

Long Live the King

Expeditionary Force 21’s call to action for Marine artillery

by LtCols Kenneth del Mazo & Craig Giorgis

In early 2014, HQMC published *Expeditionary Force 21 (EF 21)*,¹ a concept paper that describes a near-term future operational environment and outlines a campaign plan to change the Marine Corps in response. Supporting the key concepts contained within has been especially challenging for artillerymen. The ability to fight in the urban littorals, to aggregate and disaggregate seamlessly, and to retain strategic and operational mobility given limited naval lift are substantial problems artillerymen must address. Marine artillery, as it is currently organized, trained, and equipped, may not be well suited to meet these challenges. Following nearly fifteen years of counterinsurgency operations in Iraq and Afghanistan, many in the Marine artillery community have highlighted the reestablishment of core competencies as priority number one.² While this is necessary, artillerymen require a broader vision. To meet the requirements of the MAGTF of 2030, Marine artillery must develop a unifying vision that addresses necessary changes to its doctrine, organization, training, and equipment.

Understanding the broad scope of the topic, we have developed a guiding framework and a few assumptions to focus the discussion accordingly. First, we accept the future as described by *EF 21*. Although critics have rightly identified potential flaws,³ its unifying vision of distributed MAGTFs capable of supporting a broad range of operational requirements is correct. Second, this article focuses on the core missions of artillery only (cannon, rocket, and mortar fires). Third, we have adopted *EF 21*’s explicit assumption that naval

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The authors wrote this article shortly after EF 21 was released. Although the Marine Corps Operating Concept (September 2016) has since superseded EF 21, the concepts within this article remain applicable, and the authors’ intention is to provide a useful contribution to discussions about the future of MAGTF artillery.

surface fires and amphibious shipping will remain insufficient to support littoral maneuver. Finally, we expect that adversaries will effectively contest U.S. air supremacy in the near term, and the nature of distributed operations will prevent persistent air coverage. The proliferation of sophisticated surface-to-air weapons and drone technology further indicate that the MAGTF cannot continue to rely on unquestioned control of the air.⁴

yond the MEU. *EF 21* acknowledges this fact through its vision for forward-positioned SPMAGTFs (special purpose MAGTFs). These landbased SPMAGTFs are a response to geographic combatant commander requirements in a politically and fiscally constrained environment—the key restraints being a lack of amphibious shipping and a reduced political appetite for large (battalion-sized) combat formations ashore. Smaller, company-sized forma-

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EF 21: Implications for Artillery⁵

EF 21 provides a framework by which the Marine Corps envisions itself reconfiguring to meet emerging national requirements. Critically, *EF 21* asserts that geographic combatant commander requirements exceed U.S. naval forces’ current amphibious capacity and that the Marine Corps’ concept of forward presence must expand be-

tions may operate far outside the range of mutual support; access to persistent supporting arms will be a critical means of mitigating the associated risks. The requirement to support a distributed⁶ GCE while retaining the ability to mass creates a broad mission set to which MAGTF fires must organize, train, and equip. *EF 21* is short on details for Marine artillery, but, from its implications,

we derive four critical characteristics for future artillery: *versatility*, *mobility*, *simplicity*, and *distribution*.

Versatile artillery units are capable of aggregating and disaggregating in support of varied operational requirements. As there is no “right size” MAGTF, there is no right size artillery unit to meet flexible, context-specific requirements. Marine artillery must therefore be able to control fires scaled from platoon (i.e., two sections) through regiment. Additionally, artillery must have the weapons and munitions capable of mass and precision across a wide variety of target sets, from armor to urban to maritime.

Mobility is the ability of artillery—including its required sustainment—to get to the fight. It includes strategic, operational, and tactical mobility.⁷ *EF 21*’s emphasis on crisis response and littoral maneuver presents particular challenges for artillery in that weapons systems, prime movers, and ammunition are difficult to move, especially during ship-to-objective operations.

