

Future Impact: A Shift in Deep Fires

A Monograph

by

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Abstract

Future Impact: A Shift in Deep Fires, by MAJ Joseph C. Fix, US Army, 61 pages.

This monograph examines the potential of a future conflict between the United States and Russia in the Baltic States based on two historical cases: Operation Desert Storm 1991, and the Russo-Ukrainian War 2014.

This paper aims to deduce implications on the range and deep fires doctrine from these conflicts for inclusion into the development of future field artillery systems and doctrine. The five most significant insights of this study are: first, FM 3-0, Operations, is a waypoint in the paradigm shift that underscores the importance of how the US Army will fight in the deep area. Second, the range is a function of actual distance, doctrinal requirements, constraints, restraints, physics, and enemy capabilities. Third, in a near-peer fight, range will provide a tactical advantage, but whoever has the best integrated, layered, and redundant systems will have the strategic and operational advantage. Fourth, Russia will not allot time and depth for US forces to establish a “Baltic Shield.” Lastly, Russia will aim to create tactical paralysis by firing across international boundaries and from population centers to bait and discredit their adversaries.

Based on these historical, contemporary, and futuristic conflicts and insights, current US Army doctrine is unfit for future war against a near-peer adversary with overmatching field artillery deep fires in large-scale combat operations in its current battlespace construct outlined in FM 3-0, Operations. A proposed Integrated Battlespace Framework (IBF) combines the operational constructs of CAC, Futures Command, and SAMS, and still retains the simple “Rear, Close, Deep” construct.

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Abbreviations

A2/AD	Anti-Access Area Denial
AAB	Assault Amphibious Battalion
AAFCE	Allied Air Forces Central Europe
ABCT	Armored Brigade Combat Team
ACT	Allied Command Transformation
ADP	Army Doctrine Publication
AI	Air Interdiction
ATACMS	Army Tactical Missile System
BAI	Battlefield Air Interdiction
BCT	Brigade Combat Team
BTG	Battalion Tactical Group
BTO	Baltic Theater of Operations
CAC	Combined Arms Center
CATF	Combined Amphibious Task Force
CGSOC	Command and General Staff Officer College
CJTF-18	Combined Joint Task Force XIII Airborne Corps
CMD	Central Military District
DIVARTY	Division Artillery
DPA	Donetsk People's Army
DPICM	Dual-Purpose Improved Conventional Munition
DPR	Donetsk People's Republic
DSDS	Desert Shield/Desert Storm
EDF	Estonian Defense Force
EU	European Union
EXORD	Execution Order

FC	Field Circular
FM	Field Manual
FORSCOM	Forces Command
FLOT	Forward Line of Troops
FSCM	Fire Support Coordination Measure
FSCCL	Fire Support Coordination Line
GCC	Geographic Combatant Commander
GMLRS	Guided Multiple Launch Rocket System
GRF	Global Reaction Force
HIMARS	High Mobility Artillery Rocket System
IBF	Integrated Battlespace Framework
JCS	Joint Chiefs of Staff
JOA	Joint Operations Area
LPA	Luhansk People's Army
LPD	Landing Platform Dock
LPR	Luhansk People's Republic
MDO	Multi-Domain Operations
MLRS	Multiple Launch Rocket System
MRL	Multiple Rocket Launcher
NATO	North Atlantic Treaty Organization
NRF	NATO Response Force
NTDD	Northern Territorial Defense District
PLANORD	Planning Order
RIPL	Reconnaissance and Interdiction Planning Line
S-BEF	Sea-Based Expeditionary Fires
SACEUR	Supreme Allied Commander Europe

SAMS	School of Advance Military Studies
SICL	Strategic Interdiction Coordination Line
SMD	Southern Military District
SRBM	Short-Range Ballistic Missile
TAC	Tactical Command Post
TRADOC	United States Army Training and Doctrine Command
UAV	Unmanned Aerial Vehicle
USAREUR	United States Army Europe
USEUCOM	United States European Command
WMD	Western Military District

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Introduction

Current Situation: Our Perilous Situation

Given the last eighteen years of low-intensity conflict and counter-insurgency operations, the field artillery community cannot now provide long-range deep fires in support of heavy maneuver units in a possible near-peer conflict against Russia or other comparable adversaries. As the US Army shifts its focus back to Corps and Division operations, the US Army's artillery battalions have again been task organized under the Division Artillery (DIVARTY). Although the artillery battalions are now under the command of an artillery Brigade Commander, the Army has only recently made small incremental modifications to the aging platforms of the M119A2 Towed Light Towed Howitzer (105 mm), the M109A6 Paladin Self-Propelled (155 mm), and the M142 HIMARS (rocket). The last two significant advancements in artillery capabilities came in 2005 with the fielding of the M777 Towed Medium Howitzer made of titanium and in 2008 with the M982 Excalibur extended range GPS guided artillery shell.¹ The US Army's Field Artillery focus for the last ten years has been on systems, not employment, except for the reemergence of DIVARTY.

In addition to the US Army's field artillery range shortfalls, the Army is not properly postured or doctrinally aligned to support large-scale combat operations within the current security environment in the Baltic region. The Army's synchronization of long-range artillery into the maneuver plan has always been an instrumental key to success. The 100-hour long ground offensive during Operation Desert Storm is a prime example of the importance and effectiveness of fighting as a combined arms force while having an advantage in artillery. The application of Jomini's principles of war, which consists of mass, maneuver, objective, and offense, led to the US Army's success during the Gulf War. Ironically, the US Army finds itself

¹ Boyd L. Dastrup, *Artillery Strong: Modernizing the Field Artillery for the 21st Century* (Fort Leavenworth, KS: The Army University Press, 2018), 102, 171.

on the other end of Jomini's principles of war in its current fight against a near-peer competitor in that the US Army must currently maneuver to fire its out-ranged systems instead of firing to maneuver when supporting large-scale combat operations. Maneuvering to fire is a doctrinal fix to a technical shortfall, which may be okay. However, if the US Army wants to have mission success, it must again make advancements in long-range firing capabilities, as well as adjustments to deep fires doctrine based on these new long-range advancements.

The Problem: A Period of Grave Danger

Based on a review of current field artillery capabilities, range disparity, doctrine, and a comparison of the evolving battlespace, the US Army (1) does not currently have the field artillery capability or doctrine to properly conduct Division deep and Corps deep operations in large-scale combat operations, and (2) incremental modifications to field artillery systems and their ranges will not be sufficient to defeat a near-peer competitor in the near future. Together, these represent a grave danger to the US Army's ability to successfully conduct deep fires within large-scale combat operations on today's battlefield.

Background

As the Army transitions into large-scale combat operations, much like the transition from active defense to air-land-battle after Vietnam, it is worthwhile to review current field artillery capabilities, range disparity, doctrine, and to compare different views of the evolving battlespace.

A Review of Current Field Artillery Capabilities

The newly formed US Army Futures Command conducted a recent study to identify large-scale combat operational gaps as they relate to the emerging multi-domain operations (MDO) concept. A critical analysis of field artillery capabilities was central to the overall effort. Importantly, the study outlines multiple force structure gaps.²

² COL Michael Kimball, "Fire Support Modernization Update & CDID Overview" (lecture, US Army Command and General Staff Officer College, Fort Leavenworth, KS, August 2019), 5.

First and foremost, the field artillery “lacks sufficient capacity, lethality, and range to deter and defeat peer threats.”³ Coupled with this problem is the absence of Theater and Corps level fires headquarters to synchronize fires across the battlefield.⁴ Although field artillery rocket battalions’ configurations are changing, Divisions still do not possess an organic deep fires capability. Secondly, in regards to large-scale combat operations, Futures Command identified two significant shortfalls: (1) lack of fires command and control above the brigade combat team (BCT), and most importantly, (2) the lack of long-range fires to enable counterfire and shaping operations.⁵ Together, these two shortfalls highlight the Army’s inability to plan deep fires above brigade. In response to this looming problem, Futures Command is already advocating the establishment of Theater, Corps, and Division fires cells to temporarily overcome these shortfalls; an indicator that Futures Command recognizes the Army’s current inability to realistically plan and execute deep fires at the tactical, operational, and strategic levels.⁶ This study will show that the US Army once had a deep fires capability, and requires reassessing for potential updates and adaptations to weapon systems and doctrine.

Although Futures Command has identified emerging concepts in the multi-domain operational realm such as strategic fires battalions and operational fires commands, these futuristic notions are not developed in current doctrine or organizations. Furthermore, while Futures Command looks to develop and acquire new systems, they are advocating and planning on modernizing current systems in the near-term, which will only have minimal effects and do not account for the bigger problem, which is to conduct deep operational fires. For instance,

³ COL Chris Compton, “Force Structure Update: Building the MDO-Ready Fires Force” (lecture, presented to the US Army Command and General Staff Officer College, Fort Leavenworth, KS: August 2019), 10.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

improvements to the M109A7 cannon tube allow it to shoot an unclassified range of approximately seventy kilometers.⁷ However, as Figure 1 indicates, this is still within the approximate range of the Russian artillery system Smerch (an operational system), which means that the modification to the M109A6 does not alter the current risk to the US system.⁸ This specific range disparity between the US Army and its potential adversaries highlights a more significant problem with range disparity across the full spectrum of field artillery systems.

A Quick Glimpse at Range Disparity

To put a fine tip on the shortcomings, a quick glimpse at US Army and Russian Army systems helps sharpen the problem, primarily in terms of range.

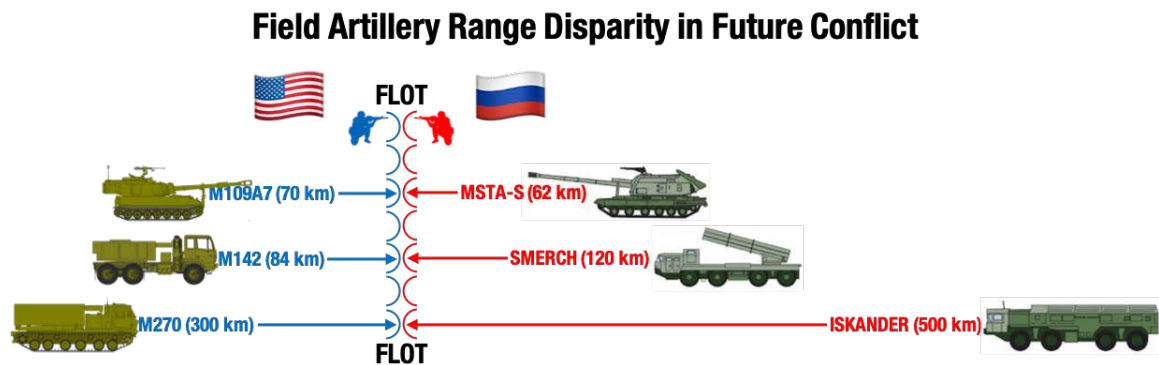


Figure 1. Field Artillery Range Disparity in Future Conflict.
Created by Author.

It is clear in this comparative chart that there is an identifiable mismatch in simple linear ranges for each like field artillery system, but range is not as simple as a comparison of straight-line distances. As one senior field artillery officer noted, “There are no straight lines in the real world,” and this applies to field artillery systems as well. The first not-so-obvious question is how

⁷ Todd South, “The Paladin’s Howitzer Barrel Just Got A Whole Lot Longer,” *Army Times*, July 8, 2019, accessed on November 3, 2019, <https://www.armytimes.com/news/your-army/2019/07/08/the-paladins-howitzer-barrel-just-got-a-whole-lot-longer/>.

⁸ “BM-30 Smerch Russian 300mm Multiple Launch Rocket System,” OE Data Integration Network, last modified November 3, 2019, accessed on November 3, 2019, <https://odin.tradoc.army.mil/Search/WEG/smerch>.

to define range. Technically, it may be defined as a function of: actual distance, doctrinal requirements, constraints, restraints, physics, and enemy capabilities.⁹ Perhaps the better question is: “what range to what end?” How we fight answers this question and generally brackets the required range from a minimum distance needed to win the counterfire fight to a maximum distance needed to prosecute the deep fight.

Directly related to this range disparity is the Russians’ continued focus on deep operations. As clearly addressed in multiple parts of the Soviet Battlefield Development Plan of 1982 and as evidence in the most recent Russian offensive operation in Ukraine, deep fires and deep operations remain a central tenet of Russian doctrine.¹⁰ Specific to range, the Soviet Battlefield Development Plan states that, “improved range and accuracy of deep fire support gives the commander a capability to strike targets deep in his area of responsibility.”¹¹ Furthermore, this key Russian doctrinal document postulates that the overall aim of improved range and accuracy is to quicken the tempo of their front line maneuver units. This links their field artillery operational reach to the success of their tactical maneuver unit’s tempo.¹² In short, Russian doctrine emphasizes the importance of field artillery assets that can operate at both tactical and operational depths.¹³ Again, Russian thinking in regards to the deep employment of field artillery assets to facilitate operational objectives is clearly outlined. Russian thinking may

⁹ LtCol Leroy B. Butler, initial counseling with author, July 29, 2019. LtCol Butler is a US Marine Corps Artillery Officer who has significant indirect live-fire combat experience in Operation Iraqi Freedom—over 2,800 munitions fired in support of 2d Marine Expeditionary Brigade (Task Force Tarawa). LtCol Butler’s most notable experience is with Task Force Tarawa during the Battle of a Nasiriyah, Iraq from March 23 2003 to April 5, 2003 as 1st Battalion, 10th Marine Regiment’s Battalion Fire Direction Officer. LtCol Butler is also my Seminar Leader here at SAMS. LtCol Butler is a 2011 SAMS AMSP graduate and a 2019 SAMS ASLSP War College graduate as well.

¹⁰ Office of the Assistant Chief of Staff for Intelligence, *The Soviet Battlefield Development Plan: Executive Summary* (Washington, DC: United States Army Intelligence Threat Analysis Center, 1982), 44.

¹¹ Ibid.

¹² Ibid.

¹³ Ibid.

apply directly to US Army commanders in the development of our own field artillery capabilities in regards to what range to what end.

Doctrine in Review: Active Defense to AirLand Battle to LSCO

Given the shift to large-scale combat operations, it is instructive to review previous warfighting doctrine and compare it to current efforts to reestablish deep fires as a primary element of this new doctrine, see Figure 2. An initial review of the Army’s current operational doctrine, FM 3-0 *Operations*, indicates a deep fires gap in knowledge and operational framework that had once existed. An examination of doctrine and concepts during a previous transitional period in the 1970s and 1980s highlights concepts and terminology that may apply to this current transitional period. Whereas before 9/11, the US Army had developed a useable and successful doctrinal model, the US Army currently does not have a similar doctrinal paradigm within which to discuss the range requirements and capabilities needed to conduct deep field artillery operations.

