

TANKS IN THE SURF: ARMY ARMOR IN EXPEDITIONARY  
AMPHIBIOUS OPERATIONS DURING WORLD WAR II

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MASTER OF MILITARY ART AND SCIENCE  
Art of War Scholars

by

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## ABSTRACT

TANKS IN THE SURF: ARMY ARMOR IN EXPEDITIONARY AMPHIBIOUS OPERATIONS DURING WORLD WAR II, by Major Matthew W. Graham, 151 pages.

The divestment of tanks from the Marine Corps in 2020 leaves the Army as the sole provider of tanks for the joint force. This shift has implications for the Army and the role of armor in future amphibious operations. This paper will analyze the Army's historical employment of armored units in amphibious assaults during World War II and draw lessons for today. Using archival sources, it will explore the operational use of non-amphibious tanks in Sicily and the Philippines. It will evaluate to what extent armor employment followed Army amphibious, armored, and combined arms doctrine.

This study finds that armor was employed following pre-war and intra-war doctrine but that there is a gap in current Army Doctrine regarding amphibious operations. It also determines that the Army should change how it conceptualizes amphibious operations. Furthermore, it highlights the importance of armor as a member of a balanced combined arms team. The qualities of armor, mainly shock, mobility, and protected firepower, make it a vital member of the joint amphibious landing team. It concludes by advocating for the codification in doctrine of previous amphibious lessons learned to ensure the Army can deploy and employ armor as part of the joint combined arms landing force. Ultimately, this research seeks to spark a rediscovery of the Army's amphibious heritage.

## ACKNOWLEDGMENTS

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## ACRONYMS

|      |                            |
|------|----------------------------|
| 2AD  | 2nd Armored Division       |
| 3ID  | 3rd Infantry Division      |
| ATP  | Army Technique Publication |
| CCA  | Combat Command A           |
| FM   | Field Manual               |
| HQ   | Headquarters               |
| JP   | Joint Publication          |
| LF   | Landing Force              |
| LST  | Landing Ship Tank          |
| RCT  | Regimental Combat Team     |
| WWII | World War II               |

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## CHAPTER 1

### INTRODUCTION

#### Background

Divestment of Tanks: We have sufficient evidence to conclude that this capability, despite its long and honorable history in the wars of the past, is operationally unsuitable for our highest-priority challenges in the future. Heavy ground armor capability will continue to be provided by the US Army.

—United States Marine Corps, *Force Design 2030*

The Marine Corps has long viewed the tank as an important weapon in amphibious operations. The Marine Corps campaigns in the central Pacific during World War II (WWII) demonstrate the utility of armor in securing and expanding the beachhead and ensuring the success of these landings. In addition, Marine Corps armor had an important role in Operation Desert Storm and the Global War on Terror, with the Marine Corps alone deploying Abrams' tanks to Afghanistan, where they were employed to significant effect against the Taliban. However, Marine Corps, *Force Design 2030*, has identified the tank in the current form of the M1A1 Abrams, as operationally unsuitable in a potential conflict in the Pacific against the People's Republic of China.<sup>1</sup> As a result, the Marine Corps has completely divested its seven tank companies and all its M1A1 Abrams prepositioned stocks. Previous research conducted by scholars and practitioners has discussed the continuing usefulness of the Abrams within the Marine Corps inventory and its effectiveness on an increasingly lethal 21st century battlefield, even though it

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<sup>1</sup> Michael R. Gordon, "Marines Plan to Retool to Meet China Threat," *The Wall Street Journal*, March 22, 2020, <https://www.wsj.com/articles/marines-plan-to-retool-to-meet-china-threat-11584897014>.

presents numerous logistical and deployment challenges. To this point, the current commandant countered, stating, “We need an Army with lots of tanks. . . . We don’t need a Marine Corps with tanks.”<sup>2</sup> For better or worse, the Marine Corps will have to depend on the Army to provide heavy armor capabilities in the future.<sup>3</sup>

From an Army perspective, the tank remains an essential tool of modern war. Until recently, however, there has been little consideration of its use in Army amphibious operations or for amphibious operations in general. The general lack of large bodies of water in the middle of Iraq and Afghanistan has, for understandable reasons, limited the Army’s interest in amphibious operations over the last twenty years. Furthermore, the definition of amphibious operations as defined in joint doctrine, and conceived of in the popular imagination, focuses on the landing operation. This limited focus runs contrary to the Army’s historical experience. It is arguable, that the focus of amphibious operations on the initial landings, is one born of inter-service interest and compromise, rather than historical mindfulness. For its part, the US Army has historically had a much more expansive conception of amphibious operations. In 1950, BG David A. Ogden, Commander of the 3rd Engineer Special Brigade in the Southwest Pacific during WWII, delivered a speech to his students at the Engineer School in which he attempted to reframe the Army’s conception of amphibious operations:

Upon return from war in 1946, I was surprised to find that the Army had reached an understanding with the Navy on a very narrow definition of the amphibious operation, limiting it solely to the business of putting troops ashore on a hostile coast. We who exploited amphibious operations did not restrict ourselves to this

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<sup>2</sup> Gordon, “Marines Plan to Retool to Meet China Threat.”

<sup>3</sup> United States Marine Corps (USMC), *Force Design 2030* (Washington, DC: Department of the Navy, Headquarters Marine Corps, 2020), 8.

limitation. The things covered in the existing definition have been largely a function of the Navy and Marine Corps from the beginning, but there was much more to it than that. The business of putting troops ashore is all over in a matter of two or three days and may only begin a land campaign. Amphibious operations, particularly those involving land masses against which the Army customarily operates, may continue for months, and the amphibious technique with variation will be used over and over again during the entire period. The result of accepting the narrow definition of an amphibious operation has been to exclude from continued development and from the textbooks a vast amount of valuable knowledge and experience.<sup>4</sup>

For the Army's purposes and the purposes of this paper, amphibious operations should not only be concerned with the landing of forces on a hostile coast but also with the land campaign that follows it. This was the case in North Africa, Sicily, Italy, Normandy, Southern France, the Solomons Island, New Guinea, the Philippines, and Okinawa. All these operations started as amphibious assaults, which enabled the employment of combined arms teams of tanks, infantry, and artillery ashore, allowing for the prosecution of a more extensive land campaign sustained and supported by sea power and air power.

### Problem Statement

As the Army increasingly focuses on the Indo-Pacific Theater, it will work in a maritime-dominated environment where other services maintain historical and doctrinal primacy. The Marine Corps is the primary military service for developing amphibious doctrine, tactics, techniques, and equipment. Department of Defense Directive (DODD) 5100.01, *Functions of the Department of Defense and Its Major Components*, appoints the Marine Corps as the joint force proponent for amphibious operations, but it also

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<sup>4</sup> David A. Ogden, "Amphibious Operations of Especial Interest to the Army," (Lecture before the Engineer School, Fort Belvoir, VA, 1951), 2-3.

requires the US Army to conduct amphibious operations.<sup>5</sup> However, since Korea, the Army has not conducted large-scale amphibious assaults involving armor. Furthermore, the Army has lacked its own version of amphibious doctrine since the retirement of Field Manual (FM) 31-12, *Army Forces in Amphibious Operations*, instead relying on joint doctrine. With the increasing focus of the Joint Force on China and the Indo-Pacific, the question must be asked, how will the Army support and conduct amphibious operations, especially the landing and employment of armored forces, as this is now solely a US Army capability.

### Purpose of Study

This paper does not critique the Marine Corps' decision to remove tanks from its inventory or challenge the Marine Corps' role as the primary doctrinal expert and leading practitioner of amphibious warfare. Instead, this paper explores the role of armor in Army amphibious doctrine and operations by examining three historical case studies during WWII. This conflict was the last significant use of armor by the US Army in amphibious operations under large-scale combat conditions and thus the most logical place to glean lessons from. It will highlight gaps in existing US Army doctrine regarding armored forces in amphibious operations and recommend how to address these in the next five to ten years. Ultimately, it will seek to answer the question: As armor is a necessary member of the combined arms team and with the Marine Corps dependence on the Army

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<sup>5</sup> Secretary of Defense (SecDef), Department of Defense Directive (DODD) 5100.01, *Functions of the Department of Defense and Its Major Components* (Washington, DC: Department of Defense, 2020).

for this capability, what historical lessons can be learned from the employment of armor in previous amphibious operations.

### Research Questions

What role did Army armor units perform during amphibious assaults in World War II? Secondary research questions include how was armor used in Army amphibious operations during World War II? Was armor use consistent with doctrine; does current doctrine reflect lessons learned from these operations? Finally, how should Army doctrine change to support joint amphibious operations in the future based on these experiences?

### Assumptions

This paper is based on two assumptions. The first assumption is that armor's capabilities and qualities, mobility, protection, and firepower are valuable and necessary on the modern battlefield, including during joint amphibious operations. The continued use of armor in amphibious assaults, by various nations in the latter half of the 20th century and the tanks continued presence on the modern battlefield, provide the underlying logic for this assumption. The second assumption is that the Marine Corps' tank removal resulted from platform-specific logistical challenges and resource (budget) allocation decisions, inherent to the Abrams platform and the Marine Corps. The tanks removal is not viewed as an indictment of the viability or utility of the tank on the modern battlefield.

### Definition of Terms

For a complete list of terms, please see the glossary. However, a few key definitions are listed below:

Amphibious Assault: “A type of amphibious operation that involves establishing a force on a hostile or potentially hostile shore.”<sup>6</sup>

Amphibious Operations: “A military operation launched from the sea by an amphibious force to conduct Landing Force (LF) operations within the littorals. The littorals include those land areas (and their adjacent sea and associated air space) that are predominantly susceptible to engagement and influence from the sea and may reach far inland.”<sup>7</sup>

Armor: A manned or unmanned platform that combines mobility, a large caliber cannon, and armor protection to engage in direct combat against like vehicles and other various forces on the battlefield, such as infantry.<sup>8</sup>

### Scope

This paper will focus on the historical employment of Army tank units in amphibious assaults of WWII. Specifically, it will explore the operational use of armor, particularly, non-amphibious light and medium tanks, in amphibious assaults in the Mediterranean and Pacific theaters of operations. It will examine the role armor played in

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<sup>6</sup> Chairman of the Joint Chiefs of Staff (CJCS), Joint Publication (JP) 3-02, *Amphibious Operations* (Washington, DC: Government Publishing Office, 2021), I-1.

<sup>7</sup> Ibid., GL-06.

<sup>8</sup> Author’s definition.

the campaign on Sicily in 1943 and on Leyte and Luzon in the Philippines in 1944 and 1945. It will discuss how armor units deployed to shore, how they were used after landing, and to what extent armor employment followed the amphibious, armored, and combined arms doctrine of the period. The following reasons drove the selection of the three case studies. First, Operation Huskey, the codename for the Sicilian invasion, represents the only time during WWII that a full armored division was employed as part of the initial LF. It also represents one of the few times an adversary used medium and heavy armor to counterattack a beachhead within the first 24 hours of the initial landings. The campaigns in Leyte and Luzon constituted the most extensive employment of Army armor in restricted, and urban littoral terrain in the Pacific Theater. Thus, they can provide valuable insights into the challenges of the operational environment in the present-day Western Pacific.

#### Limitations and Delimitations

There is one limitation and four delimitations associated with this research. First, as with any historical case study analysis, each case study has certain variables and facts unique to its time and place in history. This is an inherent limitation in any historical research. However, it does not prevent general lessons from being drawn about the use of armor in amphibious operations. WWII was selected for both the breadth and depth of case studies available. After 1945, the historical record has few examples of amphibious assault, thus imposing a practical limit on the availability of case studies data. Literature published after 1945 identifies the significant threat nuclear weapons pose to large-scale

landings. However, even in the atomic age, the usefulness of armor in more dispersed amphibious operations is still applicable.<sup>9</sup>

The first delimitation of this study is its focus on conventional armor units. While amphibious tanks play a significant role for the Army and Marine Corps in the Pacific, their absence in the current Army inventory, makes lessons learned from them minimally useful for an Army audience. The second delimitation is the selection of historical case studies from WWII. Most large-scale amphibious assaults during the conflict utilized armor, which allows the examination of armor's employment under various operational variables. Focusing on WWII shows the evolution of doctrine through combat more readily than at any other time. With most primary documents from the period declassified, it allows for a more complete examination of the historical record. The third delimitation will exclude riverine or inland waterway rivers from this analysis. While important, these operations lack the necessary sea to shore movement component, so defining of amphibious operations. The fourth and final delimitation is the research's focus on doctrine and application. Much of the current literature neglects doctrine in favor of examining organizational, material, leadership, personnel manning, facilities, and policy issues.

The selection of these case studies was influenced by the number of archival, primary, and secondary sources available at the time of writing and the similarities these operations, and the conditions under which they occurred, have with the potential future

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<sup>9</sup> James Henry Doyle, "Amphibious Operations," (Lecture, Army War College, Carlisle Barracks, PA, 12 February 1953), 16, US Army Heritage and Education Center at Carlisle Barracks Archives.

operational environment. Excluded from examination are the Normandy and Okinawa campaigns. Extensively written on in popular, professional, and academic literature, the invasions of Normandy and Okinawa both represent a pinnacle point in the US amphibious experience. Operations of such size and scope will likely never occur again.<sup>10</sup> This is not to say we cannot learn lessons from the use of armor during them, but existing research more effectively covers them.

### Significance of Study

The sea has always been an essential maneuver space for the Army and the joint force. The pacing threats posed by China and Russia in the maritime domain make the knowledge, skills, and capability to employ armor in amphibious operations vital for the 21st century Army. A lack of understanding of the opportunities and challenges surrounding the employment of armor in this domain could lead to a significant risk of failure in future joint amphibious operations. This study seeks to fill an existing knowledge gap in how armor employment developed alongside historical Army amphibious doctrine and its implications for the present. Additionally, it aims to energize further research into the Army's amphibious heritage. Finally, it will advocate for the codification in doctrine of previous lessons learned, thus helping to ensure the Army will be able to employ armor as part of the joint amphibious combined arms landing force.

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<sup>10</sup> Ogden, "Amphibious Operations of Especial Interest to the Army," 6.

## Summary

The Army should consider how the Marine Corps' recent removal of tanks will impact the Army's operational requirements in the future. The Army currently lacks a unified doctrine that describes the specific roles, requirements, techniques, tactics, and procedures it would perform in amphibious operations, despite the regulatory requirement to perform such operations.<sup>11</sup> Without a better understanding of the lessons learned in past Army amphibious operations and the role of armor within them, the Army will likely have to re-learn these lessons at the cost of blood and treasure. This research examines the historical doctrinal role of armor in amphibious operations and the operational employment of armor across three historical case studies. The first case study will focus on the allied invasion of Sicily in 1943, while the second and third will focus on the Philippines campaigns of 1944 and 1945. Finally, this study seeks to energize further research into the Army's amphibious heritage and armor's role within the amphibious combined arms landing force.

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<sup>11</sup> SecDef, DODD 5100.01.

## CHAPTER 2

### LITERATURE REVIEW

#### Introduction

The role envisioned for armor in amphibious operations by doctrine, remained remarkably consistent from 1933 through 1945.<sup>12</sup> Armor's role was to support the landings and extend operational reach far inland by capitalizing on its mobility, protection, and firepower. Revised doctrine premiered during the war that captured the lessons learned from early operations, and even the Army's primary operations manual, FM 100-5, would change to reflect the evolution of amphibious operations. While doctrine was a practical guide, the local threat, environment, and other operational variables significantly influenced armor's employment in all theaters of the war. These would show through in many a unit's after-action reports, from Battalion to Corps and Army level. The post-war analysis of armors uses in amphibious operations expanded on the pre-war, and intra-war doctrine while analyzing and incorporating the lessons learned. Many of these general themes are present in current doctrine while many specific lessons are omitted.

#### Framework

This literature review will follow a broad, to a specific format and focus on four types of documents: (1) current doctrine, (2) historical doctrine, (3) archival unit reports, and (4) post-war analyses.

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<sup>12</sup> The Joint Board, *Joint Overseas Expeditions* (Washington, DC: Government Printing Office, 1933), 35.

Literature review and interrogation begin with current joint doctrine, specifically Joint Publication (JP) 3-02, *Joint Amphibious Operations*, and JP 3-18, *Joint Entry Operations*, then examines primary Army Doctrine, specifically JP 3-99, *Airborne and Air Assault Operations*. Armor-specific FMs and Army Tactics, Techniques, and Procedures follow. Historical doctrine will then provide a background for understanding doctrinal development through the interwar and war years. Primary pre-war doctrinal publications, specifically *Joint Overseas Expeditions*, the Navy's FTP 167 *Landing Operations Doctrine*, and the Army version of FTP 167, FM 31-5, *Landing Operations on Hostile Shores*, will be the focus. Archival unit reports, ranging from Battalion to field Army level, will form the next significant source of literature and inform the battle narratives of the Sicilian and Philippines campaigns. The post-war analysis by the Army, primarily the Armored School at Fort Knox, Kentucky, and other independent scholars and writers provide additional context and analysis for these operations. Finally, the amphibious operations of other nations during WWII and in the following decades will provide a comparison to America's amphibious operations and round out the post war analysis literature.

#### Joint Amphibious and Forcible Entry Operations Doctrine

JP 3-02, *Amphibious Operations*, is the governing document for all amphibious operations of the joint force. Present doctrine identifies five types of amphibious operations, including (1) assault, (2) raid, (3) demonstration, (4) withdrawal, and (5) support to crisis response and other operations.<sup>13</sup> Like other forceable entry

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<sup>13</sup> CJCS, JP 3-02, I-3/4.

operations, amphibious operations are inherently joint and require immense cooperation by air, land, and sea forces. Though JP 3-02 identifies several types of operations, the amphibious assault was the primary focus of the literature review. This is because most writings concerned with amphibious operations focus on the assault and because armor is most prevalent in these types of operations vis-à-vis others. JP 3-02 states that “armored elements provide substantial combat power and mobility for the landing force.”<sup>14</sup>

JP 3-18, *Joint Forcible Entry Operations* identifies forcible entry as “operations to seize and hold lodgments against armed opposition. A lodgment is a designated area in a hostile or potentially hostile operations area (AO) (such as an airhead, a beachhead, or combination thereof) that affords continuous landing of troops and material while providing maneuver space for subsequent operations.”<sup>15</sup> The key factor is the opposed nature of the operation. This stands in contrast to the definition of an amphibious operation which does not specify opposed or unopposed landings. There is no specific mention of armor or tanks within JP 3-18.

Related to both JP 3-02 and JP 3-18, the Marine Corps is the Department of Defense leader for amphibious doctrine development. While not part of doctrine, the Marine Corps *Force Design 2030*<sup>16</sup> posture statement serves as a guide for the current commandant’s reform and restructuring effort. It identifies critical doctrinal, organizational, material, leadership, and personnel changes that the Marine Corps will

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<sup>14</sup> CJCS, JP 3-02, II-11.

<sup>15</sup> Chairman of the Joint Chiefs of Staff (CJCS), Joint Publication (JP) 3-18, *Joint Forcible Entry Operations* (Washington, DC: Joint Chiefs of Staff, 2018), vii.

<sup>16</sup> USMC, *Force Design 2030*.

undertake to posture for competition in the Indo-Pacific and wider operational environment. The document identifies the divestiture of the Marine Corps M1 Abrams tanks and the deactivation of its three active-duty tank battalions. It also states that the United States Marine Corps will rely on the Army to provide heavy armor capability in the future. Importantly, the Marine Corps vision of the future operational environment will be highly influential on the future formulation of joint amphibious doctrine.

### Current Army Doctrine

The current Army FMs, Army Technique Publications (ATPs), and Army Doctrine Publications are all lacking in their mention of amphibious operations and armor's use within those operations. The primary Army manuals covering armored operations, including ATP 3-20.15, *Tank Platoon*, ATP 3-90.5, *Combined Arms Battalion*, FM 3-96, *Brigade Combat Team*, FM 3-0, and Army Doctrine Publication, 3-0, *Operations*, mention amphibious operations only peripherally or as part of a forcible entry operation. "A forcible entry operation can be by parachute, air, or amphibious assault. The Army's parachute assault and air assault forces provide a formidable forcible entry capability. Marine Corps forces specialize in the amphibious assault; they also conduct air assaults as part of amphibious operations."<sup>17</sup> The fact that ATP 3-20.15 (MCRD 3-10B) does not mention amphibious operations and is a dual-use manual for both Army and Marine Corps tank platoons, is especially concerning.

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<sup>17</sup> Headquarters, Department of the Army (HQDA), Field Manual (FM) 3-0, *Operations* (Washington, DC: Army Publishing Directorate, 2017), 1-25, 6-2.

FM 3-99, *Airborne and Air Assault Operations* and ATP 3-21.20, *Infantry Battalion*, mention amphibious operations 37 times. These manuals treat planning and conducting amphibious operations similarly to airborne and air assault operations. While both airborne and air assault operations share similarities with amphibious operations, the complexity and level of joint planning necessary for amphibious operations far exceed the complexity of these other operations. Interestingly, FM 3-99 mentions armor specifically in the planning for airborne and air assault operations stating, “Close air support often can compensate for the lack of armor and heavy artillery. The airborne commander must consider the Air Force’s ability to support the force and bring knowledgeable airlift and tactical air planners together early.”<sup>18</sup> This could also constitute the Army’s viewpoint of armor in amphibious operations at present. Stated otherwise, airpower will make up for the lack of armor. The other mentions of armor in FM 3-99 focus on the defense of the airhead or landing area against enemy armor attacks.<sup>19</sup>

Thus, current Army forcible entry doctrine focuses on how to compensate for the lack of armor or how to defend against armor rather than employ it. This could be due to the difficulty of deploying armor by fixed-wing aircraft through air landing and the lack of an airmobile armored platform within the US Army inventory. It does, however, neglect to mention the ability of Army organic sealift assets to transport heavy armor during an amphibious assault, a capability the US Army possesses today.

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<sup>18</sup> Headquarters, Department of the Army (HQDA), Field Manual (FM) 3-99, *Airborne and Air Assault Operations* (Washington, DC: Army Publishing Directorate, 2015), 4-5.

<sup>19</sup> *Ibid.*, 4-18, para. 4-81.

### Historical Amphibious and Armor Doctrine

FM 31-05, *Landing on a Hostile Shore* was adapted from the Navy's FTP 167 *Landing Operations Doctrine* and forms the basis of Army pre-war amphibious doctrine. Both manuals focus heavily on the command relationship during amphibious operations but differ significantly in their focus. Both doctrines were developed and refined during the interwar years based on the outcomes of the FLEX I through VII exercises conducted from 1934 to 1941. FM 31-05 is the base amphibious doctrine for the Sicilian operation while its 1944 version formed the basis for the Phillippine operations.

The Army's primary concern during the pre-war period was the projection of forces ashore and their movement inland to take follow on objectives. This contrasted with the focus of the Marine Corps, which was to seize advanced bases for naval forces under its advanced naval base concept.<sup>20</sup> The Marine Corps, *Tentative Manual for Amphibious Operations*,<sup>21</sup> preceded Navy FTP 167 and the Army FM 31-5. It focused on amphibious operations as part of a wider naval campaign and helped to shape a limited view of such operations. Given the United States Marine Corps' institutional survival is tied to its expertise in amphibious operations, the influence of Marine's operational outlook permeates pre-war doctrines. The Marine Corps doctrine of advanced base operations did not match with the Army's vision of amphibious operations as a method of projecting combat power ashore to achieve larger objectives.

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<sup>20</sup> United States Marine Corps (USMC), *Tentative Manual for Landing Operations* (Washington, DC: Navy Department, Headquarters US Marine Corps, 1933), 2.

<sup>21</sup> Ibid.

The primary pre-war doctrine for armor operations was FM 17-33, *The Armored Battalion, Light and Medium*. The manual makes no reference to amphibious operations or landing operations but does identify the strong influence of terrain on the employment of armor.<sup>22</sup> The next evolution of the manual, issued in 1944, devotes an entire section in chapter 6 to the employment of armor in amphibious operations. The manual states “Tanks are normally landed from specialized landing craft after assault infantry and engineers have secured a beach. However, when heavy small arms fire is expected at the beach line, tanks may land from LCT or LCM with the initial assault.”<sup>23</sup> This demonstrates an evolving awareness, reinforced in battle, of armor’s usefulness in amphibious assaults and the key integration of armor with other combat arms. Helpful for understanding the integration of infantry and armor from a doctrinal perspective was FM 17-36, *Armored: Employment of Tanks with Infantry*.<sup>24</sup> The manual insisted infantry must use armor, when available, and reinforces this point by stating “Failure to make profitable use of armor when available is inexcusable.”<sup>25</sup>

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<sup>22</sup> War Department, Armored Force Field Manual (FM) 17-33, *The Armored Battalion, Light and Medium* (Washington, DC: Government Printing Office, 1942).

<sup>23</sup> War Department, Field Manual (FM) 17-33, *Tank Battalion* (Washington, DC: Government Printing Office, 1944), 189.

<sup>24</sup> War Department, Field Manual (FM) 17-36, *Armored: Employment of Tanks with Infantry* (Washington, DC: Government Printing Office, 1944).

<sup>25</sup> War Department, Field Manual (FM) 31-5, *Landing Operations on Hostile Shores* (Washington, DC: Government Printing Office, 1944), 3.

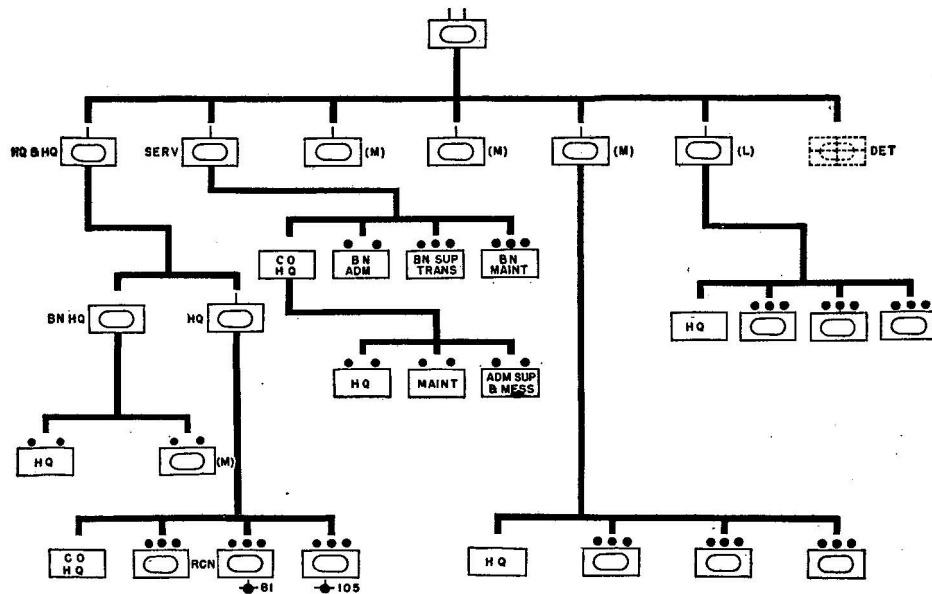


Figure 1. Standard Tank Battalion Organization

Source: War Department, Field Manual 17-36, *Armored: Employment of Tanks with Infantry* (Washington, DC: Government Printing Office, 1944), 5.

