

Field Artillery and the Combined Arms Team: A Case for the Continued Relevance of American Fire Support

A Monograph

by

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Abstract

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As US Army units begin conducting decisive action training in combat training centers, they must strengthen core field artillery proficiencies and relearn how to employ artillery successfully as part of a combined arms team in an expeditionary environment. To do so requires an appreciation of the field artillery fire support system's unique capability and its continued importance for future combat operations. Following World War I, US Army artillery officers developed the modern artillery doctrine and organization that remains relatively unchanged to this day. This doctrine developed from the lessons learned of the Great War and the ingenuity of the interwar period, and earned validation through war hardening and proper application in operations such as the Kasserine Pass battles and Operation Husky during 1943 of World War II. In March 2002 during the Battle of Shah-I-Kot in Operation Anaconda, operational planners sought to replace field artillery with airpower and mortars rather than employ it as an essential member of the combined arms team. This decision led to fateful results in the opening days of the operation. In future operations, the US military must not leave the artillery at home-station, or it will risk losing the ability to mass fires effectively, understand the operational environment, continually seek positions of advantage, and strive for simultaneous and complimentary effects.

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Acronyms

ADP	Army Doctrinal Publication
ADRP	Army Doctrinal Reference Publication
CCA	Combat Command A
CCB	Combat Command B
CCC	Combat Command C
CCD	Combat Command D
CENTCOM	Central Command
CJTF	Combined Joint Task Force
COIN	Counterinsurgency
DIVARTY	Division Artillery
FDC	Fire Direction Center
FM	Field Manual
JP	Joint Publication
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OODA	Observe-Orient-Decide-Act
RCT	Regimental Combat Team
SOSO	Stability Operations and Support Operations
ULO	Unified Land Operations

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Introduction

From March 21 to April 10, 2003, field artillery units of the US Army's V Corps provided timely and accurate fire support to maneuver elements during the initial invasion into Iraq as part of Operation Iraqi Freedom. Starting with destruction fires against multiple observation posts along the Iraq-Kuwait border, field artillery elements maneuvered alongside infantry and armor forces to provide essential fire support against Saddam Hussein's Army in the Iraqi desert and urban areas.¹ Operating in the restrictive Euphrates River Valley and providing long range indirect fire support during massive sandstorms that restricted air support, artillery demonstrated its role as a key part of the combined arms team during an initial operation lasting twenty-one days and spanning over 720 kilometers.² Following the conclusion of major combat operations, the US Army shifted to stability operations and implemented a counterinsurgency (COIN) strategy. Field artillerymen's guns remained at forward observation posts and performed fire missions consisting primarily of static counter fire operations. Given the limited need for such tasks, artillery units regularly conducted non-standard missions to include patrolling, base defense, and cordon and search operations.³ In Afghanistan, artillery units found themselves

¹ Thomas G. Torrance and Noel T. Nicolle, "Observations from Iraq: The 3d Div Arty in OIF," *Field Artillery Journal* (July-August 2003): 30; William L. Greer, Martin J. Holland, and Charles W. Kean, "101st Div Arty: Fighting with Artillery Fires in an Urban Environment," *Field Artillery Journal* (September-October 2003): 15; Philip D. Rice, "Decisive Fires, Decisive Victory: 1-9 FA in OIF," *Field Artillery Journal* (September-October 2003): 30-31.

² Torrance and Nicolle, 30; Robert F. Barry, "Why Organic Fires?" *Field Artillery Journal* (March-June 2004): 16.

³ Raymond T. Odierno, "Division Operations across the Spectrum—Combat to SOSO in Iraq," *Field Artillery Journal* (March-June 2004): 10-11; Patrick M. Antonietti and Donald K. Books, "A Fires Battalion in OIF III: Supporting Decentralized 'Hot' Platoons and Other Missions," *Field Artillery* (July-August 2006): 29-31. Non-standard refers to the task organization and allocation of artillery units to missions other than providing timely and accurate fires. See Petter K. Bacon, "Whatever it Takes: Redlegs and Riflemen," *Army* (December 2003), 13-16.

conducting similar missions, although indirect fire support to the maneuver force through counter fire and destructive fires in support of troops in contact constituted the primary mission.⁴

Field artillery's focus on non-standard missions within Iraq and Afghanistan might have led to atrophy of traditional fires core competencies, reducing artillery's ability to integrate with maneuver forces to meet future threats. Several former brigade combat team commanders mentioned the field artillery's "identity crisis" in 2007 to express similar concerns regarding current maneuver-fires integration.⁵ The Association of the United States Army, senior field artillery leaders, and observer/controller trainers at the National Training Center shared these concerns. All agreed that field artillery units should focus more on traditional branch core competencies—namely, the ability to provide accurate fire in a timely manner to maneuver forces.⁶

To mitigate loss of core field artillery proficiency and help retain the lessons of COIN operations in Iraq and Afghanistan, the US Army introduced new training exercises in 2012 at combat training centers focused on decisive action—"the simultaneous combination of offensive, defensive, and stability operations."⁷ This approach focuses on creating a complex training environment, combining a conventional near-peer enemy with an insurgent/guerrilla environment

⁴ Stephen J. Maranian, "Field Artillery Fires in the Mountains of Afghanistan," *Fires* (July-September 2008): 35.

⁵ Sean MacFarland, Michael Shields, and Jeffrey Snow, "White Paper: The King and I: The Impeding Crisis in Field Artillery's Ability to Provide Fire Support to Maneuver Commander," White Paper, United States Army, 2007, 1.

⁶ Association of the United States Army, "The Fires Force," *Torchbearer National Security Report* (October 2009), 12; Scott R. Gourley "A New Century of Fires," *Defense* (Fall 2011): 25; Timothy Bush and Michael S. Coombes, "Agile Fires and Decisive Action: Achieving Pervasive Agility by Focusing On Fundamentals," *NTC Decisive Action Training Environment Newsletter* 12, no. 19 (September 2012): 1-2.

⁷ Army Doctrine Publication (ADP) 3-0, *Unified Land Operations* (Washington, DC: Government Printing Office, 2011), 5.

that will enable the Army to rebuild its combined arms maneuver proficiency while retaining the competence gained from thirteen years of war primarily consisting of stability and COIN-related tasks.⁸ While this approach should lead to high quality training, such exercises alone might not enable the field artillery to rebuild proficiency rapidly in its atrophied offense and defense tasks. With large-scale combat operations complete in Iraq and moving towards conclusion in Afghanistan, operational planners and artillery units across the Army must review history to enhance these training opportunities and relearn the art and science of successfully employing timely indirect fire support in an expeditionary environment.

Historical Context and Importance of Study

In 2013, General Raymond Odierno described the US Army in his strategic vision as “the most highly trained and professional All-Volunteer land force . . . organized with the capability and capacity to provide expeditionary and decisive landpower to the Joint Force.”⁹ In a 2009 white paper, former Chief of Staff of the Army General George Casey wrote that the US Army must maintain the ability to “respond to unanticipated conflicts in austere, unfamiliar locations across the globe and be able to fight upon arrival.”¹⁰ This requires the Army to organize, equip, and train “to go anywhere in the world, conduct forcible entry operations in remote, anti-access environments . . . and sustain that response for uncertain durations.”¹¹ The Army’s field artillery community is reorganizing units at the division and corps level to assist in the provision of

⁸ Dennis Steele, “Decisive-Action Training Rotations: ‘Old School Without Going Back in Time,’” *Army* (February 2013): 28-32.

⁹ Raymond T. Odierno, “CSA's Remarks at Dwight D. Eisenhower Luncheon, AUSA 2013,” United States Army Homepage, October 23, 2013, accessed September 24, 2014, <http://www.army.mil/article/113661/>.

¹⁰ George W. Casey, “Adapting Our Aim: A Balanced Army for a Balanced Strategy,” White Paper, United States Army, 2009, 9.

¹¹ *Ibid.*

expeditionary and decisive landpower. Recently, the Army reestablished the division artillery (DIVARTY) concept to perform field artillery planning, coordination, and synchronization in the execution of tactical, operational, and strategic fires.¹² Every active component division will receive a DIVARTY and all three Army corps will gain a field artillery brigade.¹³ To prepare for decisive action within these new field artillery organizations, operational planners must understand how to integrate field artillery to support the maneuver fight in an expeditionary environment.

An analysis of field artillery's development and past employment over the last century yields lessons that operational planners should consider when integrating field artillery during the design of modern operations in expeditionary environments. The integration of field artillery represents one piece of the Army's combined arms team, which historian Walter Kretchik described as a consistent doctrinal theme from 1905 to the present.¹⁴ In 1905, *Field Service Regulations* planted the seed of combined arms within the Army. With the primacy of infantry and its auxiliary artillery emphasized in the 1914 edition, the combined arms concept reached full

¹² Scott R. Gourley "Return of Division Artillery Stokes the Fires," *Fires* (November-December 2014), accessed February 21, 2015, http://sill-www.army.mil/firesbulletin/current/06_Gourley.html. The modern DIVARTY organization first appeared in 1940. Consisting of a headquarters, three direct-support battalions, and one general support battalion, this structure changed little until the deactivation of all DIVARTYs by 2007. While the concept returned in July 2014, artillery battalions within brigade combat teams remain organic to those organizations. See Janice E. McKenney, *The Organizational History of Field Artillery, 1775-2003* (Washington, DC: Center of Military History, US Army, 2007), 157, 165, 301.

¹³ William A. Turner, "The Field Artillery Reorganization to Conduct Operational, Joint, and Multination Fires," *Fires* (July-August 2014): 6.

¹⁴ Walter E. Kretchik, *U.S. Army Doctrine: From the American Revolution to the War on Terror* (Lawrence: University Press of Kansas, 2011), 273.

fruition in Field Manual (FM) 100-5, *Operations* of 1941, recognizing that “no one arm wins battles,” and that “combined action of all arms and services is essential to success.”¹⁵

As US Army combined arms doctrine matured in the first half of the twentieth century, the field artillery transformed from a predominantly static, pre-planned, and inconsistent lethal force provider to a maneuverable and responsive force, massing fires through new forward observation and fire direction procedures. During World War I, American artillery performed best in static circumstances with division and higher levels of command executing largely unobserved, pre-planned artillery fire concentrations on pre-designated targets.¹⁶ American artillery units, adopting the liaison officer system from the French, placed personnel referred to as forward observation officers within infantry units to adjust fire once the battle commenced.¹⁷ Unfortunately, these forward observers often found themselves both unable to observe targets adequately and tied to their observation posts due to poor or inconsistent communications.¹⁸

These issues led to mixed results among US Army divisions in World War I. During the Meuse-Argonne Offensive, the 1st Infantry Division made impressive gains against eight German

¹⁵ US War Department, *Field Service Regulations: United States Army, 1905* (Washington, DC: Government Printing Office, 1905), 107; US War Department, *Field Service Regulations: United States Army, 1914, Text Corrections to August 18, 1917* (Menasha: George Banta Publishing Company, 1918), 68; Field Manual (FM) 100-5, *Field Service Regulations: Operations, May 22, 1941* (Fort Leavenworth, KS: US Army Command and General Staff College Press, 1992), 5.

¹⁶ John R. Walker, *Bracketing the Enemy: Forward Observers in World War II* (Norman: University of Oklahoma Press, 2013), 19; Jonathan M. House, *Toward Combined Arms Warfare: A Survey of 20th-Century Tactics, Doctrine and Organization* (Fort Leavenworth: Combat Studies Institute, 1984), 21-22, 99.

¹⁷ Walker, 14-15.

¹⁸ *Ibid.*, 15-17; Boyd L. Dastrup, *King of Battle: A Branch History of the US Army's Field Artillery* (Fort Monroe: United States Training and Doctrine Command, Office of the Command Historian, 1992), 168. Inconsistent communication problems arose from the cutting of telephone wire or line-of-sight issues with the firing units.

infantry divisions in October 1918, due largely to successful coordination between infantry and artillery forces through forward observers recalling and controlling artillery barrages when the attack stalled.¹⁹ However, infantry-artillery coordination within the 26th “Yankee” Division during the Aisne-Marne Offensive of September 1918 proved less effective due to a deficiency of liaison between observers and infantry, lack of good observation, and poor communication.²⁰ Following the war, artillerymen realized that new methods of observed and massed fires would require development to support maneuver forces as new technology made warfare increasingly mobile.

Throughout the interwar period, US Army artillery officers invested considerable time and effort to develop procedures to allow artillery to observe and mass fires successfully in support of maneuver forces conducting mobile warfare. Multiple advisory boards stimulated the eventual motorization or mechanization of nearly all artillery units before World War II, recognized the limitations of forward observation in World War I, and advocated placing fire control at the battalion versus to division and higher level.²¹ Officers in the Field Artillery School’s gunnery department who had long sought methods to make field artillery more responsive, accurate, and powerful (through massed, observed fires) discovered a book in their own branch school library that gave them increased confidence in the feasibility of these ideas. The chief of the Gunnery Department discovered French field artillery officer Neil Tytler-Frazer’s *Field Guns in France*, which described the direction of “artillery fire from point to point . . . and shifting it rapidly as the infantry needed help.” This boosted the confidence of gunnery

¹⁹ Mark E. Grotelueschen, *The AEF Way of War: The American Army and Combat in World War I* (New York: Cambridge University Press, 2007), 135-140.