Simplicity implies weapons that use new technology but are not dependent upon them. They are capable of operating in austere environments and require minimal mechanical and technical support. Simplicity is a conscious choice of resiliency and sustainability over increased capability. To ensure responsive and persistent fires regardless of weather or electronic network availability, future MAGTF artillery systems must be simple.

Distributed units are geographically dispersed in such a way that traditional concepts of mutual support are not possible, even though such units remain under a single commander.⁸ *EF 21* envisions GCEs that can disperse and mass as required.⁹ In addition to range and mobility, artillery must possess the C2 (command and control) structure and systems that support such distribution.

Recommendations: Eyes, Brains, Brawn, and Beyond

Doctrine and organization. Fundamental changes to doctrine and organization are necessary to transform artillery into a force capable of supporting *EF 21*’s vision. In part, these changes

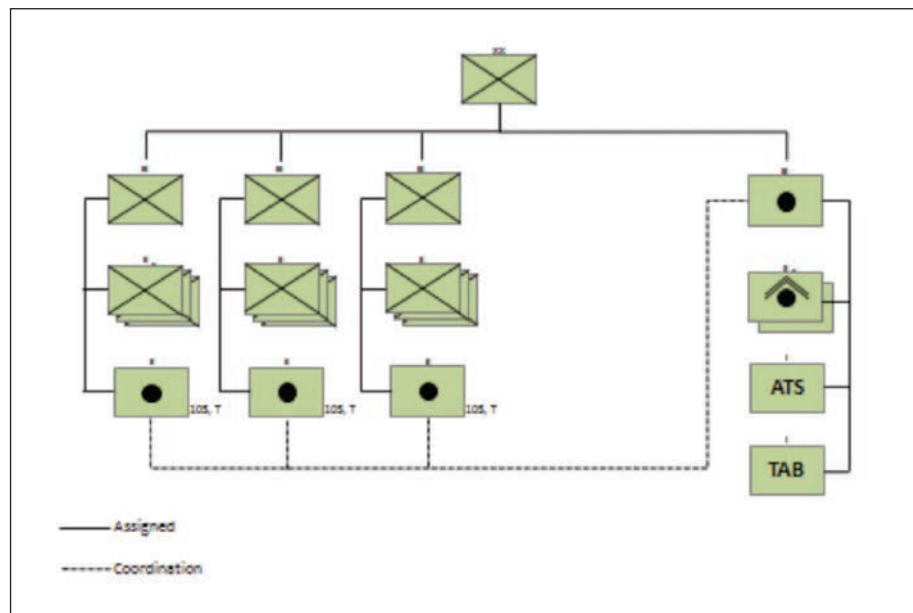


Figure 1. Proposed reorganization of the Marine Artillery Regiment.

must reorient traditional infantry-artillery organizations “one step down.” In other words, what was inherent to the division must now be in the regiment, and so on. This will facilitate scalability from platoon through regiment and promote combined arms cohesion.

First, we must shift the artillery’s doctrinal focus from the battalion to the battery. Three critical implications follow: the battery must be organized, trained, and equipped to perform tasks currently assigned to the battalion; the battery must be capable of receiving tactical missions directly from the supported unit and direct distributed platoons as required; and fire support personnel must be able to support distributed infantry battalions. In sum, the battery must perform tactical and technical fire direction and have the expertise to integrate fire support coordinators at the company level.¹⁰

Second, the permanent organization of partial regimental combat teams will facilitate infantry-artillery coordination and the modularity called for by *EF 21* (see Figure 1). The future operating environment demands the capability to employ decentralized maneuver units with accompanying fire support assets. To ensure responsive fires in a distributed environment, artillery must integrate with maneuver beyond traditional “habitual relationships.”