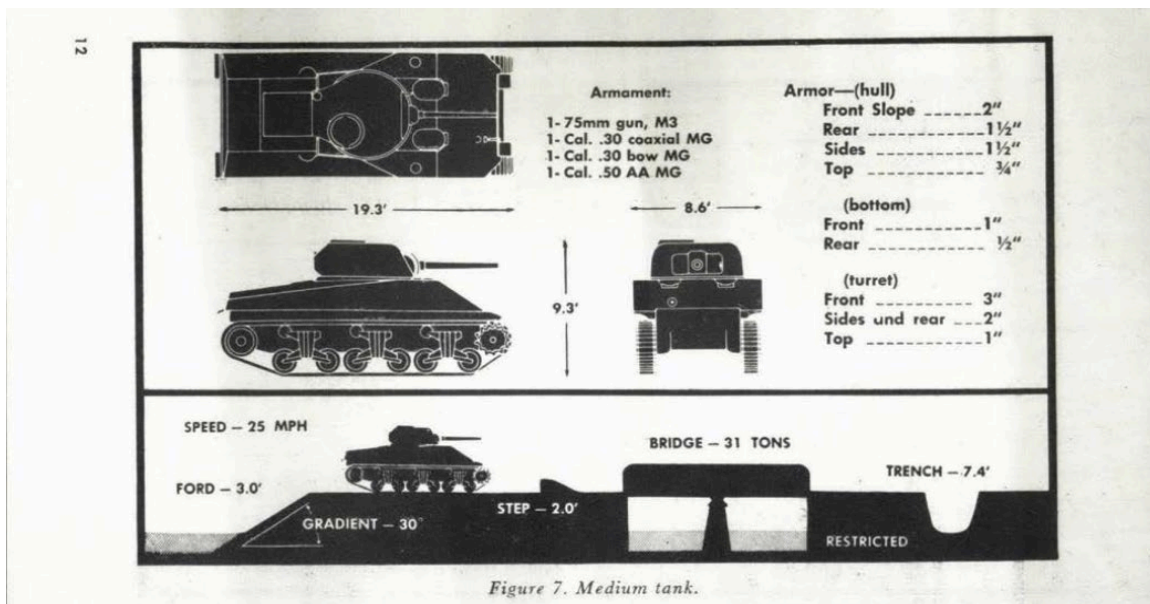


Figure 2. M4 Sherman Tank Characteristics

Source: War Department, Field Manual 17-36, *Armored: Employment of Tanks with Infantry* (Washington, DC: Government Printing Office, 1944), 7.

### Archival Unit Reports

Archival unit reports included unit after action reports and intelligence summaries from the respective campaigns. Many sources are digitized and accessible through the Combined Arms Research Library at Fort Leavenworth, Kansas, and the Donovan Research Library at Fort Benning, Georgia. There are an additional number of non-digitized reports at the US Army Heritage and Education Center. For the Sicilian campaign, the reports of the 7th Army, commanded by LTG George S. Patton were important for the maps and cross-examination of lower unit reports as was Patton's published memoirs *War as I Knew it*. Examining the landings in greater detail, the Operations Report of the 2nd Armored Division describes the actions of the division, especially the difficulties of loading, unloading, employment in rough terrain, and logistical challenges of employing an entire armored division in an amphibious assault.<sup>26</sup> Unique to the Sicilian Campaign was the axis armored counterattack at Gela on 11 July 1943. First-hand accounts such as Captain John Geary's report details a platoon of tanks from 2AD significantly contributing to the defeat of this attack.<sup>27</sup> The Allied Headquarters, *Lessons from the Sicilian Campaign* testifies to the usefulness of armor following the landings and their effectiveness in repelling the axis armored

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<sup>26</sup> 2nd Armored Division, *Historical Record: Operations of US 2nd Armored Division (Kool Forces)* (Washington, DC: United States Army, 1943), World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS. (Hereafter referred to as ISCARL).

<sup>27</sup> John A. Geary, *Report on the Invasion of Sicily*, 1944, Document Collection Call #D769.2.G261.12, Maneuver Center of Excellence (MCoE) Libraries, MCoE HQ, Donovan Research Library, Fort Benning, GA. (Hereafter referred to as MCoE).

counterattack.<sup>28</sup> Notably, German sources on the attack failed to highlight the presence of American armor on the beach.

Similarly, the 1st Infantry Division's summary of the Sicilian Campaign does not mention the presence of armor during the defense of the beachhead despite tanks being attached to the division. Reasons for omitting the presence of the 2AD as part of the defense are unclear.<sup>29</sup> The experience of the 2AD highlights the importance of landing armored forces when the enemy has similar capabilities staged within striking range of the planned landing area.

Army landings in the Philippines represent the culminating operation of Gen Douglas MacArthur's Southwestern Pacific Campaign. Critical to the re-conquest of the Philippines; was the use of armor formations to achieve objectives deep in the Japanese rear and to support the infantry's advance through the islands' rugged terrain. The unit after actions reports of the 44th, 716th, 754th, 767th, 775th Tank Battalions and the 776th Amphibian Tank Battalion form the primary sources of the tactical battle narratives for chapters 5 and 6. Additionally, the reports of the Sixth Army, I Corps, XIV Corps, XXIV Corps, 7th Infantry Division and 17th Regimental Combat Team provide additional operational and tactical archival source material for the Philippines case studies.

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<sup>28</sup> Allied Force Headquarters, Training Memorandum 50, *Lessons of the Sicilian Campaign*, November 1943), 58, ISCARL.

<sup>29</sup> MG Terry Allen, *A Summary of the Sicily Campaign during World War II (10 July-16 August 1943) with Special Reference to the Continued Offensive and Night Attacks of the 1st Infantry Division-U.S. Army* (Washington, DC: Government Printing Office, 1962), ISCARL.

### Post War Analysis and Literature

For an understanding of the significant economic and geographic influences driving US interest in amphibious warfare was Allan R. Millett, “Assault from the Sea: The Development of Amphibious Warfare between the Wars,” in *Military Innovation in the Interwar Period*.<sup>30</sup> This essay compared and contrasted the development of amphibious doctrine in Britain, the US, and Japan in the interwar years. Interestingly, it concluded that all three maritime powers faced similar strategic situations regarding amphibious operations, mainly the need to project power at great distances from their strategic bases. It also touched on the interservice rivalries and lack of joint coordination that plagued all three. However, only the US possessed the technical, economic, and operational capacity to learn from early amphibious operations and adapt its pre-war doctrine throughout the war. For a more extensive commentary on the development of amphibious assault since WWII, see the report “Charting the pathway to OMFTS: A Historical Assessment of Amphibious Operations since WWII.” This report was useful for charting the various stages of doctrinal evolution despite its focus on the Marine Corps.

The allied landing in Sicily marks the only time an armored division was part of the initial LF in the North African, European, or Pacific theaters. *Sicily ‘43: The First Assault on Fortress Europe* is an excellent, archival researched secondary account of the battle and provides a strategic and operational overview as does *Bitter Victory*, by Carlo

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<sup>30</sup> Allan R. Millett, “Assault from the Sea: The Development of Amphibious Warfare between the Wars,” in *Military Innovation in the Interwar Period*, ed. Williamson Murray and Allan R. Millett (New York: Cambridge University Press, 2009), 50-95.

D'Este.<sup>31</sup> They are included because of their incredibly detailed narratives and the use of primary sources. An important addition to how the a division should organize for amphibious operations was “Preparation for a Division Amphibious Operation.”<sup>32</sup> This detailed some of the lessons and applications of FM 31-5 in preparing a division for an amphibious assault. It identifies proper logistical planning and shipload planning as critical to ensuring success, especially when armor was involved.

“The Armored Division as the Assault Landing Force,” is invaluable for its general overview of the Army’s use of armored vehicles, both tanks, and amphibian tractors, during WWII. Most importantly, it provides a construct for understanding armors’ various uses in amphibious assaults. This construct will form the basis of analysis described further in chapter 3. Armor has five primary purposes in any amphibious assault: (1) securing objectives deep inland, (2) advance parallel to the coast and attack the enemy opposing another landing from the rear, (3) as the reserve, (4) as armored artillery, and (5) leading an amphibious attack as an amphibious tank.<sup>33</sup> Through the reports examination of the landings in North Africa, Sicily, Normandy, and Okinawa, it identifies that armor is critical to the success of any landing. However, the armors’ position in the assault waves changes. It also foreshadows the sea to shore logistical issues facing today’s force. Nevertheless, the report omits many operations in the Pacific.

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<sup>31</sup> James Holland, *Sicily '43: The First Assault on Fortress Europe* (New York: Atlantic Monthly Press, 2020).

<sup>32</sup> A. V. Arnold, “Preparation of a Division for Amphibious Operations,” *Military Review* (May 1945): 3-11.

<sup>33</sup> Committee 34, The Armored School, “The Armored Division as an Assault Landing Force,” (Research Report, The Armored School, 1952).

This gap in the post-war literature helped drive the selection of the Philippines as an area for further research.

Furthermore, “The Armored Division as an Assault Landing Force,” discusses several critical factors for the organization of armored forces in an assault landing. The most important is tailoring the LF to the available shipping space.<sup>34</sup> This highlights the importance of landing craft and landing ship availability, as a critical consideration for the employment of armored forces in amphibious landings. The Master of Military Art and Science research report, by Brandon Montanye, “Analysis of the Landing Ship Tank (LST) and Its Influence on Amphibious Warfare during World War Two” was an excellent introduction to the details of the amphibious LST, which was critical to landing operations during WWII.<sup>35</sup> Another important book detailing the importance of naval support and shipping capacity was; *MacArthur’s Amphibious Navy*, by Vice Admiral Daniel Barbey.<sup>36</sup> Its detailed, first-hand account of Seventh Fleet operations in support of the Southwest Pacific Campaign and its detailed chapter on US ship design and construction, were fundamental to understanding the importance of coordinating ship construction and design with tank construction, to ensure their interoperability.

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<sup>34</sup> Committee 20, The Armored School, “Armor in Island Warfare,” )Research Report, The Armored School, 1950), 58, ISCARL.

<sup>35</sup> Brandon Montanye, “Analysis of the Landing Ship Tank (LST) and Its Influence on the Amphibious Warfare during World War Two,” (Master’s Thesis, U.S. Army Command and General Staff College, 2013).

<sup>36</sup> Daniel E. Barbey, *MacArthur’s Amphibious Navy* (Annapolis, MD: Naval Institute Press, 1969).

“Armor in Island Warfare” was a superb overview of Army armor operations during the Pacific Campaign and detailed the dispersed nature of armor operations in that theater, compared to the relatively unified operations in Sicily and North Africa.<sup>37</sup> This report helped solidify the selection of Sicily and the Philippines as case studies. The report characterizes combat in the Pacific as “primary an infantry and air battle. Armor was employed only in minor units—a platoon supporting an infantry company or battalion . . . only in a few instances where armored units used in battalion strength.” This insight prompted further research to focus on determining if the employment of armor made a significant difference on the battlefield, even if only used in small numbers.

Given the dispersed nature of armor operations in the Pacific, Captain Edward L. Bale’s monograph, “The Tank Company with the Regimental Combat Team in an Amphibious Operation,” was helpful for its first-hand account of the planning, loading, and landing of forces on Okinawa.<sup>38</sup> The report’s conclusion provides valuable insight into the fact that even after four years of operational experience; the landing of armor remained a dangerous and constantly challenging affair. “Use of the Army in Luzon”<sup>39</sup> provides a detailed analysis of the armor action there. Of particular interest was the operations of the 13th Armored group.<sup>40</sup> The author draws on unit after-action reports,

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<sup>37</sup> Committee 20, The Armored School, “Armor in Island Warfare.”

<sup>38</sup> Edward L. Bale, “The Tank Company with the Regimental Combat Team in an Amphibious Operation,” (Monograph, The Armored School, 1947).

<sup>39</sup> Milton Hunt, “Use of the Army in Luzon,” (Student Paper, The Armored School, 1948), MCoE.

<sup>40</sup> Ibid.

particularly the 754th Medium Tank Battalion, a unit cited for its actions during the Luzon Campaign.<sup>41</sup> This unit's experience through all phases of the campaign is indicative of Battalion level operations.

*The Tank Debate*, by John Stone, examines the development of British and American Armor Doctrine. It examines how doctrine directly informed and guided armor design, development, and innovation during interwar, war, and post-war periods. It provides the reader a broad framework for understanding why tanks are the way they are and shows how planners and strategic leaders' vision of war helped shape armored vehicle design and technical requirements.

*On Contested Shores: The Evolving Role of Amphibious Operations in the History of Warfare*, is an anthology providing both broader context and international historical perspective on amphibious operations. Particularly useful were the essays on "Operation Weserubung: Early Amphibious Multidomain Operations" by James K. Greer and "Against all Odds: Turkish Amphibious Operations in Cyprus 20-23 July 1976" by Serhat Guvenc and Mesur Uyar.<sup>42</sup> This writing highlighted the role of follow-on armor forces and the importance of local air superiority as a prerequisite for the assault. These were influential as they demonstrated the universality of the usefulness of armor in amphibious assaults.

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<sup>41</sup> 775th Tank Battalion, *Unit History: 775th Tank BN., 20 September 1943 to 1 July 1945*, October 1945, ISCARL.

<sup>42</sup> Timothy Heck and B. A. Friedman, eds., *On Contested Shores: The Evolving Role of Amphibious Operations in the History of Warfare* (Quantico, VA: Marine Corps University Press, 2020), 290.

### Summary

The literature detailing the use of armor in amphibious operations is numerous and diverse. This literature review followed a broad, to a specific format and focused on four types of documents: (1) current doctrine, (2) historical doctrine, (3) archival unit reports, and (4) post-war analyses. The four broad categories provide insights into the advancement of amphibious doctrine and the employment of armor at the tactical and operational level from the pre-war period to the late 20th century. The literature reviewed primarily consisted of doctrinal publications, archival unit reports and post-war / secondary literature. Chapter 3 will examine the methodology for this research report and describe the framework for evaluating the use of armor in amphibious operations.

## CHAPTER 3

### RESEARCH METHODOLOGY

#### Introduction

This study will use a case study methodology. It will examine three historical case studies of armor's use in amphibious operations. The first case study will focus on the Sicilian Campaign in 1943. Sicily was the first significant amphibious invasion of continental Europe. Additionally, it was the first and only to involve a complete armored division as part of the initial assault LF. The second and third case studies will focus on the use of armor on Leyte in 1944 and Luzon in 1945. These campaigns illuminated the effects of tropical terrain, the importance of tanks to the land campaign and the challenges of urban operations. Research in all case studies relies on archival documents, first-hand accounts, and secondary scholarly sources.

#### Method

The research will use a case study methodology. Using three historical case studies, it will seek to identify the application of doctrine in operations and examine how and what role armor filled in these amphibious operations.

#### Data Collection

Data collection will focus on archival document analysis based on the Armor Center's identified uses for armor in amphibious operations from 1950. The primary data sources will be primary source archival documents. Archival sources include unit after-action reports, battle summaries, conference reports, interviews with key personnel, and memoirs of key participants. Primary doctrinal data will consist of current and former

Army Doctrine, Joint Doctrine, Marine Corps Doctrine, and historical unit standard operating procedures. The study will also use secondary scholarly research, including official Army histories, independent academic research, professional journals, and publications. All the case studies are from WWII due to it being the last conflict where amphibious operations occurred under large scale combat conditions similar to those envisioned today.

### Data Analysis

This study will examine the use of armor through the lenses of five identified roles.<sup>43</sup> First, armor's ability to secure objectives deep inland. Second, to advance parallel to the coast and attack an enemy opposing another, landing from the rear. Third, to act as the army reserve. Fourth, to act as armored artillery. Fifth, serve as the lead element of an amphibious attack, as an amphibious tank. This study will evaluate the use of armor through the lenses of these roles within the context of the Sicilian and Philippines campaigns to determine if tanks were employed in accordance with doctrine and how armor performed in these identified roles. It will evaluate the effectiveness of armor in these roles based on the outcome of the tactical battles, post-war analysis, and the authors own professional judgment. The primary method of data analysis will be document review, analysis, and synthesis. This analysis is applicable to other amphibious operations in which armor was employed.

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<sup>43</sup> Committee 34, The Armored School, "The Armored Division as an Assault Landing Force," 51.

### Ethical Considerations

All data collection for this study will be document-based. This study does not involve any human subject's research, thus limiting its ethical considerations and implications.

### Summary

The methodology for this research report is a historical case study examination of amphibious armor operations in the Sicilian (1943) and the Philippines (1944 and 1945) campaigns. Primary data sources are archival primary source documents, memoirs, and secondary scholarly research. Data analysis consists of document review, analysis, and synthesis. There was no human data collected in connection with this research. Data evaluation is based on the five identified uses of armor in amphibious operations. This study seeks to determine if tanks were employed per applicable doctrine and how armor performed in these identified roles. It will evaluate the effectiveness of armor in these roles based on the outcome of the tactical battles, post-war analysis, and the authors own professional judgment.

## CHAPTER 4

### THE INVASION OF SICILY

There remain only the tanks. Some of them must land at the head of the very first flight. As a result, most landings will commence just before dawn so that tanks may have enough light for their crews to see their immediate objectives whilst hostile artillery at a distance cannot observe them.

—Captain (later Viscount) William J. Slim, *Amphibious Warfare*

#### The Strategic Context-Summer 1943

Operation Husky, the Allied invasion of Sicily, began in the early hours of 10 July 1943, with operations ending on 17 August 1943. The combined allied landings constituted the largest amphibious assault in the European and Mediterranean Theater before the Normandy landings. With the completion of the North African Campaign, the allied powers were looking to open a new front in the war against the European Axis powers. At the Casablanca Conference in 1943, the British and Americans decided to pursue a periphery strategy.<sup>44</sup> Their objectives would be to knock Italy out of the war and divert Germany's combat strength from the Eastern Front.

The Sicilian invasion plan was a compromise between American and British strategic objectives. With their limited resources, the British favored an indirect approach that sought to husband their limited resources while securing naval dominance of the Mediterranean. Eliminating Sicily would open the Mediterranean to Allied shipping and enable the allies to supply their forces in East Asia, through the Suez Canal, unmolested by Axis air and naval forces. However, the Americans favored a much more direct

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<sup>44</sup> Andrew J. Birtle, *Sicily* (Washington, DC: Center for Military History, 2004), 8.

approach, favoring a direct landing in France in 1943 and a decisive drive on the Reich. This sought to end the European War quickly by exploiting America's increasing strength in material and allowing for a concentration on the Pacific Theater.<sup>45</sup> However, given the failure of the Dieppe Raid in August 1942, the British felt that the Allies were unprepared for a return to the continent in 1943. These factors would influence the push for a southern approach. At the same time, other forces began marshaling and training in England for a cross channel invasion, promised at Casablanca to take place no later than 1944. Thus, the planning for Operation Husky began.

### The Operational Context-Sicily 1943

Three factors influenced the selection of Sicily: (1) its proximity to mainland Italy and the North African invasion ports, (2) shipping availability, and (3) range of supporting aircraft. The other possible landing locations under consideration were Sardinia and Greece. The main problems with Sardinia and Greece were their distance from allied controlled ports and extended distance from existing allied airbases.<sup>46</sup>

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<sup>45</sup> Carlo D'Esta, *Bitter Victory: The Battle for Sicily, 1943* (New York: E. P Dutton, 1988), 41.

<sup>46</sup> Holland, *Sicily '43*, 45.

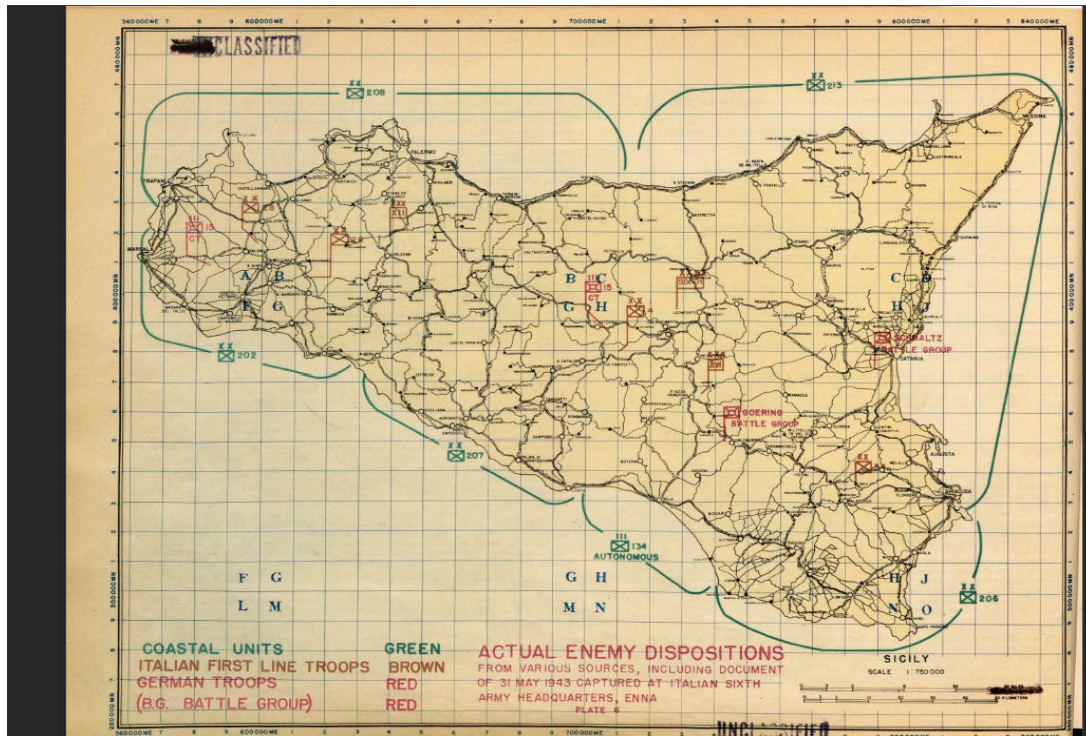


Figure 3. Axis Dispositions on Sicily, July 1943

*Source: Seventh Army Staff, Report of Operations of the United States 7th Army in the Sicilian Campaign 10 July-17 August 1943 (Paermo, Sicily: The Staff of the Seventh Army, 1943), 22, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS. Approved for public release.*

Sicily's proximity to both the Italian mainland through the main port at Messina, located on the northeast end of the island, made any follow-on operations on the Italian mainland logistically easier, than either Sardinia or Greece and more damaging to the Italian Regime. The limited availability of shipping to transport the invasion force because of other commitments, including the ongoing supplying of the Soviet Union, the build-up of troops in England for the Cross Channel invasion, and the shipping commitments in the Pacific Theater. These caused the allies to focus on shipping and LFs in the Mediterranean Theater.

The capture of Sicily would reduce Axis naval and air threat to allied convoys traversing the Mediterranean. The range of Allied airpower relative to the island was the deciding factor in the selection of Sicily. Both Sardinia and Greece would be outside of the range of allied air forces based on Malta and North Africa, thus limiting the ability to establish local allied air superiority over the landing beaches. A key consideration for any amphibious operations, past or present. Sicily also contained numerous port facilities and numerous airfields. Seizing these airfields would be a crucial objective of the LF, allowing the expansion of allied air coverage. There were over 30 airfields spread across the island.<sup>47</sup> Expanding the beachheads at Gela and Syracuse, to quickly capture and hold these airfields, would be a mission well suited for armor. Which could rapidly expand the beachhead and quickly advance, to seize ground far inland.

The 15th Army Group under the overall Command of LTG Harold Alexander (United Kingdom) would conduct the invasion. The 15th Army Group was composed of the American 7th Army and the British 8th Army. The US 7th Army, under the Command of LTG George S. Patton, was to land on the beaches around Gela on the southern coast of the island, while the British 8th Army, under Field Marshall Bernard L. Montgomery, would land on the eastern coast around Syracuse.

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<sup>47</sup> Birtle, *Sicily*, 10.