²⁰ *Ibid.*, 184.

²¹ Dastrup, 181-83; Walker, 20-21.

officers who had struggled for years against both cultural and technological challenges to such methods, and confirmed their conviction that they needed better-trained forward observers, reliable communications, and a way to mass the fires of all three firing batteries in a battalion to achieve their goals, foreseen by Tytler-Frazer years before.²²

Instead of observers computing firing data for the guns, these officers devised a simplified basic correction procedure in which observers estimated the distance of the round burst from the target.²³ Observers would then transmit these corrections on newly acquired radio sets (via Morse Code) to the fire direction center (FDC), an organization created at the battalion-level with specially trained gunnery officers to conduct fire computations for all three firing batteries, enabling the battalion to place accurate, massed fires on the target rapidly.²⁴ The experiences of World War I and the hard work of artillery officers in the two decades following the war resulted in the FDC's codification in formal army doctrine by early 1942, the addition of the FDC to the table of organization, along with a robust aerial and ground observation element to support maneuver units with observed and massed fires.²⁵

These new procedures, organizations, and doctrine developed during the interwar period—combined with new artillery and communications equipment—led to successful integration of field artillery within the US Army's combined arms formations during World War

²² Russell A. Gugeler, "Fort Sill and the Golden Age of Field Artillery," January 31, 1981, US Army Field Artillery School Archives, Morris Swett Technical Library, 10.

²³ *Ibid.*, 8.

²⁴ *Ibid.*, 11; Mark T. Calhoun, "From Rolling Barrages to the Fire for Effect: Transformation in the US Army Field Artillery Branch from WWI to WWII" (paper presented at the annual meeting of the Society for Military History, Kansas City, MO, April 3-6, 2014), 19-22.

²⁵ Walker, 5, 26. Typically, US Army field artillery battalions in WWII could have up to nine ground observation teams (one per infantry/armor company) and two aerial observation teams.

II. For example, in the Mediterranean Theater coordinated artillery barrages provided critical destruction and screening fires in support of the 3rd Infantry Division's successful crossing of the Volturno River in Italy on October 13, 1943.²⁶ In the restricted terrain of the Italian peninsula, artillery combined with forward observers often played a key role in the advance of maneuver units by destroying enemy strong points, interdicting supply routes, and massing fires through both observed and time-on-target missions.²⁷ US Army field artillery would also learn and employ new procedures during the war. From December 1942 to February 1943, artillery supported the successful attack by the Americal and the 25th Infantry Divisions to seize Henderson Field from Japanese forces on Guadalcanal by massing fires "on the forward and reverse sides" of hills, adapting current methodologies to employ high-angle fire effectively and maintain 360-degree firing capability.²⁸

While these are just a few historical examples of effective field artillery integration producing successful combined arms operations, one can also find numerous examples of poorly integrated and less successful operations in the US Army's history. Lack of success stemmed from a number of problems, including deficient artillery support based on false assumptions that other weapon systems could provide equally effective support to maneuver units. While operating at Buna, New Guinea from November 1942 to January 1943 in World War II, the US Army's 32nd Infantry Division fought against the Japanese with inadequate artillery due to transportation issues, restrictive terrain, and a false belief that air support and mortars would provide adequate

²⁶ Chester G. Starr, *From Salerno to the Alps: A History of the Fifth Army 1943-1945* (Washington, DC: Infantry Journal Press, 1948), 41; Rick Atkinson, *The Day of Battle: The War in Sicily and Italy, 1943-1944* (New York: Henry Holt and Company, 2007), 249-51.

²⁷ Starr, 447-48; Dastrup, 214.

²⁸ Dastrup, 227-28; John F. Casey, "An Artillery Forward Observer on Guadalcanal," *Field Artillery Journal* (August 1943): 563.

fire support. With the division artillery left behind in Australia, the 32nd had to rely on the Australian 7th Division's artillery (ten light field pieces and one US 105mm howitzer) since the infantry's 81mm mortar fire proved unsuccessful in damaging Japanese bunkers and close air support remained ineffective at this stage of the war.²⁹ Another problem involved deficient artillery support due to inadequate preparation and planning, requiring other combat arms to struggle to fill the support role. In July 1950, General Douglas MacArthur and Eighth Army in South Korea suffered from significant field artillery shortages. Divisional artillery battalions deployed from the United States understrength and needed filling-out from stateside artillery units, while only four corps artillery battalions existed for immediate use—MacArthur did not receive the twenty-four battalions of corps artillery that he requested until February 1951.³⁰ To compensate for its limited indirect fire capability, Eighth Army relied on tanks, naval gunfire, and close air support.³¹ Without proper understanding and appreciation of artillery capabilities and contribution to the Army's combined arms team and the larger joint force, modern planners may also fall victim to these problems.

Methodology

Successful employment of field artillery in support of expeditionary maneuver warfare requires operational planners to appreciate its unique capabilities and the benefits it provides when integrated into combined arms operations. Field artillery remains relevant on the modern

²⁹ McKenney, 179; Jay Luvaas, "Buna 19 November 1942 - 2 January 1943: A 'Leavenworth Nightmare,'" in *America's First Battles: 1776-1965*, ed. Charles E. Heller and William A. Stofft (Lawrence: University Press of Kansas, 1986), 188-89; Ronald H. Spector, *Eagle against the Sun: The American War with Japan* (New York: Vintage Books, 1985), 214-16.

³⁰ Allan R. Millett, *The War for Korea, 1950-1951: They Came from the North* (Lawrence: University Press of Kansas, 2010), 132, 153-54, 379; Bruce I. Gudmundsson, *On Artillery* (Westport: Praeger, 1993), 144-46.

³¹ Millett, 230, 268.

battlefield. Successful employment requires setting the conditions to mass fires rapidly and accurately, understanding the operational environment, continually seeking positions of advantage, and striving for simultaneous and complimentary effects. In the early campaigns of the Mediterranean Theater during World War II, the US Army learned these lessons the hard way—through a difficult but essential process of war hardening.³² Fortunately, the Army Ground Forces saw the effectiveness of artillery during the campaign in North Africa when employed using the new procedures developed during the interwar years. The widespread adoption of the FDC and observed, massed fires led to improved integration of artillery in the combined arms team during Operation Husky in Sicily. Despite this history of success, limited integration of artillery in recent protracted stability operations, combined with limited time to practice traditional fires core competencies, has resulted in a degradation of US Army fire support capability. Planners of future campaigns must avoid relearning the lessons of previous wars to offset possible core competency degradation when developing expeditionary campaign plans that include indirect fires.

Examination of two historical cases in which artillery provided support during combat operations in expeditionary environments demonstrates the value of this fire support: American artillery at the Kasserine Pass battles from February 14–23, 1943, and a comparison of American and Royal artillery during Operation Husky, the Invasion of Sicily, from July 10 to August 17, 1943.³³ The method of assessment reveals both the value of such support during these historical campaigns and the continued relevance of indirect artillery fires in the modern operational

³² Lesley J. McNair “The Struggle Is for Survival: The Importance of Training and Personnel,” *Vital Speeches of the Day* 9, no. 4 (December 1, 1942): 111-114. In his speech to US Army Ground Forces on November 11, 1942, Lieutenant General McNair referenced the “war-hardened” German and Japanese enemies and commented, “Soldiers learn quickly and well in battle . . . but the method is costly to both you and the Nation.”

³³ The term *Royal* refers to both British and Commonwealth artillery units.

environment. Comparison of the methods and effectiveness of fire support revealed in the WWII cases to a recent attempt to supplant it with airpower and mortars at the Battle of Shah-I-Kot Valley in March 2002 during Operation Anaconda amplifies the significance of the initial findings. This comparison of traditional to modern approaches to fire support illustrates the enduring importance of field artillery as a fully integrated member of the combined arms team and reveals that planners should seek to complement, not replace artillery's effect with airpower and mortars. The conclusion includes implications based on findings gleaned from the case studies with relevance to operational planners seeking to maximize field artillery integration during the design of future campaign plans for expeditionary environments.

A synthesis of theory, joint doctrine, and US Army doctrine provided the methodological tools for assessment of the three case studies. These tools include the successful employment of mass at the decisive point, adaptation of established doctrine and training to the unique characteristics of the operating environment, maneuver capability to support combat operations, and synchronization with the rest of the combined arms team. Application of these tools in the analysis of the evidence provided in each case study, supplemented by a cross-case analysis to synthesize findings, enabled an objective demonstration of the validity of the thesis.

In *On War*, Carl von Clausewitz described mass as the superiority of numbers or as the “concentration of forces in space,” achieved through the “possession of strength at the really vital [decisive] point.”³⁴ As defined in Joint Publication (JP) 3-0, *Joint Operations*, mass entails concentrating combat power effects “at the most advantageous place and time to produce decisive results.” From a field artillery perspective, described in Army Doctrinal Reference Publication

³⁴ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), 195, 204.

(ADRP) 3-09, *Fires*, this requires “maximum massed fires when and where they are required.”³⁵

In assessing mass, field artillery integration requires sufficient numbers to provide adequate support to the forces conducting the operation and the ability to mass fire support to maximize effectiveness (which requires the ability to observe and range the targets).

The ability to employ observed indirect fires in a manner appropriate to each given situation relates directly to one of the tenets of *Unified Land Operations* (ULO) in Army Doctrinal Publication (ADP) 3-0. Adaptability requires leaders and planners to change their thinking, movement techniques, and employment methods based on an accurate understanding of “the operational environment, the abilities of their Soldiers, and the capabilities of fire systems,” according to ADRP 3-09.³⁶ Adaptability does not equate to leaders and units making it up as they go along. Instead, it involves employing established doctrine learned through pre-deployment training in the most appropriate manner in a given combat situation. Willingness to change in the face of new information and an understanding of the operational environment constitutes the measure of a campaign’s adaptability.

Field artillery forces maneuver from their initial dispositions to a point where they can mass effective fires at the decisive point. JP 3-0 describes maneuver as the “employment of forces in the operational area through movement in combination with fires to achieve a position of advantage in respect to the enemy.”³⁷ This manual identifies three maneuver factors that allow an assessment of field artillery’s relative integration with maneuver forces. Field Artillery units must

³⁵ Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Printing Office, 2011), A-2; Army Doctrine Reference Publication (ADRP) 3-09, *Fires* (Washington, DC: Government Printing Office, 2012), 1-9.

³⁶ Army Doctrine Publication (ADP) 3-0, *Unified Land Operations* (Washington, DC: Government Printing Office, 2012), 8; ADRP 3-09, 1-5.

³⁷ JP 3-0, III-28.

“displace rapidly, keep pace with the supported force . . . , and position as needed to support future operations.” The correct deployment of forces will lead to relative superiority, or mass at the decisive point.³⁸

Finally, another tenet of ULO—synchronization—provides analytical insight regarding how effectively military forces act in concert to achieve greater effects. Clausewitz wrote about synchronization by advocating the simultaneous application of “all forces intended and available for a strategic purpose,” thereby creating the potential for a more successful use of combat power during “a single action at a single moment.”³⁹ This synchronized and simultaneous action can overwhelm the enemy’s ability to react effectively.⁴⁰ When assessing the field artillery’s ability to synchronize the fire support role in concert with the rest of the combined arms team, simultaneous and complimentary action remains critical to effective employment.

The Kasserine Pass Battles

On February 13, 1943, the Allies in North Africa held thinly dispersed positions along the Eastern Dorsal of the Atlas Mountains in Central Tunisia. Divided into three sections along a 250-mile front from the north Tunisian coast to El Guettar, the British First Army under Lieutenant General Sir Kenneth Anderson consisted of the British V Corps in the northern sector, the French XIX Corps in the center, and the American II Corps under Major General Lloyd Fredendall in the south.⁴¹ Army historian George Howe wrote in the official history of the campaign that Allied Forces commander General Dwight Eisenhower told Anderson and Fredendall the day before the Axis offensive that he considered the Allied dispositions “as good

³⁸ ADRP 3-09, 1-9.

³⁹ Clausewitz, 209.

⁴⁰ ADP 3-0, 9.

⁴¹ Omar Bradley, *A Soldier's Story* (New York: Henry Holt and Company, 1951): 24.

as could be made pending the development of an actual attack and in view of the great value of holding the forward regions.” The Axis offensive began on February 14 when Axis forces attacked Sidi Bou Zid and culminated after their defeat and subsequent withdrawal from Kasserine Pass on February 23.⁴² The successive defeats II Corps suffered in the first several days of fighting resulted from fundamental flaws in the Allied dispositions. These included artillery units—and the larger force as a whole—isolated on *djebels* (hills), dispersed along the Allied front too widely to provide mutual support, and generally unprepared for an attack by Axis forces. The success of the Allied defense in Kasserine Pass, in contrast, resulted from effective leadership, establishment of a combined arms defense in depth, and concentration of artillery linked by an FDC and enabled by forward observers to disrupt the attack with rapid, accurate, and devastating massed fires.