Given the Army’s recent experience with standing BCTs (brigade combat teams), this course of action may seem inadvisable. Unintended consequences ultimately persuaded the Army to return to division artillery. Concerns of the BCT concept centered on the training and professional development of artillerymen, as well as the roles and responsibilities of the artillery battalion commander and fire support coordinator on the BCT staff.¹¹ Recognizing these challenges and the vital role of the regimental headquarters, *the artillery regiment must be retained*. Marine artillery regiments would continue to provide fire support coordination staff to the division and retain C2 of general support fires and target acquisition. Furthermore, regimental headquarters would direct artillery training at the division level, advocate for doctrine, and resource battalions. Gains in combined arms cohesion and versatility offset the potential loss in the efficiency inherent to a decentralized artillery organization. In short, this organization enables the division’s artillery to task organize from the platoon and battery (most likely scenarios) through the battalion and regiment (most dangerous scenarios).

Eyes: UAS integration and target location error reduction. The recent Russo-Ukrainian War demonstrates what is possible by integrating UASs

(unmanned aircraft systems) with ground fire support platforms across a dispersed battlefield. 85 percent of all casualties in the Russo-Ukrainian War resulted from artillery, and firsthand accounts describe Russian indirect fires destroying entire battalions in a solitary strike.¹² The Russians task organized UAS and artillery platforms, pairing complementary sensing and shooting range capabilities, then disseminated information over a flattened C2 structure.¹³ This system devastated Ukrainian mechanized formations through persistent forward observation, the ability to mass dispersed firing units, short acquisition to response times (ten to fifteen minutes), and realtime battle damage assessment.¹⁴ Aerial observation thus served as an economy of fires: low-cost, high-endurance aircraft observed high-volume, massed fires from numerous groundbased weapons systems. Russian artillery proved dynamic, efficient, and lethal.

Airborne sensors also address a second requirement for future MAGTF target acquisition: reduction in target location error. Our ability to strike targets accurately has far outstripped our ability to locate them with comparable accuracy. The U.S. Army field artillery branch recently established an aspirational goal of achieving precision target location 80 percent of the time.¹⁵ Israeli experience with precision fires in dense, politically ambiguous urban areas such as Gaza indicate that this expectation is not just reasonable but necessary.¹⁶ To achieve this degree of accuracy, an observer requires technological aids; airborne sensors address that requirement in part.

Achieving these two goals by 2030—the integration of UAS observation capability and the reduction of target location error—requires three interrelated efforts. First, Marine artillery must integrate with the MAGTF's UAS system to create a network of persistent aerial observers capable of precise, realtime target location and battle damage assessment. The most capable and versatile platforms can serve as “general support observers,” providing precision observation to fire supporters in the deep, close, and rear areas of the battlefield.¹⁷

Networked company fire support teams should have direct access to UAS capabilities, thus enhancing their ability to integrate intelligence, fires, and maneuver. Simple UAS platforms should become part of their standard table of equipment. This would both reduce the limitations of line-of-sight observation and provide additional target location capabilities.¹⁸ Second, material acquisition efforts should prioritize target location aids. These aids must be versatile enough to function in a variety of suboptimal situations, e.g., without GPS or updated imagery, and mobile enough for use with a heliborne assault force. Third and most importantly, fire support C2 systems must facilitate the rapid collection and dissemination of targeting information.¹⁹ Such changes to C2 systems are the focus of the next section.

Brains: command and control. Russia's use of UASs for persistent forward observation is only part of what led to its success with indirect fires. More instructive to this discussion is Russia's C2 system. It effectively processed multiple sensor inputs and then quickly disseminated fire missions to distributed artillery platforms.²⁰ Likewise, for Marine artillery, developing the right C2 system for 2030 is a critical task. Given the likelihood of electronic degradation from electronic and/or cyber attacks, any increase in complexity (e.g., addition of a UAS network) is also an increase in vulnerability. Furthermore, in contrast to the Russian experience, U.S. fire support coordination was often embarrassingly slow on the dispersed battlefields of Iraq and Afghanistan. The combination of high and intricate trajectories, dense airspace, and counterinsurgency tactics severely hampered artillery responsiveness. These factors will remain and likely increase in complexity over the next fifteen years. Thus, two C2 challenges in particular require prioritization: the development of “all-network” capable artillery and “flattened” fire support coordination architecture.