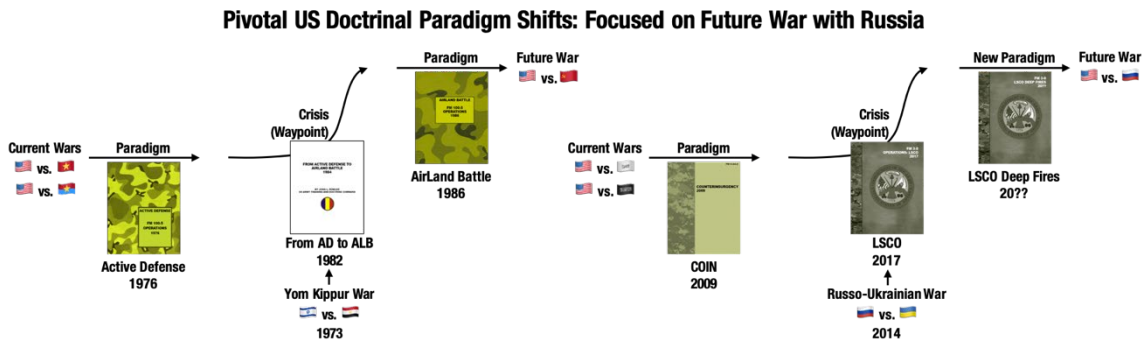


Figure 2. Pivotal US Doctrinal Paradigm Shifts: Focused on Future War with Russia. Created by author.

The period following the United States’ departure from active ground combat in Vietnam from 1973-1975 was a tumultuous time for the US Army, as an organization and intellectually. The US Army wrestled with shifting from fighting a predominately airmobile and dismounted fight in the jungle, highlands of Vietnam, to a heavy mechanized force fighting on the plains of Europe. The 1973 Yom Kippur War demonstrated, much had changed in regards to technology and weaponry after the Vietnam conflict, which the US Army had neither developed nor

integrated into their formations. Additionally, the US Army did not prepare intellectually; the logic of transformation (how to organize, man, and equip the formations) did not match the new logic of action (new combative technology). In reviewing this transition, there are various doctrinal and conceptual ideas worth assessing and evaluating for possible reintroduction into the US Army's large-scale combat operations. Most specifically, the notion of deep operations and how field artillery assets fit into this construct regarding employment and range.

Notably, the creation of TRADOC in 1973 provides a good start point for reviewing contemporary literature, warfighting concepts, and doctrine since the US Army was rethinking its mission and its ability to win in a large-scale conflict with the Soviet Union across Europe. To reenergize the US Army's intellectual engine, General William Dupuy, the first commander of TRADOC, and his successor General Donn Starry created a strategic working group to think through and capture a new way of fighting on the complex battlefields of Europe. Within this context, an examination of deep operations may provide insights still applicable today as the US Army prepares to fight large-scale combat operations on a future battlefield.

Generals DePuy and Starry changed the culture of the US Army from one that thought very little about doctrine to one that continuously discussed and debated it.¹⁴ A significant concept that Dupuy and Starry introduced was that of the "extended battlefield," which is the precursor to deep battle at the Corps level.¹⁵ The "tactical corollary of seeing deep" into the extended battlefield was the subject of "deep interdicting operations," and it was one of the most critical aspects of the doctrinal problem.¹⁶ "Deep interdicting operations" was key to the debate and discussion in which fires, maneuver, and air forces all played a prominent role under this new

¹⁴ Donn A. Starry, *Press On! Selected Works of General Donn A. Starry, vol. 1, Selected, Edited, Annotated, and with an Introductory Essay by Lewis Sorely*, ed. Lewis Sorley (Fort Leavenworth, KS: Combat Studies Institute Press, 2009), 1-2.

¹⁵ *Ibid.*

¹⁶ John L. Romjue, "From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982" (Historical Monograph Series, Historical Office, Fort Monroe, VA, 1984), 32.

construct.¹⁷ In reviewing earlier editions of FM 100-5, *Operations*, that preceded DePuy and Starry, there was no identified principle or concept of fighting the deep fight. Although offensive and defensive operations were defined in terms of depth on the battlefield, there was no specific direction or guidance on how to shape the deep fight through deep field artillery fires correctly.¹⁸

Energized by Dupuy's and Starry's notions of "seeing deep," the US Army began to shift its doctrine from Active Defense to AirLand Battle. By 1984, much of AirLand Battle had been developed, but not finalized. The development of the AirLand Battle concept was a critical waypoint in the Army's doctrinal paradigm, which was formalized by being included in the 1986 version of FM 100-5, *Operations*.

Given this earlier paradigm shift from Vietnam to the plains of Europe that required multiple iterations of emerging air-land battle doctrine, it is important to ask if large-scale combat operations as outlined in the current FM 3-0, *Operations*, is a new paradigm for the future or is it a waypoint to reintroduce deep field artillery fires. Specifically, is it a paradigm shift that will help refocus how the US Army fights in the deep area. Regardless, deep artillery fires must be redefined and reintroduced. An integral piece to this work is to establish a clear common operating picture of the battlespace within which deep fires will be planned and executed. Given the many competing operational frameworks, refer to figure 3, it is once again necessary to discuss and debate the operational framework and the necessity to "see deep" in the "extended battlespace" highlighted by Generals Dupuy and Starry.

¹⁷ Ibid.

¹⁸ Romjue, "From Active Defense to AirLand Battle," 32.

Varying Battlespace Frameworks

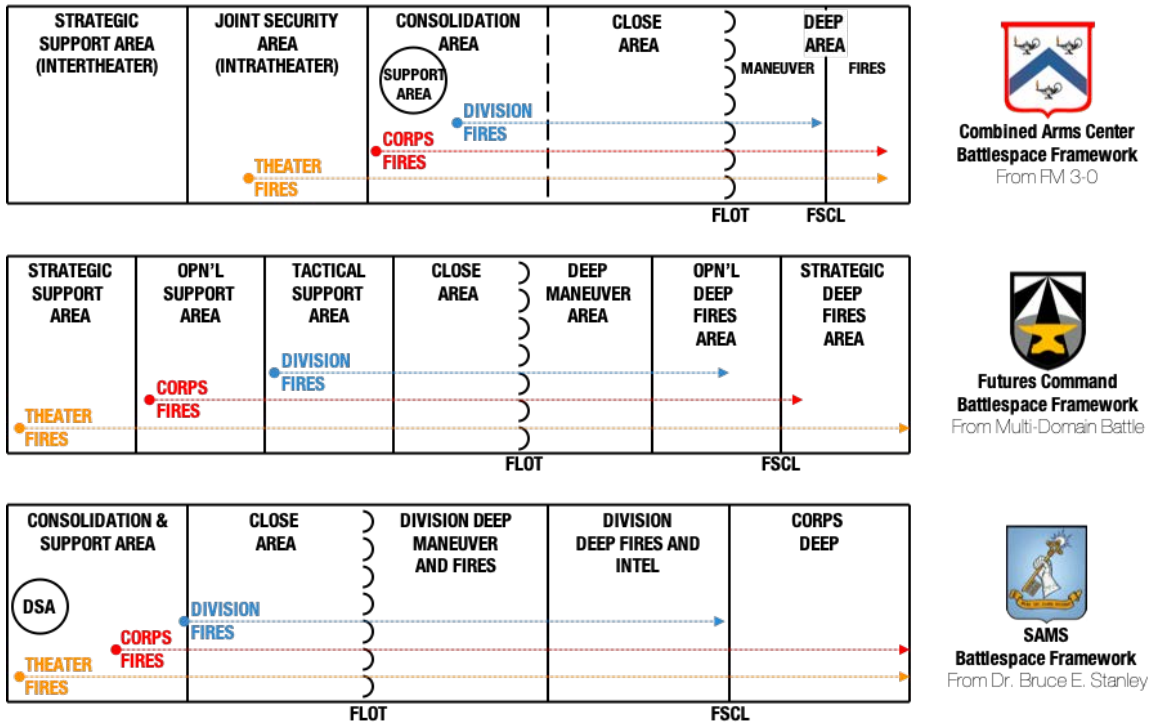


Figure 3. Varying Battlespace Frameworks.
Created by author.

In assessing these progressive views of the battlespace, it is instructive to review, evaluate, and analyze historical case studies to refine the details of the problem. A relook at Desert Storm will show existent field artillery capabilities successfully employed within the simple Deep, Close, Rear framework of AirLand Battle. In a more contemporary way, the Russian employment of deep fires into Ukraine allows a peek into the way a current near-peer advisory synchronizes field artillery assets in deep operations. And finally, looking at a future Baltic scenario will illuminate current and future field artillery range and deep fire requirements.

Methodology

Overarching Aim

Given the current situation, the problem, and foundational background information, the specific aim of this paper is to deduce implications on the range and deep fires doctrine from

historical, contemporary, and futuristic case studies for inclusion into the development of future field artillery systems and doctrine.

Approach: Looking Through a Crafted Lens

The qualitative case study method will be used. Case studies will include Operation Desert Storm, the Russian missile attack in Ukraine, and a futuristic-based scenario focused on a possible conflict between the United States and Russia in the Baltic Region.

Each of these events will be analyzed through a crafted lens consisting of a filter for battlefield structure, capabilities filter, and a doctrine filter, which will provide a means for deducing implications. In this way, these historical and contemporary case studies will show the evolution and importance of long-range precision fires within large-scale combat operations and provide insights into the future. The futuristic-based scenario in the Baltic Region will show the appropriate field artillery range needed to support large-scale combat operations doctrinally.

Case Study #1: Operation Desert Storm

Operational Overview: VII Corps Enters the Fight

By the spring of 1990, the US Army had completed its doctrinal paradigm shift from Active Defense to AirLand Battle and was resetting itself globally. After fighting in Vietnam for over two decades and with the slow dissolution of the Soviet Union, the United States military started to reduce its footprint in Europe. However, the planned withdrawal of US forces from Europe would not be as smooth as originally thought. In August of 1990, Saddam Hussein's Iraqi Republican Guard invaded their neighboring state, Kuwait, and threatened to push further south into Saudi Arabia's coastal oil fields. Following the deployment of the US XVIII Corps in August, the US VII Corps was ordered to deploy to Saudi Arabia by the President of the United States, George H. W. Bush, to give the coalition "an offensive option" necessary to expel the

Iraqi aggressors out of Kuwait.¹⁹ The United States' response was Operation Desert Storm, see figure 4.

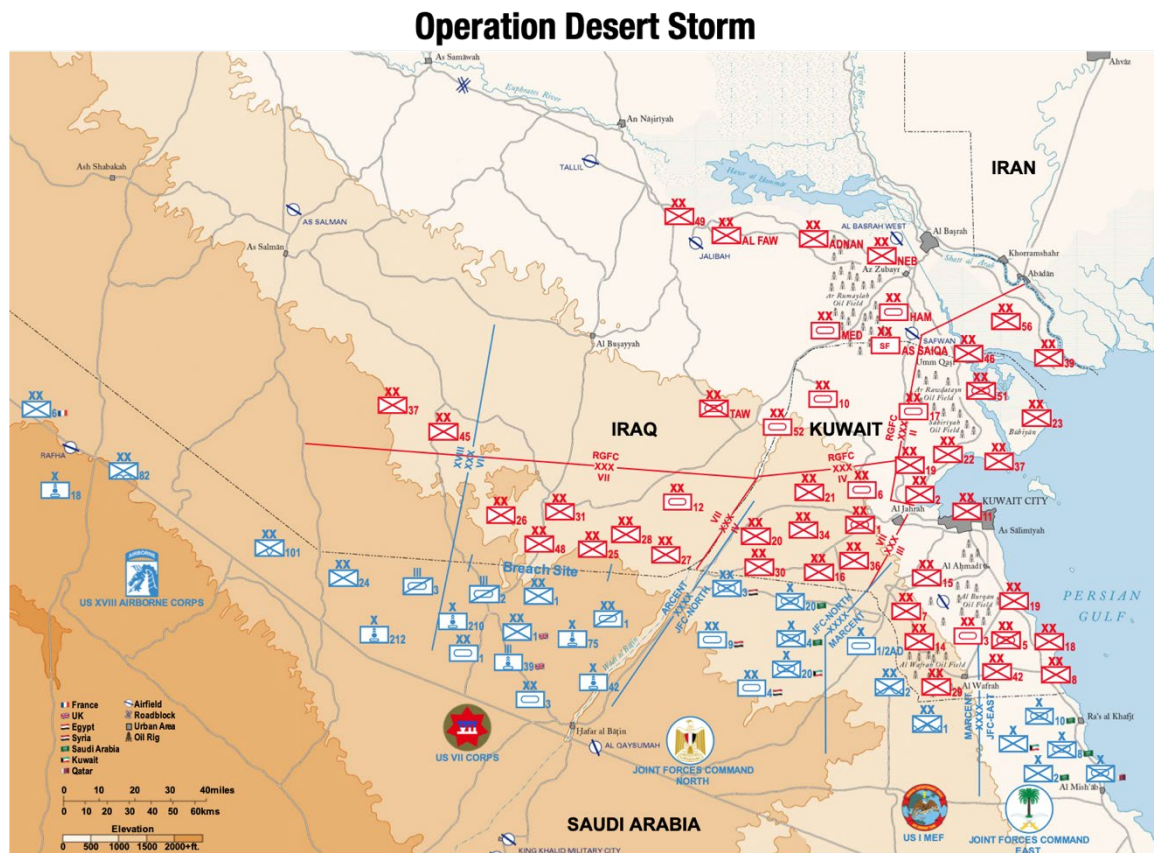


Figure 4. Operation Desert Storm. Adapted from Chris Carter, “Operation Desert Storm Map,” *Unto the Breach: Honoring Our Nation’s Heroes*, February 21, 2012, accessed on October 25, 2019, <http://www.victoryinstitute.net/blogs/utb/2012/02/21/operation-desert-storm-map/>.

Completely in line with the doctrinal tenets of AirLand Battle, US VII Corps was task organized with more combat power under its command than any other US Army unit had ever had on any previous battlefield. Typically, a US Corps was considered at full strength with three divisions. By January of 1991, the US VII Corps had three armored divisions, a mechanized infantry division, a combined arms division, an armored cavalry regiment, an aviation brigade,

¹⁹ Stephen A. Bourque, *JAYHAWK! The VII Corps in the Persian Gulf War* (Washington, DC: US Army Center of Military History, 2002), v.

and a corps artillery brigade.²⁰ By mid-February, US VII Corps was at full strength and had begun to conduct counter reconnaissance beyond the berm boundary-line that separated Iraq and Saudi Arabia. These initial operations were intended to deny Iraqi forces from determining the location of the US breach zone. Importantly, the ground gained during these operations provided the opportunity for the field artillery to “prepare the battlefield.”²¹

The primary task of the US VII Corps Artillery was to conduct artillery raids to destroy Iraqi artillery systems near the border and planned breach zone.²² Additionally, US VII Corps Artillery aimed to neutralize Iraqi communication nodes and to prevent the Iraqi reconnaissance elements from relaying essential information such as the size and direction of the US ground attack. By extension, this would prevent Iraqi artillery from firing mines or chemicals on the force conducting the breach. These artillery raids would also provide an opportunity to “shake out” the integration of cannon fire, rocket fire, counterbattery radar, fixed-wing aviation, and attack aviation.²³ Importantly, the ability of US VII Corps Artillery to mass fires in the initial phase of the ground-combat operation would play a central role in the demoralization of the Iraqi Army.

On 13 February, as the majority of the VII Corps began its movement to the west, the 1st Cavalry Division started field artillery raids as part of the Corps’ deception operation. By nightfall, four multiple launch rocket system (MLRS) batteries were in position and ready to fire at the berm-boundary line.²⁴ On the morning of 14 February, four batteries from the 42nd Field Artillery Brigade and the 1st Cavalry Division “shot hundreds of rockets of dual-purpose improved conventional munition (DPICM) consisting of thousands of bomblets on the Iraqi

²⁰ Bourque, *JAYHAWK!*, 88.