After landing successfully in North Africa in November 1942, the Allies attempted to defeat Axis forces quickly in Tunisia and capture Tunis. Axis forces soon curbed the Allies’ hopes for a quick and decisive victory because of their greater concentration of forces, better air cover, and shorter supply lines.⁴³ Upon the failure to seize Tunis quickly in late 1942, the original aim of trapping Field Marshall Erwin Rommel’s *Afrika Korps* in northern Libya between the First Army and General Sir Bernard Montgomery’s Eighth Army could not occur. Winter rains made a major offensive unfeasible until March 1943. With the German Fifth Panzer Army well positioned in northern Tunisia and receiving a steady stream of reinforcements, Allied leaders recognized that Montgomery would need to continue to drive Rommel west of Tripoli and into

⁴² George F. Howe, *Northwest Africa: Seizing the Initiative in the West*, United States Army in World War II: The Mediterranean Theater of Operations (Washington, DC: Office of the Chief of Military History, 1957), 405.

⁴³ Carlo D’Este, *World War II in the Mediterranean* (Chapel Hill: Algonquin Books of Chapel Hill, 1990): 7-10; Gerhard Weinberg, *A World at Arms: A Global History of World War II* (New York: Cambridge University Press, 1994): 435.

Tunisia.⁴⁴ Not content to remain idle in Tunisia while Montgomery attacked Rommel and sought to push his forces out of their defensive position along the Mareth Line, Eisenhower planned an attack by II Corps against Rommel's western flank to inflict casualties on his forces, keeping them off balance while ideally breaking the Axis line of communication.⁴⁵ However, the scheduled date of attack (late January 1943) coincided with Montgomery's planned arrival in Tripoli, and fears of a German counterattack against the Americans while the British First Army fixed the Fifth Panzer Army led Eisenhower to cancel the operation.⁴⁶ Rommel and his *Afrika Korps*, along with General Juergen von Arnim of Fifth Panzer Army, seized the opportunity to strike in central Tunisia as Montgomery slowly advanced and the Allies gradually built up combat power.⁴⁷

January 1942 involved multiple operations that Howe described as struggles "for the advantages of position and initiative" between Fifth Panzer Army and the Allies, specifically the possession of major passes in the Eastern Dorsal.⁴⁸ Already in control of a corridor along the eastern Tunisian coast, the Germans conducted operations to capture these passes to block future Allied advances and to threaten their lines of communication and supply bases.⁴⁹

⁴⁴ Howe, 347; D'Este, 8, 12.

⁴⁵ Howe, 349-50.

⁴⁶ Ibid., 353; US Military Academy, *The War in North Africa, Part 2 (The Allied Invasion)* (West Point: United States Military Academy AG Press, 1947): 24.

⁴⁷ Weinberg, 441-42, Howe, 349.

⁴⁸ Howe, 386.

⁴⁹ US Military Academy, 23; Howe, 386; Orr Kelly, *Meeting the Fox* (New York: John Wiley and Sons, 2002): 149.

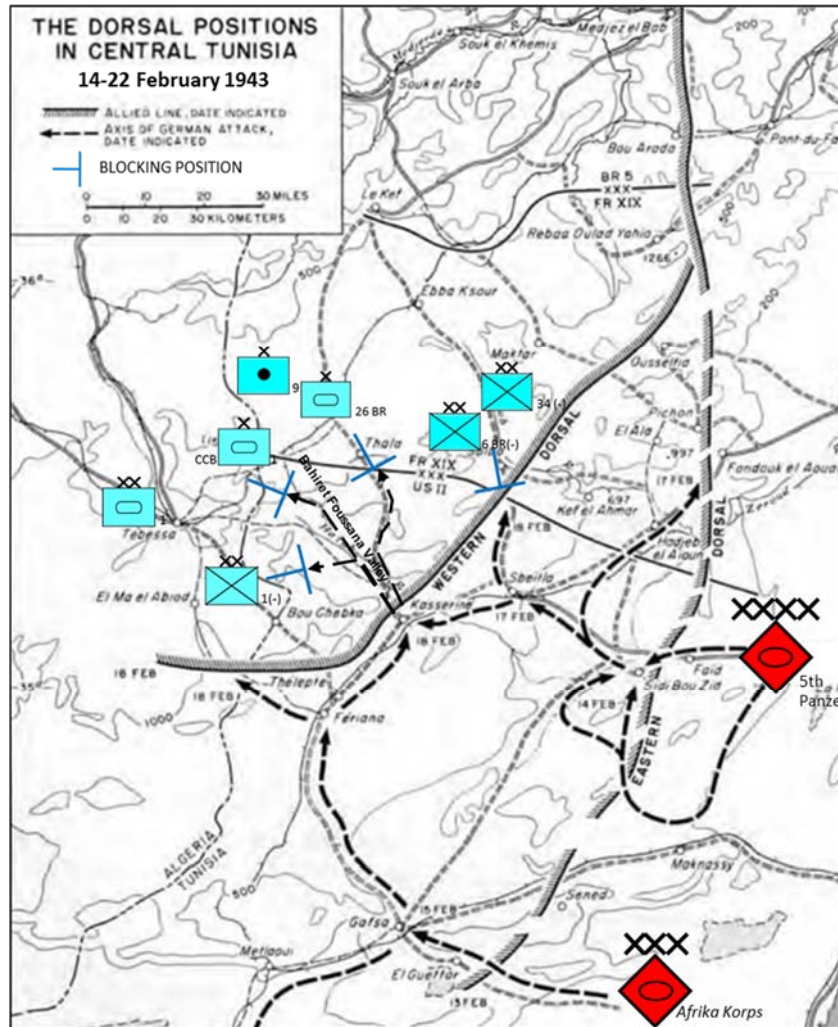


Figure 1. German Kasserine Pass Offensive, February 14-22, 1943

Source: George F. Howe, Northwest Africa: Seizing the Initiative in the West, United States Army in World War II: The Mediterranean Theater of Operations (Washington, DC: Office of the Chief of Military History, 1957), 404, Map IX.

The Fifth Panzer Army attacked the French XIX Corps successfully on three separate occasions, with poorly trained and equipped French soldiers receiving little support from nearby forces—support that journalist and military historian Rick Atkinson described as a “mincing sequence of

half-measures.”⁵⁰ Throughout these operations, the Allies took several actions that set the stage for the Kasserine Pass battles.

On three separate occasions in late January and early February, Eisenhower instructed Anderson to keep the II Corps on the defensive and to hold the 1st Armored Division as a concentrated, mobile reserve pending Montgomery’s arrival in Tunisia.⁵¹ However, Eisenhower acquiesced to Fredendall’s plan to conduct several raids with II Corps along the Allied southern flank.⁵² Wanting to test newly arrived units of the 1st Armored Division, Fredendall instructed the division commander, Major General Orlando Ward, to establish three more combat commands in addition to Combat Command B (CCB) to perform various missions.⁵³ While a standard capability of the new American triangular division design, the formation of combat commands offered great flexibility at the cost of greater complexity and reduced cohesion—significant risk during a division’s first experience of combat. Ward soon found his division widely dispersed, with CCB supporting the French XIX Corps and Combat Command A (CCA), Combat Command C (CCC), and Combat Command D (CCD) conducting unsuccessful operations between January 24-30 to seize Maknassy Pass and retain Faid Pass from Axis forces.⁵⁴ Thus,

⁵⁰ Kelly, 154; US Military Academy, 25-26; Rick Atkinson, *An Army at Dawn* (New York, NY: Henry Holt and Company, 2002), 308. These attacks occurred at Foundouk el Aouareb (January 2), Ousseltia Valley (January 18), and Faid Pass (January 30).

⁵¹ Howe, 384; Atkinson, *Army at Dawn*, 305.

⁵² Atkinson, *Army at Dawn*, 305.

⁵³ Kelly, 155-56. The US Army implemented the triangular division concept in 1939. In armor divisions, this led to the removal of brigade command and the introduction of combat commands—combined arms units formed around a small headquarters element and non-organic infantry, armor, and artillery units from branch-specific regiments to conduct a particular mission. Armor divisions normally fielded three commands—“A” and “B”—and a third command, “R,” for divisional reserve/rear area command. See John J. McGrath, *The Brigade: A History* (Fort Leavenworth, KS: Combat Studies Institute Press, 2004), 46-50.

⁵⁴ Atkinson, *Army at Dawn*, 305-07, 310-12; Howe, 392

instead of potentially controlling two key passes, the Allies held neither. With the 1st Armored Division instructed to “hold as much as possible of the forward areas” in preparation for a March offensive, II Corps found itself ill prepared to hold areas east of the Western Dorsal should the Germans attack—a situation made more dangerous with the arrival of Rommel’s *Afrika Korps* in Tunisia on February 4.⁵⁵ As Eisenhower received a briefing at the 1st Armored Division command post on February 13, Brigadier General Paul Robinett, commander of CCB, recommended that Eisenhower order withdrawal of these II Corps units to better defensive positions as soon as possible.⁵⁶

Artillery Integration at Kasserine Pass

As elements of the Fifth Panzer Army attacked Sidi Bou Zid in the early morning of February 14, they confronted dispersed and isolated II Corps units. CCA, reinforced by the 168th Infantry Regiment of the 34th Infantry Division, occupied positions in and around Sidi Bou Zid that did not allow artillery units present to mass effects. Two artillery battalions—the 91st Field Artillery and 2nd Battalion, 17th Field Artillery—occupied exposed positions in the open plain east of Sidi Bou Zid, with one battery of the 91st near Djebel Ksaira (eight miles southeast of Sidi Bou Zid) and another battery at Djebel Lessouda (eleven miles north of Djebel Ksaira), each isolated from its parent battalion.⁵⁷ As Von Arnim’s forces attacked from the Faid Pass and the Maizila Pass twenty miles to the south, they encircled II Corps units on the two isolated hills (Djebels Ksaira and Lessouda) and attempted to envelop Allied forces around Sidi Bou Zid.⁵⁸ While two of the three firing batteries of the 91st Field Artillery withdrew under pressure in

⁵⁵ Howe, 399; US Military Academy, 27-28.

⁵⁶ Kelly, 175.

⁵⁷ Howe, 411; George F. Howe, *The Battle History of the 1st Armored Division* (Washington, DC: Combat Forces Press, 1954), 145; Kelly, 176-77.

⁵⁸ Atkinson, *Army at Dawn*, 340, 342; Bradley, 25.

support of CCA, the third outlying battery near Djebel Lessouda failed to displace in time and succumbed to German forces.⁵⁹ The 2nd Battalion, 17th Field Artillery no longer existed as a functioning combat unit after the initial encounter. Made up of World War I-era tractor-pulled medium howitzers, the unit also failed to displace in time, losing every tube in a German air attack.⁶⁰ Any hope of II Corps stopping the Axis assault would require a strong counterattack force.

The II Corps counterattack force that sought to destroy the German attackers near Sidi Bou Zid and aid in the withdrawal of CCA forces on February 15 did not possess the artillery (or maneuver) strength needed to accomplish its mission. According to Atkinson, the Allies counterattacked “with a force weaker than the one already routed,” made up of CCC and only one armor battalion of CCB from the French XIX Corps sector.⁶¹ Anderson refused to release all of CCB to Ward, despite French insistence, because First Army still expected the Axis main effort to attack farther to the north.⁶² Only the understrength 68th Field Artillery battalion supported the counterattack force. Although not nearly enough artillery to support the operation, the 68th maneuvered and adapted to different forms of support well, providing counterbattery fires, close support fires directed by observers against enemy tanks, and even direct fire—first against German tanks that attempted an envelopment of the counterattack force, and then when the battalion itself faced possible encirclement.⁶³ Despite valiant Allied efforts, Axis forces defeated

⁵⁹ Howe, *1st Armored Division*, 146, 149.

⁶⁰ Kelly, 187-88; Atkinson, *Army at Dawn*, 340; Howe, 412.

⁶¹ Atkinson, *Army at Dawn*, 349; Howe, 418-19.

⁶² Howe, 416; Atkinson, *Army at Dawn*, 349.

⁶³ Howe, *1st Armored Division*, 155-63.

the counterattack and forced II Corps to withdraw under pressure to the Western Dorsal.⁶⁴ With elements of the 5th Panzer Army seizing Sbeitla and the *Afrika Korps* seizing Gafsa and Feriana by February 17, Axis forces positioned themselves for a final attack through the Western Dorsal passes and into the Allied rear areas of Central Tunisia.⁶⁵

As II Corps and the French XIX Corps withdrew and reconsolidated along the Western Dorsal, Rommel—now in command of the *Afrika Korps* and two additional panzer divisions from the 5th Panzer Army—received a directive to attack towards Le Kef in the Allied rear areas.⁶⁶ To accomplish this task, Rommel sent the 21st Panzer Division north of Sbeitla to penetrate the Allied line at Sbiba as the *Afrika Korps* prepared to attempt a similar penetration via the Kasserine Pass to the southwest. Rommel positioned the 10th Panzer Division in a central position near Sbeitla so that it could exploit success wherever the opportunity appeared.⁶⁷ As the Axis prepared their operations on February 19, the Allies hurriedly massed infantry and artillery to defend the Sbiba and Kasserine Passes. Eight infantry battalions with three field artillery battalions in support prepared for the defensive operation in Sbiba Pass.⁶⁸ At the same time, Colonel Alexander Stark situated his “Stark Force” of an infantry battalion, an artillery battalion, and an engineer regiment in defensive positions at the opening of the Kasserine Pass.⁶⁹ Success for the Allies over the next several days would depend on how long they could delay the Axis offensive and how many units could arrive in time to serve as reinforcements.

⁶⁴ Atkinson, *Army at Dawn*, 352-53; Howe, 423-24.

⁶⁵ Howe, 426-27.