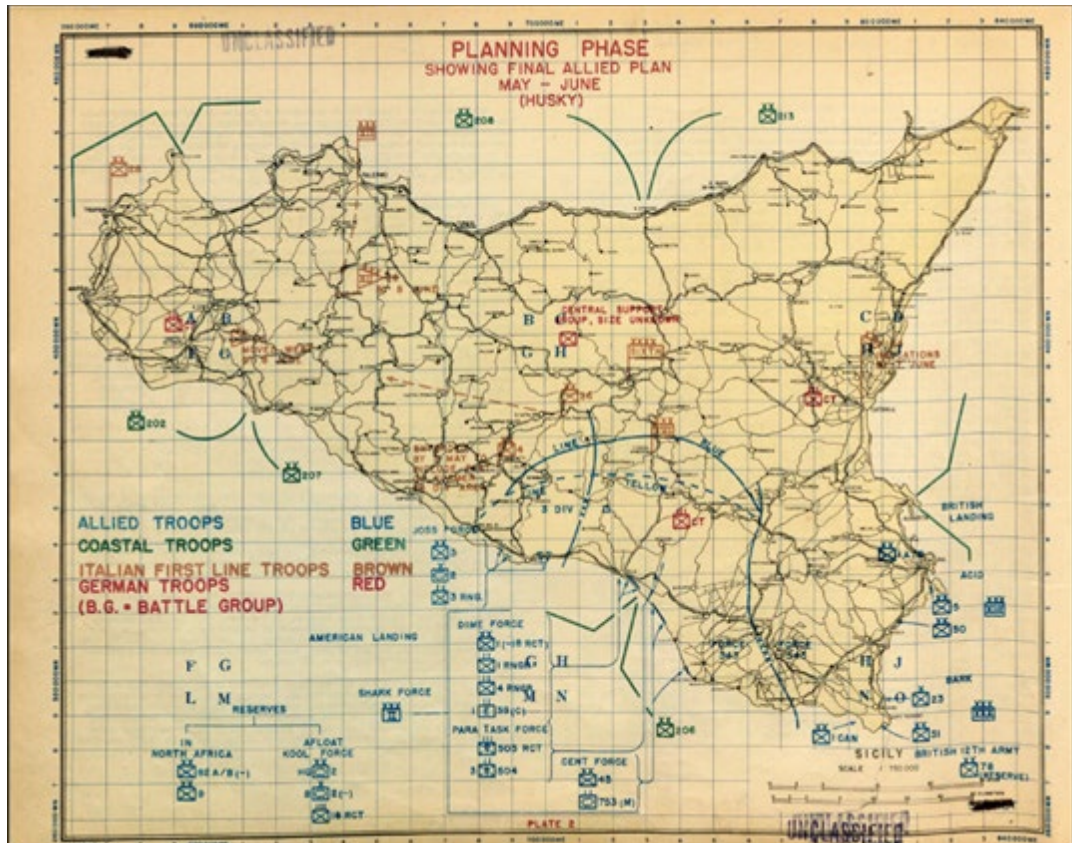


Figure 4. Allied Landing Plan with Final Allied Troop Disposition

*Source: Seventh Army Staff, Report of Operations of the United States 7th Army in the Sicilian Campaign 10 July-17 August 1943 (Paermo, Sicily: The Staff of the Seventh Army, 1943), 12, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS. Approved for public release. NOTE 3ID and 1st ID Landing Locations.*

### Tactical Context-Operation Husky

The LF at the gulf of Gela would be composed of the American II Corps, consisting of the DIME and JOSS forces. DIME force would land on the beaches of Gela to secure the port and nearby Ponte Oliva airfield. DIME force was composed of the 45th Infantry Division, 1st Infantry Division, the 1st and 4th Ranger Battalions, and the 67th Tank Battalion. JOSS force, landing near Licata, and charged with securing the left flank

of the invasion, was composed of the 3rd Infantry Division (3ID) (Reinforced). These reinforcements included the 3rd Ranger Battalion and Combat Command A (CCA) of the 2AD, including the 66th Armored Regiment and 41st Armored Infantry Regiment. The remainder of the 2AD would serve as KOOL force, the afloat reserve to reinforce any of the assaults.<sup>48</sup>

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Figure 5. Tanks of “KOOL” Force Load on LSTs in Tunisia  
in Preparation for Operation Huskey

*Source:* Alexander Sharpe, “The Failure of Joint Integration during the 1943 Sicily Campaign,” The Strategy Bridge, 21 November 2017, <https://thestrategybridge.org/the-bridge/2017/11/21/the-failure-of-joint-integration-during-the-1943-sicily-campaign>.

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<sup>48</sup> 2nd Armored Division, *Historical Record: Operations of US 2nd Armored Division (Kool Forces)*, 4.

The landings began in the early hours of 10 July 1943, with paratroopers from the 82nd Airborne Division spearheading the American landings. The 82 ABN objective was to secure the Piano Lupo, a large plateau that overlooked the plains at Gela.<sup>49</sup> Since Gela was one of the few locations with open terrain, securing these heights would be critical to delaying any Axis counterattacks against the beachheads. Encountering some resistance, but far less than anticipated from the Italian defenders, they quickly secured their initial landing objectives. However, poor weather, poor ship handling discipline, and enemy air attack disrupted combat power generation ashore, especially in DIME forces landing zones. This would prove consequential as the Axis prepared to launch a major counterattack against the beachhead.

On the morning of 11 July, the German Herman Goering division and Italian Livorno Divisions launched multiple attacks against the expanding American perimeter at Gela.<sup>50</sup> Due to shipping losses incurred by the Axis air attack on 10 July, much of the 1st Infantry Division still lacked significant amounts of its heavy artillery and anti-tank weapons.<sup>51</sup> Around 1000 on 11 July, an Axis armored counterattack hit the 1st Division. The attack involved Panzer IV and an Italian armored company mounted in French Renault 38 tanks. The armored force was about 30 vehicles. With this force, Axis commanders hoped to break into the beachhead and force a general retreat before turning

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<sup>49</sup> Seventh Army Staff, *Report of Operations of the United States 7th Army in the Sicilian Campaign 10 July-17 August 1943* (Paermo, Sicily: The Staff of the Seventh Army, 1943), a-8, ISCARL.

<sup>50</sup> D'Esta, *Bitter Victory*, 282.

<sup>51</sup> Allen, *A Summary of the Sicily Campaign during World War II*, 5.

and striking the British landing in the vicinity of Syracuse from the flank. They nearly succeeded.<sup>52</sup>

However, the panzers of the Hermann Goering Division encountered stiff resistance from the defending elements. In their after-action report of that day, the 1st Infantry Division stated that the unit defeated the enemy counterattack using dismounted anti-tank weapons, rifle grenades, and direct artillery fire.<sup>53</sup> German sources also point to the effects of naval gunfire on their attacking columns.<sup>54</sup> However, both reports fail to mention the actions of a platoon of Sherman's Tanks from Combat Command B that successfully landed on the morning of the 11th. The actions of both CCA and B in defense of the Gela beachhead and rapid advance inland were essential factors in ensuring Operation Huskey success. Their actions demonstrated the usefulness of armored forces in the initial waves of an amphibious assault and their potency in countering other armored forces, despite the lack of credit given to them.

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<sup>52</sup> Historical Division European Command, Operational History Branch, *Division "Hermann Goering" in Sicily 1943, 26 May-5 Jun 44*, 1951, Untranslated copy of MS #C-087A, ISCARL.

<sup>53</sup> Allen, *A Summary of the Sicily Campaign during World War II*, 6.

<sup>54</sup> Historical Division European Command, *Division "Hermann Goering" in Sicily 1943*.

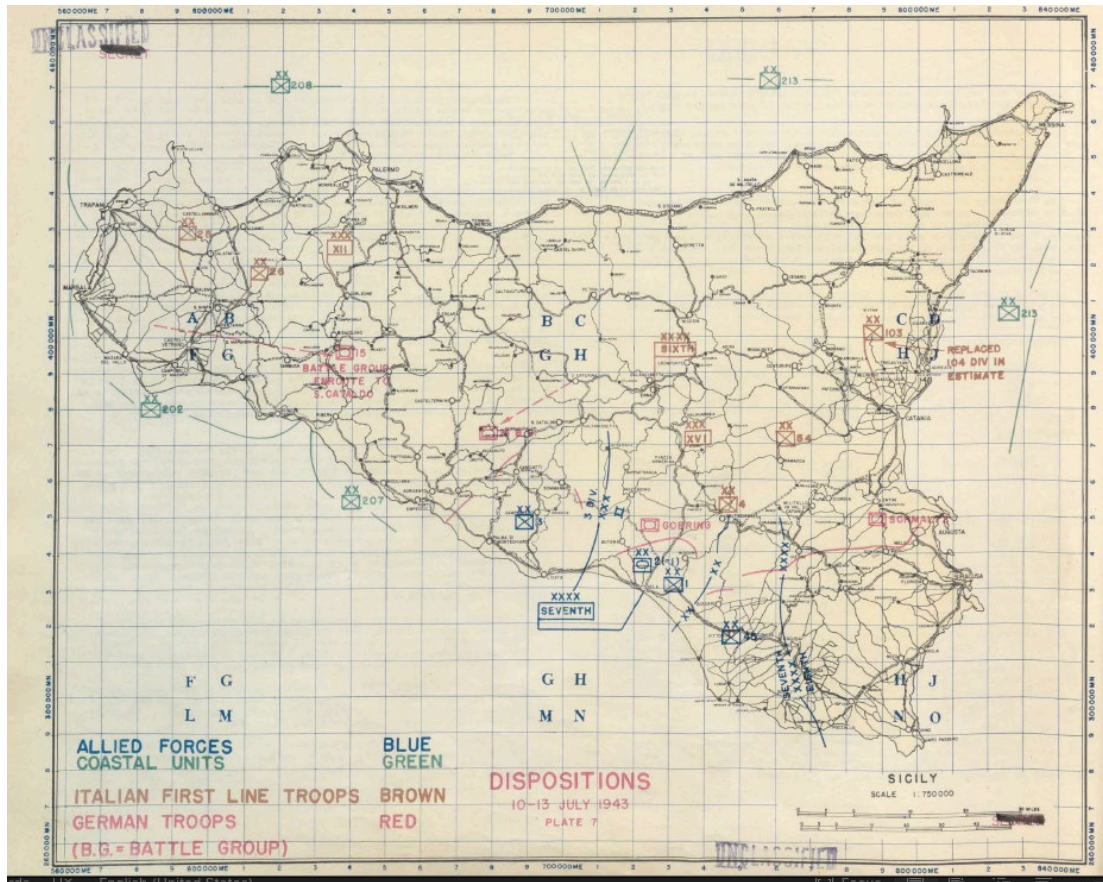


Figure 6. 7th Army Positions 10 through 13 July 1943

Source: Seventh Army Staff, *Report of Operations of the United States 7th Army in the Sicilian Campaign 10 July-17 August 1943* (Paermo, Sicily: The Staff of the Seventh Army, 1943), 24, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS. Approved for public release. NOTE the advancement of 3ID to vicinity Nora at "Yellow Line" limit of advance by day two of the invasion. This rapid advance was only possible because of armors mobility.

### The 3rd Battalion, 66th Armored, Combat Command A, 3rd Infantry Division

The 3rd Battalion, 66th Armored Regiment, Combat Command A, 2AD, was attached to the JOSS force, 3ID. JOSS forces task was to secure landing beaches in the

western half of Gela Bay in the vicinity around Licata.<sup>55</sup> The objective of 3/66th was to land with the initial waves of infantry assaulting the beaches at Licata to support the 3ID and 3rd Ranger Battalion in reducing enemy strongpoints. The initial assault waves of 3ID began landing on blue, yellow, and green beaches around 0430, 10 July 1943, approximately two hours after 1st Infantry Division landings began around Gela.<sup>56</sup> Opposing them were the men of the Italian 134th Autonomous Coastal Infantry Regiment and 207th Coastal Infantry Division. Unknown to the JOSS force, its landing beaches lay at the intersection of the two Italian unit boundaries, further complicating a unified Italian opposition to the landings. The 3ID was able to secure an initial beachhead by 0600, 10 July 1943. Company G, 3/66th landed on Red Beach at approximately 0900 and established a tactical assembly area about a mile inland from Red Beach.<sup>57</sup> Company H, 3/66th landed on Yellow Beach at approximately daybreak, assumed to be around 0600, and began preparation to support the 3ID's assault on Licata, which was ultimately unneeded. Company H, remained in an assembly area pending commitment.<sup>58</sup> Company I, 3/66th landed as part of the initial assault wave on Blue Beach around 0330, although sources vary on the exact time.<sup>59</sup> Company I helped support the 2nd Battalion and 30th

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<sup>55</sup> See Figure 3 and Figure 4 of 7th Army Landing beach layout.

<sup>56</sup> 3rd Infantry Division, *Operations Report, 3rd Infantry Division, Sicilian Operation* (United States Army, 1943), 8, ISCARL.

<sup>57</sup> *Ibid.*, 9.

<sup>58</sup> *Ibid.*, 10.

<sup>59</sup> Seventh Army Staff, *Report of Operations of the United States 7th Army in the Sicilian Campaign 10 July-17 August 1943*, b-4.

Infantry in destroying pillboxes and machine-gun nests.<sup>60</sup> The remainder of CCA continued unloading through the afternoon of the 10th and into the early morning of the 11th, eventually assembling two-thirds of the command by 0600 the morning of the 11th. CCA moved out of its assembly area near Licata at approximately 0600, 11 July and made rapid advances northwest, capturing the town of Naro by 1030 and completing the 3ID establishment of a line from Palma di Montecbiaro through Naro to Campobello to Riesi, although it suffered numerous Axis and Allied air attacks throughout the day on 11th.<sup>61</sup> This rapid advance, as highlighted in Figure 6, shows the rapid gains possible when armor is landed with or shortly after the initial waves. Armor's mobility, protection, and firepower enabled it to exploit the surprise, shock, and initiative gained by the amphibious landings to rapidly exploit and disintegrate enemy positions inland.

The ability of CCA to support the assaulting infantry on D-Day and rapidly advance across restricted terrain to secure objectives inland was essential to the landing's success. In addition, the decision to attach medium tanks with the initial LF ensured that 3ID was able to destroy Italian coastal fortifications and guard against any counterattack by Axis armored forces operating in the area if needed. The 3rd Battalion, 67th Armored Regiment and Company C, 82nd Reconnaissance Battalion would demonstrate armor's ability to do just that in the landing area around Gela.

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<sup>60</sup> 3rd Infantry Division, *Operations Report, 3rd Infantry Division, Sicilian Operation*, 10.

<sup>61</sup> Ibid., 12.

3rd Battalion, 67th Armored Regiment and Company C,  
82nd Reconnaissance Battalion, 1st Infantry Division

The landings of the 1st Infantry Division occurred in the vicinity of Gela at 0245, on the morning of 10 July. Encountering light resistance from the Italian defenders, the 1st Infantry Division secured its initial objectives around Gela by 0600, 10 July 1943. Italian engineers' destruction of the wharf facilities at Gela precluded their use in offloading allied supplies, forcing all stores and additional LFs to come over the beach. The use of floating ramps enabled the landing of approximately four M4 Sherman tanks from the third Platoon, C-Company, 82nd Reconnaissance Battalion. However, the buildup of combat power was significantly impeded by the deep sand of the Gela beaches and the malfunction of specially designed Somervelt mats. Constructed of chicken wire and laid down to support wheeled vehicle traffic as it moved from the ship across the beach, "The Somervelt mats became entangled in the tracks and could only be removed by cutting with large nippers. In avoiding the Somervelt mats, successive vehicles moving up the steep sandy hill near the beach bogged down in sand and generally throw one of both tracks."<sup>62</sup> This impeded the additional buildup of armor on the beach, highlighting some of the unique challenges of landing tanks without port facilities.

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<sup>62</sup> Committee 34, The Armored School, "The Armored Division as an Assault Landing Force," 26.

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Figure 7. M-4A1 Sherman of HQ, 3/67th Armored Battalion Comes Ashore at Gela

*Source:* Alexander Sharpe, “The Failure of Joint Integration during the 1943 Sicily Campaign,” The Strategy Bridge, 21 November 2017, <https://thestrategybridge.org/the-bridge/2017/11/21/the-failure-of-joint-integration-during-the-1943-sicily-campaign>.

These struggles to get off the beach limited the armors’ potential impact in the initial hours of the landings at Gela; however, the four tanks that were able to debark were to play critical roles in stopping the coming Axis counterattack. Ordered by Colonel I. D. White, Commander of Combat Command B (CCB) 1st Lieutenant James A. White, moved his platoon to secure the Gela-Vittoria highway, which ran east into Gela from the direction of Syracuse. At around 0900, 11 July, German armored elements composed primarily of German Mark IV tanks advanced south toward the positions of the 1st

Infantry Division across the Gela plan and met a barrage of fire from the defending tank platoon.<sup>63</sup>

The tanks scored hits against the approaching German panzer while indirect fire from artillery batteries, 4.2-inch mortars, and perhaps naval gunfire was landing in the area. The huge amount of indirect fire concealed the presence of direct fire weapons . . . during the battle, two tanks had stoppages or malfunctions with their main gun. The tank sergeant got out of their tanks and cleaned the bores of their weapons while under fire. One commander led his tank to a better firing position.<sup>64</sup>

Concurrently, another platoon of tanks from Company I, 67th Armored Battalion, began landing and moved into the fight.<sup>65</sup> Ultimately the volume of fire applied to the German attack proved overwhelming. The German force retreated north after failing to penetrate behind the Gela highway leaving behind 16 destroyed panzers and scores of killed and wounded infantries. While the tanks contributed to the defeat of the attack, they were far from the deciding factor. The combination of tank, infantry and supporting naval gun fire clearly won the day. However, one must wonder what would have happened if one of those elements was not present, would the outcome had been similar. The 1st Infantry Division would capture, in their lessons from the Sicilian campaign, the importance of training tanks and infantry together, further noting their combination as “unbeatable” if well trained together.<sup>66</sup> These comments highlight for the first time a recurring theme

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<sup>63</sup> Committee 4, The Armored School, “The 2nd Armored Division in the Sicilian Campaign,” (Research Report, The Armored School, 1950), 26, ISCARL.

<sup>64</sup> Donald E. Houston, *Hells on Wheels: The 2nd Armored Division* (San Rafael: Presidio Press, 1977), 165-167.

<sup>65</sup> 2nd Armored Division, *Historical Record: Operations of US 2nd Armored Division (Kool Forces)*, 5.

<sup>66</sup> Allied Force Headquarters, *Lessons of the Sicilian Campaign*, 32.

present in each case study: the importance of combined arms training, cooperation, and mutual understanding under the chaotic and uncertain conditions of an amphibious assault.

After the end of the battle around the Gela beachhead, the tanks of the 2AD would break out of the beachhead and enable 7th Army's advance up the western half of the island. 2AD continued its advance until 16 July when it went into refit near Pambaello. At this point, 2AD became the Seventh Army reserve and continued the advance towards Palermo. By the time 2AD reached Palermo on 22 July, intense combat, the rapid advance, and rugged terrain of Sicily had taken its toll. Over Seventy-five percent of the tank's treads were ruined by the advance.<sup>67</sup> The capture of Palermo marked the end of 2AD actions in the Sicilian campaign. Against strong opposition, over difficult terrain, and overcoming challenging logistics, the tanks of the Division proved their worth and utility in the first amphibious assault on fortress Europe.

#### Lessons Observed and Application of Doctrine

Employment-a. Tank units are particularly valuable in a landing operation. They are effective against beach defense-machine guns and barbed wire. They assist the advance of assault units during the period when field artillery support is lacking and are used in later phases in attacks against especially stubborn resistance and counterattacks. Their employment is dependent upon suitable landing boats and terrain.<sup>68</sup>

An analysis of the Sicilian operation through the lens of armored and amphibious landing doctrine demonstrates the effectiveness of tanks in this amphibious operation.

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<sup>67</sup> 2nd Armored Division, *Historical Record: Operations of US 2nd Armored Division (Kool Forces)*, 10.

<sup>68</sup> War Department, FM 31-5, 135.

Their employment was consistent with the Joint Overseas Expedition Manual (1933), which identifies the landing of tanks and light artillery early in the operation as critical if beach conditions support it.<sup>69</sup> The landing also highlights the effective operational use of tanks as envisioned by FM 100-5, *Operations* (1941), which states: “Large tank units and armored are effective Division means to counter hostile mechanized and armored forces. . . . Their employment must be closely coordinated with and supported by ground forces, anti-mechanized means, and combat aviation.”<sup>70</sup>

The actions of the 82nd Reconnaissance Battalion and 67th Armored Battalion in the defeat of the counterattack at Gela demonstrate this doctrine in action. Furthermore, the ability of the armored units of the 3rd Battalion, 66th Armored Regiment to support the 3IDs assault infantry and following exploitation demonstrate another doctrinally identified role of armor. “The front of initial penetration of such a position is carefully selected; it will frequently be determined by the existence of terrain and roads which favor the employment of armored forces in the breakthrough and exploitation.”<sup>71</sup>

Naval operations doctrine FTP 167 and FM 31-5 (1941) both mention provisions for landing armor. The actions at both Gela and Licata both display a fundamental application of the existing armored doctrine to the battle once ashore:

To provide immediate assistance to the leading troops ashore, tank units should be attached initially to the combat teams at the rate of not less than one platoon to each. However, as soon as the advance from the beach has progressed sufficiently

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<sup>69</sup> The Joint Board, *Joint Overseas Expeditions*, 35.

<sup>70</sup> War Department, FM 100-5, *Field Service Regulations: Operations* (Washington, DC: Government Printing Office, 1941), 161.

<sup>71</sup> *Ibid.*, 188.

to gain freedom of maneuver, tank units should revert to control of higher commanders in order to permit mass employment.<sup>72</sup>

The actions on the second day at Gela highlight the importance of combined arms landing teams in amphibious assaults. The ability to deploy tanks with the initial waves and as reinforcement to secure the gains made by the initial assault infantry demonstrates the importance of quickly landing armor in an amphibious operation. It also highlights the challenges of massing armor in the beachhead and their usefulness even in small numbers. The rapid armored counterattack against light infantry without effective anti-tank weapons or indirect fire support remains one of the greatest threats to amphibious assaults. The Axis counterattack at Gela; represents one of the few times in history that a significant armored counterattack occurred against an amphibious landing within the first 24 hours. As a result, the presence of the CCA Platoon, while not decisive in defeating the counterattack, certainly contributed to their defeat. However, as demonstrated in the difficulty of delivering Combat Command B tanks to the shore, the first hours of a landing are the most challenging and dangerous for any attacking force, and even significant planning, preparation, and rehearsal cannot account for the chaos of battle. Without armored support, the infantry would have had to depend on air and naval fires to defeat the Axis armored counterattack. These two factors may not be reliable and present in future operations. Had the terrain been more conducive to off-road maneuver and the attacks better coordinated, the Axis could have succeeded in further penetrating the beachhead.

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<sup>72</sup> War Department, FM 31-5, 135.

More importantly, armor had a significant role in the breakout and expansion of the beachhead. Armor's ability to apply mobility, shock, and firepower to exploit gaps created by the assault infantry and naval gunfire allowed them to rapidly attack and seize objectives further inland, as seen in the actions of the 66th Armored Battalions movements to Naro. This highlights one of the key reasons for the employment of armored forces in amphibious assaults and aligns to role one of their identified uses, the securing of objectives inland. Their unique combination of protection, mobility, and firepower enabled, more so than any other arm or unit, the expansion of the beachhead and contributed significantly to the achievement of the invasions ultimate goal, the complete capture of Sicily.

#### Summary

Armor's role in the Sicily landings fit into two of the five functions outlined in chapter 3. First, the primary use of armor in Sicily was to secure objectives deep inland. Despite Sicily's restrictive and very restricted terrain, armored forces made rapid gains by capitalizing on firepower and mobility to exploit the initiative generated by the amphibious assault. Secondly, armor filled the role of afloat reserve. With the beach initially secured by the lighter assault infantry, LTG Patton was able to commit 2AD to reinforce the beachhead and further expand the landing area. The availability of armored forces allowed the 7th Army to rapidly consolidate its initial gains, preserve the security of the landing area and defeat the destruction of the Axis counterattack. Without armored units readily available, the subsequent exploitation of the initiative achieved by the LF would have been lost.

Overall, the tank played a significant role in the success of the landings in the gulf of Gela. The presence of armor in the initial waves ensured the destruction of fixed defenses missed by the pre-landing bombardment. In addition, tanks contributed to the protection of the beachhead against armored counterattack. Because of their mobility, firepower, and armored protection, they could rapidly exploit the surprise and shock achieved by the landings to advance inland towards operational objectives. The assault, defense, and expansion of the beachhead would have been significantly more challenging if armored units were not present. The tank action on Sicily demonstrates the potential of armor to achieve operational level success when employed in amphibious assaults.

## CHAPTER 5

### THE LIBERATION OF THE PHILIPPINES: LEYTE 1944

Normally, the struggle at sea will be only an essential preliminary to decisive attack on the enemy's vitals by land and air forces, which, conveyed and supported by the Navy, will deliver the final blows.

—Captain (later Viscount) William J. Slim, *Amphibious Warfare*

The employment of armor in the Philippines constitutes the most significant employment of armored units by both sides during the Pacific War before the battle of Okinawa. In contrast to the Brigade and Division-sized tank operations common to the European Theater, the Pacific Theater saw mostly small, infantry-centric engagements, with few notable exceptions. This presents challenges for any researcher because archival sources such as infantry unit histories often contradict or are silent on the use of armored units, forcing an over-reliance on the tank units' histories.<sup>73</sup> The operations on Leyte and Luzon saw the dual employment of conventional tanks and amphibious tanks in small actions and, in one case, a full battalion action. An analysis of tank actions during the Philippines Campaign highlights the tank's importance to the land campaign, not necessarily in the amphibious assault.

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<sup>73</sup> This is due to non-organic, non-habitual nature of General Headquarters (GHQ) and independent tank battalion's assignments. Often a GHQ tank unit, like the 44th Tank Battalion, would be assigned to support an infantry division, like the 24th Infantry Division, for a specific operation. The subordinate tank companies within the battalion were then assigned to individual regiments and so forth down to the platoon or even section level. This often-led infantry units, focused on their own units' actions, to discount or not include mentions of tank actions in their unit histories or after-action reports.

Battles in restricted and very restricted terrain characterized the fighting on both Leyte and Luzon. Additionally, in the case of Luzon, this restricted terrain also involved the coastal urban environment. However, even in this terrain, the tank would prove its worth to the combined arms team. Only amphibious operations enabled the armored component of the combined arms team to be brought to bear against the Japanese.

#### The Strategic Context of the Loss of the Philippines, 1941 and 1942

Eight hours after the attack on Pearl Harbor, on the other side of the International Dateline, the Japanese began attacks on American possessions across the Pacific. Guam, Wake Island, and the Philippines would all face attack and invasion. The invasion of the Philippines began on 22 December 1941, following days of air attacks that saw the destruction or withdrawal of American airpower from the islands. Landing at Lingayen Gulf, about 110 miles northwest of the Philippine Capital of Manila, Japanese forces faced little opposition from US and Philippine forces. A lack of air cover and inadequately prepared defenses seriously hampered efforts to halt the invasion. By the next day, the Japanese had firmly established their beachhead. Additional Japanese landings in the vicinity of Lamin Bay, south of Manila, on 23 December presented the commander of United States Army Forces, Far East, Gen Douglas MacArthur, with a potential envelopment of his forces in central Luzon. With the success of both Japanese landings, MacArthur elected to withdraw to strongholds on the Bataan Peninsula and Corregidor Island to hold off the Japanese for as long as possible.

The isolating of the Philippines from any hope of reinforcement and the deteriorating defense of Bataan would, by 9 April 1942, prompt the evacuation of MacArthur and his staff to Australia, the eventual surrender of Bataan, and the complete

isolation of over 11,000 soldiers on Corregidor Island. The final fall of the Philippines would occur two months later, on 9 June 1942. This marked the end of over 44 years of American governance of the Philippines and resulted in the capture of most of the interwar active-duty Army. The conquest of the Philippines would mark another defeat for the allies in the Pacific Theater and cap a long string of Japanese victories in the Pacific, including Guam, Wake Island, British Hong Kong, and Singapore. Upon arriving in Australia, MacArthur promised that he would return to the Philippines. It would take over two years, numerous battles across the Southwest Pacific, and a separate naval campaign in the Central Pacific to make that promise a reality.