As *EF 21* describes, Marines must prepare to fight and win in an electronically degraded environment. For artillery, this means executing its core

mission—providing responsive precision and mass fires—with or without a fully functional C2 network. Disruption of radio or GPS networks, for example, would cause serious problems for Marine artillery as it is currently organized and equipped. Thus, artillery C2 systems must be able to operate with a degraded capability. In this sense, simplicity and versatility conflict: simpler weapons systems are inherently less vulnerable, yet they are also less capable. Nevertheless, artillerymen must leverage new technology without becoming dependent upon it.

We reconcile this conflict with a two-tiered approach to artillery C2 systems. The first tier exploits technological complexity, and the second relies on proven, simpler (if less capable) technology. For example, communications architecture should be capable of video streaming UAS feeds under ideal circumstances while maintaining simple, long-range voice/chat communications under all circumstances. Artillerymen must train to these standards and establish a mission-essential task for platoon through regiment to preserve operational capability in an electronically degraded environment.

The ability to calculate technical fire direction with simple, rugged computers is a technology not yet fully exploited. Much as ballistic computers facilitated distributed fire direction 60 years ago,²¹ Marine artillery has the capability to take the next step and begin computing firing data at the weapon. Freeing the battery of this task facilitates distributed operations in two ways. First, it diminishes the C2 load inherent to battery operations, thus freeing capacity to direct distributed firing units. Second, it allows a supporting artillery unit to devote more of its expertise to support maneuver units.²²

Finally, operating with degraded C2 system capabilities precludes tight control. Artillery and fire support doctrine must include procedures and templates for decentralized fire support coordination—i.e., providing for both detailed and mission command per existing Marine Corps doctrine.²³ Determining the exact structure of fire support coordination that best serves

distributed maneuver requires further research and experimentation; however, it will undoubtedly involve compositing and redefining the traditional functions of tactical fire direction, fire support coordination, and airspace coordination.

Brawn: weapons systems. Over the past decade, Marine artillery has updated its weapon systems to form the “triad of fires:” the M777 (Lightweight 155mm Howitzer), the HIMARS (High Mobility Artillery Rocket System), and the 120mm mortar EFSS (Expeditionary Fire Support System). By 2030, these systems will have exceeded their service life expectancy. Continued success in the future operating environment will require new weapons.

EF 21’s vision of a smaller, lighter, more distributed GCE demands an especially mobile artillery system. This kind of mobility requires light weapons and support equipment with small logistics footprints. Presently, Marine artillery has a mobility problem that will prevent it from supporting the future MAGTF. A review of recent MEU after-action reports revealed that one-third did not embark any M777s, and only one embarked its full battery complement of six cannons. Trends revealed that two-thirds of MEU ships were at max weight capacity for cargo, and re-

ports described the M777’s required prime mover, the seven-ton truck, as not conducive for loading aboard amphibious shipping. Moreover, aviation-dependent SPMAGTFs are deploying without any artillery—not even the EFSS.²⁴ The deduced conclusion is that Marine artillery’s premier weapons system, the 155mm towed howitzer, lacks the operational mobility to adequately support the infantry and must be replaced. Considering amphibious shipping shortfalls are expected to continue well into the next decade, the SPMAGTF will be increasingly required to replace MEU capability across the range of military operations. Marine artillery must become as mobile as the MAGTF(s) it supports.

When considering new artillery weapons, two conflicts emerge: capability versus mobility and mass versus precision. Furthermore, what is the best compromise between simplicity, versatility, and mobility? The right answer lies with two weapons systems—one DS (direct support), one GS (general support)—and a munition set appropriate to both.