⁶⁶ *Ibid.*, 440-41.

⁶⁷ Atkinson, *Army at Dawn*, 369.

⁶⁸ Howe, 442-43.

⁶⁹ *Ibid.*; Atkinson, *Army at Dawn*, 366-67.

Allied defenses at the Sbiba and Kasserine Passes exhibited vastly different levels of artillery effectiveness. As the 21st Panzer attacked Sbiba Pass, it confronted a force with three well-prepared artillery battalions that had plotted more than 100 pre-planned targets along the likely attack route, and positioned multiple observers to adjust indirect fires onto approaching tanks.⁷⁰ As the attack on Sbiba failed to penetrate this defensive position of massed and synchronized fires, Rommel ordered the 10th Panzer to reinforce the *Afrika Korps* as it attacked the much smaller Stark Force in the Kasserine Pass.⁷¹ Significantly, the vastly smaller Stark Force possessed much less supporting artillery, meaning it could only delay the attackers for a limited time. As Stark's defense of the Kasserine Pass went into a second day on February 20, Rommel realized the necessity of breaking through before the Allies could mass enough combat power to negate his chances for exploitation.⁷² Rommel ordered the 10th Panzer and *Afrika Korps* to conduct a "side-by-side attack," which finally enabled him to gain control of the pass on the evening of February 20.⁷³ Allied senior commanders anticipated their inability to hold the Kasserine Pass and instead repositioned units in the vicinity to establish defensive positions with men and artillery on either side of the Bahiret Foussana Valley, west of Kasserine Pass. This would give them a chance of limiting any Axis exploitation rather than reinforcing an already doomed defense in the pass itself. Anderson directed the French XIX Corps to release the 16th Infantry Regiment and 7th Field Artillery Battalion of the 1st Infantry Division to II Corps in order to block the Axis attack vicinity Bou Chebka on the northwest side of the valley.⁷⁴ On the

⁷⁰ Howe, 452-32; Kelly, 234; Atkinson, *Army at Dawn*, 378.

⁷¹ Atkinson, *Army at Dawn*, 378; Howe, 459.

⁷² Howe, 455.

⁷³ *Ibid.*; Atkinson, *Army at Dawn*, 372.

⁷⁴ "A Factual Summary of the Combat Operations of the 1st Infantry Division in North Africa and Sicily During World War II (Extract)," in *Kasserine Pass Battles: Readings, Volume I*,

northeast side of the valley, the British 26th Armored Brigade had orders to defend along Highway 17 while CCB established defensive positions at Djebel el Hamra, covering the passes to the Allied rear areas of Tebessa and Haidra.⁷⁵ The arrival of Allied reinforcements and commanders that knew how to employ them as part of a combined arms defense—Robinett and 1st Infantry Division commander Major General Terry Allen—meant that Rommel’s forces would face solid defenses on February 21-22 within the Bahiret Foussana Valley including support from four artillery battalions.⁷⁶

As Rommel’s forces moved into the Bahiret Foussana Valley, Allied forces blocked their advance and prevented their attempt to exploit their victory in Kasserine Pass by advancing to Tebessa and Le Kef. Within the valley, the four artillery battalions supporting CCB and elements of the 1st Infantry Division delivered accurate massed fires through forward observers and FDCs that contributed significantly to the defeat of Axis attempts to penetrate at Djebel el Hamra and Bou Chebka. Supporting CCB, the 27th Field Artillery alone fired over 2,000 rounds, while Colonel Clift Andrus—the 1st DIVARTY commander—synchronized counterattacks with fires from the 7th and 33rd Field Artillery battalions.⁷⁷ On the northeast side of the valley, the 10th Panzer advanced toward Thala against the British 26th Armored Brigade. Possessing only two batteries of artillery, the brigade withdrew to subsequent defensive positions in good order twice

Part 2, ed. Harold W. Nelson, Roger Cirillo (Washington, DC: US Army Center of Military History, 1993), 15-16.

⁷⁵ Howe, 457-58.

⁷⁶ Paul M. Robinett, “Combat Command B, 1st Armored Division, Operations Report, Bahiret Foussana Valley, 20-25 February 1943,” in *Kasserine Pass Battles: Readings, Volume I, Part 2*, ed. Harold W. Nelson and Roger Cirillo (Washington, DC: US Army Center of Military History, 1993), 2; Atkinson, *Army at Dawn*, 379. Howe, 462-63.

⁷⁷ Robinett, 2; Terry Allen, “1st Infantry Division, Summary of Activities, January-March 1943, and Division Commander's Notes,” in *Kasserine Pass Battles: Readings, Volume I, Part 2*, ed. Harold W. Nelson and Roger Cirillo (Washington, DC: US Army Center of Military History, 1993), 3.

before taking final defensive positions just south of Thala.⁷⁸ These retrograde operations provided time for the 9th DIVARTY under Brigadier General S. LeRoy Irwin to arrive in time to establish mutually supporting positions and assist the British in defeating the German attack on February 22. Bringing with him three artillery battalions and two cannon companies consisting of forty-eight tubes, Irwin established a “three-mile arc” to deliver massed DIVARTY fires controlled by improvised wire and radio communications at the forward-most Allied observation point.⁷⁹

Rommel believed that the arrival of this additional artillery portended an impending counterattack. Therefore, he gave up hopes of achieving a breakthrough and ordered all Axis units to withdraw from the Kasserine Pass on the night of February 22.⁸⁰

Analysis

While American artillery failed to mass fires effectively at the beginning of the Kasserine Pass battles, largely because of poor unit dispositions that prevented mutual support, II Corps weighted the main effort sufficiently with artillery during the defensive battles at Sbiba, Djebel el Hamra, Bou Chebka, and Thala. The failure on February 15 to give the appropriate priority to either the forces in vicinity of Sidi Bou Zid or the counterattack force caused Lieutenant Colonel Hamilton Howze of the 13th Armored Regiment to write “the concentration of artillery fire is a prerequisite of success” and that future attacks would require a minimum of three artillery battalions in support.⁸¹ The ineffective combat command structure of the 1st Armored Division

⁷⁸ Howe, 464-66.

⁷⁹ Robert C. Baldridge, “How Artillery Beat Rommel After Kasserine,” *Field Artillery* (May-August 2002): 49-50; Atkinson, *Army at Dawn*, 385.

⁸⁰ Atkinson, *Army at Dawn*, 385-87.

⁸¹Headquarters, Thirteenth Armored Regiment to Commanding General, 1st Armored Division, July 8, 1943, Dwight D. Eisenhower Presidential Library, US Army: Unit Records, 1917-1950, 1st Armored Division, 1940-1946, Box 16, 1st Armored Division Misc. Staff Section Battle Lessons 1943.

played a key role in the initial inability of supporting artillery to deliver massed fires. Employed in what military historian Carlos D'Este called “penny packets,” excessively dispersed artillery units could not provide mutual support—particularly because the 1st Armored Division created two additional ad hoc combat commands, CCC and CCD.⁸² Artillery battalions had the tools to mass, but senior leaders of those units and Allied Force Headquarters following the campaign recommended keeping the three division artillery battalions in mutual support, to employ artillery “as a battalion and not as separate batteries,” and to maintain centralized control at the division-level in order to mass fires at the decisive point.⁸³

The Allies initially failed to demonstrate adaptability by refusing to withdraw the First Army from the Eastern Dorsal to better defensive positions and await favorable weather and additional combat power for the pending March offensives. Eisenhower acknowledged this unwillingness to change the plan based on knowledge of the operational environment when he reflected after the war, “had I been willing at the end of November to admit temporary failure and pass to the defensive, no attack against us could have achieved even temporary success.”⁸⁴ Such a willingness to change could have prevented the positioning of dispersed artillery units in non-mutually supportive positions before the Axis attack on February 14. Only until successive defeats on February 14-15 did Anderson acknowledge the true precariousness of the situation and

⁸² D'Este, 10, 18; Kelly, 155-56.

⁸³ Headquarters, 27th Armored Field Artillery Battalion to Commanding General, 1st Armored Division, July 16, 1943, Dwight D. Eisenhower Presidential Library, US Army: Unit Records, 1917-1950, 1st Armored Division, 1940-1946, Box 16, 1st Armored Division Misc. Staff Section Battle Lessons 1943; Headquarters, 91st Armored Field Artillery Battalion to G3, 1st Armored Division, July 10, 1943, Dwight D. Eisenhower Presidential Library, US Army: Unit Records, 1917-1950, 1st Armored Division, 1940-1946, Box 16, 1st Armored Division Misc. Staff Section Battle Lessons 1943; “Lessons from Tunisian Campaign, 1943,” in *Kasserine Pass Battles: Readings, Volume II, Part 3*, ed. Harold W. Nelson and Roger Cirillo (Washington, DC: US Army Center of Military History, 1993), 28; Dastrup, 210-11.

⁸⁴ Atkinson, *Army at Dawn*, 391.

order a withdrawal to the Western Dorsal. As the field artillery battalions reconsolidated and moved within mutual supporting distance after the withdrawal from Sbeitla, senior artillery leaders recognized they could employ their units according to doctrine to mass fires through FDCs and observed fires.

Maneuverability can enable artillery to avoid counterbattery fire, enhance survivability, and ensure guns stay in supporting range of ground combat units. Senior leaders of artillery battalions participating in the battles stressed at the conclusion of the Tunisian Campaign the need for artillery units to improve and maintain survivability in order to support future combat operations effectively. Topics of discussion included multiple avenues of displacement, anti-tank operations, tube dispersion, and local security.⁸⁵ Some artillery units, like the 91st and 2nd Battalion, 17th Artillery, failed in this regard during the Battle of Sidi Bou Zid. Others, such as the 68th Armored Field Artillery, effectively supported their maneuver brethren while maintaining survivability on the move—in large part due to effective leadership and solid training.⁸⁶

Finally, effective synchronization of artillery with other combat arms did not take place until the battles of Sbiba, Djebel el Hamra, Bou Chebka, and Thala—in large part because senior leaders familiar with synchronizing artillery with maneuver forces were not present to coordinate such actions. Two weeks before the Axis attack on Sidi Bou Zid, the 1st Armored DIVARTY

⁸⁵ 27th Armored Field Artillery; Headquarters, 1st Infantry Division to Commanding General, Allied Force Headquarters, July 9, 1943, Dwight D. Eisenhower Presidential Library, US Army: Unit Records, 1917-1950, 1st Infantry Division, 1942-1945, Box 756, 1st Inf. Div. Reports on Combat Experience and Battle Lessons for Training Purposes; Headquarters, 68th Armored Field Artillery Battalion to Commanding General, 1st Armored Division, July 10, 1943, Dwight D. Eisenhower Presidential Library, US Army: Unit Records, 1917-1950, 1st Armored Division, 1940-1946, Box 16, 1st Armored Division Misc. Staff Section Battle Lessons 1943.

⁸⁶ Howe, *1st Armored Division*, 162-65.

commander took command of the improvised CCD, thus depriving the division of a senior artillery commander and his staff to synchronize artillery fires effectively.⁸⁷ As senior artillery commanders (like Colonels Andrus of the 1st Infantry DIVARTY and Irwin of the 9th DIVARTY) arrived to coordinate artillery fires with maneuver forces around Bou Chebka and Thala, Allied forces exercised effective simultaneous and complimentary action to defeat Axis attacks.

Initial employment of artillery in the Kasserine battles of February 1943 suffered from the same problems as the larger Allied force. As Major General Ernest Harmon—the 1st Armored Division commander following Ward’s relief in March 1943—summarized in his Tunisian Campaign report, the division “was never employed as a unit except in the final phase . . . the division had arrived piecemeal and had been used piecemeal.”⁸⁸ In retrospect, both Atkinson and Gerhard Weinberg noted that the Kasserine Pass battles provided “a great sorting out” for the US Army, whereby American units and leaders learned in several months what had taken the British several years to do.⁸⁹

⁸⁷ Atkinson, *Army at Dawn*, 347.

⁸⁸ Headquarters, First Armored Division to Commanding General, Allied Force Headquarters, July 13, 1943, Dwight D. Eisenhower Presidential Library, US Army: Unit Records, 1917-1950, 1st Armored Division, 1940-1946, Box 16, 1st Armored Division Misc. Staff Section Battle Lessons 1943.

⁸⁹ Atkinson, *Army at Dawn*, 377; Weinberg, 443-44.