#### The Strategic Context in 1944

Following the successful completion of the island-hopping campaign in the Southwest Pacific Theater and like efforts by the Navy and Marine Corps in the Central Pacific, US forces were ready to continue their drive towards the Japanese home islands in the fall of 1944. Gen Douglas MacArthur, Command in Chief Southwest Pacific Area, and Admiral Chester Nimitz, Commander in Chief, Pacific Ocean Area, had to decide where to strike the next blow. The debate centered on the island of Formosa (Taiwan) or Luzon in the Philippine archipelago. The Joint Chiefs of Staff heard arguments for each, and both options were hotly debated. Both options would give the US additional airfields within striking distance of Japan and mainland China. In addition, each option would cut Japanese sea lines of communication between the resource-rich Netherlands East Indies (current-day Indonesia and Borneo) and the Japanese home islands. Politically, however, bypassing the Philippines would betray the promise MacArthur had made over two years ago following the defeat at Bataan. Failure to uphold this promise might affect public

opinion of the Roosevelt Administration in the upcoming presidential election.<sup>74</sup>

Understandably, MacArthur argued that the US had a moral obligation to the Philippines and the Filipino people. For this and other practical military reasons, the Philippines would be the next target in the American advance.<sup>75</sup>

The Philippines is a large, populated island chain composed of hundreds of islands located in the Western Pacific. The largest of these islands, Luzon, is home to the Capital, Manila. It housed most of the Philippine's population and served as the HQ for all Japanese forces in the Philippines. On 12 March 1944, the Joint Chiefs of Staff directed MacArthur to prepare for operations against the island of Mindanao with a target D-Day of 25 October 1944. However, the desire to retain the operational initiative in the Western Pacific prompted MacArthur to suggest forgoing the capture of air bases on Mindanao and instead go directly to Leyte. The Joint Chiefs of Staff approved this change on 15 September 1944. The invasion of Leyte, MacArthur's return to the Philippines, was set for 17 October 1944.<sup>76</sup>

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<sup>74</sup> Robert Ross Smith, *Triumph in the Philippines* (Washington, DC: Center for Military History, 1993), 7.

<sup>75</sup> Ibid., 16.

<sup>76</sup> Ibid., 11. Additionally, most memoirs refer to this as A-Day, to avoid post-war confusion with the more famous European D-Day.



Figure 8. The Philippines

Source: Charles R. Anderson, *Leyte: The US Army Campaigns of World War II* (Washington, DC: Center for Military History, 1994), 11.

### Operational Context-Leyte 1944

The assault on Leyte, code-named Operation King II, would focus on the rapid seizure of coastal airfields, port facilities, and the establishment of air bases to support land-based air operations to ensure air superiority of the surrounding area.<sup>77</sup> Gen Walter Krueger, a veteran Commander of the Sixth Army in the Southwest Pacific, would lead over 202,500 men in the invasion of Leyte.<sup>78</sup> Sixth Army organized its combat power into two Corps, the X Corps, composed of the 1st Cavalry Division and the 24th Infantry Division, and XXIV Corps, composed of the 96th Infantry Division and 7th Infantry Division.<sup>79</sup> US Seventh Fleet, under the command of Admiral Thomas Kinkaid, would be in overall command of the naval elements of the invasion and support the landings with amphibious transport and naval fires. Seventh Fleet was composed of the US Seventh Amphibious Fleet, forming the Northern attack force, under the Command of Vice-Admiral Daniel E. Barbey, and the Third Amphibious Force, comprising the Southern attack force, under Vice Admiral Wilkinson. Seventh Amphibious Force would transport X Corps, while Third Amphibious Force would transport XVIV Corps.<sup>80</sup> Vice Admiral J. B. Oldendorf's task force of pre-war battleships, cruisers, destroyers, and Task unit

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<sup>77</sup> General Staff, *Reports of General MacArthur*, vol. 1, *The Campaigns of MacArthur in the Pacific* (Washington, DC: Government Printing Office, 1953), 2; Sixth United States Army, *Report of the Luzon Campaign, 9 January 1945–30 June 1945*, vol. 1, 1945, 91, ISCARL.

<sup>78</sup> Sixth United States Army, *Report of the Luzon Campaign, 9 January 1945–30 June 1945*, Annex 6a-6f.

<sup>79</sup> *Ibid.*, 94.

<sup>80</sup> Barbey, *MacArthur's Amphibious Navy*, 236.

77.4.3 (Taffy 3) under Vice Admiral Clifton Sprague would provide naval gunfire support, air interdiction, and local air coverage, respectively. The four fast carriers and supporting vessels of Admiral Halsey's Third Fleet operating to the east in the Philippine Sea would provide area air cover and protection from Japanese naval and air interdiction.

The terrain on Leyte is formidable. Tropical coastal areas give way to steep mountains in the interior that restrict mobility across the island as there are few roads. Generally, this was characteristic of most of the underdeveloped islands in the Western Pacific at the time. However, most of the critical objectives of the invasion, such as the city of Tacloban and the airfield at Dulag, were located near the coast. Thus, LFs could rapidly advance from the beachhead, overly relatively traversable terrain, and rapidly seize these objectives in the first hours or days of the invasion. This would be a key role for armor in the invasion.

Another critical factor in the battle was the weather. Sporadic heavy rain and mud would challenge the engineer's ability to get captured airfields into operation, impacting land-based aviation's ability to support the ground forces. Moreover, the emerging Kamikaze threat kept most naval aviation focused on defending the fleet, further depriving the forces on Leyte of supporting fires.<sup>81</sup> Armor would prove invaluable in the making up for the lack of air support and enable the rapid seizing of objectives in the coastal areas.

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<sup>81</sup> Committee 16, The Armored School, "Armor on Leyte, Sixth Army Operations, 17 Oct–26 Dec 44," (Research Report, The Armored School, 1949), 47, ISCRL.

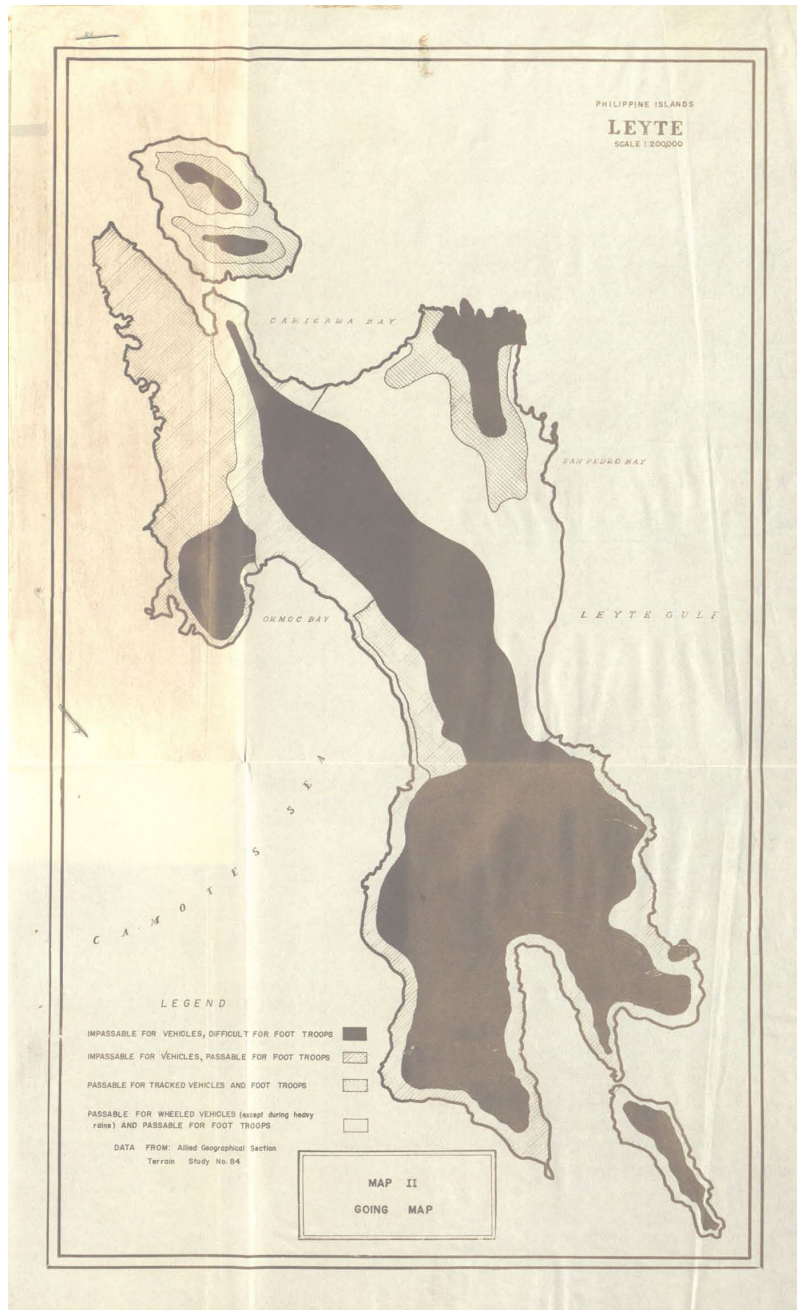


Figure 9. Modified Combined Obstacle Overlay of Leyte Island

*Source:* Committee 16, The Armored School, “Armor on Leyte, Sixth Army Operations, 17 Oct–26 Dec 44,” (Research Report, The Armored School, 1949), 155, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.

### Japanese Defense Plan

The island's defense would focus on potential landing areas on the eastern coast and retention of key terrain overlooking them. The Japanese cult of the offensive permeated its tactics against amphibious assault resulting in a desire to defeat any amphibious assault before landing or at the shoreline.<sup>82</sup> In contrast to the defense on Tarawa, the large landmass of Leyte caused the Japanese defenders to prioritize indirect fire and a mobile counterattack rather than the employing a strong fixed defense at the shoreline.<sup>83</sup> Gen Tomoyuki Yamashita, in overall command of the Philippines, anticipated the defense of Luzon would be key and assessed it, not Leyte, was vital to protecting Japanese sea lines of communication.

However, the landings on Leyte prompted the Imperial General HQ and Field Marshall Hisaichi Terauchi, in charge of the Japanese Southern Army, to change their existing defense plans and commit almost all available air, naval, and land forces to the defense of Leyte.<sup>84</sup> The decisive defeat of the Japanese Imperial Navy in the battle of Leyte Gulf irrevocably altered the ability of the Japanese to achieve a desired decisive victory on Leyte. However, Japanese false reporting regarding the results of the battle of Leyte Gulf heavily influenced their decision to continually commit valuable ground and air reinforcement to Leyte. This would result in a battle of attrition that Japanese forces in

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<sup>82</sup> War Department, Military Intelligence Division, *Japanese Defense against Amphibious Operation*, Special Series No. 29 (Washington, DC: Government Printing Office, 1945), 1.

<sup>83</sup> *Ibid.*, 15.

<sup>84</sup> Aubrey Saint Kenworthy, *The Tiger of Malaya* (Exposition Press, 1954), 70.

the Philippines could ill afford and would further weaken Yamashita's ability to defend the genuinely strategic island of Luzon. Despite personal misgivings, Yamashita would follow the orders and commit his forces to a battle of attrition that was unplanned and unwanted.<sup>85</sup> Throughout the battle, Japanese reinforcement would land on Leyte through the port of Omrec on the western coast. This stopped when 77th Infantry Division secured Omrec by amphibious assault on 7 December 1944, three weeks after the initial landings.

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<sup>85</sup> General Staff, *Reports of General MacArthur*, vol. 1, 226.

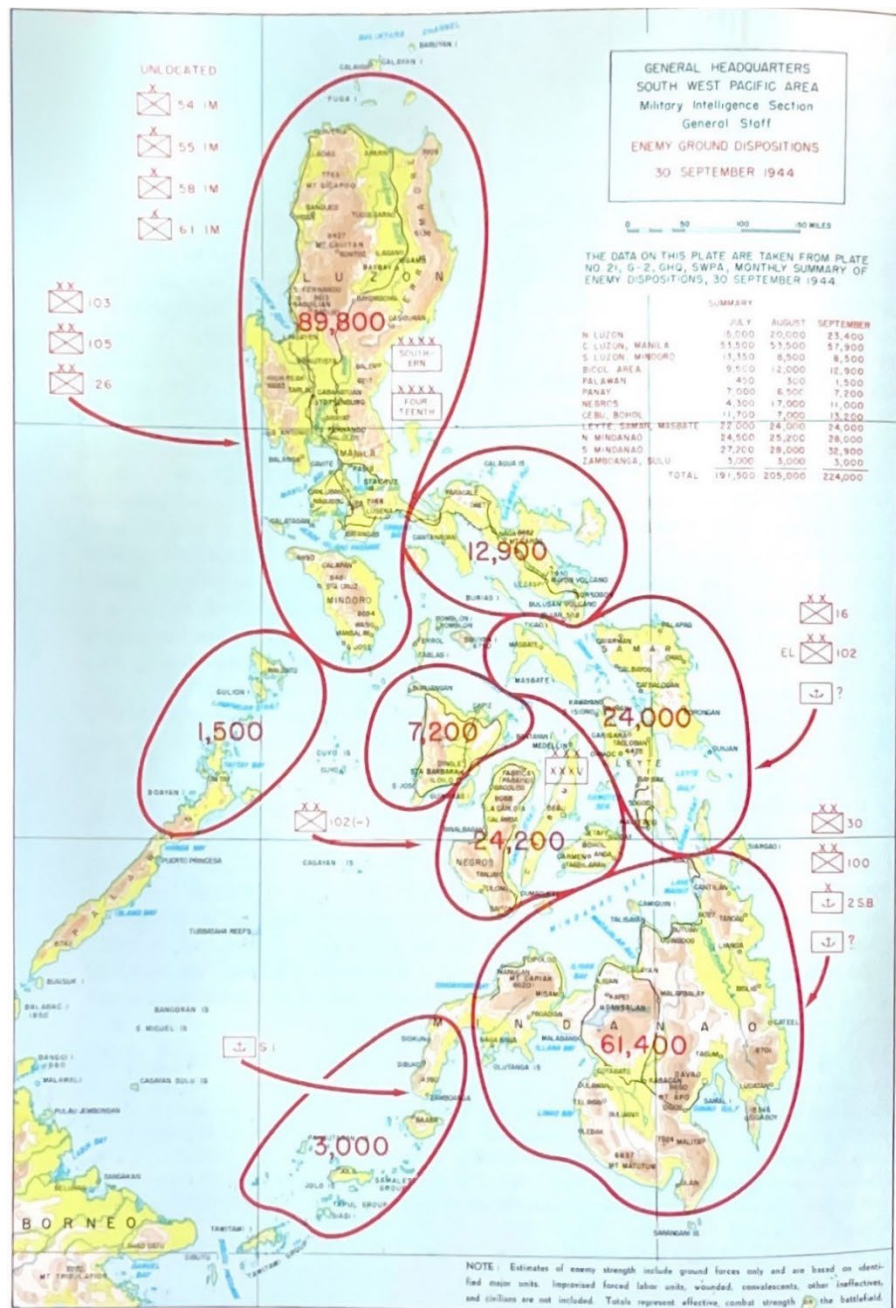


PLATE NO. 55

Enemy Ground Dispositions, 30 September 1944

Figure 10. Japanese Ground Dispositions, 30 September 1944

Source: General Staff, *Reports of General MacArthur*, vol. 1, *The Campaigns of MacArthur in the Pacific* (Washington, DC: Government Printing Office, 1953), 192.

### Leyte Invasion Plan

GHQ Instruction 70, issued 21 September 1944, described the invasion of Leyte as a four-phase operation. Phase I would secure the entrance to Leyte Gulf and its surrounding approaches. Phase II would consist of a rapid amphibious assault along the island's eastern shore from Tacloban to Dulag and rapid expansion of the beachhead. The focus of this phase would be the capture of airfields, basing, and port facilities along the coast and the important San Juanico Strait between Leyte and Samar islands, followed by a rapid penetration to secure the Capoocan-Carigara-Barugo area. In addition, GHQ Instruction 70 provided guidance for establishing air facilities capable of supporting four fighter and two bomber squadrons by A+15, highlighting the importance of securing airfields to the operation.<sup>86</sup> Phase III would focus on destroying the remaining Japanese forces on Leyte and end with the clearing of Japanese troops from southern Samar. Finally, Phase IV would consist of on-order missions to secure northern Samar.<sup>87</sup> Each of the assaulting divisions of X and XXIV Corps had a tank battalion for general support. Table 1 shows each division and its assigned armored units.

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<sup>86</sup> Sixth United States Army, *Report of the Luzon Campaign, 9 January 1945–30 June 1945*, 91.

<sup>87</sup> *Ibid.*, 20.

Table 1. Leyte Invasion Infantry Divisions and Supporting Armored Units

| <b><u>Divisions</u></b>             | <b><u>Tank Battalion</u></b>                               | <b><u>Corps</u></b> |
|-------------------------------------|------------------------------------------------------------|---------------------|
| 1st Cavalry Division                | 44th Tank Battalion                                        | X Corps             |
| 24th Infantry Division              | 44th Tank Battalion                                        | X Corps             |
| 32nd Infantry Division<br>(Reserve) | 44th Tank Battalion                                        | X Corps             |
| 96th Infantry Division              | 780th Amphibious<br>Tank Battalion<br>763rd Tank Battalion | XXIV Corps          |
| 7th Infantry Division               | 776th Amphibious<br>Tank Battalion<br>767th Tank Battalion | XXIV Corps          |
| 77th Infantry Division<br>(Reserve) | 706th Tank Battalion                                       | XXIV Corps          |

*Source:* Created by author.

#### Tactical Situation-Leyte 1944

At the tactical level, the battle for Leyte was primarily an infantry-centric combined arms fight. Tanks played a key but supporting role to the infantry.<sup>88</sup> Given Leyte's challenging weather and terrain, almost all armor actions were at the section, platoon, and company level. Only once during Leyte would an Armor Battalion, the 767th, conduct a coordinated battalion attack. This action demonstrates the opportunities and challenges of massing armor in restricted terrain and highlights the potential of tanks, if employed correctly, as a member of the combined arms team. It also highlights how tanks landed by amphibious assault prove invaluable to ensuring a rapid advance on inland objectives.

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<sup>88</sup> Committee 20, The Armored School, "Armor in Island Warfare," 104.



PLATE NO. 58

Leyte Assault, 20-25 October 1944

Figure 11. Leyte Assault

Source: General Staff, *Reports of General MacArthur*, vol. 1, *The Campaigns of MacArthur in the Pacific* (Washington, DC: Government Printing Office, 1953), 201.

Both conventional tank and amphibious tank battalions were employed to support infantry regiments throughout the battle, both as traditional tank-infantry teams and as reinforcing fires for the conventional field artillery. This highlights their use in roles four, as armored artillery. The 44th Tank Battalion effectively supported the 1st Cavalry Division's capture of Tacloban and its adjoining airfield on 21 October and enabled the 1st Squadron, 8th Cavalry Regiment to rapidly push north to southern Samar and secure the San Juanito strait.<sup>89</sup> In contrast, the 776th Amphibian Tank Battalion, following the initial landings, would primarily act as field artillery and provide beach security. For the conventional tank battalions, the lack of tactical air support caused by weather, enemy action, and the inability to establish airfields quickly elevated the importance of armor as a member of the combined arms team and increased the infantry's reliance on it.

During Phase I of the operation, from 20 October to 2 November, the 7th Infantry Division and 96th Infantry Divisions, under XXIV Corps, came ashore near Dulag along with the 96th Infantry Division. Both met light resistance on the beach and were able to capture the Dulag airstrip, their initial A-day objectives, by 21 October. Over the next two weeks, the 7th and 96th would advance inland 10 miles and capture the town of San

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<sup>89</sup> Walter Krueger, *From Down under to Nippon, The Story of the Sixth Army in World War II* (Washington, DC: Combat Forces Press, 1953), 158. As an additional note, detail on this action is included in the Armored Schools report *Armor on Leyte* under the subheading *Tanks against Obstacles*. Due to rapid thinking of a company commander and excellent mobility provided by the M5 Sturt light tanks of D Company, 44th Tank Battalion, 1/8 CAV was able to cross numerous natural obstacles and cover the distance from the landing beaches to the straits, a distance over 17 miles, in less than 14 hours. When informed that 1/8 CAV rapid advance was made by and with tanks, Gen. Mudge, Commanding General, 1st Cavalry Division simply replied "impossible!" Krueger, *From Down under to Nippon*, 99.

Pablo. Conventional and amphibious tanks played both a key and supporting role in these operations. The actions of the 776th Amphibious Tank Battalion and the 767th Tank Battalion are illustrative of the dual role tanks played in the Leyte Operation and deserve closer attention.

However, since the Army currently lacks amphibious tank capabilities and a comparable force to the 776th Amphibious Tank Battalion, this study will focus on the actions of the 767th Tank Battalion and explore the activities of the 776th Amphibious Tank Battalion only in passing. After the initial landings, the 776th acted as field artillery and beach defense while the 767th supported the 7th Infantry Division elements inland. Thus, the actions of the 767th Tank Battalion are more representative of what today's armor operations in amphibious assaults could look like.

#### 776th Amphibious Tank Battalion

The 776th Amphibious Tank Battalion was the lead element of the 7th Infantry Divisions assault on Leyte, with companies A, B, and C landing with the initial assault waves at 1000, on 20 October 1944. While receiving small arms and mortar fire, the amphibious tanks were able to advance about 250 yards inland and knock out several defending pillboxes and machine-gun nests with their 75mm Howitzers and 37mm Cannons. They further supported the advance of the 7th Infantry assault elements up the Daguitan River to secure the Dao Bridge. However, terrain and river conditions caused this movement to be unsuccessful.<sup>90</sup> Following this action, the 776th continued to provide indirect fire support for the duration of Phase I and Phase II of the operation until

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<sup>90</sup> Committee 20, The Armored School, "Armor in Island Warfare," 106.

5 November, when it was relieved and went into a consolidation and recovery phase. It was next employed on 30 November as part of the 77th Infantry Division's assault on Ormoc. The battalion provided pre-landing supporting fires by bypassing Japanese land positions and providing indirect and direct fire support from the sea. Company A, formed the lead assault wave of the 77th Infantry Division, landing at Ormoc. The capture of Ormoc enabled the Sixth Army to isolate Leyte from Japanese reinforcements. The 776th would see continuous small actions throughout the remainder of the campaign, supporting further landings at Palokpan on 25 December.<sup>91</sup>

Throughout the Leyte Campaign, the 776th provided necessary indirect fire support along with enabling cross country and cross-domain mobility for elements of the Sixth Army. The actions of the 776th highlight the role amphibian tanks used to play in US Army operations, leading both amphibious assaults and acting as supporting artillery. Amphibian armor was a critical capability that enabled US Army amphibious assaults but now only resides within the Marine Corps.

#### 767th Tank Battalion

The 767th Tank Battalion was a veteran of amphibious assaults with the 7th Infantry Division on Kwajalein Atoll in January 1944 and would again support the 7th Infantry Division on Leyte. The 767th supported the initial assault landings with a platoon of Sherman medium tanks which landed with the fifth assault wave at approximately 1010, on 20 October 1944.<sup>92</sup> The remaining elements of the 767th Tank

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<sup>91</sup> Committee 20, The Armored School, "Armor in Island Warfare," 108.

<sup>92</sup> Committee 16, The Armored School, "Armor on Leyte," 38.

Battalion began landing in the tenth and fourteenth waves, respectively. For two days, the tanks of the 767th provided direct fire support to individual regiments and battalions of the 7th Infantry Division as they advanced inland. On 22 October 7th Infantry Division consolidated all tanks under the Battalion HQ for further operations near Burauen. During this time, platoons and sections remained active, serving as the division reserve, and responding to requests for support from individual regimental and infantry companies. This support pattern would continue until the Dulag-Burauen-Dagami Road Battle, marking one of the few times that amassed tank action occurred on Leyte.

#### The Battle of the Dulag-Burauen-Dagami Road, 22 to 25 October 1944

On 22 October, the 767th was in bivouac near the recently captured Dulag airstrip while operating in support of the 7th Infantry Division. Lieutenant Colonel H. R. Edmondson, Commander of the 767th, received orders at 2000, to support the assault of the 17th Infantry Regiment (-) the next morning, 23 October, as part of a larger XXIV Corps attack west, along the Dulag-Burauen Road to seize the towns of Burauen, San Pablo and their adjoining airstrips.<sup>93</sup> The 17th Infantry and 767th were to form the center of a full 7th Infantry Division attack towards San Pablo. The 18th Infantry Regiment and 32nd Infantry Regiment operated on the 17th Infantry regiment's left and right flanks.<sup>94</sup> This attack was part of XXIV Corp's continuous advance west in coordination with the 96th Infantry to the north. MG John R. Hodge, the XXIV Commander, prioritized Corps

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<sup>93</sup> 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44*, 1944, 49, ISCARL.

<sup>94</sup> Seventh Infantry Division, *Operation Report, 7th Infantry Division King II*, 12 March 1945, 6, ISCARL.

artillery fires to the 7th Infantry Division and tasking them to make the “fullest use of tanks, field artillery, A.A. guns, naval gunfire, and aviation to support the advance.”<sup>95</sup> Unfortunately, only one of these elements, the tank, would be used during the initial advance.

Edmondson and the staff received their mission briefing at 17th Infantry Regimental HQ around 2100. Returning to the Battalion HQ around 2345, the commander and S-3 devised a maneuver scheme that envisioned companies A, B, and C attacking abreast along a 400-yard wide frontage west along the Dulag-Burauen Road while the 17th Infantry would follow and support. A Company would advance on the south side of the road, constituting the left flank. Company C would advance along the road and Company B on the right flank, north of the road. HQ Platoon would travel at the front of C Company to provide command and control via the S-3’s tank and serve as the link to fire support. The commander would follow behind Company C in his command tank. Company D, composed of M5 Stuart light tanks, would remain with the support elements as security at the bivouac area and provide convoy escort for any resupply convoys for the battalion. The 767th Tank Battalion would commit over 50 Sherman tanks to the attack.<sup>96</sup> The 767th and 17th would face elements of the Japanese 2nd Battalion, 20th Infantry which had fallen back to hasty defensive positions around Burauen and San Pablo.

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<sup>95</sup> XXIV Corps, *Operation Report, XXIV Corps, Leyte, 20 October 1944–25 December 1944*, February 1945, 176, ISCRL.

<sup>96</sup> 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 50.



Figure 12. Tank #28 *Man of War*, 767th Tank Battalion, Advances West from the Village of Jualita along the Dulag-Burauen-Dagami Road

Source: Mike Guardia, *American Armor in the Pacific* (Philadelphia: Casemate, 2020), 86.

NOTE: The dual radios indicated a command tank.