²¹ *Ibid.*, 160.

²² *Ibid.*

²³ *Ibid.*

²⁴ *Ibid.*, 161.

artillery batteries.”²⁵ During these initial raids, US VII Corps Q-37 target acquisition radars were key to the counterbattery fight. At any indication of Iraqi return fire, these systems were queued and ready to acquire locations for immediate US strikes. Although the Iraqi’s seldom returned fire, this critical integrated fire system was tested and in place.²⁶

After these initial fires to shape the battlefield, the most massive artillery action was conducted on 16 February in 1st Cavalry Division’s area of operation. In this synchronized effort, the 42nd Field Artillery Brigade and elements of the 6th Cavalry Regiment of the 11th Aviation Brigade conducted a classic deep attack, see figure 5. During the evening hours, five battalions of the 42nd Field Artillery Brigade suppressed Iraqi air defenses, thereby opening a mile-wide air corridor through which Apache attack helicopters of the 11th Aviation Brigade flew through to their objectives.²⁷ As aviation assets crossed the line of departure, the 42nd Field Artillery shifted its fires to targets deeper into the zone of attack. Behind this wall of “steel rain,” the Apaches flew alongside one another along a nine-mile-wide frontage identifying and destroying targets along their flight path.²⁸ Although the combined operation only lasted an hour and forty-five minutes, it had devastating results, and more importantly, provided an opportunity to exercise critical command and control functions.

²⁵ Bourque, *JAYHAWK!*, 161.

²⁶ *Ibid.*, 51.

²⁷ *Ibid.*, 161.

²⁸ *Ibid.*, 53.

Synchronized Deep Fires

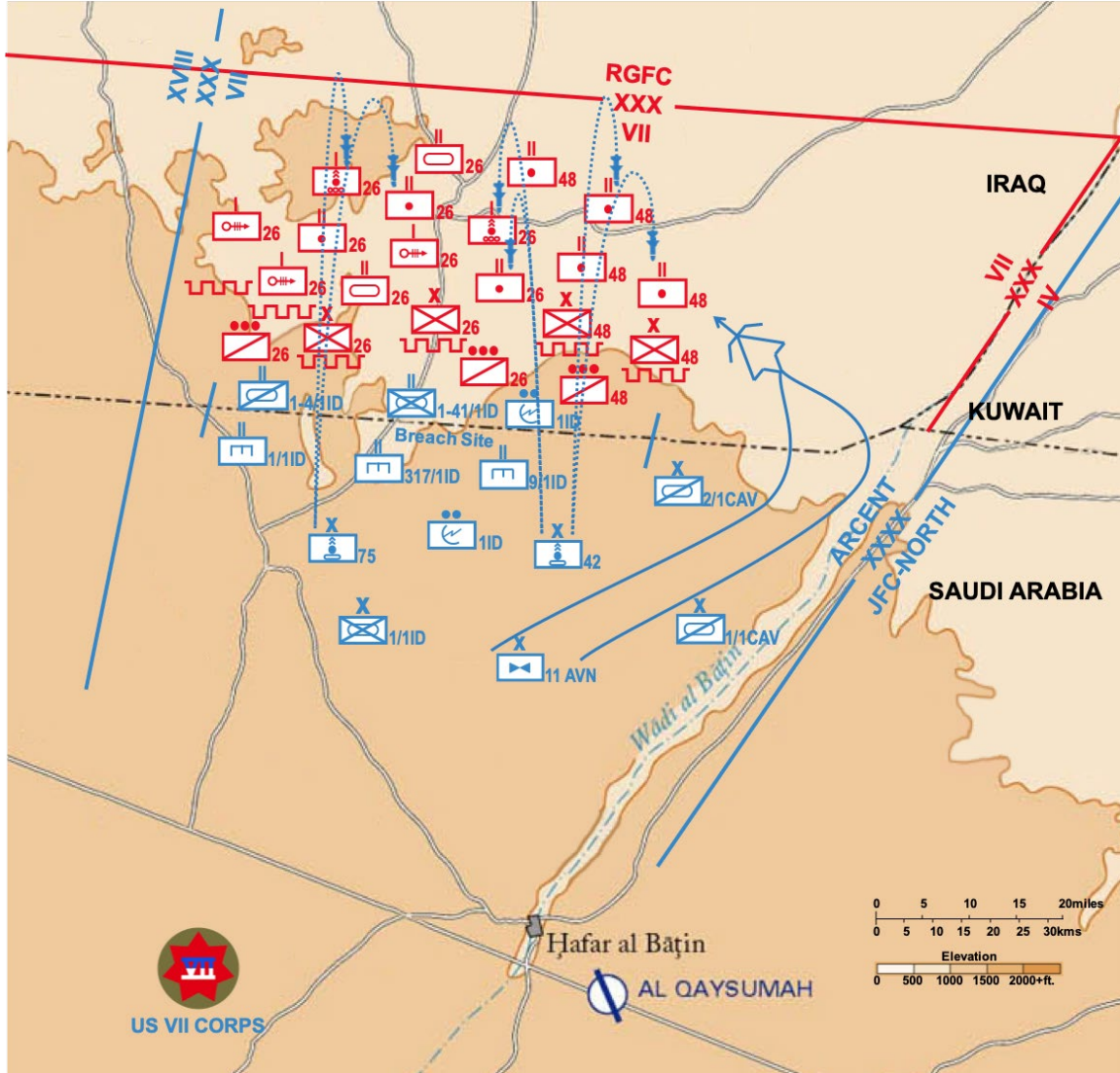


Figure 5. Synchronized Deep Attack.
Created by author.

From the 1st Cavalry Division's Artillery command post, the Corps Commander, the Field Artillery Brigade Commander, and the Aviation Brigade Commander were able to overwatch the operation and to assess their ability to command and control this complex operation while also looking for areas of improvement and refinement. Critically, the 1st Cavalry Division's Artillery command post was linked to the Corps Battle Cell and the 11th Aviation's

command and control aircraft via satellite communications.²⁹ In short, this operation served as a significant combined arms rehearsal for deep attacks during the Corps' planned main assault. The Corps' "shake out" required considerable planning and training within the common operational framework clearly outlined in FM 100-5, *Operations*, and within the tactics, techniques, and procedures outlined in FC 100-15-1, *Corps Deep Operations: Tactics, Techniques, and Procedures Handbook*. In this case, these well-understood intellectual foundations proved as important as the technologically advanced combat systems that were employed. Although the Apaches, Q-37 radars, MLRS, and fire control systems provided a significant technical advantage, it was the doctrinal underpinnings that provided the critical intellectual advantage.

By the time the ground offensive started on 24 February, US VII Corps had fired over 14,000 rounds of artillery and 4,900 MLRS rockets at Iraqi targets during these initial raids.³⁰ Participating in these US VII Corps shaping operations were seventeen field artillery batteries, three MLRS battalions, and six separate MLRS batteries.³¹ During eight days of devastating attacks, the US VII Corps destroyed the vast majority of the Iraqi artillery capability. In addition to destroying the Iraqi indirect fire assets, these attacks caused many front-line Iraqi units to dissipate, leaving little resistance for the maneuver forces, especially at the point of penetration of US VII Corps' attack on the Iraqi defensive line.³² When on 24 February, the 1st Infantry Division conducted its breaching operation against the Iraqi Seventh Corps front line defenses, US VII Corps fired more than 6,000 cannon rounds and 414 MLRS rockets by three Field Artillery Brigades and two Divisions' worth of artillery.³³

²⁹ Bourque, *JAYHAWK!*, 55.

³⁰ *Ibid.*, 60.

³¹ *Ibid.*

³² *Ibid.*, 61.

³³ MAJ Colin K. Dunn, "Field Artillery Desert Facts," *Field Artillery: A Professional Bulletin for Redlegs* (October 1991): 2.

Though the ground combat operations in Desert Storm lasted just four days, the US maneuver forces moved further and faster than in any previous US military offensive operation in history. They brought to bear more firepower than in any previous campaign.³⁴ Field artillery systems, doctrine, and a clear operational framework proved critical to the success of Operation Desert Storm and provided valuable insights for the future.

US Battlefield Framework: A Simple Construct

In preparation for conducting combat operations, US VII Corps was fortunate that the Combined Arms Center (CAC) at Fort Leavenworth, Kansas had just published Field Circular (FC) 100-15-1, *Corps Deep Operations: Tactics, Techniques, and Procedures Handbook* in April of 1990. This handbook superseded the Army's earlier Field Circular (FC) 100-15, *Corps Deep Operations*, which had been released in September of 1985.³⁵ The revised 1990 Field Circular provided the operational framework that a US Army Corps Commander and his staff could use in developing and executing deep operations. Importantly, FC 100-15-1 was not intended to be a stand-alone document. On the contrary, FC 100-15-1 was designed to augment the Army's capstone document FM 100-5, *Operations*.

At the time of Desert Shield/Desert Storm (DSDS), the 1986 version of FM 100-5 *Operations*, was in effect. In both the Field Manual and Field Circular, the battlefield framework was a simple construct that included three areas: Deep, Close, and Rear. Each of these distinct areas of the battlefield overlapped with its adjoining areas. These adjoining areas, or "linkages," between Deep, Close, and Rear identified key areas where operational aims, time, and activities were synchronized.³⁶ Combat assets and resources were allocated to each area of the battlespace

³⁴ COL Vollney B. Corn, Jr. and CPT Richard A. Lacquemont, "Silver Bullets," *Field Artillery: A Professional Bulletin for Redlegs* (October 1991): 15.

³⁵ US Department of the Army, Field Circular (FC) 100-15-1, *Corps Deep Operations: Tactics, Techniques, and Procedures Handbook* (Fort Leavenworth, KS: Combined Arms Center, 1990), i.

³⁶ US Army, FC 100-15-1, 1-3.

based on the Commander's vision.³⁷ For the Commander to properly understand, visualize, describe, and direct action, he/she had to understand the interconnected relationships between all three areas. For Desert Shield/Desert Storm, this simple construct was well communicated and understood. In short, it was a clear common operating picture that framed the battlefield, see figure 6. However, in the joint fires community, a significant issue arose over the US Army's use of an additional Fire Support Coordination Measure (FSCM) that had not been vetted and agreed-to with the US Air Force.

The placement and use of the Reconnaissance and Interdiction Planning Line, or RIPL, created significant problems in planning and executing the deep fight.

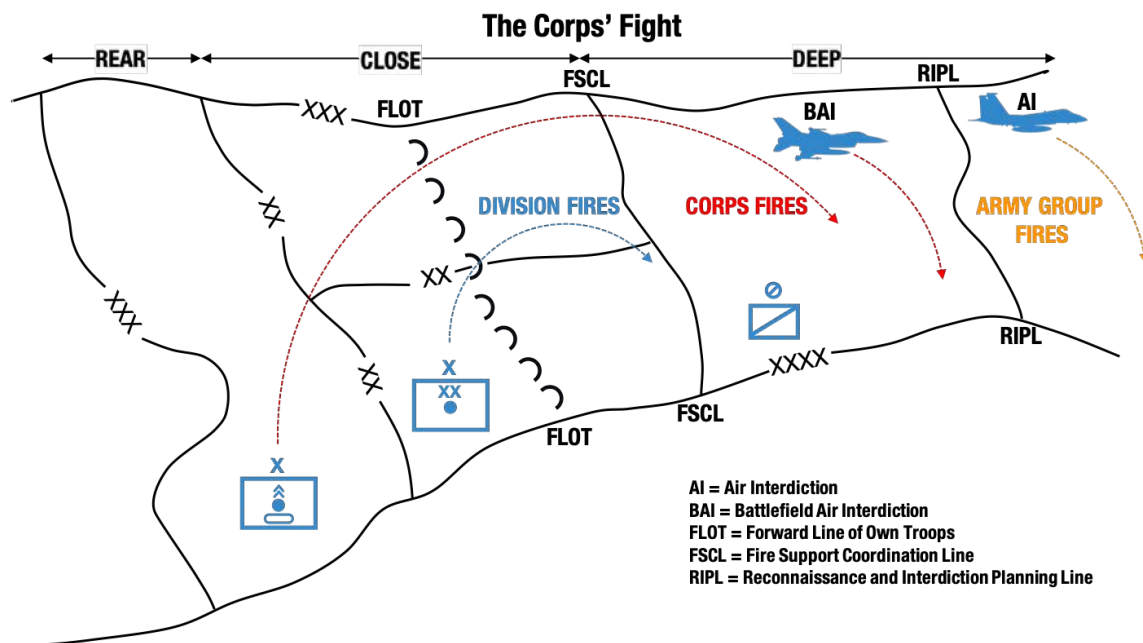


Figure 6. The Corps' Fight. Linking the rear, close, and deep areas turns the battlefield into "The Corps' Fight." The concept is to enable the Corps to shape across the battlespace. Created by author.

Although the RIPL was not an official doctrinal term in US Air Force doctrine, it was adopted as a coordination measure in the Allied Air Forces Central Europe (AAFCE) Manual 80-

³⁷ US Army, FC 100-15-1, 1-3.

2, *Offensive Air Operations*.³⁸ The purpose of the RIPL was to separate the Army Group air interdiction area from the Corps' Battlefield Air Interdiction area to deconflict friendly fires that could inadvertently hit Corps reconnaissance and intelligence assets.³⁹ Without the RIPL, joint air assets could engage any targets beyond the Fire Support Coordination Line (FSCL) without coordinating with the Corps. The purpose of the FSCL was to expedite the process of engaging targets beyond the line and to sufficiently inform pilots where coordination with the ground forces is not required. Still, since the Corps had multiple assets beyond the FSCL, a new FSCM was needed.⁴⁰ The RIPL was developed to ensure joint air planners would coordinate with the Corps and would, therefore, be aware of friendly forces beyond the FSCL. Since the RIPL was not agreed-to, this restrictive fire control measure significantly restricted joint air planning beyond the FSCL, which created organizational friction. Because both entities believed the space between the FSCL and RIPL to be under their control, each thought they could employ fires without coordinating with the other organization. In essence, the RIPL was both a permissive and restrictive fire control measure, which only led to further confusion over the rightful owner of the battlespace.

As evidenced by the confusion over the RIPL, it is vital to have a shared battlespace framework. The RIPL allows US Joint Forces to see the battlefield through the same lens, to fight as a team, and to prevent fratricide and duplicity in engaging priority targets with limited firing capabilities. With the technological advancements in communication, observation, and firing platforms, structuring the deep fight is not only becoming more complex, but the importance of

³⁸ Allied Air Forces Central Europe (AAFCE), Manual 80-2, *Offensive Air Support* (Ramstein, DE: Headquarters, Allied Air Forces Central Europe, 1989), 18.

³⁹ *Ibid.*

⁴⁰ US Department of Defense, Joint Staff, Joint Publication (JP) 3-09, *Joint Fire Support* (Washington, DC: Government Printing Office, 2019), A-5.

having a well understood and communicated battlespace framework has become more critical than ever.