Operation Husky, the Invasion of Sicily

Operation Husky, the invasion of Sicily by the Allied 15th Army Group, commenced on the night of July 9, 1943 with airborne operations behind Axis lines in support of an amphibious assault on July 10, and concluded with the seizure of Messina on August 17.⁹⁰

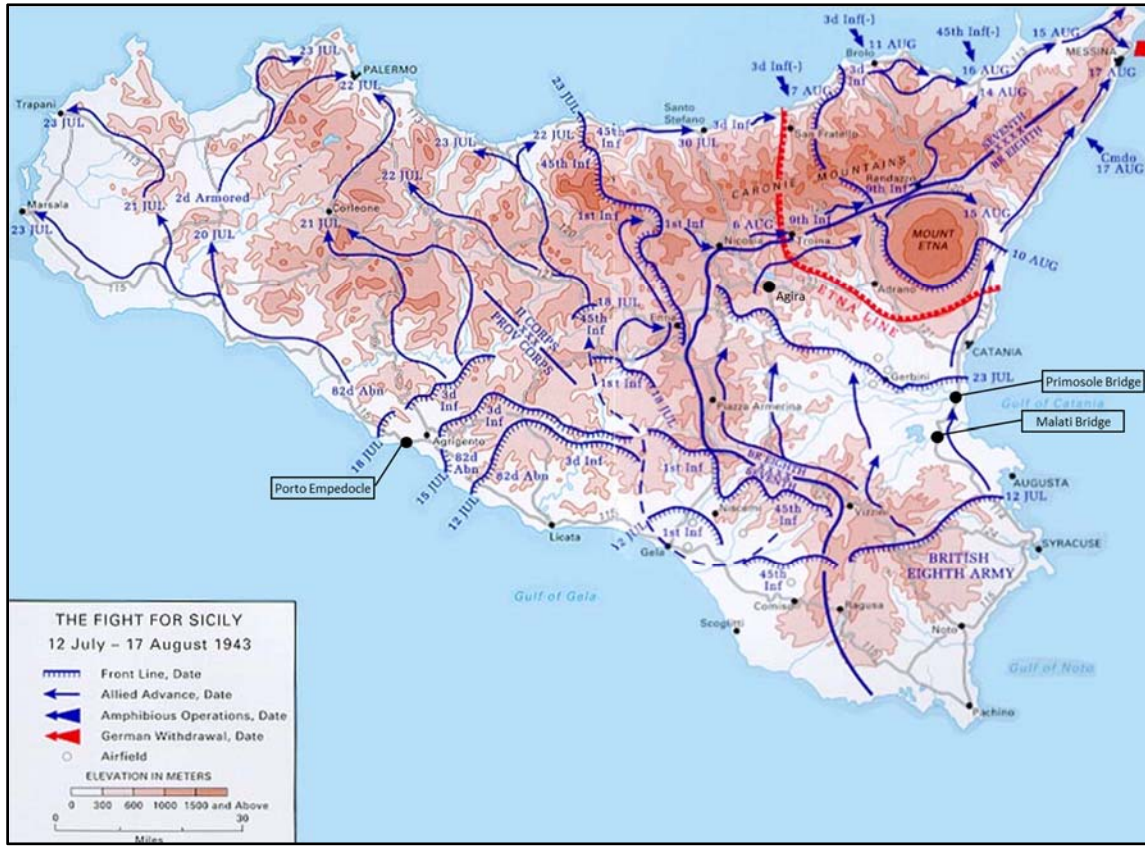


Figure 2. Operation Husky, Post-Amphibious Assaults, July 10-August 17, 1943

Source: Andrew J. Birtle, *Sicily* (Washington, DC: US Army Center for Military History, 1993), 18-19.

Montgomery's 8th Army landed on the southeast corner of Sicily below Syracuse, while Lieutenant General George Patton's 7th Army landed to the 8th's west to protect Montgomery's

⁹⁰ Douglas Porch, *The Path to Victory: The Mediterranean Theater in World War II* (New York: Farrar, Straus, and Giroux, 2004), 417-19, 444.

left flank and minimize disruption of the Allied drive towards Messina.⁹¹ Despite the Allies outnumbering Axis forces by more than two-to-one, Axis forces (primarily the German 15th Panzer Grenadier and Herman Goering Divisions) possessed the advantage of defending on complex terrain as the operation shifted from the relatively unopposed amphibious invasion to mountain operations.⁹² As the Allies transitioned from the beaches and advanced along the eastern coast towards Catania (8th Army) and into central/western Sicily (7th Army), Axis troops utilized the increasingly restrictive terrain in northeastern Sicily around Mount Etna and the Catania Plain to delay the Allied advance with mines, demolitions, and prepared defensive positions.⁹³ Despite these difficulties, the Allies—and in particular their artillery—began the operation having internalized three years of training, application of the lessons learned in North Africa, and in the case of those units with previous combat experience, the process of war hardening that proved so critical to America’s conscript army.

War hardening and training for both American and Royal artillery units of the invasion force occurred under different circumstances before Husky. For some American units, war hardening occurred very quickly in Tunisia as described in the previous case study. Units like the 1st Infantry Division underwent their formative experience in Tunisian combat, while others—such as the 3rd Division—conducted intensive training in Algeria and French Morocco before Husky, including the coordination of artillery with infantry and training on forward observation

⁹¹ Porch, 419.

⁹² Ibid., 419, 426-27; Andrew J. Birtle, *Sicily* (Washington, DC: US Army Center for Military History, 1993), 8; Allied Force Headquarters, “Lessons from the Sicilian Campaign,” November 20, 1943, World War II Operational Documents Collection, CARL, 1. The Allied landings went relatively unopposed except for an Axis counterattack at Gela. The 1st Infantry Division, along with naval gunfire from the *USS Boise*, successfully repulsed the attack.

⁹³ Birtle, 5-6; Robin Neillands, *Eighth Army: The Triumphant Desert Army That Held the Axis at Bay from North Africa to the Alps, 1939-45* (Woodstock: The Overlook Press, 2004), 213; Allied Forces Headquarters, 2.

and gunnery.⁹⁴ Unlike the Americans, the Royal artillery conducted training and experienced war hardening for three years between the Dunkirk evacuation of 1940 and Montgomery's victory at Alamein in November 1942. Initially struggling to incorporate an unappreciated artillery branch effectively with infantry and armor, the British preferred instead to consider what British Brigadier R. G. S. Bidwell described as "problems on a single arm instead of an army basis."⁹⁵ Despite these difficulties, Royal artillery developed a responsive affiliation system between its artillery and infantry regiments to provide the necessary support and observation to mass fires that—although not as accurate as American artillery—compensated for this deficiency through concentration of howitzer tubes.⁹⁶

Before the execution of Husky, senior Allied leaders implemented an important lesson from the Tunisian Campaign into the overall Husky plan concerning artillery. In communications to General George Marshall and both the Combined and British Chiefs of Staff, Eisenhower expressed his fear "that a dispersed attack against mountainous Husky might result in repulses everywhere," and therefore acknowledged the importance of "concentrated strength at critical points" in order to expel Axis soldiers from the difficult terrain he knew the Allies would soon

⁹⁴ Lucian K. Truscott, Jr., *Command Missions: A Personal Story* (New York: E.P. Dutton and Company, 1954), 182-86; Headquarters, Third Infantry Division Artillery to Commanding General, Third Infantry Division, July 30, 1943, Dwight D. Eisenhower Presidential Library, US Army: Unit Records, 1917-1950, 3rd Infantry Division, 1928-1954, Box 777, Report of Artillery Operations JOSS Force; Donald G. Taggart, ed., *History of the Third Infantry Division in World War II* (Nashville: The Battery Press, 1987), 43.

⁹⁵ House, 87-95; R. G. S. Bidwell, "The Development of British Field Artillery Tactics: Old Principles—New Methods 1940-1943," *The Journal of the Royal Artillery* 95, no. 1 (March 1968): 10.

⁹⁶ Shelford Bidwell and Dominick Graham, *Fire-Power: British Army Weapons and Theories of War 1904-1945* (London: George Allen and Unwin, 1982), 253; House, 87; Richard Doherty, *Ubique: The Royal Artillery in the Second World War* (Stroud: The History Press, 2008), 57. Royal artillery regiments are equivalent to American artillery battalions.

face.⁹⁷ Part of this concentrated strength involved ensuring every division possessed the requisite organic artillery assets and maintained additional support above the divisional-level to support the main effort as needed. For example, the reinforced 3rd Infantry Division (codenamed “JOSS” in planning documents) landed on the 7th Army’s left flank with its full complement of four artillery battalions, plus the 5th Armored Field Artillery Group (three 105mm howitzer battalions) and three 155mm howitzer battalions.⁹⁸ These six additional artillery battalions eventually shifted to the 7th Army’s II Corps, the army’s new main effort following the capture of Palermo, for the advance on Messina.⁹⁹ For the 3rd Infantry Division, the attachment/detachment of augmenting artillery (what today’s ADRP 3-09 refers to as reinforcing artillery) was nothing new since the division trained on such coordination in North Africa.¹⁰⁰

The 7th and 8th Armies did not suffer a shortage of artillery support during Husky, but massed artillery rarely produced quick victory as both American and Royal artillery suffered maneuver difficulties in mountainous terrain. The Allies managed to mass significant numbers of artillery—up to fifteen battalions for the 1st Infantry Division’s attack on Troina and ten regiments supporting the British 50th Division’s attack north of the Primosole Bridge along

⁹⁷ Alfred D. Chandler, ed., *The Papers of Dwight David Eisenhower, the War Years: II* (Baltimore: The John Hopkins Press, 1970), 1111-12.

⁹⁸ Truscott, 195; Taggart, 51.

⁹⁹ Truscott, 228; Russell A. Weatherby, "The Field Artillery Group In Support Of The Corps And Field Army, 1942-1953," Monograph, US Army Command and General Staff College, 1965: 1-2, 30. Weatherby described the formation of the artillery group in 1942 by Lieutenant General McNair as a solution to the inflexibility and unresponsiveness of the non-divisional artillery brigades, thereby providing “augmenting artillery” to the division.

¹⁰⁰ Third Infantry Division Artillery. ADRP 3-09 describes reinforcing fires as supporting organic or direct support artillery units to “weight the main effort.” See also Field Manual (FM) 3-09, *Field Artillery Operations and Fire Support* (Washington, DC: Government Printing Office, 2014), 1-33.

Sicily's eastern coastal highway.¹⁰¹ A balanced analysis must acknowledge that once either of the Allied armies encountered disciplined Axis units in complex terrain that favored the defender, the fighting took on a ferocious nature that even massive amounts of artillery could not prevent.¹⁰² Despite plentiful artillery support, American units fought for seven bloody days around the mountainous Troina before its capture with the Germans exploiting the terrain to their advantage.¹⁰³ Less successful was the British attack north of Primosole Bridge. Massed artillery and four days of heavy fighting resulted in no gains and the battle ended with the 50th Division in defensive positions.¹⁰⁴ In addition to the decreased effectiveness of massing in mountainous terrain, both American and Royal artillery maneuver suffered due to the poor quality and limited number of road networks once each army moved into the complex terrain of northeast Sicily towards the Etna Line.¹⁰⁵

To understand the contrasting nature of American and Royal artillery requires an analysis of its synchronization with infantry and the way in which leaders adapted combined arms

¹⁰¹ Nelson W. Tobey, ed., "History, 7th Field Artillery Battalion, World War II," September 5, 1992, World War II Operational Documents Collection, CARL, 10; Samuel W. Mitcham, Jr. and Friedrich von Stauffenberg, *The Battle of Sicily* (New York: Orion Books, 1991), 166.

¹⁰² 7th Army's rapid advance through western and central Sicily ceased once American divisions ran into the same terrain and disciplined enemy their 8th Army counterparts faced. General Truscott writes that his division went from Aragona to Palermo (98 miles) in three days, but from San Stefano di Camastra (on northern coast) to Messina (105 miles) in seventeen days. See Truscott, 229.

¹⁰³ Albert N. Garland and Howard M. Smyth, *Sicily and the Surrender of Italy*, US Army in World War II: The Mediterranean Theater of Operations (Washington, DC: US Army, Center of Military History, 1993), 328; Birtle, 22.

¹⁰⁴ C. J. C. Molony et al., *The Mediterranean and Middle East, vol. 5*, (London: Her Majesty's Stationery Office, 1973), 105.

¹⁰⁵ Garland and Smyth, 333; Doherty, 187; Birtle, 20-21. The Etna Line consisted of German strongpoints that started on the east coast near Catania, went around Mount Etna, and ended near San Fratello on the northern coast.

operations against an enemy in complex terrain. Looking at Allied operations in Agrigento, Agira, Primosole Bridge, and San Fratello, American artillery units often synchronized more successfully with their maneuver counterparts. American senior leaders' willingness to change and understanding of the operational environment allowed them to employ their sound combined arms doctrine and employ artillery effectively as part of the larger combined arms team. American units possessed a doctrine that emphasized the application of combined arms against an organized defense or another combined arms force, while artillery doctrine developed during the interwar period—and as stated in FM 6-20, *Field Artillery Tactics and Techniques*—stressed “the most accurate preparation of fire possible” by FDCs through forward observation.¹⁰⁶ In contrast, the Royal artillery mostly abandoned scientific gunnery practices learned during World War I, while the British Commonwealth Army failed to generate combined arms cooperation before World War II and—according to military historian Jonathan House—only achieved it through Montgomery's rigid adherence to “centralized command and control for set-piece battles.”¹⁰⁷

Artillery Integration during Operation Husky

The 3rd Infantry Division's seizure of Agrigento in southwest Sicily following their amphibious landing and the Canadian 1st Division's initial attack on Agira southwest of Mount Etna illustrates a contrasting example of successful versus failed artillery synchronization within the combined arms team. Agrigento and its nearby harbor of Porto Empedocle held special significance for Patton's 7th Army, for their capture meant control of the main road intersections to Palermo and western Sicily, plus an anchorage twenty-five miles nearer the front lines.¹⁰⁸

¹⁰⁶ FM 100-5, *Field Service Regulations: Operations*, 5; Field Manual (FM) 6-20, *Field Artillery Tactics and Techniques* (Washington, DC: Government Printing Office, 1940), 113.

¹⁰⁷ House, 51-52, 95.