At 0630, on 23 October, the 767th left its bivouac area and moved to attack positions near Moion, arriving around 0740. At 0800, the battalion crossed the line of departure and rapidly advanced along the Dulag-Burauen Road. Encountering sporadic but determined resistance, the battalion advanced the three and a half miles from its attack position to San Pablo in less than four hours, losing only three tanks due to mines

and Japanese satchel charges.<sup>97</sup> In place of ranged anti-tank weapons, the Japanese employed suicidal satchel charges wielding infantry. While inherently hazardous to the attacker's wellbeing, this tactic would prove effective in the restricted terrain of Leyte, especially when tanks lacked infantry support. Despite these losses, the 767th rapidly advanced to San Pablo and Burauen, facilitated by the mass and firepower of the battalion, which had a substantial effect on the Japanese resistance. Reaching San Pablo by 1100 and capturing one of its accompanying airstrips by 1130, the battalion halted to re-organize and resupply. However, the terrain over which the tanks had so rapidly advanced proved difficult for the infantry to cross and there was a growing gap between the battalion and its supporting infantry. The 767th resumed its attack at 1400 and advanced rapidly, encountering no enemy resistance as it quickly captured San Pablo airstrip number two and advanced into Burauen, securing the west side of the village by 1600, while encountering only sporadic sniper fire.<sup>98</sup> However, because of the infantry's inability to keep pace, the 767th was ordered to withdraw two miles back to San Pablo to establish a bivouac.

The 17th Regimental Combat Team (RCT) Report *Battle for Burauen*, included in the back pages of the 776th unit action report does not mention this withdrawal.<sup>99</sup>

However, later sources would cite a general policy of not allowing tanks to bivouac

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<sup>97</sup> Committee 20, The Armored School, "Armor in Island Warfare," 109; 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 51.

<sup>98</sup> 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 51.

<sup>99</sup> *Ibid.*, 85.

ahead of the infantry and blame the Battalion Commander for requesting to retrograde to the vicinity of Jualita, near the initial line of departure, for the attack's loss of initiative.<sup>100</sup> This loss of ground would prove costly to the battalion the next day. At 2000, 23 October, Edmondson received verbal orders from Colonel. Francis Pachler, Commander of the 17th Infantry, to continue the attack towards Burauen at 0800 the next morning, with the objective of securing the Buri airstrip and bridges over the Daguitan River. This would cause a change in the battalion battle plan. Company D, composed of M5 Stuart light tanks would replace Company C on the main Dulag-Burauen Road. Company C would break off from the main battalion and reinforce infantry at the San Pablo airstrips and then move to capture the Buri airstrip in quick succession. Finally, Company B, operating on the north flank of the battalion's advance, would bypass the town of Burauen and attempt to envelop it from the north, eventually linking back up with the main body via the Burauen-Dagami Road.<sup>101</sup>

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<sup>100</sup> This policy is cited in the Armored School's report "Armor on Leyte." The report does not provide a reference or citation for this policy. However, an extensive search of WWII-era doctrine does support the withdrawal of armored units at night. War Department, FM 17-33, *Tank Battalion*, 56, 67, states that tanks are of little use at night and should be relieved by infantry forces in both advanced guard and rear-guard actions. It further states "tanks can take an objective, but they should not be required to hold it. FM 17-33, 143. War Department, FM 17-36, does not touch on the subject. XXIV Corps Combat SOP states "The tank bivouac area must be within the infantry perimeter defenses" ("XXVI Combat SOP," 22, in XXIV Corps, *Operation Report, XXIV Corps, Leyte, 20 October 1944–25 December 1944*). The 767th unit journal states the BN commander received orders to bivouac just east of San Pablo but after suffering communication breakdown with the 17th RCT requested to return to bivouac at Jualita. 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 51.

<sup>101</sup> 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 52.

At 0800, on 24 October, the battalion re-commenced its attack, advancing rapidly west to the outskirts of Burauen. However, the surprise and shock effect of the previous day's attack had worn off, and the Japanese were waiting. Starting around 1030, several tanks in the main column struck mines, with one damaged tank blocking the road and halting the advance. This caused the remaining tanks to attempt to bypass by leaving the road, resulting in several becoming bogged down in thick mud. By 1130, the battalion's main advance into Burauen had stalled, while elements of Company B had encountered an additional minefield five to six hundred yards to the northeast of Burauen. A strong Japanese defense around Burauen forced Company B to withdraw around 1205. Burauen would not fall until elements of Company G and F of 1st Battalion, 17th Infantry Regiment arrived around 1330 and cleared the town. Both elements of Company B and the 17th Infantry continued actions about 500 yards north of Burauen until 1730 with little effect.<sup>102</sup>

In total, the two-day battle of the Dulag-Burauen-Dagami Road cost the battalion nine M4 Sherman medium tanks, three M5 Stuart light tanks, two Killed in Action, six Wounded in Action, the relief of the Battalion Commander, and the end of massed conventional tank battalion actions on Leyte.<sup>103</sup>

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<sup>102</sup> Seventh Infantry Division, *Operation Report, 7th Infantry Division King II*, 53.

<sup>103</sup> 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 55.

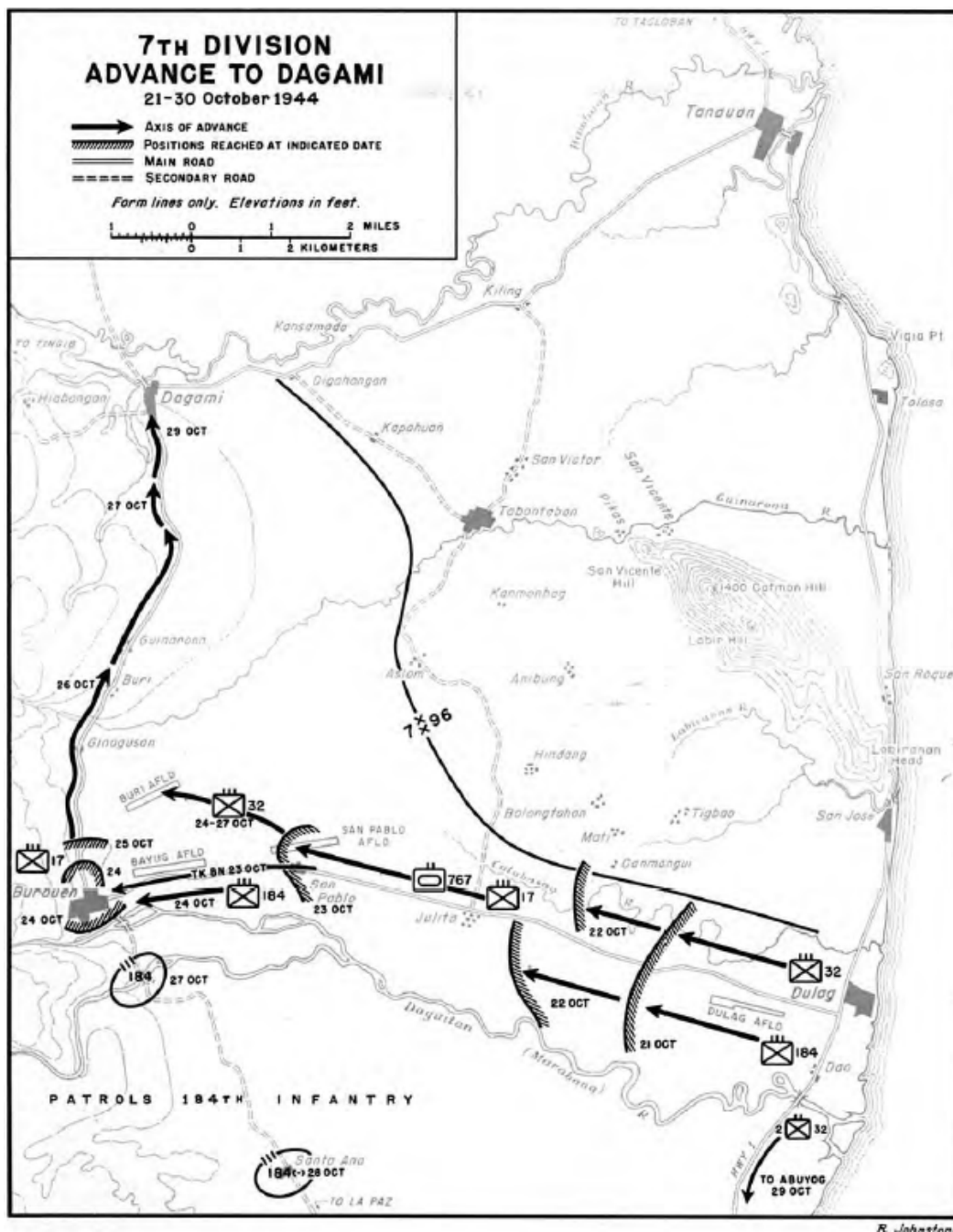


Figure 13. 7th Division Advance to Dagami, Cannon

*Source:* Hamelin Cannon, *Leyte: Return to the Philippines* (Washington, DC: Center for Military History, 1993), 125.

Overall, the lack of infantry support, the failure to capitalize on the shock of the massed armored attack on 23 October, and the terrain limited the effectiveness of the 767th Tank Battalion. The 7th Infantry Division after-action report identifies the inability of the infantry to keep pace with the tanks and the generally canalizing terrain of Leyte as reducing armors effectiveness during the battle.<sup>104</sup> In addition, the report judges that the two primary uses of tanks in such terrain are the reduction of enemy pillboxes and the flushing out of bamboo thickets.<sup>105</sup> This highlights a critical misunderstanding of the capabilities of armored forces, especially in the Pacific. The Armored School Report on the action is less critical, saying the actions of the 767th “might have been one of the most successful tank operations on Leyte” and blames the 17th Infantry Regiment for its failure to exploit the initial success of the 767th attack.<sup>106</sup> The report does not leave the 767th without criticism, though, citing the decision by the Battalion Commander to withdraw beyond San Pablo and an apparent lack of aggression on the second day, in the face of only small arms fire and anti-tank mines.<sup>107</sup>

In the end, the 17th Infantry Regiment failed to support the 767th Tank Battalion with even a company of mounted or mobile infantry during its initial attack, or to reinforce it rapidly once it had occupied Burauen. This fundamentally violated the principle of infantry-tank cooperation as laid out in FM 17-36 and resulted in the

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<sup>104</sup> Seventh Infantry Division, *Operation Report, 7th Infantry Division King II*, 77.

<sup>105</sup> Ibid.

<sup>106</sup> Committee 16, The Armored School, “Armor on Leyte,” 76.

<sup>107</sup> Ibid., 78.

unnecessary battle on 24 October.<sup>108</sup> This again highlights the importance of tank-infantry cooperation while also demonstrating the potential of the tank to rapidly capitalize on mass and shock. Two qualities that can prove decisive, as seen on 23 October, if armor is available during or following an amphibious landing.

With the capture of Burauen, although at a higher cost than necessary, XXIV Corps had partially achieved its A-day mission of seizing the Dulga-Burauen-Dagami-Tanauan area.<sup>109</sup> However, it would take further actions by the 7th Infantry Division and the 767th Tank Battalion, now operating in a supporting role, to complete that objective.<sup>110</sup> The next battle, the battle of the Stone Bridge, would be stereotypical of armor-infantry action in the Southwest Pacific and serves as an example of armor's importance in amphibious operations, operating as an integral part of a combined arms team.

#### Battle of Stone Bridge 28 October 1944

Although armored units, both conventional and amphibious, were critical in enlarging the Leyte beachhead, as American forces moved further inland, the terrain became increasingly restricted and Japanese resistance increasingly furious. Moreover, the canalizing terrain of the island's central mountain ranges increased the need for closer tank-infantry cooperation. At the same time, bad weather and the aftermath of the battle

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<sup>108</sup> War Department, FM 17-36, 57.

<sup>109</sup> XXIV Corps, *Operation Report, XXIV Corps, Leyte, 20 October 1944 – 25 December 1944*, 175.

<sup>110</sup> Sixth United States Army, *Report of the Luzon Campaign, 9 January 1945 – 30 June 1945*, 75.

of Leyte Gulf drew naval and land-based air support away from the advance. The battle of the Stone Bridge would see the 767th, now under the command of Major L. P. Daniels, the executive officer, again face the Japanese while in support of the 17th Infantry Regiment in their attack, across a fortified linear obstacle.

On 28 October 17th Infantry Regiment continued its attack north towards Dagami. They encountered stiff enemy resistance approximately one mile south of the village, centered around a damaged stone bridge and adjoining wooden causeway crossing a stream, surrounded by swampy terrain. Defenders from the Japanese 20th Infantry Regiment had built a formability defense around the bridge, about 1,000 yards south of Dagami, composed of mutually supporting pillboxes with interlocking fields of fire. Additionally, the Japanese had placed mines along the road leading into Dagami. These positions were located on high ground to the north of the stone bridge and had clear fields of fire across the length and width of the engagement area. Japanese strength around the bridge was unknown but in the greater surrounding area it was estimated to be anywhere from 1,500 to 2,500.<sup>111</sup>

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<sup>111</sup> Hamelin Cannon, *Leyte- Return to the Philippines* (Washington, DC: Center for Military History, 1993), 141.

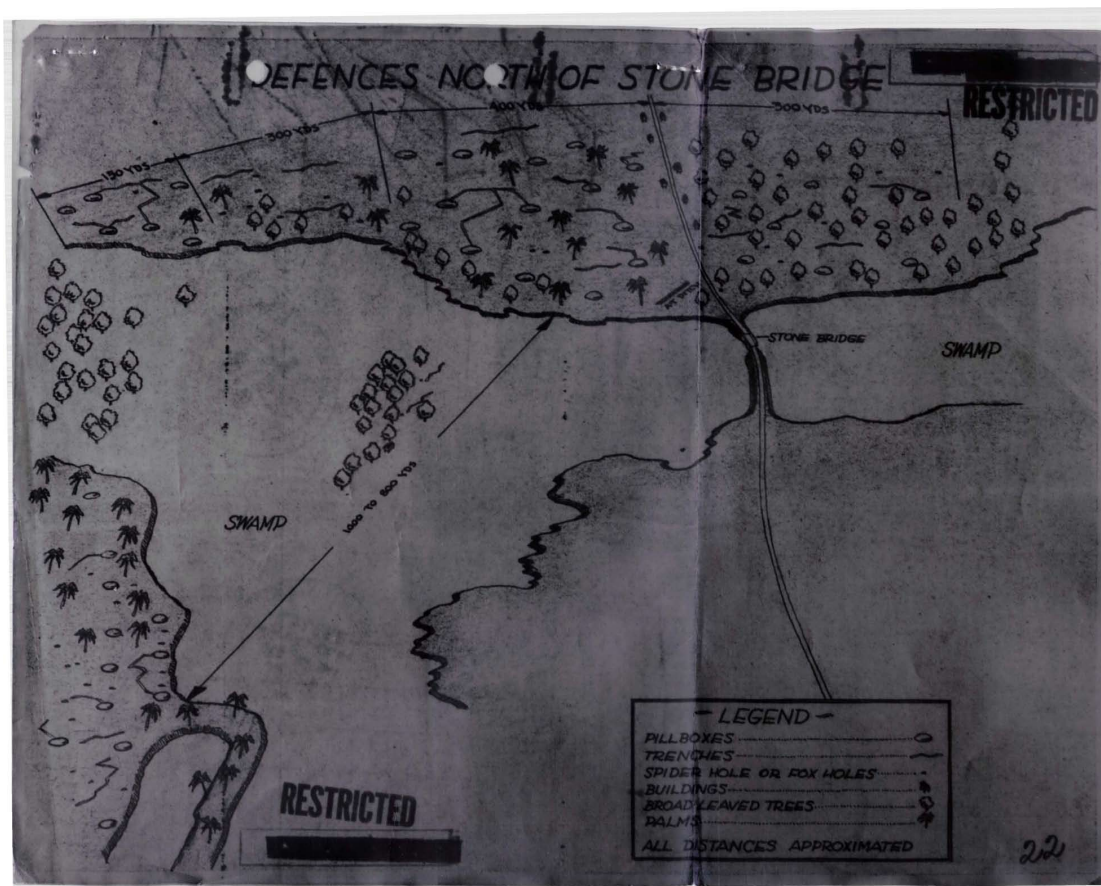


Figure 14. Stone Bridge Defenses

Source: 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 107, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS. Approved for public release.

The 767th, now in general support of the 17th Infantry, was to provide one company of medium tanks for the coming assault.<sup>112</sup> Jumping off at 0800, with 13 medium tanks, Company C encountered resistance as it crashed into the Japanese lines. They effectively applied direct fire and destroyed numerous pillboxes and fighting

<sup>112</sup> 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 58.

positions while the attacking infantry worked its way along the road and through the adjoining swamps. By 1000, one platoon had been able to cross the bridge and adjoining causeway. However, the weight of the vehicles had further damaged the structures, limiting the ability of other armored forces to cross until repairs were made.

With a platoon now north of the stream and cut off from supporting infantry, they became the focus of concentrated Japanese direct and indirect fire. By 1100, a suicidal Japanese satchel charge had destroyed one tank while land mines disabled another two, leaving one of the tank crews, that of tank C-44, trapped and surrounded in their disabled vehicle.<sup>113</sup> With supporting infantry pinned down by heavy Japanese machine guns and mortar fire, the attack was stalling. However, the commitment of an additional Infantry Company and the flanking of Japanese positions to the east, by a section of M8 armored gun carriers operating in support of Companies E and G, ensured the suppression of the Japanese left flank and re-establishment of fire superiority. This enabled engineers to make necessary repairs to the bridges, thus allowing the remaining elements of C Company, 767th Tank Battalion, to move north of the bridge.

By 1545, elements of E and G Companies had completed the destruction of the left flank of the Japanese defenses. On the American left, additional probing to the west and north by Company C, F, and B, 17th Infantry had located the enemy's right flank. With the support of a single medium tank, Company B, 2nd Battalion, 17th Infantry regiment was able to destroy numerous pillboxes in this area and roll up the Japanese right. By 1845, friendly forces finally reached the trapped crew of tank C-44 and rescued

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<sup>113</sup> 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 60.

them. Having turned both flanks and penetrated the center of the enemy defensive line along the stone bridge, the 17th Infantry went into defensive positions approximately 300 yards beyond the north of the stone bridge, while Company C, 767th withdrew to the regimental command post to reconsolidate.<sup>114</sup>

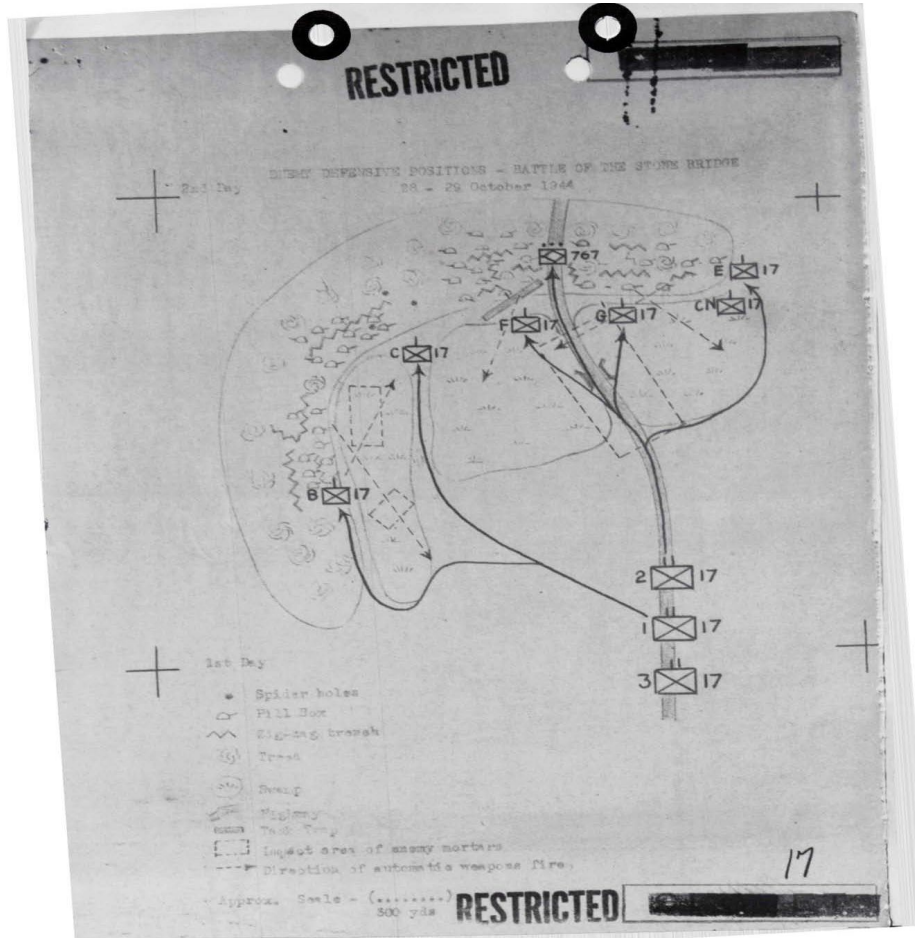


Figure 15. Stone Bridge Attack

Source: 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 January thru 31 December 44*, 102, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS. Approved for public release.

<sup>114</sup> 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 60.

The breaking of the defensive line around the stone bridge enabled the capture of Dagami the next day, 29 October, and the linking of 7th and 96th Infantry Division on 30 October, thus solidifying XXIV Corps front and securing X Corps southern flank. The 767th would continue in support of the 7th Infantry Division throughout the remainder of the campaign but mostly in section and platoon direct fire support roles.

The combined arms action at the stone bridge demonstrates the effectiveness of the tank-infantry team, even in highly restrictive terrain. The employment of armor in these scenarios, even in limited quantities, provides ready examples of armor's ability to capitalize on mobility and firepower, to both enable maneuvers and rapidly reduce enemy positions by direct fire. While the actions of the 767th Tank Battalion between 17 October and 30 October represent the actions of only one tank unit employed on Leyte, they show the effects armor could achieve when employed and supported properly. The achievement of these effects would be impossible if tanks were not part of the initial landing force or present in the follow-on waves of the amphibious operation. Again, tanks fulfilled the role identified in the methodology of attacking objectives inland and supporting the initial landings.

The campaign on Leyte would continue until 26 December, when GEN MacArthur declared operations complete.<sup>115</sup> In total, the Sixth Army, in the period between 20 October and 26 December 1944, suffered 2,888 killed and 9,858 Wounded in Action.<sup>116</sup> Japanese losses during this time are hard to determine, but Sixth Army

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<sup>115</sup> Douglas MacArthur, *Reminiscences* (New York: McGraw Hill, 1964), 233.

<sup>116</sup> Krueger, *From Down under to Nippon*, 187. Gen Krueger further states that non-battle related casualties were much higher.

estimated it had killed over 56,000 Japanese troops and captured 392.<sup>117</sup> Regardless of the final number, it is clear the Japanese decision; to force the decisive land, air, and naval battle for the Philippines at Leyte, came up short. The decision to commit to an all-out defense of Leyte, even after the defeat of the Japanese Navy at the Battle of Leyte Gulf, resulted in a battle of attrition, which only weakened the Japanese ability to defend the remainder of the Philippines. After the war, Gen Yamashita, Commander of all Japanese Army forces in the Philippines, stated: “After the loss of Leyte . . . I realized the decisive battle was impossible.”<sup>118</sup> The use of armor on Leyte, even though in small numbers when compared to other campaigns, highlighted their usefulness and their fulfillment of their doctrinal role. Without armor, it is doubtful that the land portion of the Leyte campaign could have been successfully concluded in such a relatively short time.

#### Lessons Observed and Application of Doctrine

The actions of the 767th Tank Battalion during the Leyte Campaign are illustrative of the challenges and opportunities armor faces when employed in a jungle or tropical environment. The restrictive nature of the terrain in the battle for Stone Bridge limited one of the tank’s key strengths, mobility. Terrain also limited the march rate of supporting infantry, as seen in the Dulag-Burauen-Dagami Road Battle. Additionally, the

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<sup>117</sup> Japanese numbers are hard to pin down. Japanese total losses, including air and naval loss, are estimated to 59,400 or approximately 1/5th of the Japanese forces in the Philippines. For more detailed information on Japanese and American casualties’ numbers see Cannon, *Leyte: Return to the Philippines*, 367-368.

<sup>118</sup> U.S. Military Commission, “U.S. Army Forces Western Pacific, United States of America vs Tomoyuki Yamashita,” (Testimony of General Yamashita), XXVIII, 3527, quoted in Hamelin Cannon, *Leyte: Return to the Philippines* (Washington, Dc: Center for Military History, 1993), 370.

17th Infantry failed to fully capitalize on the tanks' qualities of shock, mobility, and firepower during the battle. Unit Standard Operating Procedures and doctrine negatively affected the unit's ability to capitalize on its rapid territorial gains on 23 and 24 October.<sup>119</sup> The belief that armored units should not maintain ground independent of infantry formations, a belief which doctrine reinforced, cost valuable time and lives in the 7th Infantry Divisions attack across southern Leyte.

The battle of Stone Bridge and the Dulag-Burauen-Dagami Road demonstrate the need for tanks during the land campaign that typically follows an amphibious assault. When weather, enemy action, and other issues limited the application of both artillery and airpower, it fell to the infantrymen and the tanker to accomplish the mission. The capability of armor to apply shock, mobility, and firepower to an enemy enables the infantry to close with and destroy. Similarly, the infantry's ability to clear, hold, and maneuver in very restrictive terrain protects the tank from enemy infantry anti-tank weapons. Both infantry and armor form a symbiotic relationship that produces the greatest effect on the enemy.

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<sup>119</sup> War Department, FM 17-33 *Tank Battalion*, 56, 67 states that tanks are of little use at night and should be relieved by infantry forces in both advanced guard and rear-guard actions, It further states "tanks can take an objective, but they should not be required to hold it. FM 17-33, 143. War Department, FM 17-36 *Armored: Employment of Tanks with Infantry* does not touch on the subject. XXIV Corps Combat SOP states "The tank bivouac area must be within the infantry perimeter defenses." ("XXVI Combat SOP," 22, in XXIV Corps, *Operation Report, XXIV Corps, Leyte, 20 October 1944–25 December 1944*). The 767th unit journal states the BN commander received orders to bivouac just east of San Pablo but after suffering communication breakdown with the 17th RCT requested to return to bivouac at Jualita. 767th Tank Battalion, *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*, 51.