The Disparity in Range and Technology: Distance vs. Systems

The massing of field artillery systems played an instrumental role in bridging the gap between air assets operating beyond the RIPL in the deep area and the maneuver units fighting at the FLOT in the close area.⁴¹ One of the contributing factors that led to the success of the rapid-pace ground offensive was the field artillery's ability to simultaneously shoot, move, and communicate to support the maneuver units across the designated battlespace.⁴² This integrated technique of employing fires allowed the Corps Commander to continuously overwhelm Iraqi forces with fire superiority, which enabled friendly forces to overcome the Iraqi's range advantage.

Although the Iraqi Seventh Corps had an artillery advantage in both distance and the total number of assets, the US VII Corps' fires plan used a "system of systems" targeting methodology to destroy Iraqi Seventh Corps' artillery before they could adequately respond with counterfire.⁴³ US VII Corps initially focused on targeting the Iraqi Seventh Corps' reconnaissance units, or their "eyes," to prevent the Iraqi Seventh Corps' from gathering intelligence and calling for fire. Furthermore, by creating this "fog of uncertainty" within the Iraqi Seventh Corps, US VII Corps was able to freely move their target acquisition radars, their communication platforms, and their firing batteries throughout the battlespace.⁴⁴ Additionally, through the use of satellite imagery and joint air reconnaissance assets, US VII Corps targeted and destroyed Iraqi command posts.

⁴¹ Dunn, "Field Artillery Desert Facts," 3.

⁴² Ibid.

⁴³ Bourque, *JAYHAWK!*, 161.

⁴⁴ Dunn, "Field Artillery Desert Facts," 3.

This proactive approach prevented the Iraqi Seventh Corps from re-organizing its combat power and massing along the berm-boundary line, the future breach zone for US VII Corps.⁴⁵

By mid-February, the Iraqi Seventh Corps artillery was still in defensive positions on the Iraqi side of the berm-boundary line with approximately twenty-two battalions.⁴⁶ Each Iraqi battalion consisted of three firing batteries with six tubes in each battery.⁴⁷ Additionally, the Iraqi Army integrated its air-defense assets with their artillery platforms to compensate for their meager camouflaged defensive positions.

In regards to the interoperability of enemy fire support systems, the Iraqi Seventh Corps had a “mixed bag” of artillery platforms that provided a variety of ranges, rates of fires, and forms of mobility, see figure 7.⁴⁸ However, these platforms required specialized training, different calibers of ammunition, and a unique logistical support network for each platform. The Iraqi Seventh Corps artillery consisted of five cannon platforms made from three different foreign militaries. Supporting the Iraqi Seventh Corps in the close fight was the Russian 122 mm D-30 Towed Howitzer (15 km), the Russian 152 mm 2S3 Self-Propelled Gun-Howitzer (24 km), and the Russian 130 mm M-46 Towed Gun (38 km).⁴⁹ Whereas, US VII Corps only had the 155 mm M109 Self-Propelled Howitzer (18 km) to combat the aforementioned Iraqi platforms. Furthermore, the Iraqi Seventh Corps had the South African 155 mm G-5 Towed Gun-Howitzer (39 km) and the French 155 mm GHN-45 Self-Propelled Howitzer (40 km) capable of ranging US VII Corps’ close area.⁵⁰ Similarly, the aging 203 mm M110 Self-Propelled Howitzer (25 km) was the furthest shooting cannon artillery asset within US VII Corps. Consequently, due to the

⁴⁵ Bourque, *JAYHAWK!*, 161.

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Holthus and Chandler, “Myths and Lessons of Iraqi Artillery,” 7.

⁴⁹ Corn and Lacquemont, “Silver Bullets,” 11.

⁵⁰ Ibid.

lack of available prime-movers, the preponderance of the Iraqi towed artillery platforms established permanent dug-in positions which contributed to US VII Corps, success in the counterfire fight.⁵¹

On top of that, the Iraqi Seventh Corps had two multiple rocket launchers (MRL) systems that could reach US VII Corps' rear area. They were the Russian 122 mm BM-21 Multiple Rocket Launcher (32 km) and the Brazilian 300 mm ASTROS Multiple Rocket Launcher (90 km).⁵² The ASTROS created the biggest concern for the US VII Corps due to its expansive range and its ability to be loaded with chemical munitions.⁵³ Given the threat of a chemical attack, US VII Corps was the first unit to employ the M270 Self-Propelled Multiple Launch Rocket System (MLRS) (165 km) and the M142 Self-Propelled High Mobility Artillery Rocket System (HIMARS) (165 km) on the battlefield.

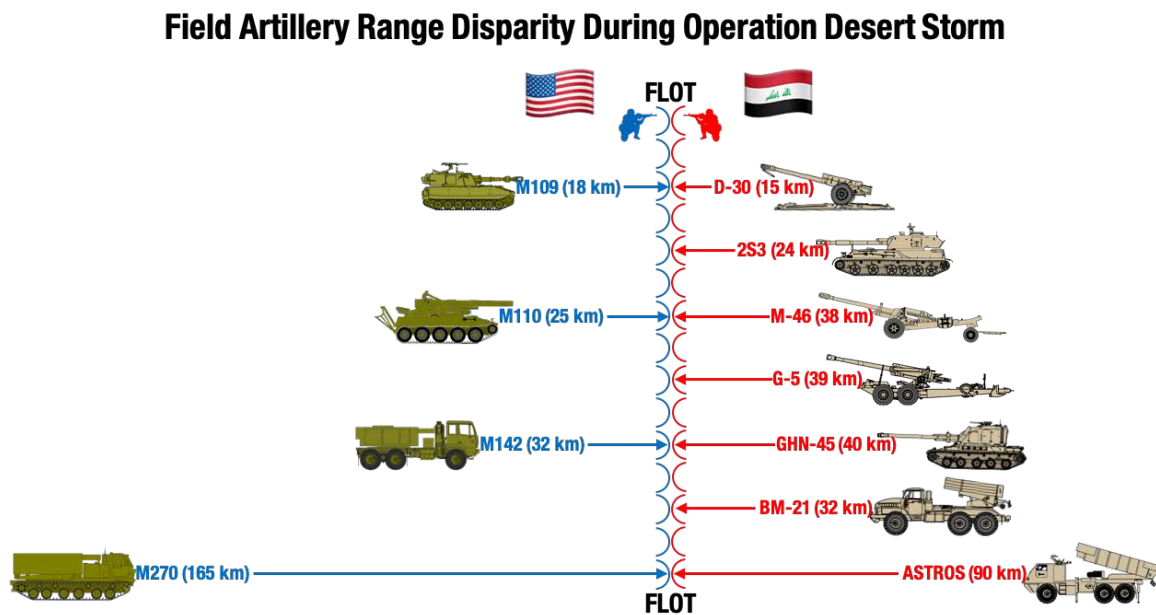


Figure 7. Field Artillery Range Disparity During Operation Desert Storm. Created by Author.

⁵¹ Holthus and Chandler, "Myths and Lessons of Iraqi Artillery," 8.

⁵² Corn and Lacquemont, "Silver Bullets," 11.

⁵³ Bourque, *JAYHAWK!*, 137.

Insights: Organization and Technology Matter

The US VII Corps' artillery task organization and employment of precision munitions were drastically different than the Iraqis' and were vital in shaping the Divisions' fights. Each firing battalion had three batteries with nine launchers in each battery. This "3x9 Configuration" gave US VII Corps the flexibility to rotate firing batteries between conducting (1) a survivability move, (2) conducting resupply, or (3) conducting fire missions.⁵⁴ This continuous and overlapping process of conducting fire missions within each battalion contributed significantly to its survivability and led to the astonishing destruction of the Iraqi Seventh Corps.

Significantly, the introduction of precision munitions such as the Army Tactical Missile System (ATACMS) and Copperhead projectile dramatically altered the outcome of the campaign and changed the nature of war. The ATACMS not only provided operational depth to shape the deep fight from 165 kilometers away, but it rapidly improved fire mission processing time and munition reliability in the counterfire fight.⁵⁵ In addition to this long-range improvement, the Copperhead projectile proved to be a critical combat multiplier in the close fight. Its ability to pinpoint and surgically destroy Iraqi tank formations from sixteen kilometers contributed to the dissipation of the Iraqi Seventh Corps' will to fight.⁵⁶

Another technological first was the integration and execution of counterfire doctrine in a combat environment.⁵⁷ Target acquisition radars were linked to MLRS and cannon battery firing systems by both voice and digital communications, which produced unprecedented response times that led to the destruction of the Iraqi Seventh Corps.⁵⁸ US VII Corps' aggressive stance and early success in the counterfire fight overwhelmed Iraqi Seventh Corps' artillery firing units

⁵⁴ Corn and Lacquemont, "Silver Bullets," 12.

⁵⁵ Dunn, "Field Artillery Desert Facts," 3.

⁵⁶ Ibid.

⁵⁷ Ibid., 2.

⁵⁸ Ibid.

and were the overarching reason why few Iraqi batteries returned fire. As a result, US VII Corps artillery created freedom to maneuver for the ground units throughout the close area battlespace through its coordinated and layered system of systems.

In all, before the start of the US ground offensive, the Iraqi Seventh Corps had approximately 400 artillery platforms primarily located in the US VII Corps' eastern sector near the Batin Wadi. The Iraqi Seventh Corps had a variety of artillery platforms that had the potential to delay the ground offensive and make the counterfire fight incredibly strenuous. However, the Iraqi Seventh Army's lack of systems training, prime-movers, and continuous logistical support hindered their ability to quickly and accurately deliver timely fires. Targeting the Iraqi Seventh Corps' field artillery assets, air defense support, and command posts had a devastating cumulative effect that hindered their ability to return fire. In short, US VII Corps' ability to link intelligence assets and target acquisition radars with their precision fires platforms proved to be a successful formula for defeating a foreign army that had an artillery advantage in range and numbers.

Case Study #2: Russo-Ukrainian War

Operational Overview: Red Storm Rising 2014

In late 2013, the Ukrainian President, Viktor Yanukovich, rejected a long-negotiated deal with the European Union (EU) that sought to strengthen economic and political relations between Ukraine and pro-Western Europe.⁵⁹ Consequently, President Yanukovich's pro-Russian move to denounce the agreement led to massive protests in Kyiv, Ukraine's capital, located at the center of the country.⁶⁰ By March of 2014, the Ukrainian government began to topple, and chaos spread throughout the country. Russian President Vladimir Putin exploited this internal divide and annexed the Ukrainian peninsula of Crimea through military force, see figure 8.⁶¹ President Putin's daring move shocked many Western leaders and completely blindsided Ukraine.⁶²

⁵⁹ Max Fisher, "Everything You Need to Know About the Ukraine Crisis," *Vox*, last modified September 3, 2014, accessed on January 6, 2020, <https://www.vox.com/2014/9/3/18088560/ukraine-everything-you-need-to-know>.

⁶⁰ *Ibid.*

⁶¹ *Ibid.*

⁶² CPT Mark Chapman, "Training to Fight at the Corps and Division Level: Tackling the Problem of Fighting a Near-Peer Threat in a Contested Environment From a Higher Echelon," *Fires Bulletin: A Joint Publication for U.S. Artillery Professionals* (November-December 2019): 22.

Red Storm Rising 2014



Figure 8. Red Storm Rising 2014.

Adapted from Adam Taylor, and Gene Thorp, “How Ukraine and Russia Are Moving Toward War,” *The Washington Post*, May 2, 2014, accessed on November 11, 2019, <https://www.washingtonpost.com/news/worldviews/wp/2014/05/02/map-how-ukraine-and-russia-are-moving-toward-war/>.

Moreover, less than a month later, the pro-Russian separatists, known as the Donetsk People’s Republic (DPR) and the Luhansk People’s Republic (LPR), seized their respective cities

of Donetsk and Luhansk in the Donbas Region and declared their independence from Ukraine.⁶³ Each one of these regional organizations created their own proxy fighting force: the Donetsk People's Army (DPA) and the Luhansk People's Army (LPA). By early April, Russia began to openly support the separatist rebels that continued to fracture Ukraine along their internal ethnic and linguistic lines.⁶⁴ In response to the growing divide that was becoming deadlier each day with violent protests and deadly ambushes between separatists and loyalists, the Ukrainian Army deployed to Eastern Ukraine to prevent the DPA and LPA from extending their influence throughout the country. Subsequently, an increase in Russian military operations and support fueled the desired expansion of the separatist movement. As this conflict continued to develop along the Ukrainian eastern front, there were six distinct engagements that highlight the renewed Russian threat and its operational reliance on artillery and deep fires in support of their own organic and proxy forces in the Donbas Region. These overlapping engagements include: (1) the Battle for Luhansk Airport, (2) the First Battle for Donetsk Airport, (3) the artillery barrage at Zelenopillya, (4) the Battle at Ilovaisk, (5) the Second Battle for Donetsk Airport, and (6) the Siege at Deval'tseve, see figure 9. Collectively, a review of these engagements highlights the continued Russian reliance on artillery and deep fires and their integration of varying systems.

⁶³ MAJ Amos Fox, "'Cyborgs at Little Stalingrad': A Brief History of the Battles of the Donetsk Airport, 26 May 2014 to 21 January 2015," *The Institute of Land Warfare* (May 2019): 2.

⁶⁴ *Ibid.*

Overlapping Engagements in the Donbas Region



Figure 9. Overlapping Engagements in the Donbas Region.

Adapted from “Making Sense of Russian Hybrid Warfare: A Brief Assessment of the Russo–Ukrainian War,” *The Land Warfare Papers*, March 2017, 11.

The first significant engagement of the war was in the Luhansk Oblast from 1 April to 1 September 2014. During these critical opening days of the conflict, the 80th Airborne Brigade of the Ukrainian Army was the sole military defender during the Battle for Luhansk Airport.⁶⁵ For

⁶⁵ Olha Stryzhova, “Why the Battle for Luhansk Airport is just as Important as the Battle for Donetsk Airport,” *Euromaidan Press: News and Views from Ukraine*, last modified February 10, 2018, accessed on January 11, 2020, <http://euromaidanpress.com/2018/02/10/117926/>.

146 consecutive bloody days, the Ukrainian Paratroopers controlled the Luhansk Airport during which the Russian military conducted a continuous artillery bombardment that left the airport buildings and runway in ruins and utterly useless.⁶⁶ Importantly, Russian air defense systems successfully shot down multiple aircraft in support of their operations and in defense of their firing systems.⁶⁷ After five months of using self-propelled artillery assets to neutralize Ukrainian occupying forces, Russian troops launched a massive offensive ground attack with their modernized T-90 Main Battle Tanks to seize the airport.⁶⁸ Overwhelmed and with nothing left to defend, the 80th Airborne Brigade withdrew from the Luhansk Airport on 1 September 2014 after nearly five months of continuous fighting.⁶⁹ The tenacious fight of the 80th Brigade provided the time and space for the remainder of the Ukrainian Army to mobilize and occupy key terrain throughout the region and to prevent Russian and proxy forces from advancing further west, and gaining full control of both contested oblasts. From a tactical perspective, the Ukrainians lost this first engagement, given that they relinquished key terrain; however, from an operational perspective, the Ukrainians were successful at prolonging the conflict and pressing Russian commanders to commit additional time and resources to the Luhansk Oblast. Unlike the occupation and annexation of Crimea, the Ukrainians forced the Russians and their proxies to reassess their commitment in lives and resources to the occupation and annexation of the Donbas Region. Importantly, the Ukrainians confirmed how the Russians would contribute to the overall conflict, especially in their application of long-range precision fires, air defense of critical nodes,

⁶⁶ Stryzhova, “Why the Battle for Luhansk Airport is just as Important as the Battle for Donetsk Airport.”