¹⁰⁸ Garland and Smyth, 224-26.

Although Patton did not have orders to attack Agrigento, he concurred with Major General Lucian Truscott's suggestion that the 3rd Infantry Division conduct a reconnaissance in force, thereby "clearing up an uncertain situation."¹⁰⁹ After receiving five artillery battalions as attachments, the 7th Regimental Combat Team (RCT) proceeded to conduct the recon in force on July 14-15.¹¹⁰ As the 7th RCT moved through intervening ridgelines to surround Agrigento and Porto Empedocle for the final assault, American artillery provided preparation and close supporting fires, culminating with accurate and massed fires on approaching enemy reinforcements from the north.¹¹¹ This synchronized and massed artillery attack as the infantry advanced on Agrigento prevented Axis reinforcement and destroyed or caused the abandonment of fifty Axis vehicles, with both objectives falling to the Americans on July 16.¹¹²

The Canadian 1st Division, unlike the 3rd Infantry Division, conducted an inflexible and set piece attack in its approach to Agira. This town was one of several along Highway 121 that followed along a spur towards Adriano, the British XXX Corps objective just west of Mount Etna.¹¹³ Tasked to take Agira, the Canadian 1st Division prepared a set piece attack with pre-planned artillery and screening smoke concentrations following in front of advancing infantry.¹¹⁴

¹⁰⁹ Truscott, 218; FM 100-5, *Field Service Regulations: Operations*, 45.

¹¹⁰ Truscott, 219; US Army, Headquarters, Third Infantry Division. "Report of Operation," September 10, 1943, World War II Operational Documents Collection, CARL, 15. Regiments replaced brigades in the triangular infantry division structure before World War II. RCTs consisted of infantry regiments enhanced with an artillery battalion and signal, medical, and engineer support, although the exact task organization depended on the assigned mission. See McGrath, 54-56.

¹¹¹ Truscott, 220; Taggart, 57.

¹¹² Truscott, 220; Headquarters, Third Infantry Division, 15.

¹¹³ Molony et al., 151-53.

¹¹⁴ G. W. L. Nicholson, *The Gunners of Canada: The History of the Royal Regiment of Canadian Artillery Vol. II, 1919-1967* (Toronto: McClelland and Stewart Limited, 1972), 149;

According to military historian Mark Zuehlke, division commander Major General Guy Simonds felt that this “barrage type of support of The Great War vintage” by seven Royal artillery regiments would not fail to keep the defending Germans from stopping the Canadian infantry.¹¹⁵ When informed of the division’s plan, the commander of the infantry brigade for the attack remarked: “to shoot around the country in the hope of hitting something, and to time this shooting on the assumption that the people you want to support will be within one hundred yards of the shells . . . is nonsense.”¹¹⁶

Company commanders in the lead battalion also expressed doubts concerning the plan’s inflexibility and the infantry’s ability to keep up in the complex terrain.¹¹⁷ This foreshadowing correctly predicted reality—as the Canadian infantry conducted their three-mile attack to Nissoria just west of Agira on July 24, the artillery eventually out-paced the soldiers as they trudged on foot through difficult terrain.¹¹⁸ As the infantry approached Nissoria, unscathed and forewarned German defenders caught the Canadians in a withering attack that delayed the capture of Agira until July 28.¹¹⁹ German prisoners later commented to their captors that Canadian infantry was too slow behind the artillery fire and that many of the concentrations fell on empty dirt.¹²⁰ The Canadians failed to synchronize their infantry and artillery efforts in a complimentary way, and

Mark Zuehlke, *Operation Husky: The Canadian Invasion of Sicily, July 10-August 7, 1943* (Vancouver: Douglas & McIntyre, 2008), 299.

¹¹⁵ Zuehlke, 299-300.

¹¹⁶ *Ibid.*, 301.

¹¹⁷ *Ibid.*, 302-03.

¹¹⁸ Molony et al., 155; Zuehlke, 305.

¹¹⁹ Molony et al., 155; Nicholson, 149-50. Zuehlke, 299. The Germans took shelter in their dug-in positions and emerged after the artillery barrage passed to attack the advancing infantry.

¹²⁰ G. W. L. Nicholson, *Official History of the Canadian Army in the Second World War, Volume II: The Canadians in Italy 1943-1945* (Ottawa: Department of National Defense, 1956), 122-23; Hugh Pond, *Sicily* (London: William Kimber, 1962), 175.

their ability to mass artillery meant nothing since it failed to act at the critical phase of the attack due to an absence of forward observation.

The 8th Army's actions to seize Primosole Bridge compared to the 3rd Infantry Division's amphibious landing at San Fratello contrasts two approaches Allied senior leaders implemented to adapt their formations to an entrenched enemy in complex terrain. While each operation had its shortcomings, the Americans succeeded in incorporating artillery into their attack whereas the British did not. Montgomery's attack on Primosole Bridge began with a powerful inland thrust to the west, but ended with the XXX Corps bogged down, forcing him to focus more attention on his primary axis of advance—the attack by XIII Corps north along the coastal highway to Catania.¹²¹ Montgomery's basic plan called for attacking the Axis' open flanks, utilizing the 1st Parachute Brigade to jump behind enemy lines and seize Primosole Bridge on July 13, with the No. 3 Commando conducting a simultaneous amphibious landing to the south to capture the Malati Bridge.¹²² As both of these operations commenced, the XIII Corps would advance almost thirty miles in less than twenty-four hours to relieve these units, establish a bridgehead, and capture Catania.¹²³

While the 1st Parachute Brigade and the No. 3 Commando seized both bridges successfully on July 14, neither force did so with a complement of Royal artillery support—a decision made more problematic by German reinforcement, unreliable naval gunfire support, and the delayed advance of XIII Corps. Unknown to British intelligence, the Germans reinforced Group Schmalz (a mobile reserve of the Herman Goring Division) with units from the 1st

¹²¹ Carlo D'Este, *Bitter Victory: The Battle for Sicily, 1943* (New York: E.P. Dutton, 1988), 350-51.

¹²² Molony et al., 93; Neillands, 223-24.

¹²³ D'Este, *Bitter Victory*, 351.

Parachute Division from southern France, thus creating a much more formidable enemy precisely where Montgomery's operation would take place.¹²⁴ The reinforced defenders delayed the lead elements of the advancing XIII Corps, drove the British paratroopers south of Primosole Bridge, and forced the Commandos to retreat south to friendly lines.¹²⁵ Both British units lacked artillery—the paratroopers only had three of the original twelve anti-tank guns they initially deployed with and their naval gunfire support ceased when needed most due to a loss of radio contact.¹²⁶ In fairness, both of these operations did prevent destruction of the bridges, but both units suffered extremely high casualties for those forces engaged.¹²⁷ Historian Carlos D'Este criticized Montgomery's failure to launch an amphibious operation during this time on the relatively undefended Catania as a better way to take the city and break the stalemate.¹²⁸ American senior leaders on the northern coast of Sicily would tackle a similar problem later in the operation using just such a method, but with a combined arms approach.

While encountering equally difficult terrain and an entrenched, disciplined enemy the 3rd Infantry Division—unlike the XIII Corps vicinity Primosole and Malati Bridges—employed combined arms maneuver as described in US Army doctrine and in a manner best suited to the situation by conducting amphibious landings and effectively incorporating artillery support. Truscott's division assumed the mission of advancing down the northern coast to Messina on July

¹²⁴ D'Este, *Bitter Victory*, 208, 352-54;

¹²⁵ *Ibid.*, 356-57, 359-63, 369-74. Less than 20% of the entire British 1st Parachute Brigade actually landed on or near the Primosole Bridge.

¹²⁶ Molony et al., 95-96; D'Este, *Bitter Victory*, 368, 373-74. Friendly fire and poor/inaccurate glider landings caused the shortage of anti-tank weapons for the British 1st Parachute Brigade. Some paratroopers actually employed a captured German artillery piece on their attackers.

¹²⁷ D'Este, *Bitter Victory*, 360; Molony et al., 96.

¹²⁸ D'Este, *Bitter Victory*, 395-96.

31 and encountered a determined German defense along the San Fratello ridge, the northern terminus of the Etna Line.¹²⁹ Unlike their drive to Palermo, the division encountered difficult terrain, minefields, roadblocks, and a lack of good roads that slowed the advance, as supplies and artillery took longer to get forward.¹³⁰ Costly attacks by two infantry RCTs with adequate fire support could not dislodge the German defenders, necessitating Truscott and his superiors to plan an amphibious operation or “end-run” east of the San Fratello ridge in order to break the stalemate and regain the initiative.¹³¹ Truscott intended to coordinate the landing of a reinforced battalion—which included two batteries of artillery—with attacks by the division’s three infantry RCTs, thereby ensuring the landing force had adequate fire support from the division and reasonable expectation of relief.¹³² After landing early on August 7, the attached artillery played a key role in defeating two attempted German counterattacks, allowing the reinforced battalion to hold its position and successfully link-up with the rest of the division that afternoon.¹³³

Analysis

Massed indirect fires at the decisive point can aid in the achievement of a distinct advantage. Massing in terms of engaging a particular target with as many artillery pieces as possible did not cause significant issues for the Allies. Large artillery concentrations at Agrigento, Agira, and Troina illustrated this ability. Allied units also succeeded in shifting artillery assets from one infantry RCT to another as the mission changed and the main effort needed extra support, such as the “JOSS” force did in reinforcing the 7th RCT before

¹²⁹ Garland and Smyth, 348, 353; Birtle, 23.

¹³⁰ Truscott, 231; Garland and Smyth, 348.

¹³¹ Garland and Smyth, 357-60; D’Este, *Bitter Victory*, 477-78.

¹³² D’Este, *Bitter Victory*, 478; Truscott, 231.

¹³³ Garland and Smyth, 363-65; Truscott, 234.

Agrigento.¹³⁴ The Allies struggled to employ artillery effectively—particularly the 8th Army—when this involved massing artillery support at the critical phase, whether it was outside Nissoria as the Canadian infantry worked through difficult terrain or as the 1st Parachute Brigade and No. 3 Commando tried in vain to defeat German counterattacks with limited heavy weapons and unreliable naval gunfire. One can see this struggle clearly in the Royal artillery’s use of unobserved massed fires according to timetables and phase lines, much as they did more than two decades before during WWI.¹³⁵ In contrast, the Americans could make extremely effective use of this key element of the combined arms team because of the observed fires procedures developed in the early 1930s and practiced for a decade before America’s involvement in WWII. The combination of establishing artillery in doctrine as a central element of the combined arms team and developing procedures that enabled units to adjust unprecedented amounts of fires onto enemy elements with amazing accuracy and mass gave the US Army a huge advantage over its allies and enemies in the campaigns analyzed above, and throughout the war.

As both Allied armies approached a similar situation in northeast Sicily, one army employed artillery as a fully integrated and effective member of the combined arms team in a manner appropriate to the enemy and operational environment and one did not. The 8th Army did not supplement either of its bridge seizure forces with artillery, nor was XIII Corps close enough or in reliable contact to provide adequate artillery support.¹³⁶ Patton’s 7th Army, on the other hand, sought to regain the initiative by employing successful combined arms landing operations practiced thoroughly in North Africa and executed on July 10. Perhaps Patton’s openness to amphibious end-runs at San Fratello (and later on at Brolo) resulted in large part from the great

¹³⁴ Third Infantry Division Artillery.

¹³⁵ Gudmundsson, 71, 88; House, 20-22.

¹³⁶ Molony et al., 95-96.

difficulties encountered by the 82nd Airborne Division during its pre-invasion airborne operations and the professional chastisement that followed by Eisenhower.¹³⁷

Maneuverability presented a challenge for both American and Royal artillery once the fighting transitioned to mountainous terrain. With roads poor and in short supply, it proved exceptionally important for artillery to displace to new positions as often as possible in order to stay in contact with the supported infantry and armor.¹³⁸ A DIVARTY Operations Officer from the 7th Army commented in an after action review that artillery units “must be well forward, and I mean really well forward. On two occasions we had all the division artillery in positions actually ahead of the front line elements of the infantry. You must push forward constantly and push the fire forward all the time.”¹³⁹ Keeping artillery forward not only supported the maneuver fight, but also presented the enemy with another problem to confront in complex terrain.

Finally, successful synchronization between maneuver forces and artillery in mountainous terrain must go beyond what British Major General J. B. A. Bailey described as the “dominant consideration” for artillery in Sicily, namely “set-piece operations.”¹⁴⁰ To achieve synchronization, artillery must remain flexible and responsive with well-trained forward observers and FDCs. In Sicily, forward observers directed over 90% of all American artillery missions and single FDCs exhibited the ability to coordinate the delivery of accurate fire of multiple artillery battalions when needed—up to seven at one point during the operation.¹⁴¹ On a larger point, any plan that seeks to utilize infantry, armor, and other forms of maneuver with

¹³⁷ Mitcham and Stauffenberg, 92-93; Atkinson, 106-10, 112.

¹³⁸ Garland and Smyth, 418.

¹³⁹ Allied Force Headquarters, 35-36.

¹⁴⁰ J. B. A. Bailey, *Field Artillery and Firepower* (Annapolis: Naval Institute Press, 2004), 314.