Effective infantry-armor cooperation during amphibious operations was the single most important lesson of the Leyte Operation. As noted in several after-action reports, two factors continually affected this coordination; leaders' attitudes towards tanks and the level of tank-infantry training before the operation.<sup>120</sup> As one infantry battalion commander expressed, "From my experience, the use of tanks under extreme conditions of weather and areas of tropical vegetation is hardly worthwhile."<sup>121</sup> Opinions like this, hint at a lack of understanding of the tank's capabilities and how best to employ them. The second issue was a lack of tank infantry training. The long distances and dispersed nature of the Pacific Theater limited the ability of units to conduct combined arms rehearsals before operations. This severely impaired the development of mutual trust and understanding between tank battalions and their assigned infantry divisions. As an example, the Leyte invasion fleet deployed from three separate departure points, each over 1,200 miles from the invasion beaches at Leyte Gulf.<sup>122</sup> This dispersion of forces, increased survivability but greatly limited the capability of units to train together before Leyte. However, some units did have experience and training at the Division level before departure for the theater.<sup>123</sup> As FM 17-36, *Armored: Employment of Tanks with Infantry*

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<sup>120</sup> Committee 16, The Armored School, "Armor on Leyte," 103.

<sup>121</sup> Ibid.

<sup>122</sup> Barbey, *MacArthur Amphibious Navy*, 366.

<sup>123</sup> Sixth United States Army, *Report of the Luzon Campaign, 9 January 1945–30 June 1945*, 26. Of note the 7th Infantry and 1st Cavalry had prior combat experiences. The 7th Infantry and 96th Infantry divisions both conducted full-dress practice landings on Maui, Hawaiian territory in September 1944. However, these landings did not cover actions inland, instead focusing on the assault landing only.

implores, “By using practiced maneuvers and formations, infantry and tanks with supporting arms may form a team to meet any situation. These maneuvers must be practiced in training, so there will be complete understanding of the role of each element.”<sup>124</sup> Unfortunately, these practiced maneuvers often only focused on the landings, and not actions further inland. The further coordination and, even more importantly, understanding of the capabilities of the tank was often underdeveloped in the minds of some pacific commanders despite the encouragement of doctrine. As FM 17-36, *Armored: Employment of Tanks with Infantry* states:

Success in battle can be assured only when there is complete cooperation of all arms. No one arm wins battles. Success is attained when each arm, weapon, and individual is employed to afford the maximum of support to the remainder integrated so as to achieve the destruction of the enemy. Since tanks and infantry are linked so closely one to the other it is necessary that the doctrine, powers, and limitations of both be understood by all.<sup>125</sup>

This is no easy task. Even commanders within the 7th Infantry Division, habitually operating with the 767th Tank Battalions since early 1944, had trouble achieving effective infantry-armor synergy.

In the context of wider amphibious operations, there was a strong adherence to doctrine regarding the role of the tank, both the conventional and amphibious variety. Research finds doctrinal reasons for the limited use of amphibious tanks in Leyte. FM 31-5, *Landing Operations on Hostile Shores* points out that the use of “Amphibian tanks operate ashore only until relieved by land tank units or by the fires of supporting artillery.

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<sup>124</sup> War Department, FM 17-36, 52.

<sup>125</sup> Ibid., 1.

This relief should be affected as soon as practicable.”<sup>126</sup> Conversely, the Navy’s FTP 167, *Landing Operations Doctrine*, reinforces that conventional tanks are critical to clearing the beach of wire and machine-gun nests, enabling the infantry’s passage. Additionally, it states “tanks in adequate numbers should be provided to support the advance to the final objective. Their speed and maneuverability make them particularly effective for rapid exploitation.”<sup>127</sup> Similarly, FM 31-6 states, “The position of tanks within the assault forces depends upon the mission, the terrain, the landing craft available, and the nature of the enemy defenses and beach obstacles. In any case, tanks must either closely follow or be followed closely by infantry.”<sup>128</sup> A point that FM 100-5, *Operations*, echoes as well.<sup>129</sup> Thus, doctrine again reinforces and highlights the importance of tanks in amphibious assaults and their mutual relationship with the infantry.

It is a credit to the doctrine writers that while some commanders saw tanks of little use, despite what doctrine said, they were still employed. In Leyte, the inability to develop land-based airpower and the commitment of the Navy to a major engagement during the initial phases of the operation deprived the LF of important air support. This increased the dependence on the other elements of the combined arms team, including the tank. It is an interesting thought exercise to envision an amphibious operation like Leyte

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<sup>126</sup> War Department, FM 31-5, 150.

<sup>127</sup> United States Navy, FTP 167, *Landing Operations Doctrine* (Washington, DC: Government Printing Office, 1938), 181.

<sup>128</sup> War Department, FM 31-5, 150.

<sup>129</sup> War Department, FM 100-5, 288.

occurring without tanks. One must wonder how successful and potentially costly such a campaign would be. It is without doubt that the capability and willingness to deploy tanks, during an amphibious assault in anticipation of the follow-on land campaign, significantly contributed to the land victory on Leyte.

In the coming battle for Luzon, this capability would prove central, as the combined arms landing force would find itself again, battling the Japanese on the plains of Luzon and in the streets of Manila.

## CHAPTER 6

### THE LUZON CAMPAIGN 1945

To gain success in battle will demand that he be, regardless of whether he commands a platoon or division, (be) thoroughly grounded and proficient in the tactics and technique of all of the arms he may command.

—Major Milton T Hunt, “Use of the Army in Luzon”

#### Strategic Context-The Luzon Campaign 1945

After the successful conclusion of the Leyte Campaign in December 1944, Gen MacArthur and the Sixth Army turned their attention to the liberation of Luzon, the largest and most important of the islands in the Philippine archipelago. Luzon is approximately 500 miles long and 140 miles wide. The island’s north is dominated by the Sierra Madre Mountains and Cagayan River Valley, while the center of the island is characterized by the wide expanse of the Luzon plain. The plain is an average of 50 miles wide and stretches 150 miles from Lingayen Gulf in the north to the Philippine Capital, Manila, at its southern tip. Manila, a city of approximately 1.1 million people and covering 14.5 square miles in 1944, sits on the north end of Manila Bay. Guarding the entrance to the bay are the Bataan Peninsula and the island fortress of Corregidor.<sup>130</sup> Canalizing the southern approaches to Manila are Laguna de Bay and Lake Taal, while approaches from the north are generally unrestricted with multiple improved and unimproved highways, leading from Lingayen to Manila.

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<sup>130</sup> Thomas Huber, “Battle for Manila,” in *Block by Block: The Challenge of Urban Operations*, ed. William G. Robertson and Lawrence A. Yates (Fort Leavenworth, KS: Command and General Staff College Press, 2003), 91.

The Japanese decision to seek a decisive battle at Leyte and their subsequent defeat in that campaign; meant the Japanese High Command had few means left to prevent further American advances in the Philippines.

### Japanese Defense Plan

In overall command of the Philippines, Gen Yamashita realized that the flood of reinforcements he had sent to Leyte, at the direction of the Imperial General HQ, had significantly weakened his ability to defend Luzon. Coupled with the decisive defeat of Japanese naval and air forces at the Battle of Leyte Gulf, Luzon lay wide open for invasion. Acknowledging this reality, Yamashita resolved to fight a delaying action on Luzon, hoping to draw American forces into an attritional battle in the mountainous northern half of the island, with the intent of drawing away American troops and material from further actions against the Japanese home islands.<sup>131</sup> Yamashita assessed that MacArthur's most likely course of action would be to conduct an amphibious landing near Lingayen Gulf, at Appari, and on the Batangas and Bataan Peninsula, while also potentially launching an airborne assault to secure the Cagayan Valley.

Given these possibilities, Yamashita developed a broad defensive plan based on four key points. First, secure defensive positions in mountainous terrain to the east and north of Manila, to the west of Clark Field, and around the Balata Pass. This would allow Japanese forces to dominate the central Luzon plain by fire and delay any advance on

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<sup>131</sup> As an aside, Gen MacArthur states in his memoir that during the occupation of Japan following the war, the Emperor confessed that the failure at Leyte and specifically the destruction of the "Yamashita line," convinced the Japanese government that the war was lost and that "all their subsequent efforts were to achieve peace without internal explosion." MacArthur, *Reminiscences*, 234.

Manila, assessed as the primary American objective. Second, employ small units to delay any advance on Manila from the southwest via the Batangas Peninsula. Third, retain the Cagayan Valley in the north to allow for the withdrawal of Japanese forces from positions further south and enable a long-term defense of the Sierra Madre Mountains. Fourth, evacuate troops from Manila to spare the city from significant fighting.<sup>132</sup>

However, Yamashita's order to evacuate Manila only applied to Army forces in the city. Under the Command of LTG Shizuo Yokoyama, Japanese naval forces in Manila, as part of the Shimbu Battle Group, ultimately reported to the Combined Fleet HQ and not Yamashita's 14th Army group.<sup>133</sup> As a result of these conflicting chains of command, naval personnel were tasked to defend the naval facilities in Manila and by extension, the city, in direct contradiction to Yamashita's orders. Thus, the coming battle of Manila would pit US forces against approximately 17,000 sailors and marines of Rear Admiral Sanji Iwabuchi's, Manila Naval Defense Force in some of the toughest urban combat of WWII.

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<sup>132</sup> Kenworthy, *The Tiger of Malaya*, 74-75.

<sup>133</sup> Huber, "Battle for Manila," 91-92.



PLATE NO. 76  
Japanese Plan for Defense of Luzon, 19 December 1944

Figure 16. Japanese Defense of Luzon

Source: General Staff, *Reports of General MacArthur*, vol. 1, *The Campaigns of MacArthur in the Pacific* (Washington, DC: Government Printing Office, 1953), 265.

### Operational Context-Landing at Lingayen Gulf and Drive on Manila

The Sixth Army launched its invasion of Luzon on 9 January 1945, landing two Corps, the XIV, and I Corps, at Lingayen Gulf. Sixth Army's mission, with support from the Third Fleet and the 20th and 14th Air Forces, was to establish a beachhead at Lingayen Gulf, destroy enemy forces in the central Luzon plain, liberate Manila then eliminate any remaining Japanese forces on the island.<sup>134</sup> Sixth Army would accomplish this mission in three phases; Phase I, an amphibious assault followed by establishing air and support facilities in the Lingayen Gulf area. Phase II, was the destruction of all Japanese forces north of the Agno River and the securing of crossings over it. Phase III, the destruction of Japanese forces in the central Luzon plain, paired with a rapid offensive south to liberate Manila. I Corps, composed of the 43rd and 6th Infantry Divisions and the 716th Tank Battalion, would land on the eastern side of Lingayen Gulf between San Fabian and Dagupan. XIV Corps, composed of the 37th and 40th Infantry Divisions and the 754th Tank Battalion, would land on the west side of Lingayen Gulf between Dagupan and Labrador.<sup>135</sup> In addition, the Sixth Army could call on the newly formed 13th Armored Group for additional armored support.<sup>136</sup> The 13th Armored Group

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<sup>134</sup> Sixth United States Army, *Report of the Luzon Campaign, 9 January 1945–30 June 1945*, 1.

<sup>135</sup> *Ibid.*, Annex 3b, 3c.

<sup>136</sup> The armored group was little used formation of World War II. Designed in 1942 as the tactical HQ for independently number tank battalions, its role as a tactical HQ was widely supplanted by infantry Divisions. By the Luzon campaign, the 13th Armored group HQ would serve mostly as an administrative HQ for the tank battalion and as principal armor warfare advisors to Sixth Army HQ. The 13th Armored was composed of the group HQ, 44th Tank battalion (minus C-Co), 775th Tank Battalion, 186th Engineer Battalion and 632 Tank Destroyer Battalion. Total strength was

consisted of the 44th, 775th Tank Battalions and 632nd Tank Destroyer Battalion and supporting engineers.<sup>137</sup> Two additional divisions, the 1st Cavalry and 32nd Infantry Divisions would land as reinforcements on 27 January, bringing the total number of divisions to six. Four conventional tank battalions, the 44th, 716th, 754th, and 775th, would render valuable service throughout the campaign.

The landings at Lingayen Gulf were largely unopposed. The Japanese, having recognized the overwhelming weight of American naval and air superiority, understood that a traditional shoreline defense was impractical, and subsequently adapted their doctrine. The Japanese would choose instead to adopt a defense in depth strategy.<sup>138</sup> As Sixth Army forces advanced inland and spread across the Luzon plain, the Japanese would mount stubborn defenses of the Cabaruan hills, approximately 12 miles southeast of I Corps landing beaches. Meanwhile, XIV Corps exploited the excellent paved highways leading from Lingayen to rapidly moved south, with the 40th and 36th Infantry Divisions moving along parallel highways against very little Japanese opposition. By 19 January, XIV Corps had crossed the Agno River and secured the towns of Paniqui and Anao, approximately 40 miles south of the landing beaches.

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around 2,900 personnel. Sixth United States Army, *Report of the Luzon Campaign, 9 January 1945–30 June 1945*, Annex 3g.

<sup>137</sup> Sixth United States Army, *Report of the Luzon Campaign, 9 January 1945–30 June 1945*, Annex 3g.

<sup>138</sup> Sixth Army, Office of the Assistant Chief of Staff, G2, *Enemy on Luzon: An Intelligence Summary*, December 1945, 22, ISCARL.

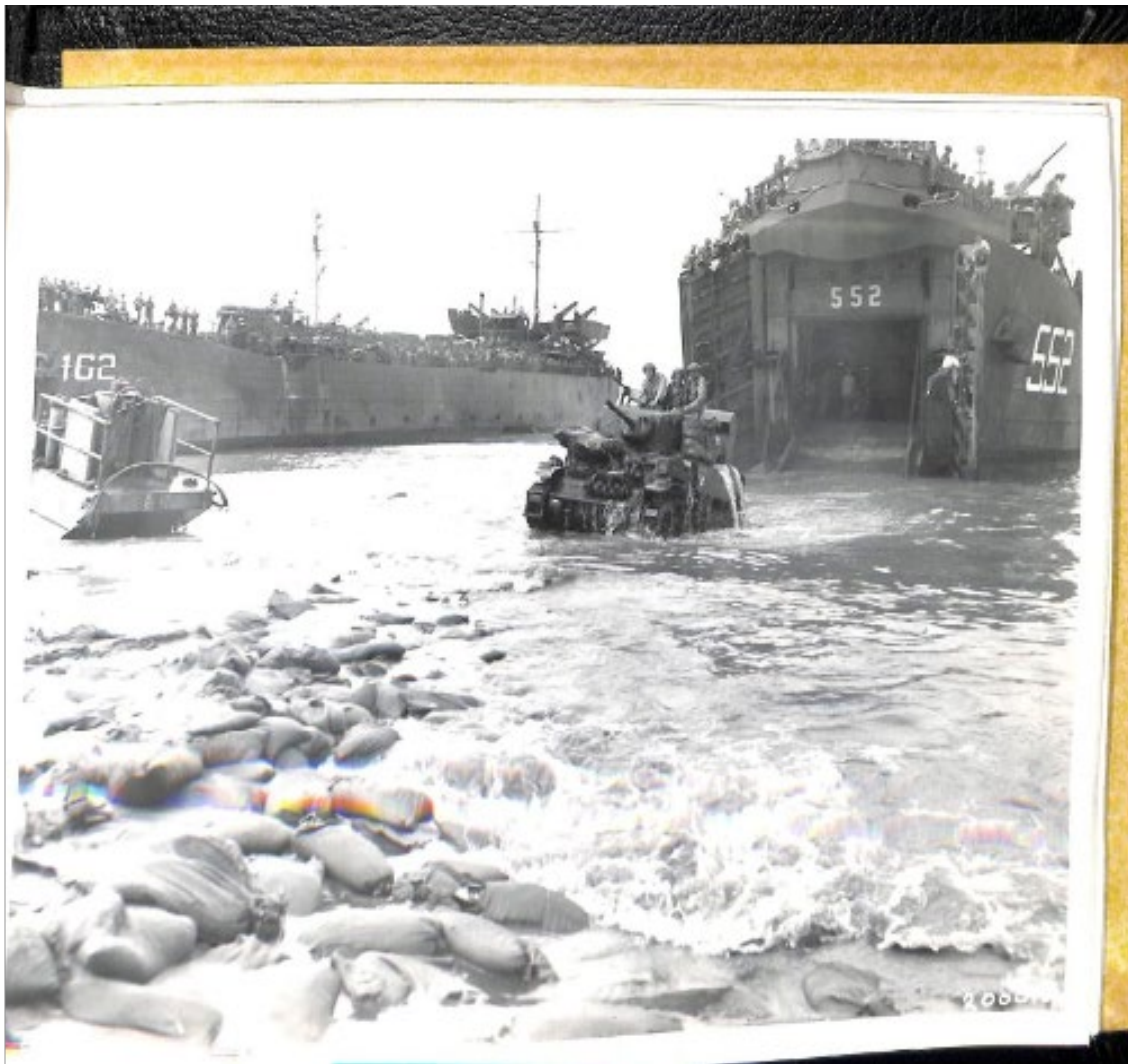


Figure 17. An M5 Stuart Light Tank of Company D, 716th Tank Battalion  
Attached to the 43rd Infantry Division Comes Ashore on  
White Beach near San Fabian on 11 January 1945

*Source:* Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954, Philippine Islands-Luzon-Lingayen, RG 111-SCA-Album-2896\_183, National Archives, College Park, MD, accessed 2 May 2022, <https://catalog.archives.gov/id/80668331>.

With XIV Corps rapidly advancing towards Manila, it fell to I Corps to protect the advance's left flank against increasingly stiff Japanese resistance, including the 2nd

Japanese Tank Division. Originally designed as a mobile striking force, the Japanese lack of air parity caused Japanese commanders to instead employ most of their tanks in dug-in fighting positions on key terrain, while holding only a few in reserve as a counterattack force. While American sources identify the fixing of tanks in defensive positions as a fundamental error, Japanese sources justify the change in tactics as the only way to counter allied air superiority, given the vulnerability of massed tanks to air attack, especially during daylight.<sup>139</sup>

#### 716th Tank Battalion against the Japanese 7th Tank Regiment

There was much anticipation that the decisive battle between the armored forces of Japan and the United States would take place on Luzon. However, American tanker's expectations for a great clash of armor in the Pacific would remain unfulfilled. In the early morning hours of 16 January, a small striking force composed of elements of the Japanese 7th Tank Regiment, 2nd Tank Division, and the Japanese 23rd Infantry Division formed for a counterattack. Forming four "Suicide penetration units," these combined arms teams moved towards the village of Monaog. The lead elements of these units were the 4th Company and 7th Tank Regiment. They soon encountered the forward elements of the 103rd Infantry Regiment and 43rd Infantry Division and withdrew. Assessing the way blocked, the unit tried again on the night of the 17th to reach the beachhead, this time by diverting north around Monaog toward Lingayen Gulf. Reaching the beachhead at the village of Potpot, near San Fabian, the 4th Company, 7th Tank Regiment ran into

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<sup>139</sup> Sixth Army, *Enemy on Luzon: An Intelligence Summary*, 7.

medium tanks of Company C, 716th Tank Battalion.<sup>140</sup> A two-hour fight ensued, but the result was all but pre-determined. The light armor of the Japanese tanks was no match for the 75mm guns and comparatively thick armor of the Sherman's. The 716th's after-action report cites the destruction of four enemy tanks along with 30 infantries.<sup>141</sup> Japanese after-action reports specify the loss of three type 97, one type 95, four other armored vehicles disabled, and 50 troops killed.<sup>142</sup> The failure to penetrate the American beachhead was compounded a few days later when the 161st Infantry secured the critical town of San Manuel. Here C Company, 716th Tank Battalion, lead the attack, providing direct fire support to the infantry against dug-in tanks, machine gun nests, and pillboxes. The battle for San Manuel raged for three days resulting in the loss of one medium tank, four disabled, two killed, and eight wounded, while inflicting an estimated 150 casualties on the Japanese.

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<sup>140</sup> 716th Tank Battalion, *After Action Report, 716th Tank Battalion: 9 January 1945 thru 8 February 1945, 18 March 1945 thru 8 February 1945*, 67, ISCRL.

<sup>141</sup> Ibid.

<sup>142</sup> Eighth Army, 10th Information and Historical Services, *Staff Study of Japanese Operations on Luzon*, 1949, 135-136, ISCRL.



Figure 18. A Sherman from C Company, 716th Tank Battalion Passes a Destroyed Type 97 Tank after the Battle near Linmangansan (Lingayen)

*Source:* Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954, Philippine Islands-Luzon-Le to Lu, RG 111-SCA\_2895\_069, National Archives, College Park, MD, accessed 2 May 2022, <https://catalog.archives.gov/id/80668173>.

NOTE: There is no town named Linmangsen currently in the Philippines. This could be a misspelling of Linagayen, which would geographically match the location of the engagement near Potpot village on the night of 17 January 1945 between elements of the 716th and Japanese 7th Tank Regiment. The photo from the national archives catalogues cites the picture as being taken in Linmangansan.

The presence of the medium tanks, with their 75mm guns and relatively thick armor compared to their Japanese counterparts, proved highly effective in both repelling the Japanese armored attack on the beachhead and knocking out fixed tank positions during the assault on San Manuel. Like the actions in Sicily in 1943, these brief but

violent actions near the beachhead demonstrate again how effective, especially under limited visibility conditions, the tank could be in defeating enemy armor and ensuring the security of the beachhead. It is a recurring trend that the most effective defense against an armored counterattack on an amphibious landing force during WWII was the tank. While the Japanese chose to employ most of their armor in fixed emplacements, their use in this attack shows that even limited mobile armor can be potentially dangerous.<sup>143</sup>

With San Manuel secure, I Corps continued its advance southeast, holding the left flank of the Sixth Army's advance south and enabling XIV Corps rapid drive towards Manila. XIV Corps continued its advance south towards the Clark Field-Fort Stotsenburg area. The Clark Field-Fort Stotsenburg sat within striking distance of Highway 3, the primary ground line of communication for XIV Corps, back to the beachhead at Lingayen Gulf. With over 30,000 troops of the Japanese Kembu Group operating the area, Gen Griswold, XIV Corps Commander, chose to launch a full Corps attack on the area on 27 January, to drive the Japanese into the hills west of Clark Field. This would secure his ground lines of communications for his eventual drive on Manila and enable the link up with the recently landed XI Corps, north of Subic Bay.<sup>144</sup>

#### 754th Tank Battalion-Clark Field and Fort Stotsenburg

After landing at Lingayen Gulf, the 754th operated in support of the 37th and 40th Infantry divisions, helping them maintain the rapid advance south towards Manila. Numerous delaying actions by the Japanese defenders hindered this rapid advance.

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<sup>143</sup> Eighth Army, *Staff Study of Japanese Operations on Luzon*, part IV, 7.

<sup>144</sup> General Staff, *Reports of General MacArthur*, vol. 1, 269.

Destroyed bridges significantly inhibited armor's ability to maintain pace with the steadily advancing infantry. Significant delays resulted as engineers repaired damaged bridges or established temporary ones. Once able to cross, the tanks were forced to conduct long road marches to re-gain contact with the infantry. The importance of maintenance and the tireless effort of the Battalions logistical support units was critical in enabling this stop-start advance. The advance continued like this from 9 January till 25 January. On 26 January, the disposition of the battalion was as follows: A Company, attached to the 37th Infantry; B Company, attached to the 40th Infantry Division; the remainder of the battalion serving as XIV Corps mobile reserve. As the Infantry Divisions approached the Clark Field-Stotsenburg area, the battalion began preparations to support the infantry divisions in their assault on Japanese defenses threatening the drive to Manila.<sup>145</sup>

The battle around Clark Field was similar to the battle for San Manuel. Company A, remained in reserve while Company B, supported the 40th Infantry Division, and Companies C and D, supported the 37th Infantry Division. On 27 January, the units conducted reconnaissance and field activities in preparation for the coming assault on the Clark Field-Fort Stotsenburg complex.<sup>146</sup> On 28 January, C Company, engaged in direct infantry support of the 2nd Battalion, 129th Infantry Regiment. However, it could only employ one platoon to support their assault due to the terrain. These tanks, however, ran into a minefield disabling three tanks, with one a total loss. Company D had more success

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<sup>145</sup> 754th Tank Battalion, *Battle of Luzon: 754th Tank Battalion: 9 Jan-30 June '45*, February 1945, 86, 90, ISCARL.

<sup>146</sup> *Ibid.*, 90.

in supporting 3rd Battalion, 189th Infantry Regiment. Using two platoons in rotation, the company provided valuable direct fire support to the infantry's assault-destroying pillboxes and strong points. The rotation of the platoons allowed each to refuel and rearm without forfeiting support to the assaulting infantry. On 29 January, D Company, engaged in a tank-on-tank action against four Japanese tanks, defending east of Fort Stotsenburg, destroying all four without loss.<sup>147</sup> 29 January saw the end of Japanese resistance on Clark Field and their withdrawal into the mountainous terrain to the west. Caught between the continuing advances of the 37th Infantry Division, isolated to the south by the 40th Infantry Division, and encircled to the west by the recently landed element of XI Corps, the Kembu Group became almost totally isolated in the hills west and northwest of Clark Field.

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<sup>147</sup> 754th Tank Battalion, *Battle of Luzon*, 93.



Figure 19. A Typical Tank-Infantry Team during the Advance to Manila

*Source:* Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954, Philippine Islands-Luzon-San or Santa F, RG 111-SCA Album 2958\_206, National Archives, College Park, MD, accessed 2 May 2022, <https://catalog.archives.gov/id/80680345>.