⁶⁷ Gene Thorp, “Ukrainian Aircraft Shot Down in Separatist Conflict,” *The Washington Post*, last modified July 23, 2014, accessed on January 17, 2020, https://www.washingtonpost.com/world/ukrainian-aircraft-shot-down-by-pro-russian-separatists/2014/07/23/4f4565e2-12bc-11e4-8936-26932bcfd6ed_graphic.html.

⁶⁸ “Ukraine Crisis: Troops Abandon Luhansk Airport After Clashes,” *BBC News*, last modified September 1, 2014, accessed on January 17, 2020, <https://www.bbc.com/news/world-europe-29009516>.

⁶⁹ *Ibid.*

ability to resupply multiple firing systems, and to operate continually over an extended period of time.

In the middle of the extended fight for control of the Luhansk Airport, a second major engagement broke out for control of the Donetsk Airport. On 26 May, separatists seized control of the airfield, which resulted in a successful counter-attack by the 93rd Separate Mechanized Brigade of the Ukrainian Army.⁷⁰ With the loss of several dozen fighters, the separatists withdrew leaving control to Ukrainian forces. This battle, ultimately a Ukrainian victory, was one of the last successful operations against Russian proxy forces in 2014. During this same time period an operational raid by the Ukrainian 95th Air Assault Brigade, led by Colonel Zabrodski, opened a corridor for the escape of trapped Ukrainian soldiers and equipment from along the Ukrainian-Russian border.⁷¹ During the three week raid, proxy forces along with their Russian artillery weapons and equipment were destroyed.⁷² Both the successful counterattack on the Donetsk Airport and the raid across the Donbas Region constituted a major threat to overall Russian success, which provided the Russians with *casus belli* for more significant involvement.

While the Ukrainian 80th Airborne Brigade was still defending the Luhansk Airport; the Ukrainian 93rd Separate Mechanized Brigade was securing the Donetsk Airport; and the “Zabrodski Raid” was underway, the Ukrainian 24th and 72nd Mechanized Brigades sought to maintain the initiative by conducting a deliberate attack that began on 11 July 2014.⁷³ The two Ukrainian Mechanized Brigades rallied five miles west of the front lines of the DPR near the

⁷⁰ “The Defense of Donetsk Airport–Ukrainian Battle of Thermopylae,” *Ukraine Crisis Media Center*, last modified January 30, 2017, accessed on January 17, 2020, <https://uacrisis.org/51976-donetsk-airport>.

⁷¹ Philip A. Karber, “If Ukraine Reverses You Lose,” last modified November 19, 2014, accessed on February 2, 2020, <https://tsn.ua/interview/yakscho-ukrayina-vidstupit-vi-prograyete-392647.html>.

⁷² *Ibid.*

⁷³ COL Liam Collins and CPT Harrison Morgan, “King of Battle: Russia Breaks Out the Big Guns,” *Association of the United States Army*, last modified January 22, 2019, accessed on August 27, 2019, <https://www.ausa.org/articles/king-battle-russia-breaks-out-big-guns>.

town of Zelenopillya to coordinate their assault aimed at cutting off the DPA's supply lines.⁷⁴ Consequently, while the Ukrainian ground forces prepared for their attack, Russian unmanned aerial vehicles (UAVs) hovered over the Ukrainian tactical assembly area and disrupted their communication nodes using electronic warfare assets affixed to UAVs.⁷⁵ Additionally, these UAVs provided timely targeting information to Russian firing batteries located on the Russian side of the Ukraine border. In this case, using modern targeting sensors and rocket artillery, the Russians employed deep fires from across the international boundary to have an operational effect, which aligns directly with Soviet's military theorist G. E. Isserson's notion of deep attack from the 1940s.⁷⁶ Moments later, the Russians delivered a barrage of short-range BM-21 MRL rockets on the Ukrainian's position resulting in over two dozen killed and hundreds wounded, two battalions' worth of heavy armored vehicles destroyed, and Ukrainian forces demoralized.⁷⁷ Russia's technological capability to directly link their UAVs to their artillery platforms provided timely and accurate fires, which operationally crippled the pending Ukrainian offensive. The artillery barrage at Zelenopillya demonstrated Russia's use of drones for jamming and targeting purposes, long-range fires capability, asymmetrical firing techniques in shooting across international boundaries, and precision systems. In short, the Russians demonstrated their adaptability and continued reliance on operational deep fires to shape the battlefield as they would again employ during the ensuing battle of Ilovaisk.

Following the artillery barrage at Zelenopillya and the shooting down of Malaysian Airline Flight MH-17, the Ukrainian Army had circumstantial evidence that the Russian military

⁷⁴ Collins and Morgan, "King of Battle."

⁷⁵ CPT William Neltner, MAJ Nathan Applebaum, and CW2 Barry Galinger, "The Gray Eagle Fires System," *Fires Bulletin: A Joint Publication for U.S. Artillery Professionals* (September-October 2017): 32.

⁷⁶ Richard W. Harrison, *Architect of Soviet Victory in World War II: The Life and Theories of G. S. Isserson* (Jefferson, NC: McFarland & Company Inc. Publishers, 2010), 113.

⁷⁷ Collins and Morgan, "King of Battle."

was actively fighting alongside the DPA and LPA.⁷⁸ Ukrainian Intelligence believed that Russia was supplying the DPA through the town of Ilovaisk.⁷⁹ The strategic location of Ilovaisk has both a major highway and railway hub that runs directly to Rostov-on-Don, a vital logistical port used by the Russian Southern Military District (SMD).⁸⁰ The Ukrainian Army concluded that if they could seize Ilovaisk, the DPA's center of gravity, that it would cut Russia's vital logistical corridor to the DPA in the Donetsk Oblast.

In early August, after four months of continuous fighting, the Ukrainian Army was spread severely thin across the 200-mile eastern front and did not have enough Ukrainian Army active-duty forces to seize Ilovaisk. Because of the lack of available combat power, the Ukrainian Army tasked their volunteer Dnipro and Donbas Police Battalions to seize the town of Ilovaisk.⁸¹ The Ukrainian forces gained moderate success in the early phase of the operation by establishing a strong point on the western side of the Ilovaisk railway.⁸² However, by the end of August, the DPA was reinforced with Russian forces, enabling them to encircle and besiege Ukrainian forces with the combined use of drones, rocket, and cannon fire for almost three weeks.⁸³ The depleted Ukrainian forces were virtually out of supplies and needed a diplomatic solution. Subsequently, the Ukrainian and Russian Commanders on the ground reached an agreement for a peaceful withdrawal.⁸⁴ On 29 August, the retreating Ukrainian columns were nearly annihilated by

⁷⁸ Lucian Kim, "The Battle of Ilovaisk: Details of a Massacre Inside Rebel-Held Eastern Ukraine," *Newsweek*, November 4, 2014, accessed on January 17, 2020, <https://www.newsweek.com/2014/11/14/battle-ilovaisk-details-massacre-inside-rebel-held-eastern-ukraine-282003.html>.

⁷⁹ Ibid.

⁸⁰ Catherine Harris and Frederick W. Kagan, "Russia's Military Posture: Ground Forces Order of Battle," *Institute for the Study of War* (March 2018): 31.

⁸¹ Kim, "The Battle of Ilovaisk."

⁸² Kim, "The Battle of Ilovaisk."

⁸³ MAJ Amos Fox, "Understanding Modern Russian War: Ubiquitous Rocket, Artillery to Enable Battlefield Swarming, Siege Warfare," *Fires Bulletin: A Joint Publication for U.S. Artillery Professionals* (September-October 2017): 23.

⁸⁴ Kim, "The Battle of Ilovaisk."

Russian artillery and mortars along the agreed designated route. Consequently, over 1,000 Ukrainian soldiers were killed, with hundreds wounded, making it the bloodiest battle of the conflict for the Ukrainian Army.⁸⁵

After their ruthless victory at Ilovaik, Russian forces continued their ground offensive north with the intent to recapture the Donetsk Airport.⁸⁶ Following four months of the Ukrainian Army retaining control of the airport, Russian forces conducted an encirclement with multiple battalion tactical groups (BTGs) to remove Ukrainian forces before the onset of winter. On 28 September, Russian troops began the slow and arduous process of pushing further into the airport. Simultaneously, eight kilometers south, the DPA conducted urban operations and established firing positions within the oblast capital, Donetsk City.⁸⁷ For almost five months, these "urban firing points" continually delivered mortar, cannon, and rocket fire into the airport.⁸⁸ Due to this Russian firing technique, Ukrainian forces were hesitant to conduct counterfire within their population centers in fear of either harming innocent civilian lives or creating new supporters for the separatist movement.⁸⁹ Regardless of this risk, these inaccurate artillery duels resulted in killing and injuring multiple innocent bystanders.⁹⁰

As the fighting carried into the winter, the combined Russian and DPA's full-scale combat operation had squeezed the Ukrainians into the new terminal building.⁹¹ On January 21,

⁸⁵ Fox, "Understanding Modern Russian War," 23.

⁸⁶ Franklin Holcomb, "Russia and Ukraine Security Report 3," *Institute for the Study of War* (September 2017): 9.

⁸⁷ "Donetsk Airport Shelling Violates East Ukraine Truce," *BBC News*, last modified September 30, 2014, accessed on January 19, 2020, <https://www.bbc.com/news/world-europe-29424766>.

⁸⁸ BBC News, "Donetsk Airport Shelling."

⁸⁹ *Ibid.*

⁹⁰ Andrew E. Kramer and Rick Lyman, "Chaotic Retreat Follows Ukrainians' Withdrawal From Donetsk Airport," *The New York Times*, January 22, 2015, accessed on January 19, 2020, <https://www.nytimes.com/2015/01/23/world/europe/ukraine-cedes-donetsk-airport-to-rebels-as-fighting-continues.html>.

⁹¹ Fox, "Cyborgs at Little Stalingrad," 24.

Russian and DPA forces finally seized the Donetsk Airport where the remainder of the Ukrainian troops had been killed, captured, or forced to withdraw. The airport runway, control tower, and terminals had been destroyed.⁹² The DPA's modern technique of establishing "urban firing points" coupled with the Russian's classical encirclement, kept the Ukrainian forces off-balance and unable to escape. Similar to Operation Uranus during WWII at Stalingrad, the Second Battle for Donetsk Airport, or now, "Little Stalingrad," the Russians focused on trapping the enemy and firing massive amounts of artillery until the Ukrainian forces had exhausted their manpower, ammunition, and food supplies.⁹³ This winning formula gave them the momentum to move east to capture Debal'tseve.

The aim of the Ukrainian operations at Debal'tseve was to gain control of the strategic lines of communication, which were significant for both sides to move supplies, personnel, and equipment throughout the country.⁹⁴ Debal'tseve sits on the Donetsk-Luhansk Oblast border and is home to a vital highway junction and railway center that provides Russia direct logistical access within Ukraine to quickly and efficiently resupply the DPA and LPA. Two major highways impacted the operation. The Artemivsk Highway, or M03, runs north-south and is the only major highway that directly connects the Donetsk and Luhansk Airport, both of which were currently controlled by Russia and their proxy forces. Highway M04 runs east-west and not only cuts through the entirety of the Donetsk Oblast, but also stretches into eastern Russia. Additionally, the Debal'tseve's train station has rail lines that parallel Highways M03 and M04, and provides additional railway branches that extend throughout the country to include eastern

⁹² Kramer and Lyman, "Chaotic Retreat Follows Ukrainians."

⁹³ Daniel McLaughlin, "Wounded Ukrainians Vow to Fight on After 'Little Stalingrad,'" *The Irish Times*, January 31, 2015, accessed on January 12, 2020, <https://www.irishtimes.com/news/world/europe/wounded-ukrainians-vow-to-fight-on-after-little-stalingrad-1.2086066>.

⁹⁴ Fox, "Cyborgs at Little Stalingrad," 24.

Russia and Crimea. The central location of Debal'tseve, wedged between the DPA and LPA, lent way to another infamous Russian encirclement.

On 14 January 2015, Russian forces started to “prep the battlefield” by pounding Ukrainian forces, population, and infrastructure with a multitude of rocket salvos over two weeks leading up to their main attack.⁹⁵ By the beginning of February, Russian and proxy forces had seized the nearby town of Vuhlehirsk, gained control of the Artemivsk Highway, and cut the power to Debal'tseve thus creating a humanitarian crisis.⁹⁶ The Russian “cauldron” around Debal'tseve and their never-ending delivery of rockets made it virtually impossible for Ukrainian forces to expand their perimeter and safely evacuate the remaining population.⁹⁷ As a result, by mid-February, the Minsk II agreement was signed, establishing a ceasefire in the Donbas Region.⁹⁸ However, since its signing in early 2015, the Minsk II agreement has served only as a tool to keep diplomats at the table while still managing a low-intensity conflict in the background. Ultimately, Russia achieved its strategic end state by denying NATO expansion and preventing Western leaders from intervening directly in a protracted war. Today, both sides continue to exchange artillery rounds across the static frontline with no end in sight.⁹⁹

⁹⁵ Maxim Tucker, “Kremlin-Backed Separatists Rain Death Down on Debaltseve,” *Kyiv Post (Ukraine)*, January 20, 2015, accessed on January 20, 2020, <https://www.kyivpost.com/article/content/war-against-ukraine/kremlin-backed-separatists-rain-death-down-on-debaltseve-377923.html>.

⁹⁶ Amnesty International, “Ukraine: Debaltseve's Residents Reaching Breaking Point,” last modified February 3, 2015, accessed on January 21, 2020, <https://www.amnesty.org/en/latest/news/2015/02/ukraine-debaltseves-residents-reaching-breaking-point/>.

⁹⁷ Amnesty International, “Ukraine: Debaltseve's Residents.”

⁹⁸ Jonathon Brunson, “War On the Rocks,” last modified February 1, 2019, accessed on January 21, 2020, <https://warontherocks.com/2019/02/implementing-the-minsk-agreements-might-drive-ukraine-to-civil-war-thats-been-russias-plan-all-along/>.

⁹⁹ Information Analysis Center: National Security of Ukraine, “The Situation in the Joint Forces Operation Area in the East of Ukraine: 22 January 2020,” last modified January 22, 2020, accessed on January 22, 2020, <http://mediarnbo.org/2020/01/22/jfo-map-22-01-2020-2/?lang=en>.

Russia's Battlefield Framework: A Fluid Construct

The continued conflict in the Donbas Region highlights Russia's increased combat effectiveness in deploying forces from every military district in Russia. From mobilization to training and from deployment to conducting combat operations, the Russian Army has displayed a level of experience and professionalism not demonstrated in many years. In contrast with the belief that the Russians are exercising a new form of hybrid warfare, a realistic assessment of their operational-level norms indicate a more conventional ground centric approach with a heavy reliance on artillery and other emerging technologies.¹⁰⁰ Unlike the envisioned battlefield of the future, in actuality the initial phases of the Ukrainian-Russian conflict in the Donbas Region was more like the mobile warfare of World War II. At the tactical level, Russian operations in Eastern Ukraine have been shaped by reliance on rocket and long-range cannon artillery, which in concert with their maneuver forces, proved successful against Ukrainian forces.¹⁰¹

In terms of mobile warfare, the Battles for the Luhansk and Donetsk Airports are representative of how Russian forces will "structure" their battlefield. On the offense, the Russians traditionally use artillery fires to neutralize enemy defenses before committing maneuver units.¹⁰² In both of these major engagements, however, Russian forces isolated Ukrainian forces through encirclement and then attrited them with operational fires. In support of this shift in tactics, the Russians have fielded and successfully employed maneuver units organized as independent or "roving" battalions, in contrast with a more traditional employment of forces within a brigade and division hierarchy. In fact, there are no indications of Russian brigade or regimental headquarters west of the Russian international border. On the contrary, their primary tactical formations are Battalion Tactical Groups, or BTGs, that appear to operate

¹⁰⁰ Fox, "Cyborgs at Little Stalingrad," 5.