DS artillery in 2030. Given a choice between capability and mobility, the MAGTF of *EF 21* must favor mobility: operational mobility to get to the fight and tactical mobility to support

distributed maneuver units.²⁵ Therefore, artillery must be as light as possible while still providing the mass necessary to be worth the lift assets required to move it across the battlespace. Mortars, while light and operationally/tactically mobile, lack the range and direct fire capability to adequately support distributed maneuver units. Medium howitzers, with their large prime movers and heavy ammunition, lack the necessary operational mobility.

The Marine artillery DS system of the future is an extended range (40km+)²⁶ 105mm howitzer. The 105mm howitzer system—at approximately one-half the weight and volume of its 155mm counterpart—is the right compromise between firepower and mobility. The mobility of the 105mm, coupled with a lightweight, easily transportable prime mover and decreased ammunition signature, will offset the loss in range and lethality provided by a less mobile 155mm.

GS artillery in 2030. In Ukraine, Russia’s artillery employment focused on mass and area fires instead of precision. They maintained a high proportion of rocket to cannon systems—three multiple launch rocket systems for every four cannons—enabling them to mass at varying ranges (6km to 90km) while providing constant fire support coverage across the battlefield.²⁷ Currently, the Marine Corps has nine cannon and two rocket battalions. This ratio is not the right force structure for the MAGTF of 2030. Today’s rocket systems can range approximately seven times further than cannons, can quickly shoot and move, and are strategically mobile. By 2030, the Marine Corps must close the rocket to cannon ratio by tripling the number of rocket systems. The increased ratio of GS weapons will further offset the shorter range of a DS 105mm howitzer as well as provide an alternative means of supporting distributed GCEs. Additionally, a “vehicle-agnostic” common launch system would provide an exceptionally versatile fires capability to the MAGTF. The combination of a howitzer that can get to the fight and an increased rocket capacity will ultimately produce the operational reach envisioned by *EF 21*.



The future of artillery requires versatility, mobility, simplicity, and distribution. (Photo by LCpl Matthew Bragg.)

Artillery munitions of 2030. The present infatuation with precision is a consequence of fifteen years of counterinsurgency and counter-terrorism operations. The operational requirement to prevent collateral damage in such environments has obscured lessons learned from past conflicts. For example, massed fires in Operation DESERT STORM overwhelmed the enemy and provided critical, timely support to maneuver commanders.²⁸ 25 years later, Russia successfully massed a versatile inventory of munitions that included thermobaric, cluster (e.g., dual-purpose improved conventional munitions [DPICM]), anti-armor, and scatterable mine munitions.²⁹

Massed area fire artillery has continued relevance. Even so, some have advocated for a complete reliance on precision munitions and a rewrite of doctrine to reflect artillery as a precision-only weapon system.³⁰ The correct approach, however, is a synthesis of mass and precision. Without the capability to do both well, artillery is simply less effective and less versatile. Therefore, in addition to the continued development of precision munitions, the development of politically suitable anti-armor and area-fire munitions (i.e., a DPICM replacement) should occupy the top munition development priority for Marine artillery.³¹

The Way Forward

The authors of *EF 21* expected that the concept would stimulate organizational change across the MAGTF. They wrote,

In this time of increased fiscal austerity and global crisis, we need to break old paradigms ... It will require time, and will ultimately change joint and service doctrine, organization, training, material, logistics, personnel, and facilities.³²

Furthermore, *EF 21*'s authors make the point that

air support alone will not satisfy the fire support needs of the littoral maneuver force ... Long-range multiple-launch rocket systems or other surface missiles could also be considered as a means to support maneuver.³³



Munition development will be a priority for Marine artillery. (Photo by Cpl Ali Azimi.)

To meet these challenges, we recommend additional study in four critical areas.

First, *EF 21* does not discuss Marine artillery's role in support of the joint force. The artillery community must develop an operating concept that addresses this gap, including maritime strike (i.e., anti-ship), long-range fires (400 to 500km), and, potentially, low-altitude air defense fires from common air defense/field artillery platforms. Each of these concepts has implications beyond the MAGTF.