NOTE: Sniper fires keep Infantrymen low as medium tanks advance

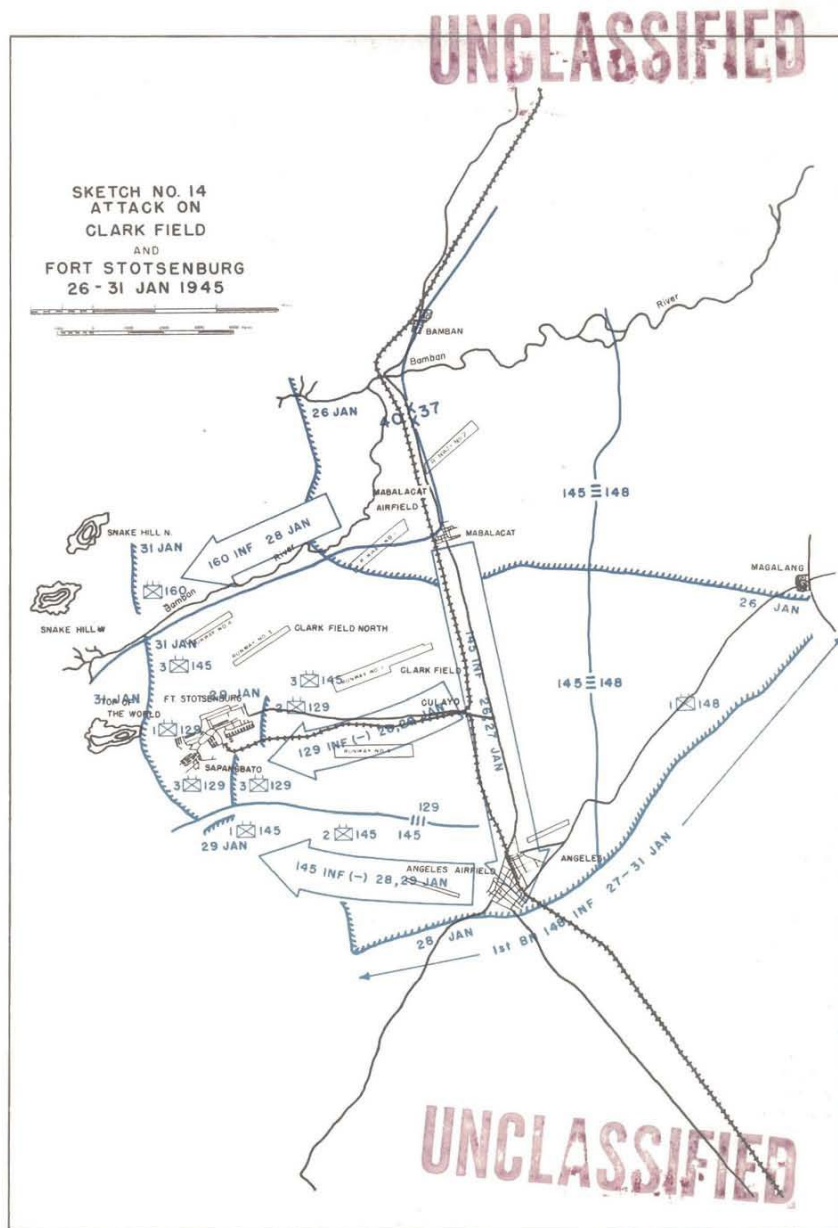


Figure 20. XIV Corps Assault on Clark Field- Fort Stotsenburg and the Surrounding Area

Source: XIV Corps, *After-Action Report, XIV Corps, M-1 Operations*, July 1945, 86, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS. Approved for public release.

The 754th unit history describes the fighting around Clark Field as difficult for the tanks because of the terrain and the prolific use of Japanese artillery, which caused the tanks to fight buttoned up, in the tropical heat, for hours on end. These conditions took their toll on the crews and resulted in numerous battle fatigue and heat exhaustion casualties.<sup>148</sup> More significantly, lessons learned during the earlier campaigns in the Solomon's islands were forgotten. Instead, brute force and practicality ruled the day. As the unit report summarizes, "Our only tactics were common sense application of our capabilities toward the achievement of the desired result."<sup>149</sup>

Again, a recurring inability to understand the tank's capabilities on behalf of some commanders was a key contributor to the limited and unimaginative employment of tanks in the actions around Clark Field.<sup>150</sup> Since the battalion was employed piecemeal in support of two infantry divisions, the battalion saw a difference between commands who understood tanks and those that did not. Before the invasion, the 754th had trained with the 37th Infantry Division and was habitually assigned to it. Tank commanders noted a marked difference in the employment and quality of tank-infantry coordination with the 37th Infantry Division when compared to other units, such as the 40th Infantry Division, with which they had little relationship. Habitual assignment and training of the infantry with their supporting armored elements are key in optimizing the infantry-tank team.<sup>151</sup>

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<sup>148</sup> 754th Tank Battalion, *Battle of Luzon*, 88.

<sup>149</sup> Ibid.

<sup>150</sup> Hunt, "Use of the Army in Luzon," 6.

<sup>151</sup> 754th Tank Battalion, *Battle of Luzon*, 60.

A separate but challenging aspect of the Luzon Campaign was the difficulty of resupply and availability of supply transportation for the armored forces. When operating detached from their organic battalion, the tank company largely forfeited its sustainment elements. Likewise, spare parts were always an issue with the long supply lines in the Pacific and rapid advance across Luzon.<sup>152</sup> This highlights some of the challenges of supporting an armored force during an amphibious campaign. Every new tank track, main gun round, and drop of fuel necessary to keep the tanks fighting had to travel from San Francisco across the vast expanse of the Pacific, through various logistical hubs to the beaches of Luzon. Sustaining and maintaining an armored force during an amphibious campaign is no small feat of logistical ability.

Fighting would continue in the Clark Field-Fort Stotsenburg area until 7 February. The 754th Tank Battalion provided direct and indirect fire support to assaulting infantry, as they seized Top of the World Hill and Snake Hill, two pieces of key terrain overlooking Clark Field. Finally, with their right flank secure, Kembu Group isolated and scattered, and with the link to XI Corp achieved, XIV Corps was ready to continue its drive south on Manila.

#### 44th, 754th, 716th Tank Battalions in Manila- Tanks in the Urban Environment

The 44th, 754th, and 716th each took part in the assault on Manila. The 44th Tank Battalion, assigned to the 1st Cavalry Division, was involved from the outset of the assault on 30 January, while the remaining battalions would join around 13 February. The

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<sup>152</sup> 754th Tank Battalion, *Battle of Luzon*, 58.

44th, 754th, and 716th would each act to support their divisions and play a key role in reducing Japanese fortifications. Of special note, 44th and 716th would provide invaluable direct and indirect fire support for the infantry, as they fought into the city and through the heavily fortified sections of the government district and the Intramuros Fortress.

Gen MacArthur saw the liberation of Manila as the decisive point of the Luzon Operation. Influenced by his long and intimate relationship with the Philippines and the Filipino people, he issued orders that heavily restricted the use of artillery and airpower during the initial assault on the city.<sup>153</sup> This forced American forces to fight in close combat without their traditional tactical advantages of superior fire support. This would prove costly in terms of casualties for the American forces and Filipino civilians caught in the crossfire. The restriction on massed artillery fire would only be lifted on 10 February, after increasingly high casualties.<sup>154</sup>

The 44th Tank Battalion, attached to the 1st Cavalry Division, would be the first tank unit to reach the outskirts of Manila on 3 February. Serving as the left flank of a two-pronged advance on Manila, the 1st Cavalry Division advanced along Highway 5, while the 37th Infantry Division advanced along Highway 3. Their mission was to rapidly encircle and capture the city in a coup de main. Intending to capitalize on shock and surprise, Gen Kruger instructed the 1st Cavalry Division, with three companies of the 44th Tank Battalion, to form “flying columns” for the advance down Highway 5.

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<sup>153</sup> Huber, “The Battle of Manila,” 113.

<sup>154</sup> Ibid.

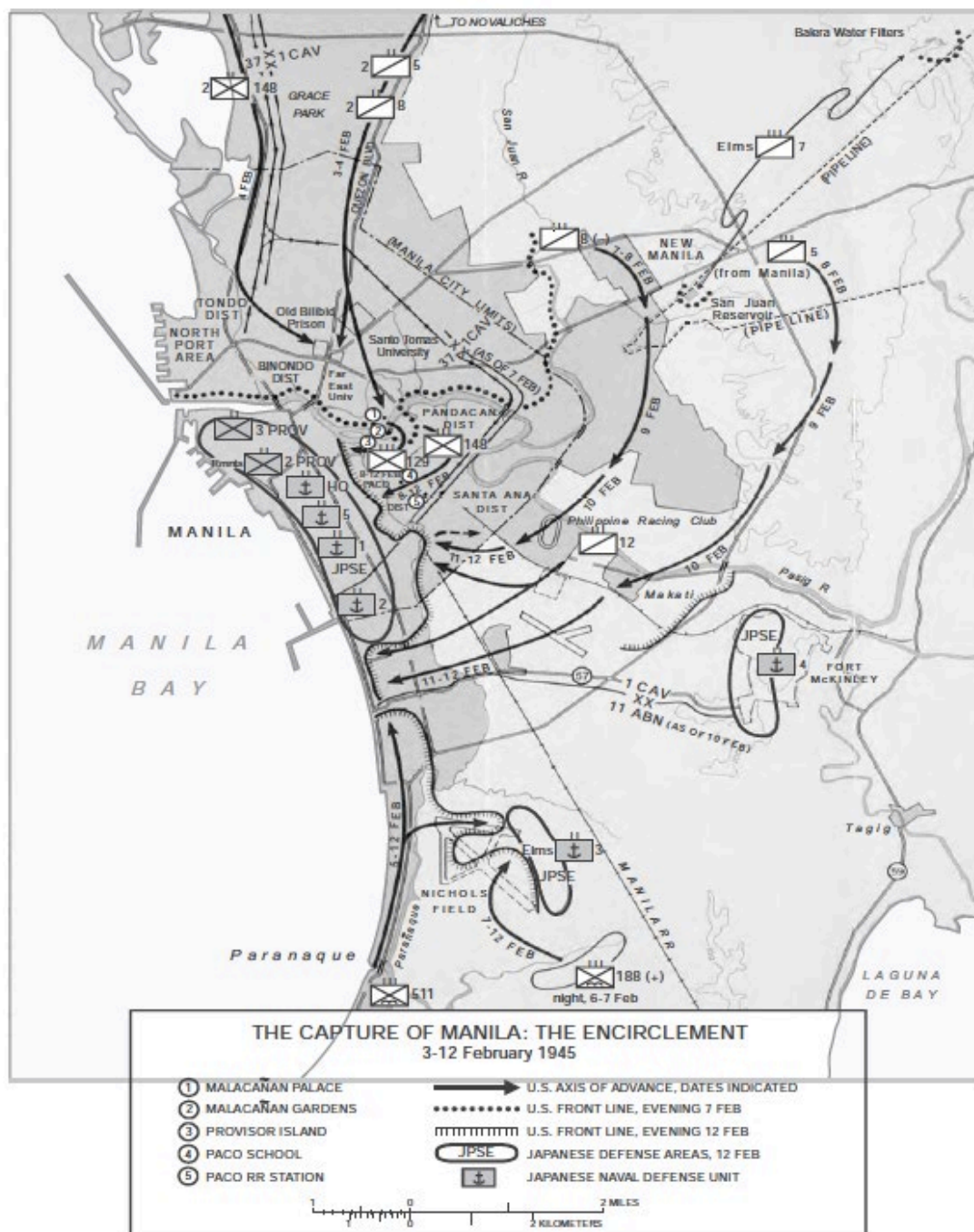


Figure 21. The Capture of Manila

Source: Thomas Huber, "The Battle of Manila," in *Block by Block: The Challenge of Urban Operations*, ed. William G. Robertson and Lawrence A. Yates (Fort Leavenworth, KS: Command and General Staff College Press, 2003), 99.

Supporting the advances were fighter-bomber and medium-bomber aircraft from the Marine Corps and Army Air Forces acting in direct support. This enabled the column to rapidly call for close air support and reduce enemy positions, thus helping ensure the tempo of the advance was maintained.<sup>155</sup> Starting near Guimba, Companies A, B, and C of the 44th Tank Battalion spearheaded the advance of three separate brigade combat teams. In three days, these brigades covered roughly 100 miles from Guimba to Manila, liberating the towns of Cabanatuan, Santa Rosa, Novaliches, Baliuag, and Agnat, causing an estimated 710 enemy casualties, destroying innumerable pillboxes, anti-tank guns, and other Japanese support vehicles.<sup>156</sup> On 3 February, Company B, entered Manila via the front gates of Santo Tomas University internment camp. A tank named “Battlin Basic” would be the first US unit to enter Manila proper, helping liberate the camp and its approximately 3,521 civilian prisoners.<sup>157</sup> Again, the ability of armor to capitalize on their mobility, protection and firepower enabled both tactical and operational maneuver during a critical moment in the land campaign. The improved road network on Luzon and the general more permissive terrain of the Luzon plain allowed armor to be exploited to its full potential and achieve both an operational and strategic objective, the rapid liberation of prisoners of war.

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<sup>155</sup> Kruger, *From Down Under to Nippon*, 241.

<sup>156</sup> 44th Tank Battalion, *After Action Report of the United States Army 44th Tank Battalion, 9th Armored Division: 17 July 1944-22 December 1944; January 1945-June 1945*, Document 844 TB 101, 6 (46), MCoE.

<sup>157</sup> Kruger, *From Down Under to Nippon*, 243. Dates differ between sources on this, but the 44th Tank Battalion reports reflect 03 1730 February as the hour of liberation.



Figure 22. The crew of “Battlin Basic” B Company, 44th Tank Battalion (Center) Poses for a Photo in Laguna Province on 3 August 1945

*Source:* Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954, Philippine Islands-Luzon-La, RG 111-SCA\_2894\_12, National Archives, College Park, MD, accessed 2 May 2022, <https://catalog.archives.gov/id/80668078>.

Following the liberation of Santo Tomas University, Company B, continued its advance into Manila, establishing positions along the Pasig River near the Presidential Palace. From here, it was able to neutralize several Japanese positions on the far bank and interdict Japanese river barge traffic.<sup>158</sup> Meanwhile, Company A, was consolidating gains along the division’s route of advance near Pandil. Action quieted for the battalion on 5 and 6 February as Companies B and C, supported their respective brigade teams while the remainder of the battalion conducted defensive operations near Santo Tomas. Most

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<sup>158</sup> 44th Tank Battalion, *After Action Report of the United States Army 44th Tank Battalion, 9th Armored Division*.

actions during this time were in support of the advancing infantry battalion teams and involved the destruction of pillboxes, fixed gun emplacements, and sniper positions. This was the nature of combat for the 44th throughout its time in Manila from 3 February through the 13th, with some notable exceptions.

Heavy fighting commenced again on 7 February with the 2nd Cavalry Brigades' drive into the Rosario Heights district. A platoon from Company B, supported the 37th Infantry Division's assault through the west half of the city to the north bank of Pasig River. On 7 February, two Platoons of B Company attacked to secure a water reservoir in the Rosario Heights sector. Due to serious concerns over potential Japanese destruction of civil infrastructure, the mission was deemed important enough to risk the tanks conducting a hasty attack, without infantry support to secure the reservoir. Advancing east, the platoons' encountered stiff resistance from small arms, pillboxes, satchel charges, and 120mm anti-aircraft gunfire. The platoons were able to reach the reservoir, but the volume of fire proved overwhelming. This action resulted in the loss of three medium tanks and the damaging of two. It would not be until 1330, on 08 February, after another failed tank attack, that Company B would return with supporting infantry and secure the reservoir.<sup>159</sup> This action highlights that in urban terrain, the tank-infantry team is even more essential to tactical success.

Meanwhile, in northern Manila near Grace Park, the 754th Tank Battalion (-) joined the battle with Company A acting as the 37th Infantry Division's mobile reserve and Company C and D operating as XVI Corps reserve. Company B remained in the

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<sup>159</sup> 44th Tank Battalion, *After Action Report of the United States Army 44th Tank Battalion, 9th Armored Division*, 9 (49).

Clark Field area further north, assisting in operations there. Staging out of Grace Field, Company A supported the 37th Infantry Division in their drive to the northern bank of the Pasig River, providing direct fire on enemy positions and serving as general security patrols.<sup>160</sup> Further to the east on 9 February, lead elements of Company A, 44th Tank Battalion, drove east, leading the 8th Cavalry Regiment. Reaching the north bank of the Pasig near the Santa Ana district, the tanks again proved valuable in interdicting river traffic and establishing near side security for a bridgehead across the Pasig. As a result, the infantry established a beachhead on the far side of the river later that evening. Engineers established a pontoon bridge by 1700 the next day, but indirect fire damaged it, rendering the bridge unusable until engineers repaired it.<sup>161</sup> Company B, 44th Tank Battalion, finally crossed the Pasig River on 13 February and continued its support of the 1st Cavalry Divisions advance through southwestern Manila until reaching the south side of the Intramuros, on 22 February.

The cumulative effect of these tank-infantry actions was to tighten the noose around the Japanese defenders in the city center. The toughest fight in Manila would be for the government district and the Intramuros Fortress complex. The government district was composed of the police station, the post office, the legislative building, and numerous other government buildings. Constructed of reinforced concrete and designed to withstand the region's frequent earthquakes, they would each make a formidable defensive position. The Intramuros, a 16th century European style fortress at the heart of

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<sup>160</sup> 754th Tank Battalion. *Battle of Luzon*, 106.

<sup>161</sup> XIV Corps, *After-Action Report, XIV Corps, M-1 Operations*, 97.

Manila, had masonry walls 20 feet thick, bristling with defensive emplacements. With the restriction of unobserved fires lifted, the 37th Infantry Division and 1st Cavalry Division made extensive use of both artillery and tank fire to prepare objectives, breach obstacles, and blow holes in walls to allow for infantry to assault buildings and strong points from unexpected directions. While individual actions are too numerous to count, a reporting of the rounds expended by the 44th Tank Battalion provides insight into the ferocity of the fighting. Between 12 February and 22 February, the 44th Tank Battalion expended over 3,600 main gun rounds and over 183,000 machine gun rounds against positions in the government district alone.<sup>162</sup> As an after-action report on the Japanese defense of Manila characterized:

It is necessary to employ all weapons possible in the preparatory fires in order that troops gain a foothold in a fortified building. High-angle artillery and mortar fire prove worthless against buildings of this type. Direct fire, high velocity, self-propelled guns, like tank destroyers, M-7s, and tanks prove effective only after hours of shelling have literally torn the building asunder.<sup>163</sup>

The heavy fighting for the government district constituted the Japanese primary defensive zone, with the Intramuros and Manila harbor being their final defensive positions. Due to fighting experienced in the government district, the assault gun platoon of the 716th Tank Battalion was ordered south from Monaog to Manila and attached to the 1st Battalion,

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<sup>162</sup> 44th Tank Battalion, *After Action Report of the United States Army 44th Tank Battalion, 9th Armored Division*, 10 (50).

<sup>163</sup> XIV Corps, *Japanese Defense of Cities as Exemplified by the Battle of Manila*, Assistant Chief of Staff, G-2, Headquarters, Sixth Army, July 1945, 23, ISCRL.

437th Infantry Regiment, 37th Infantry Division to assist in the assault on the Intramuros.<sup>164</sup>

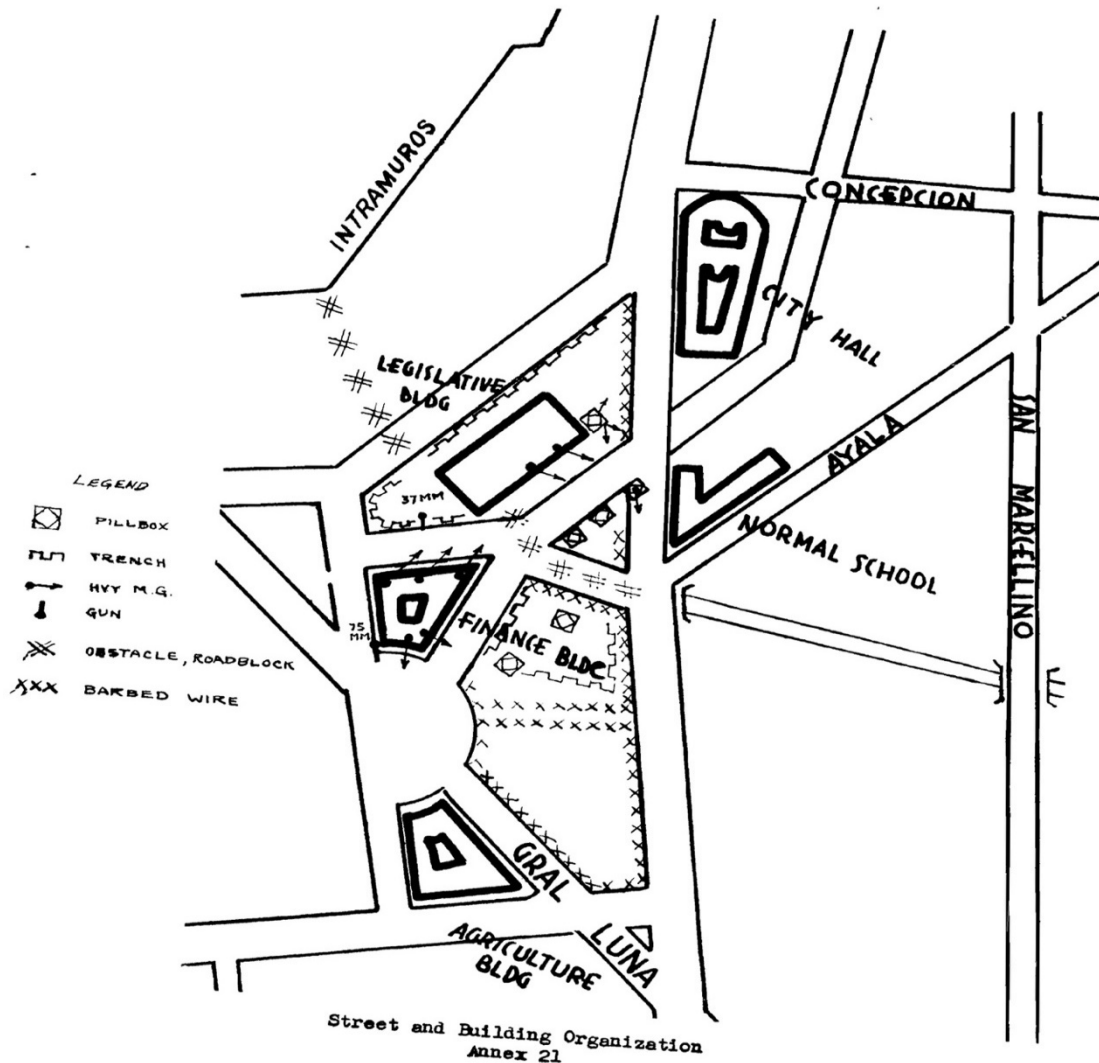


Figure 23. Government Quarter Layout

Source: XIV Corps, *Japanese Defense of Cities as Exemplified by the Battle of Manila*, Assistant Chief of Staff, G-2, Headquarters, Sixth Army, July 1945, 58, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.

<sup>164</sup> 716th Tank Battalion, *After Action Report, 716th Tank Battalion: 9 January 1945 thru 8 February 1945, 18 March 1945 thru 8 February 1945*, 72.

The Assault Gun Platoon Sherman's, mounting a 105mm Howitzer, would be highly effective in helping reduce the fortifications around City Hall, the Manila Theater, and the ice works.<sup>165</sup> The taking of City Hall in support of the 145th Infantry Regiment is illustrative of the effectiveness of the 105mm's direct fire capability. On 21 February, while operating in support of the regiment's Third Battalion, the platoon assaulted across open ground on the east side of City Hall to a position only 60 yards from the structure. The platoon then commenced a two-hour bombardment firing an innumerable number of rounds into the building and creating a 15-foot hole in the east wing of the building. This enabled an infantry assault to bypass the prepared defenses around the main entrance and enter the building. However, the pre-bombardment shelling was insufficient to suppress the defenders effectively, and the assaulting infantry had to withdraw. A bombardment of white phosphorus incendiary rounds followed.<sup>166</sup> This cycle of attack, withdrawal, bombardment, and assault continued till 23 February. The fire placed on the building by tanks and artillery was so intense that it eventually collapsed the entire northeast corner of the four-story building. By midday on the 23rd, the infantry could finally clear what was left of City Hall.

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<sup>165</sup> 716th Tank Battalion, *After Action Report, 716th Tank Battalion: 9 January 1945 thru 8 February 1945, 18 March 1945 thru 8 February 1945*, 73. Authors note: XIV Corps after action reports identify the M-7 Self-propelled artillery as making the breach in city hall. However, due to the open top construction of the M-7 Priest, it is more likely the 716th Unit report, identifying the fully armored M4 (105) VVSS Sherman is correct.

<sup>166</sup> XIV Corps, *After-Action Report, XIV Corps, M-1 Operations*, 113.

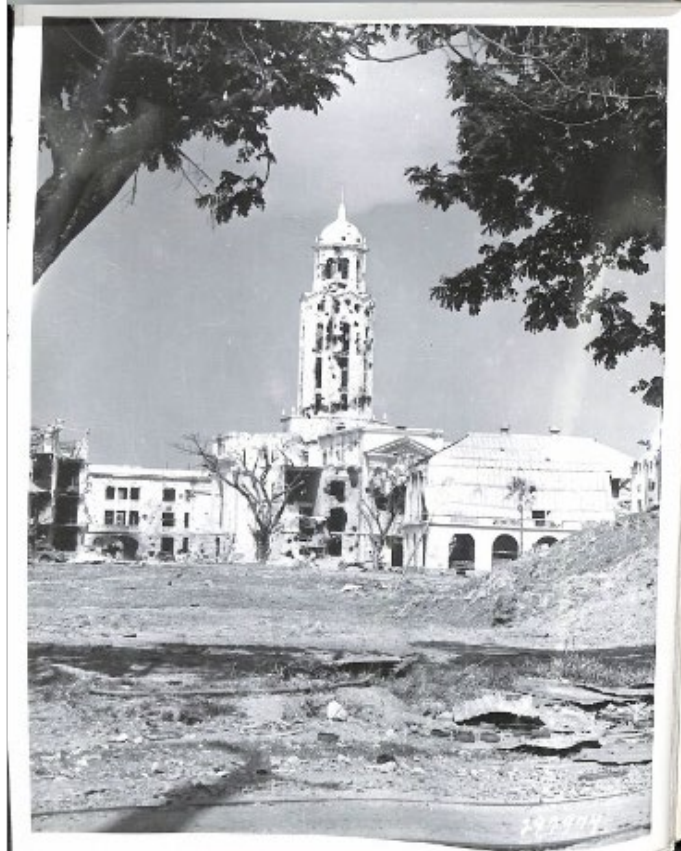


Figure 24. The Remains of City Hall. A Testament to the Destructive Nature of Urban Combat in Manila

*Source:* Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954, Philippine Islands-Luzon-Manila, RG 111-SCA Album 2941\_96, National Archives, College Park, MD, accessed 2 May 2022, <https://catalog.archives.gov/id/80676826>.

The fight for the Intramuros began on 19 February with a preliminary artillery bombardment. After three days of artillery bombardment, the tanks joined in. This would be the culmination of armor's employment in the city. The 716th Assault Gun Platoon provided direct fire support to the 37th Infantry Division's assault on the south gate. Meanwhile, 754th Tank Battalion provided direct fire support to elements of the 1st Cavalry Division, now under the operational control of the 37th Infantry Division, as they

assaulted the southwest and northeast sections of the fortress on 23 February.<sup>167</sup> 2nd Platoon, Company B, 754th Tank Battalion, fired at a rate of two rounds a minute for the duration of the bombardment, enabling the infantry to assault the ancient fortress.<sup>168</sup> XIV Corps after action reports count the expenditure of over 450 main gun rounds and over 4,573 105mm Howitzer rounds from both the assault gun Platoon and supporting artillery. Although armor did not accompany the infantry in the initial assault, tanks from the 754th would enter the Intramuros on 24 February to assist with the consolidation of gains. This includes providing direct fire support to the 129th Infantry Regiment, 37th Infantry Division in its clearance of Japanese holdouts in the Del Monaco Church and Fort Santiago, with the fortress falling on 25 February.<sup>169</sup>

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<sup>167</sup> Smith, *Triumph in the Philippines*, 295.