¹⁰¹ Ibid., 25.

¹⁰² John J. McGrath, *Crossing the Line of Departure: Battle Command on the Move, A Historical Perspective* (Fort Leavenworth, KS: Combat Studies Institute Press, 2006), 185.

independent of their regimental or brigade headquarters. This innovative concept proved decisive in overwhelming and defeating the Ukrainian forces. Instead of massing brigades or regiments at one or two critical points on the battlefield, the Russian's simultaneously employed multiple BTGs from multiple commands to reinforce LPA and DPA momentum. In essence, the smaller more mobile BTGs allowed Russia to achieve overmatch at the right place at the right time across the Donbas Region.¹⁰³ Contrary to conventional thinking, the Russia military does not have a singular, rigid, way of conducting ground operations as evidenced by this paradigm shift. In fact, the Russians have developed a very fluid way of conducting ground operations by “swarming” these smaller formations versus massing larger ground units. In this campaign, BTGs have been the central maneuver element; something unimaginable prior to 2014.¹⁰⁴

Disparity in Range and Delivery: Distance v. Placement

In terms of operational fires, the Russians relied heavily on artillery and long-range coordinated strikes to ensure these independent or “roving” battalions were adequately weighed to take on larger Ukrainian formations, see figure 10. Russian artillery brigades supported the BTGs with a combination of Russian 122 mm BM-21 Multiple Rocket Launchers (32 km), Russian 300 mm, Russian 300 mm 9A52-4 “Tornado” Multiple Rocket Launchers (90 km), and BM-30 “Smerch” Multiple Rocket Launchers (120 km).¹⁰⁵ Conversely, the Ukrainian artillery brigades deployed to the Donbas Region and used a variety of old Soviet platforms to include Russian 152 mm 2S5 Giatsint-S Self-Propelled Howitzers (40 km), Russian 203 mm 2S7 “Pion” Self-Propelled Howitzers (55 km), and Russian 2S19 “Msta-S” Self-Propelled Howitzers (62 km).

¹⁰³ Fox, “Understanding Modern Russian War,” 22.

¹⁰⁴ Scott Boston and Dara Massicot, *The Russian Way of Warfare: A Primer* (Santa Monica, CA: RAND Corporation, 2017), 1.

¹⁰⁵ Fox, “Cyborgs at Little Stalingrad,” 12.

Field Artillery Range Disparity During Russo-Ukrainian War

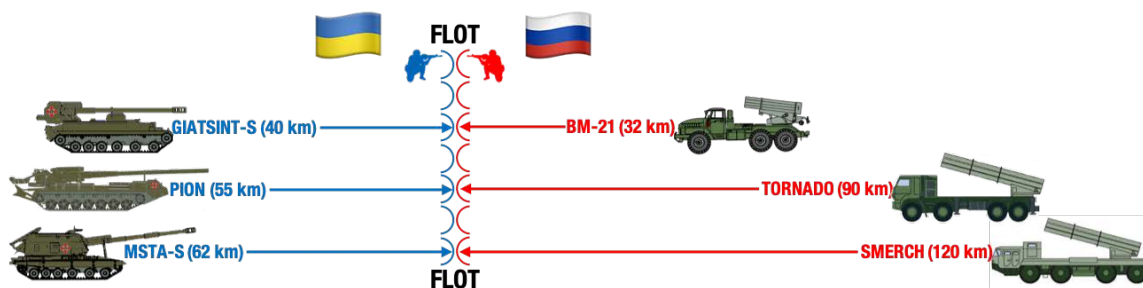


Figure 10. Field Artillery Range Disparity During Russo-Ukrainian War. Created by Author.

As highlighted in the six major engagements, artillery proved to be decisive and contributed to nearly 85 percent of the casualties Russian artillery inflicted on their adversary.¹⁰⁶ Specifically, the psychological impact was just as devastating as the physical impact as evidenced by the artillery barrage at Zelenopillya.¹⁰⁷ In less than two minutes, Russian rocket and cannon artillery decimated two Ukrainian battalions, rendering them combat ineffective as much from the psychological impact as from the physical destruction.¹⁰⁸ Importantly, Russian firing assets were positioned on their side of the international border during the initial engagements to provide a diplomatic level of protection as the Ukrainians were reluctant to counterfire or maneuver across the international boundary. These pre-determined firing points underscored Russia's attempt to maintain plausible deniability at the expense of limiting their artillery coverage.¹⁰⁹ As a result, this unorthodox positioning of firing assets proved successful and halted the Ukrainian's offensive momentum. Russia's ability to infuse indecision through the non-standard positioning

¹⁰⁶ Phillip A. Karber, *“Lessons Learned” from the Russo-Ukrainian War* (Laurel, MD: The Potomac Foundation, 2015), 17.

¹⁰⁷ Ibid., 18.

¹⁰⁸ Collins and Morgan, “King of Battle.”

¹⁰⁹ Sean Case, and Klement Anders, *Putin's Undeclared War: Summer 2014-Russian Artillery Strikes against Ukraine* (Leicester, UK: Bellingcat, 2016), 31.

of firing assets will be employed again and any adversary of theirs should plan and act accordingly.

Insights: Combat Multipliers

Throughout the Donbas Campaign, Russia tactics relied heavily on their ability to fight as a combined-arms force with an over-reliance on artillery overmatch and area denial. In particular, continuous Russian movements throughout the region kept the Ukrainian Army in a reactive mode that hindered its ability to mass its forces. As a result of their unbalanced posture, Russian Battalion Tactical Groups retained the initiative by swarming Ukrainian forces and overwhelming them with long-range fires.

While operating in a high-intensity conflict, the Russian military has continually stressed and refined their systems across the warfighting functions of intelligence, maneuver, fires, sustainment, and command and control.¹¹⁰ In all, approximately 36,000 Russian, DPA, and LPA forces have deployed to Eastern Ukraine to fight for and retain control of the Russian seized territory.¹¹¹ With an estimated 80 rocket and 140 cannon systems in place to support the Russian BTGs, artillery was vital to their success.¹¹² In short, Russia's increased military capability, or hard power, and continued presence in the Donbas Region, has expanded President Putin's willingness to apply the instruments of national power to achieve strategic goals through any means necessary.

¹¹⁰ Fox, "Cyborgs at Little Stalingrad," 16.

¹¹¹ Maksymilian Czuperski et al., *Hiding In Plain Sight: Putin's War in Ukraine* (Washington, DC: Atlantic Council, 2015), 32.

¹¹² Ibid.

Case Study #3: A Possible Baltics Scenario

Operational Overview: A Futuristic Perspective

The following case study is from a futuristic perspective. It focuses on a real-world Geographic Combatant Commander's (GCC) area of responsibility and outlines how actual friendly and enemy forces may be employed to achieve strategic and operational aims. Importantly, this paper seeks to identify implications on battlefield structure, deep fires, range, doctrine, and other key insights that may impact the development of future artillery systems and doctrine. Accordingly, this scenario narrowly focuses on the posturing and employment of major ground units, their supporting fire support assets, and their command and control headquarters. Hence, it only touches tangentially on air and naval operations. In actuality, the narrative would be far more complex than this complicated narrative. For the purposes outlined herein, this future battle will provide an operational design for a Theater Commander and his Combined Joint Task Force Commander to visualize force employment throughout the Joint Operations Area (JOA) from multiple non-contiguous locations onto a single contiguous battlefield where they can effectively reinforce and complement one another especially as it relates to fire support.

2023 in the Baltics: NATO's Narva Nightmare

After the collapse of the Soviet Union in 1991, the town of Narva, in the northeast corner of Estonia, regained its independence.¹¹³ In short order, the city and its surrounding county of Ida-Viru became a buffer between newly westernized Estonia and Russia, see figure 11. At this critical juncture, the government of Estonia made a consequential mistake by culturally isolating the town of Narva by requiring all persons seeking Estonian citizenship to speak the national

¹¹³ Josh Rubin, "NATO Fears That This Town Will Be the Epicenter of Conflict With Russia," *The Atlantic*, January 24, 2019, accessed on January 26, 2020, <https://www.theatlantic.com/international/archive/2019/01/narva-scenario-nato-conflict-russia-estonia/581089/>.

language, Estonian. Since the vast majority of the Narva population were of Russian ethnic descent and spoke Russian, they were instantly alienated from the beginning of Estonia’s independence. The Narva population remained Russian citizens or “stateless residents” ineligible for Estonian citizenship.¹¹⁴ The seeds of discontent were sewn, and the path to war was set.



Figure 11. Estonia Map.
Created by Author.

Comparable to its strategic successes in Crimea and Eastern Ukraine, Russia embarked on a similar path in the fall of 2022 to influence the Estonian National Elections set for March 2023. After exciting ethnic and cultural passions, the Russians exploited Estonia’s insensitive decision on ethnic exclusion of Russian-speaking Narva residents from the elections. Given significant economic decline in the county of Ida-Viru, as compared with the majority of the rest

¹¹⁴ Rubin, “NATO Fears That This Town Will Be the Epicenter of Conflict With Russia.”

of the country to include the capital of Tallinn, Russian activists provoked the political cloud of discontent, which quickly raised political tension from anxious to open hostility.

To subdue further violence, the Estonian President ordered elements of the Northern Territorial Defense District (NTDD) to occupy Narva and its surrounding areas. Given the heavy-handed military approach, pro-Russian Narva residents organized a local militia to protect their property and their ethnic sovereignty. With overt Russian government encouragement, local Narva political leaders established the Ida-Viru Partisan Force or IVPF. Similar to the insurrection in the Luhansk and Donetsk Oblasts in Eastern Ukraine in 2014, the Russians instigated political violence, which escalated out of control and resulted in significant damage and loss of Russian lives in Narva. President Putin declared that it was Russia's natural right to protect the ethnic sovereignty of Russian citizens and directed the commander of the Western Military District (WMD) to position military forces to support the IVPF. Like in the Eastern Ukrainian Campaign, the 6th Combined Arms Army rapidly positioned forces on the Estonia-Russia international boundary and established staging areas and firebases. From these assembly areas, Russian units could provide indirect fire support to the IVPF or quickly cross the six bridges over the Narva River to provide immediate assistance. From these locations, the 9th Field Artillery Brigade (MRL) established firing positions for their BM-30 "Smerch" MRLs to provide operational fires capable of ranging roads and ingress routes from the capital city of Tallinn into Narva. Russian Iskander Missile Brigades remained in hardened positions with the 26th Missile Brigade (Iskander) in Luga, near St. Petersburg, and the 152nd Missile Brigade (Iskander) in Chernykhovok, Kaliningrad.¹¹⁵ With each missile brigade armed with a basic load of forty-eight (48) missiles each, enemy operational fires included ninety-six (96) road-mobile short-range

¹¹⁵ Harris and Kagan, "Russia's Military Posture," 18.

ballistic missiles (SRBM).¹¹⁶ In addition to moving their fire support assets, the Russian Commander of the WMD alerted for imminent combat the 76th Guards Air Assault Division and the 2nd Spetsnaz Brigade both co-located in Pskov (approximately 20 miles from Estonia), as well as 25th Separate Motor Rifle Brigade at Luga (approximately 70 miles from Estonia), and the 138th Separate Motor Rifle Brigade at Kamenka (approximately 140 miles from Estonia).¹¹⁷

President Putin's unequivocal commitment to the Russian citizens in Narva, coupled with major Russian troop movements towards the Estonia-Russia border jolted US and NATO leaders to act to preclude another Donbas fiasco. For years US military planners recognized the vulnerability of NATO's northeastern member, Estonia. In parallel with Russian troop movements, the United States and NATO implemented Operation Northern Light, see figure 12. During the initial phase of the operation, the Supreme Allied Commander Europe (SACEUR) established the Combined Joint Task Force XVIII Airborne Corps (CJTF-18), see figure 13. Already existing NATO headquarters remained in place to oversee and execute their existing missions to include the NATO Response Force (NRF), which retained its strategic reserve mission. Also, the British-led Battlegroup stationed in Tapa, Estonia continued to provide enhanced forward presence.

Upon notification from the National Command Authority, lead elements of the CJTF-18 main command post began immediate deployment to the Wiesbaden, Germany, to co-locate with the United States Army Europe (USAREUR) Command Center. Given Russian anti-access/area-denial (A2/AD) in the Baltic Theater of Operations (BTO), the CJTF-18 Tactical Command Post (TAC) joined with 2d Marine Expeditionary Brigade (2d MEB) with an additional HIMARS battery and sailed towards the Gulf of Finland for link-up with the United Kingdom's 45

¹¹⁶ "Missile Threat, SS-26 Iskander," *Center for Strategic and International Studies*, last modified December 19, 2019, accessed on January 27, 2020, <https://missilethreat.csis.org/missile/ss-26-2/>.

¹¹⁷ Harris and Kagan, "Russia's Military Posture," 12.

Commando Battalion (Royal Marines), also afloat, and then attached to 2d MEB.¹¹⁸ With the arrival of the established and arrival of this combined amphibious task force (CATF) into the BTO, the United States and NATO had established command and control in theater, that remained outside the Russian’s preestablished A2/AD umbrella, see figure 13.