¹⁴¹ Allied Force Headquarters, 39.

artillery must seek to attain complimentary and simultaneous effects. This was not the case when Canadian infantry officers expressed doubt after hearing the plan of attack from their division commander, a former artillery officer.¹⁴²

Battle of Shah-I-Kot Valley, Operation Anaconda

The Battle of Shah-I-Kot Valley, Afghanistan during Operation Anaconda occurred in March 2002 and—unlike the Kasserine Pass battles and Operation Husky—involved no deployment and use of field artillery systems. Constraints at various levels of command led to the decision to forego the deployment and utilization of artillery. The Central Command (CENTCOM) operations officer, United States Air Force Lieutenant General Victor Renuart, argued that it was “very important that we not relearn the lessons of the Russians, that we not get mired down in large forces . . . that we not be seen as occupiers in the early stages.”¹⁴³ Richard Kugler, a prominent national security thinker, characterized Operation Anaconda as an “economy of force operation” designed to prevent the perception of a full-blown invasion and keep options open for possible military action in the Persian Gulf.¹⁴⁴ General Tommy Franks, the CENTCOM commander, did not want the military footprint to exceed 10,000 troops and—from a capability and logistical airlift perspective—saw mortars as both more efficient to deploy and better suited for use in the difficult terrain of Afghanistan’s mountainous regions.¹⁴⁵ In addition to these

¹⁴² Zuehlke, 299.

¹⁴³ Donald P. Wright et al., *A Different Kind of War: The United States Army in Operation Enduring Freedom October 2001-September 2005* (Fort Leavenworth: Combat Studies Institute Press, US Army Combined Arms Center, 2010), 43.

¹⁴⁴ Richard L. Kugler, Michael Baranick, and Hans Binnendijk, *Operation Anaconda: Lessons for Joint Operations* (Washington, DC: Center for Technology and National Security Policy, National Defense University, 2009), 28.

¹⁴⁵ Richard L. Kugler, *Operation Anaconda in Afghanistan: A Case Study of Adaptation in Battle*, Case Studies in Defense Transformation Number 5 (Washington, DC: Center for Technology and National Security Policy, National Defense University, 2007), 9; US Army

constraints, two assumptions supported the idea that US forces did not need to deploy to Afghanistan with artillery. Plans approved by senior commanders included the assumptions that Al Qaida fighters would not mount a particularly powerful resistance, and that mortars would provide sufficient ground-based fire support because of the technological advantages of modern airpower, which would easily compensate for the lack of field artillery.¹⁴⁶

These two assumptions took hold during the early months of Operation Enduring Freedom (OEF). Following the events of September 11, the Afghani Northern Alliance along with US Special Operation Forces captured multiple towns (including Kandahar and Kabul) in a period of only three weeks, and then attacked Al Qaida in Tora Bora in southern Afghanistan.¹⁴⁷ This operation, heavily supported by airpower, failed to capture or kill a majority of the Al Qaida fighters.¹⁴⁸ However, airpower played a large and very successful role in supporting the Northern Alliance as it defeated Taliban and Al Qaida forces, and the US military relied heavily on enhanced intelligence and targeting to guide air-delivered ordinance—a majority of it precision (56% through February 2002).¹⁴⁹ These early operations guided senior leaders' thinking regarding composition of the invasion force, development of the initial plan to engage Al Qaida in the Shah-I-Kot Valley, and reliance on mortars and airpower to compensate for a lack of artillery.

Command and General Staff College, Combat Studies Institute, *Field Artillery in Military Operations Other Than War: An Overview of the US Experience*, Global War on Terrorism Occasional Paper 4 (Fort Leavenworth: Combat Studies Institute Press, 2005), 37.

¹⁴⁶ Joseph A. Jackson, "Moving Artillery Forward: A Concept for the Fight in Afghanistan," *Small Wars Journal*, March 23, 2010, accessed January 29, 2015, <http://smallwarsjournal.com/jrnl/art/moving-artillery-forward>.

¹⁴⁷ Kugler, 1.

¹⁴⁸ Paul L. Hastert, "Operation Anaconda: Perception Meets Reality in the Hills of Afghanistan," *Studies in Conflict and Terrorism* 28, no. 1 (February 24, 2007): 13-14.

¹⁴⁹ Hastert, 13; Anthony H. Cordesman, *The Ongoing Lessons of Afghanistan: Warfighting, Intelligence, Force Transformation, and Nation Building* (Washington, DC: Center for Strategic and International Studies, 2004), 34.

Incorporating Airpower and Mortars

The military force given responsibility for planning and executing Operation Anaconda resembled a patchwork of different forces and capabilities, and exhibited various deficiencies including reliance on airpower to compensate for a lack of artillery. As intelligence reports noted the assembly of Al Qaida elements in the Shah-I-Kot Valley in late January 2002, Major General Franklin Hagenbeck's 10th Mountain Division assumed the role of a combined joint task force (CJTF) and prepared to conduct offensive operations to destroy these forces. Hagenbeck's CJTF Mountain included one infantry battalion from 10th Mountain Division, a brigade from the 101st Air Assault Division, a joint special operations task force, and other coalition special operation forces and interagency partners.¹⁵⁰ However, Hagenbeck's division did not deploy with its tactical air control party or associated air support operations squadron—both of which provided important close air support planning and coordination.¹⁵¹ Besides these air staff shortages, the division only possessed eight Apache attack helicopters even though Hagenbeck had requested a full battalion of twenty-four.¹⁵² In addition to a lack of air liaison staff, the 10th Mountain Division did not include the combined air operations center in initial planning, and only notified it of the imminent deployment eight days before the execution of Operation Anaconda.¹⁵³

CJTF Mountain planned a classic “hammer and anvil” attack in which an Afghani and a special operations force serving as the “hammer” would attack into the Shah-I-Kot Valley from

¹⁵⁰ Hastert, 14-15; Kugler, 5, 8. General Hagenbeck did not have either of his assistant division commanders, while half of his division staff and a brigade were in Kosovo, and a battalion task force was in Bosnia and the Sinai.

¹⁵¹ Wright et al., 133. The tactical air control party remained in the United States due to desires to keep deployed numbers low, and the air support operations squadron deployed separate from the division and served with Joint Special Operations Task Force-North.

¹⁵² Kugler, 10.

¹⁵³ Edgar Fleri et al., *Operation Anaconda Case Study* (Maxwell Air Force Base: College of Aerospace Doctrine, Research, and Education, 2003), 19-20.

the north and south to push Al Qaida fighters into the “anvil” of blocking positions occupied by two infantry battalions on the eastern side of the valley.¹⁵⁴ Based on intelligence reports that greatly underestimated the composition and disposition of Al Qaida in the valley, and the escape of many enemy fighters during earlier operations at Tora Bora, Hagenbeck did not approve recommendations by the air component commander to execute widespread pre-operation airstrikes because he wanted to maintain surprise and sensitive site exploitation opportunities.¹⁵⁵ As the operation commenced, CJTF Mountain encountered an enemy positioned in powerful defensive strongpoints and possessing heavy firepower (including 82mm mortars and 122mm howitzers), while the “hammer” portion of the operation failed to materialize due to a friendly-fire incident with an AC-130 gunship.¹⁵⁶ Thus, the planned operation broke down on the first day, leading Hagenbeck to request more airpower than originally allotted, especially since after the first day only two Apache attack helicopters remained mission capable of the original eight.¹⁵⁷

Although Hagenbeck’s request for additional airpower makes this seem like a critical issue for CJTF Mountain, the neglect of indirect fires appears, in hindsight, to represent a more serious problem. Despite the decision to deploy with mortars, while leaving the division’s 105mm howitzers at home-station, few units actually employed them during the first few days of the operation. For example, although the brigade conducting the blocking mission deployed with thirty-four mortar systems, only one infantry battalion included mortars in the initial assault force—one 120mm mortar plus the battalion’s complement of 81mm mortars—while the other

¹⁵⁴ Hastert, 15; Fleri et al., 22.

¹⁵⁵ Kugler, 6; Fleri et al., 23. Coalition airpower attacked fewer than twenty targets thirty minutes before the start of the operation.

¹⁵⁶ Fleri et al., 27; Jackson; Hastert, 15.

¹⁵⁷ Fleri et al., 30; Kugler, 11.

brought no mortars, expecting to receive fire support from its adjacent battalion.¹⁵⁸ No unit committed additional mortars to the attack until nearly eleven hours after the start of the operation.¹⁵⁹ Despite Hagenbeck's assertion that CJTF Mountain "could capitalize on our mortars" and that he would rather "airlift in soldiers with their mortars" over 105mm howitzers, the initial employment of mortars seems to suggest that even this indirect fire support system was not taken seriously as an important combat multiplier in the complex terrain of the Shah-I-Kot Valley.¹⁶⁰

Analysis

CJTF Mountain struggled to mass fires during the critical opening phase of Operation Anaconda, whether airpower or mortars. The unexpected level of Al Qaida resistance forced CJTF Mountain to rely on airpower to provide much needed fire support, including close air support. While not prepared for this, the air component accomplished this feat primarily because it had no major operations other than Operation Anaconda to support.¹⁶¹ The presence of 105mm artillery might have mitigated this transition from a "metered" air tasking order set up for continuous coverage, to the ability to surge operations and place more responsive fires when and where needed to support ground forces' operations.¹⁶² While virtual air supremacy enabled abundant use of precision fires, expecting airpower "to accomplish what literally nuclear-scale fires have not been able to attain in the past,"—the destruction of enemy ground troops in well-

¹⁵⁸ Christopher F. Bentley, "Afghanistan: Joint and Coalition Fire Support in Operation Anaconda," *Field Artillery* (September-October 2002): 13; Wright et al., 139-40, 152. Al Qaida 82mm mortar fire knocked the one 120mm mortar out of action on the first day.

¹⁵⁹ Kugler, 10.

¹⁶⁰ Robert H. McElroy and Patricia S. Hollis, "Afghanistan: Fire Support for Operation Anaconda," *Field Artillery* (September-October 2002): 6.

¹⁶¹ Kugler, Baranick, and Binnendijk, 50.

¹⁶² *Ibid.*

prepared defenses—demands something that exceeds the capability of airpower alone as described by military analyst Stephen Biddle.¹⁶³ For example, Al Qaida fighters often heard approaching aircraft and retreated into the protection of their heavily fortified defensive positions, often in caves dug well into the mountainsides, and emerged unscathed to continue the ground fight upon the aircrafts' departure. Adding to the problem, non-emergency close air support to troops could take up to forty-five minutes to materialize.¹⁶⁴ Artillery could probably have provided much more responsive and continuous suppressive fires, with almost three times the range of 120mm mortars, enabling infantry units to maneuver more effectively against defending Al Qaida defensive positions.¹⁶⁵ Another problem caused by relying solely on mortars involved the clearing of "hot" landing zones before air assaults. Artillery officers later decried the absence of 105mm howitzer fires to suppress enemy resistance on landing zones, which CJTF Mountain faced during aerial insertions, as a failure to remember the lessons of Vietnam and the Soviets in Afghanistan.¹⁶⁶

CJTF Mountain relied far too heavily on the ability to surge airpower assets during the Shah-I-Kot battle due to the lack of artillery. After the majority of Apaches in country received significant damage, the 13th Marine Expeditionary Unit aboard the *USS BonHomme Richard* diverted from its current mission to support CJTF Mountain with Cobra attack helicopters, while

¹⁶³ Stephen Biddle, "Afghanistan and the Future of Warfare: Implications for Army and Defense Policy," Monograph, Strategic Studies Institute, 2002, 36-37.

¹⁶⁴ McElroy and Hollis, 7; Kugler, 18.

¹⁶⁵ Joshua D. Mitchell, "A Case for Howitzers in Afghanistan," *Field Artillery* (November-December 2003): 7.

¹⁶⁶ Hastert, 15; Mitchell, 9; Combat Studies Institute, 38; Matt M. Matthews, "*We Have Not Learned How to Wage War There, the Soviet Approach in Afghanistan 1979-1989*," Occasional Paper 36 (Fort Leavenworth: Combat Studies Institute Press, US Army Combined Arms Center, 2011), 33-34.

A-10 Thunderbolts and additional Apaches deployed to Bagram.¹⁶⁷ With over 200 aircraft surged to support combat operations, CJTF Mountain possessed enough airpower to engage the enemy with both fighter-delivered precision munitions and traditional close air support platforms like the A-10 and AC-130.¹⁶⁸ While airpower ultimately overcame initial difficulties, enemy capabilities, terrain, and system constraints still left mortars at a significant disadvantage. Unlike artillery, mortars required much closer placement to targets, along with stable seating of the baseplate to obtain maximum range effects, thus putting them in the effective fire range of Al Qaida mortars and artillery.¹⁶⁹ The 10th Mountain Division's 105mm howitzers would have possessed the range to engage Al Qaida positions with little concern about mortar or howitzer counter fire. In addition, several US Army officers with experience in Afghanistan argued that deploying a minimally equipped and staffed 105mm artillery battery to support Operation Anaconda would require only slightly more transport capability than a platoon of 120mm mortars.¹⁷⁰

Synchronizing airpower and mortars with maneuver operations to provide effective simultaneous and complimentary effects occurred with difficulty during the initial phases of Operation Anaconda, an issue CJTF Mountain could potentially have mitigated by employing a true combined arms force—in accordance with current operational doctrine—that included 105mm artillery support. Not only had a lack of planning coordination between CJTF Mountain and the air component caused an unexpected and drastic shift from a metered to surged air tasking order, it also caused a decrease from two to just one aircraft carrier in support of OEF during the

¹⁶⁷ Hastert, 18; Fleri et al., 19-20, 31.