Second, achieving a higher proportion of GS to DS weapons systems requires more than simply adding force structure. Assuming a zero-sum game—i.e., no net increase in artillery structure—any additional GS capacity must come at the expense of DS capacity. However, the authors believe that the additional flexibility afforded by a versatile, long-range GS weapon outweighs any losses in short-range capacity. Further study is required to determine the best way of achieving this ratio without cutting the “muscle” of our DS formations.

Third, the best way to test our standing regimental combat team hypothesis is to designate one division as a test bed. Given a period of evaluation and data collection, the artillery and ground operational advisory groups can then

make an informed decision as to the best course of action.

Finally, Marine artillery may require a school that reflects the unique tactical and operational priorities of expeditionary artillery fires. Marine artillery is necessarily different from Army field artillery and thus may require a separate center of excellence that focuses on the integration of MAGTF fires. A study of alternatives to the current structure that addresses both officer (i.e., tactical) training and the potential for deeper MAGTF integration is recommended.

Notes

1. Headquarters Marine Corps, *Expeditionary Force 21*, (Washington, DC: HQMC, 2014).

2. This was an issue recently identified by the Marine Corps' artillery leadership. See the Artillery Operational Advisory Group (AOAG), “AOAG Conference Minutes,” unpublished report, 26 October 2015.

3. For example, see: Michael Orzetti, “Extinct Force 21: *EF 21*'s Existential Threat to the Marine Corps,” *Marine Corps Gazette*, (Quantico, VA: December 2015), and Sydney Freedberg Jr. and Colin Clark, “Hard Corps: Marine's ‘Expeditionary Force 21’ To Be ‘Fast, Austere, & Lethal,’ And Expensive,” *Breaking Defense*, (3 April 2014), available at <http://breakingdefense.com>.

4. For example, see: Jeremy Binnie, "Grail quest: MANPADS Proliferation in the Wake of Lybia," *Jane's Defence Weekly*, (United Kingdom: 12 June 2014); Reuben Johnson, "MH017 Mostly Likely Downed by Russian-Backed Separatists," *Jane's Defence Weekly*, (United Kingdom: 18 July 2014); Per Liljas, "Ukraine Separatists Had Surface-to-Air Missiles, Rebel Leader Admits," *Time*, (New York: 25 July 2014); Maxim Pyadushkin, "Tallying Ukraine's Aircraft Losses," *Aviation Week and Space Technology*, (New York: June 2014).

5. This section is a partial adaptation from a paper the co-author wrote as a student at the Marine Corps Command and Staff College in 2014.

6. From *Marine Corps Order 3120.13, Policy for Marine Expeditionary Units (MEU)*, published by Deputy Commandant, Plans, Policies, and Operations, (Washington, DC: 29 October 2015):

Distributed Operations are those where subordinate elements increase physical separation to mitigate a threat or better support mission accomplishment while not maintaining mutual support through fire or maneuver. Dispersed elements remain under the command and control of their parent unit and their activities support its mission.

7. The authors use the following rough definitions: "strategic mobility" includes lift via aircraft (C-130 and larger) and amphibious or merchant shipping; "operational mobility" includes lift via amphibious shipping, amphibious connectors, helicopters, and tilt-rotor aircraft; and "tactical mobility" includes movement via helicopters, tilt-rotor aircraft, and prime movers (i.e., trucks).

8. *Marine Corps Order 3120.13*.

9. *Expeditionary Force 21*.

10. Jonathan Dunne, "Enhanced Artillery Battery Operations," *Marine Corps Gazette*, (Quantico, VA: February 2010).

11. Peter Vangjel, "Green Tab to Green Tab Fire Support: The BCT Commander's Best Fires Asset," *Infantry*, (Fort Benning, GA: May/ Jun 2008).

12. Mary Ellen Connell and Ryan Evans, "Russia's 'Ambiguous Warfare' and Implications for the U.S. Marine Corps," *Center for Naval Analyses*, (Washington, DC: May 2015).