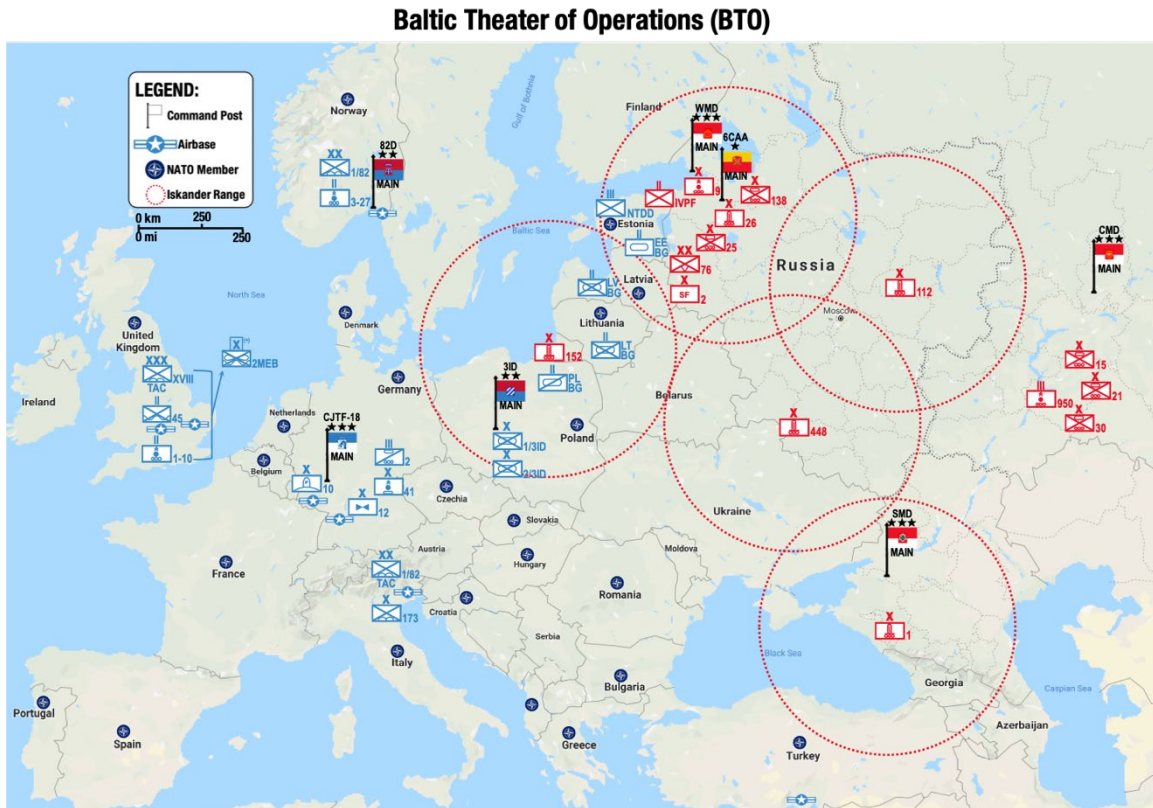


Figure 12. Baltic Theater of Operations (BTO).
Created by Author.

With the tactical ground movements of both Russian and Estonian forces posturing for possible combat operations, United States European Command (USEUCOM) alerted for possible deployment, the 173rd Airborne Brigade, the 2nd Cavalry Regiment, the 12th Combat Aviation Brigade, the HIMARS battalion of the 41st Fires Brigade, and associated supporting units. As directed in the Operation Northern Light planning order (PLANORD), Forces Command

¹¹⁸ US Department of the Navy, “Marine Expeditionary Brigade: Informational Overview,” *Expeditionary Force 21*, 2014, 27.

(FORSCOM) alerted not only XVIII Airborne Corps, but also the 82nd Airborne Division. Upon receipt of the Joint Chiefs of Staff (JCS) execution order (EXORD), the 82nd Division TAC forward-deployed to Aviano, Air Base in Italy to link up with the 173rd Airborne Brigade while the 82nd Division Headquarters and the Global Reaction Force (GRF) deployed to its NATO forward staging base at Rygge Air Station, Norway.¹¹⁹ Included in the Division's GRF movement, the 3-27 HIMARS Battalion also staged forward to Norway. Finally, to fix the Russian maneuver units in Kaliningrad, the 1st and 2nd Armored Brigade Combat Teams (ABCT) of the 3rd Infantry Division air deployment to Powidz, Poland, and drew two ABCT sets of pre-positioned equipment.¹²⁰ Under NATO control, 3rd Infantry Division (3ID) Headquarters also deployed to Powidz, Poland, to provide command and control of the two ABCTs in its role as the CJTF-18 heavy reserve.

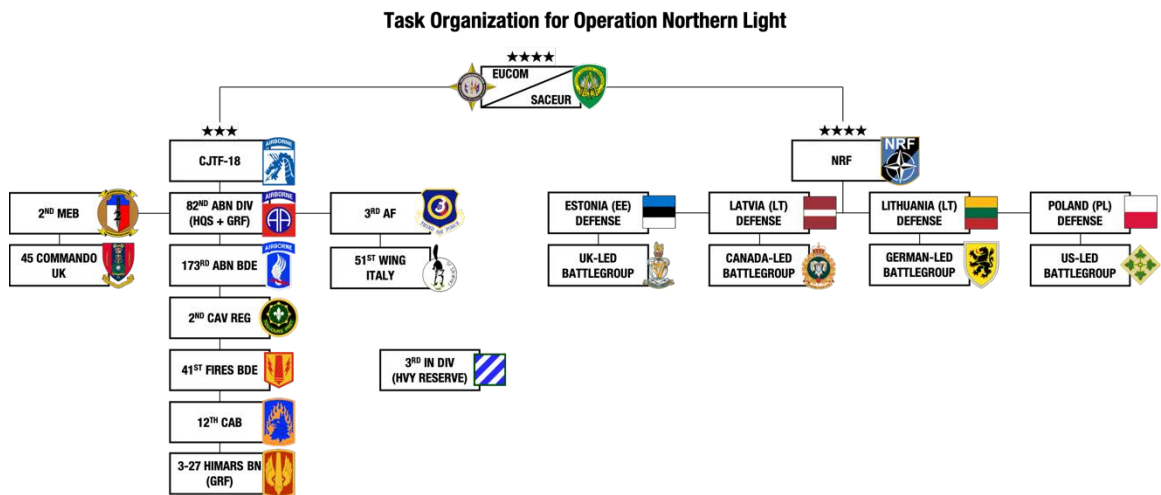


Figure 13. Task Organization for Operation Northern Light.

¹¹⁹ Shawn Snow, "US Plans \$200 Million Buildup of European Air Bases Flanking Russia," *Air Force Times*, December 17, 2019, accessed on January 29, 2020, https://www.airforcetimes.com/flashpoints/2017/12/17/us-plans-200-million-buildup-of-european-air-bases-flanking-russia/?utm_expId=jFR93cgdTfYMrWXdYEtvgA.1&utm_referrer=https%3A%2F%2Fwww.ar15.com%2Fforums%2FGeneral%2FUS-plans-200-million-buildup-of-European-air-bases-flanking-Russia%2F5-2062549%2F#jwvideo.

¹²⁰ Dan Stoutamire, "Army to Move Brigade's Worth of Firepower into Poland," *Stars and Stripes*, April 26, 2017, accessed on January 28, 2020, <https://www.stripes.com/news/army-to-move-brigade-s-worth-of-firepower-into-poland-1.465372>.

Created by Author.

While the United States and NATO raced to get CJTF-18 into the BTO, the violence boiled-over in Narva and spread throughout the region, the situation quickly overwhelmed the forces of the Northern Territorial Defense District. The IVPF seized control of local government buildings, key infrastructure sites, including the local radio tower, and tv station. Elements of the paramilitary border guard and the local police, loyal to their Russian roots, joined the IVPF, which significantly expanded the fighting capacity and combat capability of the partisans. In reaction, the President of Estonia declared a state of emergency and directed the Commander of the Estonian Defense Forces (EDF) to reinforce the territorial defenses and reestablish control of the city and the surrounding county. Given the tactical situation, the Commander of the EDF ordered the 1st Mechanized Infantry Brigade located in Tapa, to move into Ida-Viru County to reestablish local governance and the rule of law.

As the two battalions of the 1st Brigade moved in a column down Highway 1 towards Narva, Russian BM-30 “Smerches” launched a barrage of artillery rockets from the Russian side of the international border, which resulted in dozens of Estonian soldiers killed, hundreds wounded, and two battalions worth of equipment destroyed. The Russian deep strike had the same effect as their 2014 artillery barrage in the town of Zelenopillya, wherein two Ukrainian mechanized battalions were destroyed similarly.¹²¹ Firing from behind the international border may have created a false sense of security as it had provided the Russians in the Ukrainian campaign since the United State and NATO response was more proactive in their support to their NATO ally. Immediately following the strike, Russia’s 2nd Spetnatz Brigade began infiltration operations across Estonia.

¹²¹ Collins and Morgan, “King of Battle.”

Immediately following the attack, the United States and NATO commenced its air and naval campaign to attrite and destroy Russia's significant A2/AD capabilities surrounding the BTO. After two weeks of continuous airstrikes and joint fires, conditions were set for CJTF-18 to move forces into their JOA. Since combat operations had already begun and the race for Tallinn was underway, there was no time to establish "Baltic Shield" similar to "Desert Shield" of the Persian Gulf War. On the contrary, CJTF-18 was posturing forces while in contact with the enemy. Significantly, during this critical phase, NATO and CJTF-18 lacked any ground counterfire capability against Russia's ground-based short-range ballistic missiles. Instead, they relied solely on the air force and naval assets to undertake what inherently was an army responsibility.

With Russia's A2/AD "umbrella" diminished and its ground forces assaulting into Estonia, CJTF-18 began its force flow, which resembled the "rolling start" of Operation Iraqi Freedom.¹²² The 2nd MEB was first to "roll" as it established an Ocean Operating Area adjacent to the west coast of Estonia and organized a Distant Retirement Area and a Close Support Area.¹²³ To help cover the movement of Army ground forces into the JOA, the 2nd MEB organized and dispatched its two HIMARS batteries on the Landing Platform Docks (LPDs) of the USS *New York* (LPD-21) and USS *Ponce* (LPD-15). The USS *New York* maneuvered along the north shore of Estonia and conducted an artillery raid with ATACMS from the Gulf of Finland on remaining elements of the 26th Missile Brigade (Iskander) and the 9th Field Artillery Brigade (MRL) to further diminish any Russian deep strike assets against the pending airborne assault of the 173rd and 82nd. Additionally, this sea-based expeditionary fire (S-BEF) mission also employed deep fires against Russian land forces organized into Battalion Tactical Groups

¹²² Vernon Loeb, "Rumsfeld Faulted for Troop Dilution," *The Washington Post*, March 30, 2003, accessed on January 26, 2020, <https://www.globalpolicy.org/component/content/article/167/35286.html>.

¹²³ US Department of Defense, Joint Staff, Joint Publication (JP) 3-02, *Amphibious Operations* (Washington, DC: Government Printing Office, 2019), IV-21.

(BTGs) moving into Ira-Viru County and westward toward the capital, Tallinn. Simultaneously, the second LPD, the USS *Ponce*, maneuvered southward to conduct an amphibious artillery raid against the remaining elements of the 152nd Missile Brigade (Iskander) in order to cover the ground movement of the 2nd Cavalry Regiment, from Grafenwoehr, Germany to the sea port of Riga, Latvia, and the self-deployment of the 12th Combat Aviation Brigade to the vicinity of Valga along the Estonian-Latvian border. Both sea-based expeditionary fire missions (S-BEF) shaped the battlefield and set the conditions for the introduction of Army combat forces.¹²⁴

During this same period, the Russian 6th Combined Arms Army conducted air-assault operations with the 76th Guards Air Assault Division to seize key bridges over the Narva River and a key road junction in Rakvere along Highway-E20 to facilitate the offensive movement of the 25th Separate Motor Rifle Brigade and the follow-on 138th Separate Motor Rifle Brigade to Tallinn. To support this initial attack, the WMD Commander ordered the 448th Missile Brigade (Iskander) to establish a firing position south of Pskov. Additionally, the Chief of the Russian General Staff ordered the 2nd Combined Arms Army of the Central Military District (CMD) to transfer control of a division's worth of combat power to the Commander of the 6th Combined Arms Army. Accordingly, the 15th, 21st, and the 30th independent mechanized brigades along with the 950th Field Artillery Brigade (MRL) regiment began movement from Samara to the Estonian front.

With the loss of two battalions, the Commander of the Estonian Defense Forces ordered the remaining battalion of the 1st Mech Brigade along with the British-led Battlegroup to contract towards the capital to establish blocking positions along high-speed avenues of approach and to protect the air landing of the 1-112th HIMARS Battalion positioned at Tallinn Airport to provide fire support for the deteriorating situation. Similarly, the Estonian 2nd Infantry Brigade (Light)

¹²⁴ MAJ Adam Ropelewski, "Artillery's Role in Sea-Based Expeditionary Fires," *Fires Bulletin: A Joint Publication for U.S. Artillery Professionals* (July-August 2018): 36.

moved to defensive positions in the “Pskov Corridor” to prevent Russian ground forces from enveloping the pending airborne drops. Concurrently, the Canadian-led Battlegroup in Adazi, Latvia, moved to the Estonian-Latvian border and established blocking positions at Valga to protect the 12th CAB’s forward operating base just south of the town. In preparation for CJTF-18’s airborne operations, 12th CAB and 41st Fires Brigade conducted deep attacks against the forward elements of the 25th Separate Motor Rifle Brigade in the vicinity of Rakvere along Highway-E20. With the enemy’s forward units stalled, CJTF-18 conducted two simultaneous airborne drops along north-south Highway-E67 to establish a line of defense, behind which the 2nd MEB could conduct amphibious operations in preparation for the main counterattack to expel Russian ground forces out of Estonia, see Figure 14. In response, the Russian 448th Missile Brigade (Iskander) repositioned to the range and suppressed the 1-112th HIMARS Battalion at the Tallinn Airport. Significantly, the 1-112th could not range the Russian Iskanders and suffered the loss of one firing platoon. The 1-112th HIMARS Battalion was suppressed until combat air assets from 2nd MEB could destroy the Russian 448th Missile Brigade (Iskander).

“Maneuver to Fire”

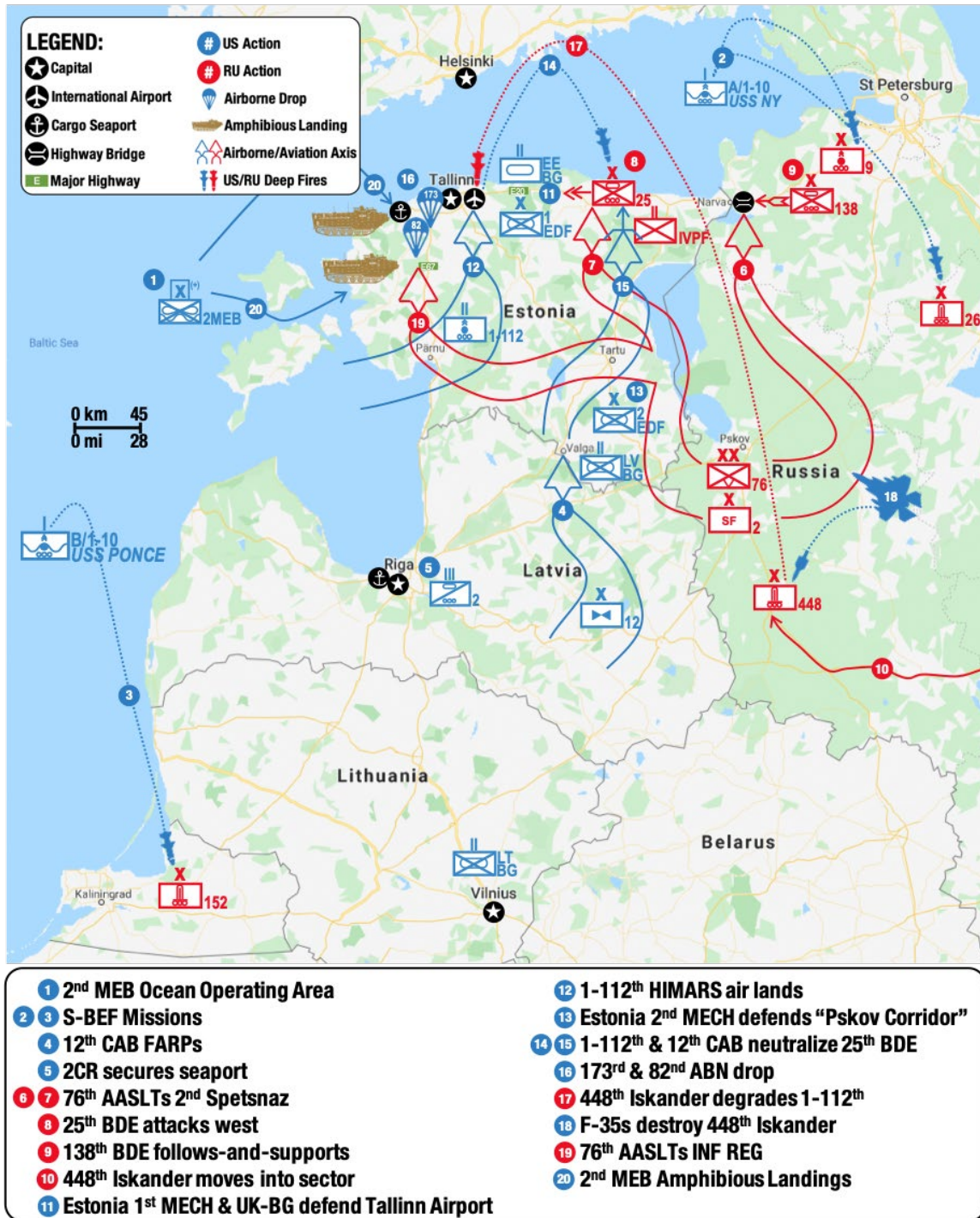


Figure 14. “Maneuver to Fire.”