¹⁶⁸ Kugler, 18, 20.

¹⁶⁹ Combat Studies Institute, 38.

¹⁷⁰ Mitchell, 7, 9; Cordesman, 111; Combat Studies Institute, 38. Mitchell provides calculations of transporting four 120mm mortars, supporting personnel, and equipment versus six 105mm howitzers, supporting personnel, and equipment. Based on his calculations, it would take one and one-half C-17 loads for the mortar platoon and two C-17 loads for the howitzer battery.

beginning stages of Operation Anaconda, which lasted until March 9.¹⁷¹ While more aircraft quickly arrived in theater to provide precision fires and close air support, even Hagenbeck admitted the difficulties of airpower killing Al Qaida fighters—something possible only in the rare circumstances when smart munitions achieved a hit directly inside the Al Qaida cave complexes.¹⁷² As for mortar support, the infantry battalions within the valley quickly brought in 60mm mortar tubes, but heavier mortar capabilities did not arrive until the third and fifth days of the operation.¹⁷³ If CJTF Mountain possessed field artillery in theater from the beginning, infantry units could have called upon its superior accuracy and range to suppress enemy fighters during the air assaults and complement the burgeoning airpower in the complex terrain of the Shah-I-Kot Valley. While emergency close air support remains a very responsive asset to soldiers in need, well-placed and trained artillery connected to the frontline by forward observers communicating with FDCs remains a capability that airpower and mortars still, in 2003, could not replace.

Cross Case Analysis

Massing artillery in support of maneuver in expeditionary environments requires effective planning and the realization that no other system can completely replace its capability. Clausewitz wrote that concentrating strength at the critical phase depends “on suitable planning from the start,” thereby ensuring the correct positioning of forces.¹⁷⁴ Leaders and staff of II Corps failed to plan appropriately before the Kasserine Pass battles, which set the conditions for excessively dispersed combat commands with artillery that could not mutually support those units or weight the main effort. Through war hardening and the arrival of additional assets, the II Corps

¹⁷¹ Fleri et al., 19-20.

¹⁷² McElroy and Hollis, 7.

¹⁷³ Wright et al., 155, 162-63.

¹⁷⁴ Clausewitz, 197.

massed effectively against Rommel's forces at the decisive points of Sbiba, Djebel el Hamra, Bou Chebka, and Thala. Senior leaders and planners implemented the lessons of Kasserine and the greater Tunisian Campaign to build a task organization for Operation Husky that provided enough artillery support to maneuver formations and maintained additional support at higher echelons to reinforce as required. Yet, as the Canadians learned at Agira, simply possessing large amounts of artillery and employing it simultaneously does not equate to successful massing of fires—this requires both accurate placement and timing of those fires, which in turn requires observation of fires and rapid adjustment through an FDC or similar capability. Senior leaders and operational planners must not forget the critical capability that forward observers and FDCs provide when considerations arise that make the option of supplanting artillery with airpower and/or mortars seem preferable, as happened in Shah-I-Kot Valley. If planners “juxtapose prevailing theory” (employing artillery with other elements of combat power) alongside previous experiences where artillery was not in theater or needed (Tora Bora) and conclude that airpower, mortars, or a combination of the two can replace it, then the potential exists for a future operational mishap like that experienced in the Shah-I-Kot Valley.¹⁷⁵ Artillery provides a unique, all weather, and long-range fire support asset that airpower and mortars cannot completely replace. As the air component struggled to surge airpower initially to mass effects, even precision fires struggled to destroy targets, while mortars lacked range and could not support forces adequately on hostile landing zones.

Adaptive thinking enables planners to employ artillery effectively as part of the larger combined arms team, which in turn aids the total force in dealing with an ever-changing and

¹⁷⁵ Lawrence W. Moores, “T.E. Lawrence: Theorist and Campaign Planner,” Monograph, US Army Command and General Staff College, 1992, 37. Moores described how T.E. Lawrence sought to “juxtapose prevailing theory against his own experience to develop his own theory of war” in his successful campaign against the Turks during World War I.

unpredictable operational environment. According to ADRP 3-0, adaptive planners must possess “comfort with ambiguity and uncertainty,” and an “ability to rapidly adjust while continuously assessing the situation.”¹⁷⁶ One way to do this involves “reflection-in-action,” a process described by professional education expert Donald A. Schön in *Educating the Reflective Practitioner* as reflecting, “in the midst of action without interrupting it . . . to reshape what we are doing while we are doing it.”¹⁷⁷ After the Allies missed the opportunity to capture Tunis in December 1942, Eisenhower and subordinate leaders failed to reflect and understand how the operational environment changed. Weather forced the Allies to take an operational pause, while Axis forces surged into the port facilities at Tunis, enabling them to concentrate in theater much quicker, while Montgomery’s advance further to the south slowed in pace.

Rather than reflecting on these new developments and going on the defensive in order to concentrate artillery assets, II Corps attempted to hold multiple forward areas along the Eastern Dorsal with artillery in dispersed, non-mutually supportive positions. Unlike the Allies’ failure to adapt in early 1943, both Patton and Truscott understood the fundamental change in the operating environment as the 3rd Infantry Division transitioned to the mountainous northeast area of Sicily during Operation Husky. To regain the initiative, the division proceeded to plan and execute several amphibious operations rather than airborne or commando raids without artillery support, or continued reliance on bloody frontal assaults like the British 8th Army. As CJTF Mountain encountered a motivated enemy in well-prepared defensive positions along complex terrain in Afghanistan sixty years later, planners found themselves reshaping air support operations drastically because of an inability to see how the operational environment changed based on a

¹⁷⁶ ADRP 3-0, 2-13.

¹⁷⁷ Donald A. Schön, *Educating the Reflective Practitioner* (San Francisco: Jossey-Bass, 1987), 26.

lack of artillery support and poor intelligence. With no artillery and limited heavy mortars during the first days of combat, CJTF Mountain received the majority of its fire support from airpower—a luxury since no other operation was on going and an air threat did not exist. Even with the abundant availability of airpower, precision guided missiles simply could not match the capability of observed, indirect artillery fires to provide effective and timely support to friendly ground forces.

Maneuverable artillery formations enable the massing of fires at the decisive point in support of their combat arms brethren and add to the total force's ability to overwhelm an opponent. According to JP 3-0, "effective maneuver keeps the enemy off balance . . . by continually posing new problems for the enemy."¹⁷⁸ If the enemy becomes overloaded within his Observe-Orient-Decide-Act (OODA) "loop," which international relations professor Antoine Bousquet described in *The Scientific Way of Warfare* as "the decision-making process a combatant goes through when engaged in the warfighting environment," then he most likely will suffer defeat.¹⁷⁹ At the beginning of the Kasserine Pass battles, the Allies' artillery maneuvered only minimally, and therefore failed to contribute effectively in the total force's ability to defend itself along the Eastern Dorsal or overload the Axis' OODA "loop." Only through solid leadership and previous training did a select few units (like the 68th Armored Artillery) manage to survive initial contact at Sidi Bou Zid and successfully support their maneuver counterparts. This enabled skilled commanders (Robinette and Allen) to establish a combined arms defense in depth that maximized the capability of massed, observed artillery to support the other members of the ground forces, halting Rommel's offensive and forcing the *Afrika Korps* to retreat. In the

¹⁷⁸ JP 3-0, A-2.

¹⁷⁹ Antoine Bousquet, *The Scientific Way of Warfare: Order and Chaos On the Battlefields of Modernity* (New York: Columbia University Press, 2009), 188, 194.

official history of Operation Husky, historians Albert Garland and Howard Smyth made assessments that support today's JP 3-0 and ADRP 3-0 regarding the importance of effective artillery maneuver in supporting combined operations. In particular, they noted that in order to overwhelm the enemy: "the most important lesson learned . . . was the necessity for vigorous and aggressive employment requiring continued rapid displacements in order to maintain fire support."¹⁸⁰ With the decision to forego artillery deployment and use within the Shah-I-Kot Valley, planners left out a piece of the combined arms team that might have added additional complexity to Al Qaida's operating environment.

Finally, proper synchronization between artillery and maneuver forces within the combined arms team requires leaders and staffs who recognize the interdependence between them and the emergent properties that result when utilized in a simultaneous and complimentary way. Physicist and complexity expert Yaneer Bar-Yam, in *Making Things Work*, wrote that one must ask the question "if we take one part of the system away . . . how will the rest of the system be affected?"¹⁸¹ Interdependence exists between artillery and maneuver forces on the battlefield as infantry, armor, and other units rely on their organic forward observers to communicate with artillery units to provide timely, accurate, and all-weather fire support. Similarly, artillery relies on maneuver to get forward observers into a position to observe and adjust fires to the needs of the supported force, not according to a set piece and inflexible plan. This interdependence allows the combined arms team to exhibit what Robert Axelrod and Michael Cohen defined in *Harnessing Complexity* as emergent properties, or "features . . . of the [complex] system that the

¹⁸⁰ Garland and Smyth, 418.

¹⁸¹ Yaneer Bar-Yam, *Making Things Work: Solving Complex Problems in a Complex World* (Cambridge: Knowledge Press, 2004), 28.

separate parts do not have.”¹⁸² During the Kasserine Pass battles, only after II Corps transitioned to defensive positions along the Western Dorsal did leaders and staffs arrive who possessed the ability to synchronize large unit actions of artillery and maneuver to defeat the Axis advance into Tunisia. While the 3rd Infantry Division applied the lessons of Tunisia to exercise simultaneous and complimentary application of artillery and maneuver at Agrigento during Operation Husky, the Canadian 1st Division hindered the interdependence of its artillery and infantry units with an inflexible set piece attack—thereby nullifying its very own emergent qualities. Six decades later in the Shah-I-Kot Valley, a lack of artillery within CJTF Mountain forced ground units to rely far too heavily on airpower and mortars—assets that could not completely replicate the capabilities of artillery. As CJTF Mountain struggled to surge airpower and get additional mortars into Operation Anaconda’s first few days, the potential simultaneous and complimentary effects of artillery remained absent as ground forces arrived on hostile landing zones and fought to eradicate well-armed insurgent fighters in complex terrain.

Conclusion

Field artillery provides a unique fire support capability to the US Army’s combined arms team, a competency born from its shortcomings in World War I, developed and nurtured during the interwar period, and brought to fruition in the first major campaigns and operations of World War II. As US field artillery fought against the Axis Powers in Tunisia, it learned valuable lessons during the process of war hardening. Successful employment required an array of forces that set the conditions to mass, an understanding of the operational environment to enable adaptation of doctrine and training to the circumstances at hand, maneuverability to gain an advantage, and simultaneous and complimentary action with maneuver forces to achieve greater

¹⁸² Robert Axelrod and Michael D. Cohen, *Harnessing Complexity: Organizational Implications of a Scientific Frontier* (New York: Basic Books, 2000), 15.

effects. The initial attacks by Axis forces during the Kasserine Pass battles caught the II Corps unprepared to employ its excellent fire support system developed from sound, practical doctrine and procedures by gunnery officers at the Field Artillery School. As the operation progressed, II Corps learned from its mistakes and employed artillery—in conjunction with the rest of the maneuver force—to enable Allied victory in a campaign marked by significant initial tactical defeats. After reflecting on the lessons learned during the Tunisian Campaign and bringing greater force to bear, the Allies faced a disciplined enemy in the complex terrain of Sicily during Operation Husky. As Allied units struggled to maneuver in the mountainous terrain, the US artillery fared better than Royal artillery in providing support at the critical phase in simultaneous and complimentary ways, in large part due to its outstanding fire support system of forward observers and FDCs. In addition, US Army leaders adapted to the operational situation more effectively than their British counterparts did by adapting their doctrine to the current situation and incorporating artillery effectively as part of the larger combined arms team to regain the initiative from the German defenders. In Operation Husky, unlike Tunisia, the US Army brought a superior fire support system into the fight successfully from the very beginning.

Field artillery remains relevant on the modern battlefield. As artillery units train on decisive action at home-station and combat training centers, artillerymen relearn the importance of accurate, timely, and all-weather fire support to combined arms operations. It remains a capability that airpower or mortars cannot replace. At the Battle of Shah-I-Kot during Operation Anaconda, the absence of artillery placed a greater burden on airpower and mortars than CJTF Mountain could initially bear. While hard work, dedication, and a lack of air threats or other operations eventually allowed massive use of air assets, even mortars and airpower could not suppress landing zones or Al Qaida fighters in complex terrain effectively. Surely, the presence of US field artillery could have provided a critical capability to complement other fire support assets.

The US Army possesses an outstanding and unique fire support system based on a doctrine and organizational construct that has changed little in the last seventy-five years. In future operations, it seems impossible to imagine a good reason to leave such a powerful capability at home station. Even if initial conditions do not seem to require its employment, should conditions change, field artillery and its observed, massed fires provide an unmatched strength and responsiveness that US military forces neglect at great risk. As operational planners seek to integrate elements of combat power in future operations, they must not leave artillery behind. As one piece of a dynamic system, artillerymen and their equipment provide a critical element that supports and compliments the other war-fighting functions within the US Army and creates something greater than the sum of its parts.

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