13. Phillip Karber "Lessons Learned' from the Russo-Ukrainian War: Personal Observations,"

The Potomac Foundation, (Washington, DC: 6 July 2015).

14. "Russia's 'Ambiguous Warfare' and Implications for the U.S. Marine Corps."

15. In this sense, "precision" is a target location error (TLE) of 10m or less; "near-precision" is a TLE between 10 and 50m; and "area" or "non-precision" is a TLE of greater than 50m. The authors apply the same terms and standards to weapons system accuracy and CEP (circular error probable). See William Turner, "State of the Field Artillery," *Fires*, (Fort Sill, OK: January-February 2015).

16. Israel's creative use of ground and aviation fires in Gaza is worth additional research. The Israeli Defense Force is also expanding its precision artillery capabilities in response to lessons learned. See David Johnson, *Hard Fighting: Israel in Lebanon and Gaza*, (Santa Monica, CA: RAND Corporation, 2011); Sachar Helwig, "The Return of Israeli Artillery," *Fires*, (Fort Sill, OK: March-April 2009); Katz Yaakov, "Israel Draws up Plans for a Future Imperfect," *Jane's Defence Weekly*, (United Kingdom: 20 December 2010) and "IDF Aims for Precision Guided Mortar System," *Jane's International Defence Review*, (United Kingdom: 8 August 2011); Geo-Strategy Direct, "Israel Preparing Next-Generation Artillery Platform with 40-km Range," *Geo-Strategy Direct*, (Springfield, VA: 5 September 2012).

17. Deep, close, and rear areas of the battlefield are fundamental elements of battlespace framework described in multiple doctrinal publications, including *MCDP 1-0, Marine Corps Operations*, (Washington, DC: 2017).

18. For a historical analysis of aerial observation in the U.S. Army field artillery, see Boyd Dastrup, "Aerial Observation Gives 'New Eyes' to Target Acquisition," *Fires*, (Fort Sill, OK: November/December 2015).

19. For example, see Capt Courtney Boston, "Creating Ground Strike Sections: An EF 21 Imperative," *Marine Corps Gazette*, (Quantico, VA: December 2015).

20. "Lessons Learned' from the Russo-Ukrainian War."

21. E.J. Rowse and L.S. Bethards, "FDC Needs Modernization," *Marine Corps Gazette*, (Quantico, VA: April 1955).

22. "Enhanced Artillery Battery Operations."

23. Headquarters Marine Corps, *MCDP 6, Command and Control*, (Washington, DC: 4 October 1996).

24. Information supporting this analysis derived from a review of the last five years' worth of available after-action reports, load plans, and lessons learned analyses from the Marine Corps Center for Lessons Learned.

25. *Expeditionary Force 21*.

26. One arms manufacturer is currently testing a 105mm howitzer with a range of 36km. *IHS Jane's* "Denel Land Systems 105 mm Light Experimental Ordnance (LEO)," (United Kingdom: 10 September 2014), available at <https://janes-ihs-com.lomc.idm.oclc.org>.

27. "Lessons Learned' from the Russo-Ukrainian War."

28. Boyd Dastrup, *Modernizing the King of Battle: 1973-1991*, (Fort Sill, OK: Office of the Command Historian, United States Army Field Artillery Center and School; Washington, DC: Center of Military History, United States Army, 2003).

29. "Lessons Learned' from the Russo-Ukrainian War."

30. Michael Forsyth, "Averting a Disaster," *Fires*, (Fort Sill, OK: November/December 2012).

31. U.S. policy makers have opted to eliminate the primary anti-armor munition—DPICM—from its inventory because of a propensity to produce duds. This dud rate has led to unintended collateral damage and political consequences in recent counterinsurgency environments. However, its elimination without a replacement severely reduces U.S. anti-armor capability in future wars. The authors assume that DPICM will remain a political non-starter for the foreseeable future.

32. Doug King, et al., "Forward and Ready for Crisis," *Proceedings*, (Annapolis, MD: November 2013).

33. Ibid.