Created by Author.

With an overarching aim of sealing off the amphibious landing zone, the 173rd Airborne Brigade parachuted vicinity the town of Saue and 1st Brigade of the 82nd parachuted vicinity the

town of Palau in order to seize vital transportation and communication hubs along Highway-E67. Shortly after seizing initial objectives, the 82nd Division TAC and the 3-27th HIMARS Battalion air landed at Vasalemma Airfield already secured by 1-91st RSTA Squadron in the initial jump. Paratroopers from both brigades met significant resistance from the 2nd Spetsnaz Brigade conducting deep reconnaissance and interdiction operations against possible amphibious landing sites. The Spetsnaz aimed to identify and organize helicopter landing zones for follow-on Russian air assault operations aimed at disrupting 2nd MEB's amphibious landings. Shortly after the airborne operations, the 76th Guards Air Assault Division landed an infantry regiment in the vicinity at the communication hub at Kernu to threaten the right flank of 2nd MEB's amphibious landings.

With the airborne brigade blocking critical routes into the amphibious landing zone, 2nd MEB began its amphibious assault with its first Assault Amphibian Battalion (AAB) landing at Haapsalu and attacking the Russian 76th Air Assault Regiment to secure its right flank. The Marines then landed its second AAB comprised of the Light Armored Reconnaissance Battalion further north at Paldiski, which moved quickly and conducted a forward passage of lines through the airborne brigades' defensive front, created the maneuver space to push the FLOT to the east for the 2nd MEB's main body and to establish firing positions for its organic rocket and cannon artillery assets. With both amphibious operations complete, the Commander CJTF-18 had introduced all of his maneuver units into the BTO and established the outline of his battlefield framework.

For the remainder of this case study, the focus will shift from how the Estonian Campaign unfolded to how the CJTF Commander established his battlefield framework. In doing so, the need for a new Integrated Battlespace Framework, or IBF, see figure 15, is apparent. Given the Commander's posture in this futuristic scenario, a combination of several constructs outlined earlier is required to organize and mass combat power and to synchronize deep fires.

Specifically, there are elements of the SAMS framework and the Futures framework, see figure 3, which, when taken together, create an easily understandable and workable solution.

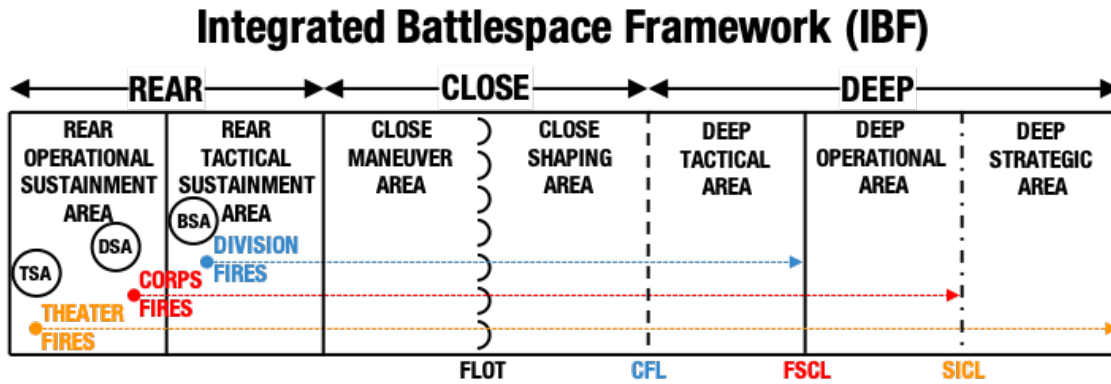


Figure 15. Integrated Battlespace Framework (IBF).
Created by Author.

Based on case studies one and three, a simple construct is still required. From AirLand Battle and Desert Shield Desert Storm, the rear, close, deep construct captures the essence of what most conventional battlefields will look like. However, it lacks the granularity a future Commander needs to organize forces at all levels appropriately, account for technological advances in target acquisition and range, and efficiently prosecute targets across the tactical, operational, and strategic spectrum. The IBF, shown in figure 16, retains the simplicity of the AirLand Battle framework while also delineating vital areas for planning, targeting, and executing deep fires at all levels. With the reintroduction of large-scale combat operations that retain key attributes of AirLand Battle doctrine, the simple construct of the rear, close, deep is appropriate and useful and should be reintroduced into emerging deep fires doctrine.

IBF during Operation Northern Light

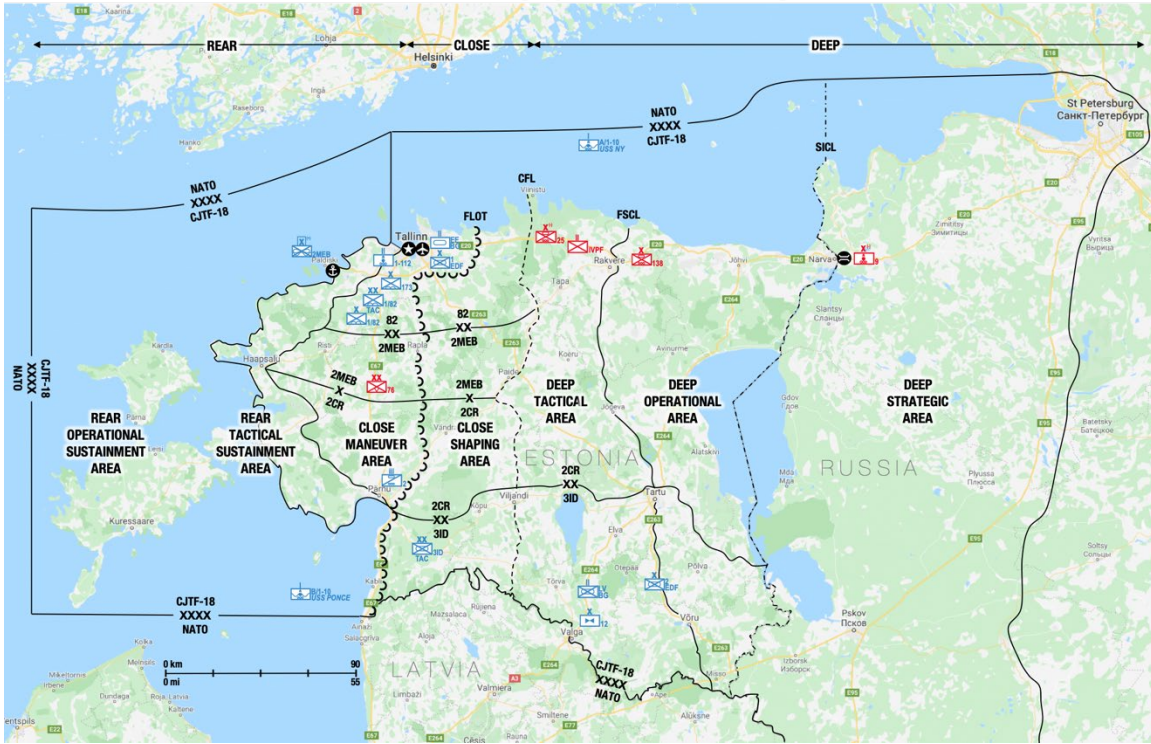


Figure 16. IBF During Operation Northern Light.
Created by Author.

With this new integrated battlespace framework, it is clear from this futuristic scenario on NATO's north shoulder that the US Army and Marine Corps do not currently have strategic fires necessary to counter the Russian Iskander short-range ballistic missile proportionally. Unlike Desert Shield Desert Storm, the battlespace structure in this futuristic scenario had to be created during the fight, versus setting the battlespace structure before the first round was fired. In this instance, the CJTF Commander had to maneuver his forces to establish his deep fires capabilities, e.g., "Maneuver to Fire." In case study three, the CJTF Commander did not have immediate counterfire capabilities at the strategic level and had to rely on the air force and naval air assets, which did not deliver suppressive fires promptly. Given the specific aim of this paper, which was to deduce implications on the range and deep fires doctrine from historical, contemporary, and futuristic case studies, the Estonian Campaign highlights that range still matters and the disparity of this capability with the Russians could prove disastrous. As the US Army continues to develop

its future field artillery systems and doctrine, range disparity must be addressed, and an integrated battlespace framework must be adopted.

Final Insights: Operational Implications

As stated in the introduction of this document, this paper has aimed to deduce implications on the range and deep fires doctrine from historical, contemporary, and futuristic case studies for inclusion into the development of future field artillery systems and doctrine. For clarity and simplicity, here are the ten most significant insights of this study. These are compiled from the literature review and all three case studies. These operational implications provide a basis for continued analysis and potential implementation.

Critical Waypoint in the Paradigm Shift. As evidenced by the paradigm shift in the early 1970s from Vietnam to Europe that required multiple iterations of air-land battle doctrine, it is essential to recognize that large-scale combat operations as outlined in the current FM 3-0, *Operations*, is a waypoint in the paradigm shift that underscores the importance of how the US Army will fight in the deep area. To this end, FM 3-0, *Operations*, must continually be refined to better frame deep fires.

Multi-faceted Definition of Range. As highlighted early in the comparative chart in [Figure 1](#), there is a measurable mismatch between Russian and US field artillery systems in simple linear ranges. Still, as case studies two and three indicate, the range is not as simple as a comparison of straight-line distances. Technically, it may be defined as a function of actual distance, doctrinal requirements, constraints, restraints, physics, and enemy capabilities.¹²⁵ In actuality, when fighting an adaptive thinking adversary, the better question is, “what range to what end?”

System of Systems. In a near-peer fight, range will provide a tactical advantage, but whoever has the best integrated, layered, and redundant networks will have the strategic and operational advantage. Matching and overmatching like-systems in real-time will require great speed, skill, and dexterity like needed to win a Rubik’s Race. Each operational command and control node must be capable of planning and executing their operations as well as understanding and tracking the close and deep operations of lateral and higher headquarters.

Distributed and Redundant Command and Control. At the operational and tactical levels, the Russians will disrupt, degrade, and destroy command and control nodes and power projection platforms.¹²⁶ With no time or depth to establish a “Baltic Shield,” command and control nodes will be more vulnerable. Multiple and distributed command and control nodes at the operational level (CJTf-18, 82nd Airborne Division, 2nd MEB, 3rd Infantry Division) will ensure continuity of operations in the close and deep battlespaces.

¹²⁵ LtCol Leroy B. Butler, initial counseling with author, July 29, 2019.

¹²⁶ Boston, and Massicot, *The Russian Way*, 2.

Legal Authorities to Fire. As the Russians demonstrated in the Eastern Ukraine Campaign, they created tactical paralysis by firing across international boundaries and from populated areas in an attempt to bait and discredit their adversaries. Possible and probable legal constraints created by the enemy's non-standard or unlawful positioning of firing assets must be identified and remediated well in advance of commencing combat operations to ensure the unimpeded delivery of deep fires.

Multiple Non-Contiguous Locations. Given significant enemy A2/AD capabilities, deployment into the Baltics will be from non-contiguous locations and will require unique command and control structures with challenging interoperability issues. In the early phases of the futuristic Baltic scenario, planning and synchronizing deep operations will be complicated by the geographical distribution of forces and headquarters at the beginning of the campaign.

HIMARS Capability in Europe. Although the US Army has sufficient MLRS battalions in Germany, the 41st Fires Brigade does not have any HIMARS capability. From an operational perspective, this limits the 41st Fires Brigade's support of airborne and air landing operations, which is what the current European based units will be conducting (173rd Airborne Brigade and the 2nd Cavalry Regiment (Stryker)).

Maneuver to Fire. Because of the significant, if not daunting, Russian A2/AD threat, the CJTF-18 Commander incorporated redundancy, simultaneity, and balance into his operational design. To ensure continual command and control of an extraordinary complex and dangerous environment, the Commander geographically uncoupled tactical command posts from their parent main command posts to mitigate risk through redundancy. For instance, the CJTF-18 TAC co-located with 2nd MEB afloat, the CJTF-18 Main, was co-located USAREUR headquarters in Wiesbaden, Germany. Similarly, the 82nd Airborne Division TAC co-located with the 173rd Airborne Brigade at Aviano, Italy, while the Division Main staged in Rygge, Norway, with its GRF Brigade. Additionally, 2nd MEB established and conducted two amphibious landings to lessen the risk and to enhance command and control. Each command and control node could cover the loss of an adjacent or higher headquarters to ensure continuity of operations and to ensure the execution of any planned deep fires. In terms of simultaneity, CJTF-18 maneuver units deployed from multiple staging bases geographically dispersed throughout NATO's AOR, directly from the United States, and from an Amphibious Ready Group. When completely deployed into CJTF's JOA, the balanced posture of the maneuver force provided the operational footprint from which long-range fires were deployed.

Coordinating Deep Fires with NATO. From case study three, there will be NATO forces operating within the CJTF-18 battlespace as the Commander introduces his forces into the JOA. Initially, this will be a complex and convoluted battlespace. The urgency of the moment will tempt planners to implement "make-shift" fire support control measures, as was the case of the RIPL during Operation Desert Storm. Emerging US doctrine for the employment of long-range fires must be simultaneously developed with NATO's Allied Command Transformation (ACT) headquarters.

Battlefield Framework. In light of a proposed Integrated Battlespace Framework (IBF) in this document, a new joint deep fires manual must be developed to create a shared battlespace framework across joint and combined forces. The IBF is a combination of CAC, Futures Command, and SAMS operational constructs and retains the simple "Rear, Close, Deep" construct, albeit delineated with more granularity. More importantly, it reintroduces a key fire support coordination measure, the Strategic Interdiction Coordination Line (SICL), as a means to deconflict air delivered deep fires with forward-deployed reconnaissance

assets, and ground delivered fires. Unlike the RIPL during Operation Desert Storm, the SICL should be explored and assessed collectively before the next international crisis. The IBF will ensure a common lexicon across US forces and NATO and provide a common operating battlespace framework within which to synchronize maneuver with deep fires.

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