<sup>168</sup> 754th Tank Battalion, *Battle of Luzon: 754th Tank Battalion: 9 Jan-30 June '45*, 120.

<sup>169</sup> 754th Tank Battalion, *Battle of Luzon: 754th Tank Battalion: 9 Jan-30 June '45*, 122; XIV Corps, *After-Action Report, XIV Corps, M-I Operations*, 122-123.



Figure 25. The 37th Infantry Division Assault Plan for the Intramuros

*Source: XIV Corps, After-Action Report, XIV Corps, M-1 Operations, July 1945, 123, World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS. Approved for public release.*

Fighting would continue in the city for another eight days, especially around the finance building in the government district. Finally, on 4 March 1945, the finance building fell to a combined tank-infantry-artillery assault. As the 754th after-action report would conclude, regarding the battalions' actions in Manila. "In general, tanks were used to their best advantage during this phase of the battle of Luzon, and this battalion earned praise and commendation of the Infantry divisions with which it worked."<sup>170</sup>

The campaign on Luzon would continue to the east, south, and north of Manila for the remainder of the war. Bataan and Corregidor were recaptured in late February.<sup>171</sup> By 30 June, over six months after landing at Lingayen Gulf, the Sixth Army had taken most of Luzon minus an 11,000 strong Japanese holdout position in the rugged Sierra Madre Mountains and another 12,000 strong position in the Kiangnan-Bontoc Mountains.<sup>172</sup> While strong in number, these positions were isolated, cut off from both supply and hope of reinforcement. Many of the remaining Japanese defenders would die from disease, starvation, and wounds. In total, the campaign to liberate Luzon had lasted 173 days, cost an approximate 8,140 American lives, and killed, captured, or isolated over 248,000 Japanese.<sup>173</sup> The four tank battalions that saw action during the campaign undoubtedly assisted in the rapid penetration of Japanese defenses around Lingayen Gulf,

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<sup>170</sup> 754th Tank Battalion, *Battle of Luzon: 754th Tank Battalion: 9 Jan-30 June '45*, 103.

<sup>171</sup> General Staff, *Reports of General MacArthur*, vol. 1, 280.

<sup>172</sup> Krueger, *From Down under to Nippon*, 318.

<sup>173</sup> *Ibid.*

enabled the rapid advance on Manila, and were an essential element of the combined arms teams in the streets of Manila.

The length of the land campaign following the amphibious assaults at Lingayen Gulf is a testament to the duration such operations can take. The challenge of extended supply lines, ship to shore connection, difficult tropical and urban terrain, and a fanatical enemy all were factors that contributed to the decision to employ tanks in the amphibious landings on Luzon. There is perhaps no campaign in the Pacific theater that highlights both the challenges, opportunities, and necessity for employing armor in amphibious operations better than the Luzon campaign.



Figure 26. Using Tracers, a Tank Fires on a Japanese Bunker in Manila

*Source:* Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954, Philippine Islands-Luzon-Manila, RG 111-SCA\_Album 2902\_009, National Archives, College Park, MD, accessed 2 May 2022, <https://catalog.archives.gov/id/80669480>.

### Lessons Observed and Application of Doctrine

In analyzing the application of armor in Luzon, we see a continuation of the tactical and doctrinal trends identified in Leyte. On Luzon, armor was used to rapidly expand the beachhead and defend the LF from enemy armor and infantry attacks. Following the defense, armor units were able to spearhead the rapid advance of the 37th and 1st Cavalry Divisions south along Highways 3 and 5. Armor in Luzon largely fit roles one and four for armor's employment in amphibious operations. Under role one, armor struck targets inland through the employment of speed, mobility, and firepower. Sources document this during the employment of 1st Cavalry Divisions flying columns on the drive to Manila. Armor's use in role four, as armored artillery, was on full display during the battle in Manila. The 44th, 754th, and 716th each provided invaluable direct fire support to assaulting infantry during the battles to establish a bridgehead over the Pasig River, the fights in the government district over City Hall, and in their support to the assault on the Intramuros. Unlike in Leyte, armor's actions on the beach were a supporting effort to the overall landings. By their very nature, the amphibious operations on Luzon were a means of delivering combat power to the shore. The geographic size of the island essentially made the campaign a traditional land campaign after the landings. A campaign in which tanks served their traditional doctrinal roles as codified in FM 100-5, FM 31-5, FM 17-36, and FM 31-50, *Attack on a Fortified Position and Combat in Towns*.<sup>174</sup> Far from the ideal of FM 17-36, tanks and infantry worked together inconsistently. When tanks and infantry did effectively cooperate,

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<sup>174</sup> XIV Corps, *Japanese Defense of Cities as Exemplified in the Battle of Manila*, 26.

training and habitual unit alignment made the difference as seen during the urban combat in Manila.

#### Armor on Luzon Summary

There was a hope among many armor units that the wide Luzon plain would result in battles more characteristic of the armored clashes ongoing in central France.

Unfortunately, American airpower robbed them of that hope. Instead, they engaged enemy tanks in strong defensive positions, routed out enemy snipers and machine-gun nests, and engaged in some of the most intense urban combat since Stalingrad. They faced rugged terrain, numerous river crossings, and a fanatical enemy. They also had to deal with highly developed urban terrain while operating over extended ship-to-shore logistics lines, while supporting infantry units that sometimes did not know how to employ them. They operated dispersed in platoons and companies, with limited centralized control from their parent units. Yet, they rendered invaluable service to their supported infantry. The Luzon Campaign highlights the importance of the tank in combined arms warfare and perhaps, like no other campaign in the Pacific, that the amphibious assault is typically only the beginning of a much longer campaign, and it is planning for that operation, the land operation, which must drive and shape planning for the amphibious operation.

## CHAPTER 7

### CONCLUSION AND RECOMMENDATIONS

It would seem, therefore, that those responsible for directing such operations could not fail to benefit from some study and meditation on the doings of their predecessors.

—Captain (later Viscount) William J. Slim, *Amphibious Warfare*

The tank has been a vital element within the combined arms team throughout the 20th century. The employment of the tank as part of the larger combined arms landing force was central to the success of amphibious operations in both the Mediterranean and Pacific Theaters during WWII and one commensurate with its doctrinal role. Without the tank's ability to provide lethal direct and indirect fire support and protected mobile firepower, the Sicilian and Philippine campaigns would have been much more costly in terms of time, blood, and treasure.

#### Findings and Recommendations

This research sought to answer the question of what the role of Army armored units in amphibious assaults was. The analysis of three historical case studies concludes that the tanks' primary role was to rapidly exploit the success of the landings and expand the beachhead, securing objectives far inland from the initial amphibious objective area. Its secondary role was to support other elements of the amphibious landing force during the initial assault through direct fire. While tanks played an important role in initial landings in both the Mediterranean and Pacific Theaters, tanks were not the decisive factor in the success of these operations. Instead, tanks truly shined after coming ashore

in the later waves of an amphibious assault and the subsequent land campaigns. The exception to this was when an armored threat to the beachhead was present.

The tank's ability to bring mobile, protected firepower to the landing beaches enabled 3ID's landings around Licata. Armor's ability to rapidly advance out of the beachhead and secure key terrain ensured the Allies retained the initiative and ultimately the victory in Sicily. Similarly, in the Philippines, the amphibious tank's ability to provide direct fire support to the infantry enabled the successful landings at Leyte. Likewise, the ability of conventional tanks to subsequently mass and generate shock against the Japanese defenders in the battle of the Dulag-Burauen-Dagami Road allowed US forces to advance inland rapidly and secure important airfields.

However, along the Dulag-Burauen-Dagami Road, we saw the failure of combined arms. The failure of the infantry to keep pace with the armor and protect it in the restricted terrain of Leyte caused a loss of initiative and resulted in the battle on 25 October, where US forces had to pay for the same ground twice. The key factor in these mistakes was the poor understanding of the tank's capabilities on behalf of infantry commanders and vice versa.

The importance of the combined arms team was on display again in Manila. The balanced tank-infantry-artillery team was able to drive the Japanese from their urban pillboxes and strong points. At the same time, air support played little role due to concerns over potential civilian casualties. It is key to note that the introduction of tanks and artillery into the urban fight for Manila also made a key difference in limiting US casualties.

Overall, while the tank was employed in multiple amphibious operations throughout WWII, it was not the decisive weapon of those landings. Instead, the decisive weapon was the combined arms team. The ability to envision and effectively employ the various elements, infantry, armor, and artillery was key. The removal of any of the combined arm's elements resulted in a serious unbalancing of the team and often failure. Furthermore, in these moments of imbalance, the reliance on airpower and other inter-service fires proved disadvantageous. The balanced combined arms team, supported by proper planning and training, was the key to success in Sicily, Leyte, and Luzon.

Secondary research questions included what lessons from previous operations are absent in today's doctrine and how should Army Doctrine change to support joint amphibious operations in the future effectively? In answer to the first question, today's Army Doctrine lacks significant discussion of amphibious operations. Currently, only FM 3-99, *Airborne and Air Assault Operations* (2015) makes meaningful mention of them. FM 3-99 treats amphibious operations very similarly to airborne and air assault operations despite amphibious operations being inherently more complex; requiring a level of interservice coordination far superior to that required by both airborne and air assault operations. This makes sense given the existence of joint doctrine on the subject and the Marine Corps responsibility for amphibious doctrine. It is simply not the US Army's current responsibility to draft and formulate amphibious doctrine.

However, the realities of a potential conflict with China or Russia means the Army could find itself engaged in two theaters where maneuver across the sea offers substantial tactical and operational advantages to Army commanders. As demonstrated during Sicily, the Southwestern Pacific Campaigns of MacArthur, and later in Korea,

maneuver across the sea by US Army forces is a critical capability and not solely the purview of the Marine Corps. While the US Army lacks the doctrinal responsibility for amphibious operations, it should not and cannot abdicate its responsibility to think about or conduct amphibious operations as part of the joint force. The new FM 3-0, scheduled for publication in June 2022, is an important step in reclaiming the Army's amphibious heritage. Chapter 6, Army Operations in Maritime-Dominated Environments, is a good starting point for changing how the Army thinks about its role within joint amphibious operations. By highlighting the historical importance of the land campaign that follow most Army amphibious operations, this research seeks to reshape the US Army's conceptualization of amphibious operations. Amphibious operations once allow the US Army to seize, retain, and exploit the initiative, maneuver to positions of relative advantage against peer competitors and extend operational reach. They can again.

With the removal of tanks from the Marine Corps combined arms teams, it will fall to the Army to provide this component. Without Army Doctrine or dual-use Marine-Army Doctrine to support this, junior and mid-grade leaders will have to relearn old lessons at the expense of blood and treasure. The key to preventing this is training. Army armored units must be able to train with and be employed by the Marine Corps and vice-versa. Placing an Army Tank Battalion or company afloat with a Marine Expeditionary Unit and conducting joint training aboard Camp Pendleton or Camp Lejeune with tanks from the 1st Armored Division or 3ID could go a long way in the development of Army Tactics, Technique, and Procedures for armor support to amphibious operations. However, there are numerous logistical and platform-specific impediments to this training. Mainly the limited availability of ship-to-shore movers and the weight of the

current Abrams tank. Thus, the US Army should look to field additional light / medium tank companies or Battalions in place of Cavalry Squadrons within its Infantry Brigade Combat Teams.

Furthermore, the Army should train amphibious assaults and other amphibious operations using both its own Army watercraft systems and as part of the joint force. US Army Pacific and its assigned units are the most logical place to begin training amphibious operations again. Ideally, this training would take place with Navy and Marine Corps elements.

To address another secondary research question, the US Army should move to codify specific doctrine related to armors use in amphibious operations. The Office of the Chief of Armor should work to identify and track former Marine Corps armor officers who elected to transfer into the US Army. These officers should help write and publish specific sections or appendices to the existing Combined Arms Battalion, Tank Company, Tank Platoon FMs, and other doctrinal publications that address the employment of armored forces in amphibious operations. The US Army should work with the Marine Corps to actively harvest its years of lessons learned to form the basis of an Army Tactics, Technique, and Procedure's manual on the subject. Finally, the US Army should incorporate planning for Army amphibious landings into the joint operations blocks of instruction at the Command and General Staff College. This will highlight the complexity of amphibious operations to students-officers while allowing greater integration between Army and Marine Corps elements. This part of the scenario could be overseen by the Marine Corps element within the department of Joint-

interagency military operations to ensure synchronization of joint and Marine Corps landing doctrine.<sup>175</sup>

### Areas of Future Research

Further research into armor's use in amphibious operations after 1945 would expand the body of historical knowledge on amphibious operations. Particularly, how does the proliferation of numerous and increasingly effective anti-tank guided missiles change the employment of armor in amphibious operations. Further research into the Turkish landings on Cyprus and the British use of armored vehicles in the Falklands Campaign could illuminate this topic. As large-scale massed amphibious assaults in a nuclear environment seem increasingly unlikely, further studies could investigate the potential use of tanks and armored platforms for amphibious raids and demonstrations.<sup>176</sup> Furthermore, opportunities for US Army armor to train and integrate with Marine Corps operations should be explored. While the massed amphibious assault of both services pasts may be of lesser tactical and operational value, the ability to land dispersed combined arms forces from the sea and then concentrate them on an objective far inland, remains critical.<sup>177</sup> As a corollary, additional research into the changing nature of the

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<sup>175</sup> Lieutenant General Robert E. Coffin, USA, (RET), "Letter to the Editor," *Army History*, no. 30 (Spring 1994): 38. In his letter, LTG. Coffin explains that during his time at the Command and General Staff College in 1950 that this type of relationship existed in relation to Airborne and amphibious training.

<sup>176</sup> B. A. Friedman, "Naval Strategy, and the Future of Amphibious Operations," in *On Contested Shores: The Evolving Role of Amphibious Operations in the History of warfare*, ed. Timothy Heck and B. A. Friedman (Quantico, VA: Marine Corps University Press, 2020), 362.

<sup>177</sup> Keith D. Dickson, "The Role of Amphibious Operations within the Multidomain Operational Construct," in *On Contested Shores: The Evolving Role of*

combined arms team would be beneficial. The proliferation of drones, loitering munitions, and the increasingly lethal multi-domain reconnaissance-strike complex is changing the character of the combined arms team. How could sensor networks, drones, active countermeasures, and unmanned ground vehicles integrate as members of a new manned-unmanned combined arms team change armor's employment in amphibious operations?

### Final Thoughts

At the time of this writing, in mid-2022, the contemporary conflicts in Nagorno-Karabakh and the Russo-Ukrainian War are seen as the harbingers of the tank's death.<sup>178</sup> The tank has been here before. A similar argument was advanced after the stunning defeat of unsupported Israeli Armor by Egyptian forces during the Yom Kippur War in 1973.<sup>179</sup> A similar death warrant was issued when unsupported Russian armor drove into Grozny in 1995.<sup>180</sup> Despite claims that the tank is analogous to the outdated battleship of the 20th century, the fact remains that the tank, or more importantly the qualities of the tank, are key to the success of the combined arms team and critical to the success of any

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*Amphibious Operations in the History of warfare*, ed. Timothy Heck and B. A. Friedman (Quantico, VA: Marine Corps University Press, 2020), 327.

<sup>178</sup> Nick Reynolds and Jack Watling, "Your Tanks Cannot Hide," *RUSI Defence Systems* 22 (5 March 2020), <https://rusi.org/explore-our-research/publications/rusi-defence-systems/your-tanks-cannot-hide>.

<sup>179</sup> Jonathan House, *Toward Combined Arms Warfare* (Ft. Leavenworth, KS: Combat Studies Institute, 1984), 180.

<sup>180</sup> Kendall D. Gott, *Breaking the Mold: Tanks in the Cities* (Fort Leavenworth, KS, Combat Studies Institute Press, 2006), 86.

offensive or defensive operation.<sup>181</sup> The tanks qualities of shock, mobility, and protected firepower make it essential to the effectiveness of combined arms especially in amphibious operations, as this study has attempted to show. While anti-tank guided missiles and drones have changed battlefield dynamics and increased the need for a recapitalization in anti-air and anti-tank guided missiles defensive technologies, the simple fact remains that the tank will continue to evolve and endure as a member of the combined arms team.<sup>182</sup> It is instead doctrine that must change to meet the realities of the modern battlefield. When employed as a member of a balanced combined arms team, the tank, in whatever form it may take next, will continue to play a key role in future amphibious operations.

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<sup>181</sup> David Johnson, “The Tank is Dead. Long Live the Javelin, the Switchblade, the...?” *War on the Rocks*. 18 April 2022, <https://warontherocks.com/2022/04/the-tank-is-dead-long-live-the-javelin-the-switchblade-the/>.

<sup>182</sup> John Spencer and Harshana Ghoorhoo, “The Battle of Shusha City and the Missed Lessons of the 2020 Nagorno-Karabakh War,” Modern War Institute, at West Point, 14 August 2021. <https://mwi.usma.edu/the-battle-of-shusha-city-and-the-missed-lessons-of-the-2020-nagorno-karabakh-war/>.

## GLOSSARY

Below are several key terms derived from current joint amphibious doctrine, JP 3-02, the Department of Defense Dictionary, and former amphibious Army Doctrine as codified in FM 31-5. Definitions sourced from FM 31-5 are italicized for contrast.

Amphibious Invasion. “*A major landing assault with extensive forces and resources involving continued operations on land against an active enemy.*”<sup>183</sup>

Assault Landing Force. “A unit making the initial landing on a hostile shore.”<sup>184</sup>

Combat Loading. “The arrangement of personnel and the stowage of equipment and supplies in a manner designed to conform to the anticipated tactical operation of the organization embarked.”<sup>185</sup>

D-Day. “The unnamed day on which a particular operation commences or is to commence.”<sup>186</sup>

Demonstration. “An amphibious demonstration is conducted for the purpose of deceiving the enemy by a show of force with the expectation of deluding the enemy into following an unfavorable course of action.”<sup>187</sup> “*An expedition intended only as an exhibition of force, implying attack.*”<sup>188</sup>

H-Hour. “In amphibious operations, the time the first landing craft or amphibious vehicle of the waterborne wave lands or is scheduled to land on the beach and, in some

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<sup>183</sup> War Department, FM 31-5, *Landing Operations on Hostile Shores*, 3.

<sup>184</sup> McDaniel et al., “The Armored Division as an Assault Landing Force,” 5.

<sup>185</sup> Joint Chiefs of Staff, JP 3-02, *Amphibious Operations*, GL-10.

<sup>186</sup> Ibid., GL-11.

<sup>187</sup> Ibid., I-3.

<sup>188</sup> War Department, FM 31-5, *Landing Operations on Hostile Shores*, 3.

cases, the commencement of countermine breaching operations.”<sup>189</sup> “The time at which the first wave reaches the hostile shore.”<sup>190</sup>

Landing Craft. “A craft employed in amphibious operations specifically designed for carrying troops and their equipment and for beaching, unloading, retracting, and resupply operations.”<sup>191</sup>

Occupation. “An assault expedition to seize and hold a prescribed area without continuing a land operation.”<sup>192</sup>

Raid. “An amphibious raid is the swift incursion into, or temporary occupation of, an objective followed by a planned withdrawal.”<sup>193</sup> “*An assault expedition involving relatively small forces designed to land, accomplish a mission and retire within a limited time.*”<sup>194</sup>

Regimental Combat Team (RCT). “Usually consist of an infantry regiment plus supporting artillery and engineers. Miscellaneous service troops may be attached.”<sup>195</sup>

Regimental Landing Team (RLT). “A task organization for landing composed of an infantry regiment reinforced by those elements that are required for initiation of its combat function ashore.”<sup>196</sup>

Ship to Shore. “*A transshipment of troops, equipment, and supplies from any type of suitable seagoing vessel to smaller landing craft, and the subsequent movement to the landing beaches.*”<sup>197</sup>

Shore to Shore. “That portion of the action phase of an amphibious operation that includes the deployment of the landing force from ships to designated landing

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<sup>189</sup> Joint Chiefs of Staff, JP 3-02, *Amphibious Operations*, GL-14.

<sup>190</sup> McDaniel et al., “The Armored Division as an Assault Landing Force,” 5.

<sup>191</sup> Joint Chiefs of Staff, JP 3-02, *Amphibious Operations*, GL-15.

<sup>192</sup> Ibid.

<sup>193</sup> Ibid., I-3.

<sup>194</sup> War Department, FM 31-5, *Landing Operations on Hostile Shores*, 3.

<sup>195</sup> McDaniel et al., “The Armored Division as an Assault Landing Force,” 6.

<sup>196</sup> Joint Chiefs of Staff, JP 3-02, *Amphibious Operations*, GL-19.

<sup>197</sup> War Department, FM 31-5, *Landing Operations on Hostile Shores*, 2.

areas.”<sup>198</sup> “*The movement of particular elements of a landing force directly to the landing beaches without transshipment at sea.*”<sup>199</sup>

Waves. “A formation of forces, including landing craft, amphibious vehicles, or aircraft, required to beach or land about the same time.”<sup>200</sup>

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<sup>198</sup> Joint Chiefs of Staff, JP 3-02, *Amphibious Operations*, GL-21.

<sup>199</sup> War Department, FM 31-5, *Landing Operations on Hostile Shores*, 3.

<sup>200</sup> Joint Chiefs of Staff, JP 3-02, *Amphibious Operations*, GL-22.

## BIBLIOGRAPHY

- 2nd Armored Division. *Historical Record: Operations of US 2nd Armored Division (Kool Forces)*. Washington, DC: United States Army, 1943. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- 3rd Infantry Division. *Operations Report, 3rd Infantry Division, Sicilian Operation*. United States Army, 1943. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- 44th Tank Battalion. *After Action Report of the United States Army 44th Tank Battalion, 9th Armored Division: 17 July 1944-22 December 1944; January 1945-June 1945*. MCoE HQ, Donovan Research Library, Fort Benning, GA, Document 844 TB 101.
- 637th Tank Destroyer Battalion. *After Action Report: 637th T.D. BN: Luzon Campaign, 22 Nov 44 thru 30 June 45*. January 1946. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- 716th Tank Battalion. *After Action Report, 716th Tank Battalion: 9 January 1945 thru 8 February 1945, 18 March 1945 thru 8 February 1945*. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- 754th Tank Battalion. *Battle of Luzon: 754th Tank Battalion: 9 Jan-30 June '45*. February 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- 767th Tank Battalion. *After Action Report, 767th Tank Battalion, 23 October 44 thru 30 October 44; 1 Jan thru 31 Dec 44*. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- 775th Tank Battalion. *Unit History: 775th Tank BN., 20 September 1943 to 1 July 1945*. October 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- 776th Amphibian Tank Battalion. *Operation Report: Leyte Campaign, King II*. 1944. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.

- Allen, MG Terry. *A Summary of the Sicily Campaign during World War II (10 July-16 August 1943) with Special Reference to the Continued Offensive and Night Attacks of the 1st Infantry Division-U.S. Army*. Washington, DC: Government Printing Office, 1962. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Allied Force Headquarters. Training Memorandum Number 50, *Lessons from the Sicilian Campaign*. November 1943. Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Anderson, Charles R. *Leyte: The US Army Campaigns of World War II*. Washington, DC: Center for Military History, 1994.
- Andrade, Dale. *Luzon*. Washington, DC: Center for Military History, 1996.
- Arnold, A. V. "Preparation of a Division for Amphibious Operations." *Military Review* (May 1945): 3-11.
- Athey, Phillip. "Here's What Was New for Marines at Its Massive Naval Exercise." *Marine Corps Times*, 18 October 2021. <https://www.marinecorpstimes.com/news/your-marine-corps/2021/10/18/heres-what-was-new-for-marines-at-its-massive-naval-exercise/>.
- . "Role Reversal: Marine Artillery and Infantry Swap Roles in Exercises Preparing for Littoral Fight." *Marine Corps Times*, 29 March 2021. <https://www.marinecorpstimes.com/news/your-marine-corps/2021/03/29/role-reversal-marine-artillery-and-infantry-swap-roles-in-exercises-preparing-for-a-littoral-fight/>.
- Bale, Edward L. "The Tank Company with the Regimental Combat Team in an Amphibious Operation." Monograph, The Armored School, 1947.
- Barbey, Daniel E. *MacArthur's Amphibious Navy*. Annapolis, MD: Naval Institute Press, 1969.
- Birtle, Andrew J. *Sicily*. Washington, DC: Center for Military History, 2004.
- Blankenship, Cory. "Armor for the Infantry." *Marine Corps Gazette*, March 2019.
- Boose Jr., Donald W. *Over the Beach: US Army Amphibious Operations in the Korean War*. Fort Leavenworth, KS: Combat Studies Institute, 2008.
- Cannon, Hamelin. *Leyte: Return to the Philippines*. Washington, DC: Center for Military History, 1993.
- Chairman of the Joint Chiefs of Staff. Joint Publication 1-0, *Doctrine for the Armed Forces*. Washington, DC: Joint Chiefs of Staff, 2017.

- . Joint Publication 3-02, *Amphibious Operations*. Washington, DC: Joint Chiefs of Staff, 2021.
- . Joint Publication 3-18, *Joint Forcible Entry Operations*. Washington, DC: Joint Chiefs of Staff, 2018.
- . Joint Publication 5-0, *Joint Planning*. Washington, DC: Joint Chiefs of Staff, 2020.
- Clark, Bryan, and Jesse Sloman. *Advancing Beyond the Beach: Amphibious Operations in an Area of Precision Weapons*. Washington, DC: Center for Strategic and Budgetary Assessments, 2016.
- Coffin, Lieutenant General Robert E., USA, (RET). “Letter to the Editor.” *Army History*, no. 30 (Spring 1994): 38.
- Committee 4, The Armored School. “The 2nd Armored Division in the Sicilian Campaign.” Research Report, The Armored School, 1950. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Committee 9, The Armored School. “Armor on Luzon: Comparison of Employment of Armored Units in the 1941-42 and 1944-45 Campaigns.” Research Report, The Armored School, 1950.
- Committee 16, The Armored School. “Armor on Leyte, Sixth Army Operations, 17 Oct–26 Dec 44.” Research Report, The Armored School, 1949. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Committee 20, The Armored School. “Armor in Island Warfare.” Research Report, The Armored School, 1950. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Committee 34, The Armored School. “The Armored Division as an Assault Landing Force.” Research Report, The Armored School, 1952.
- Cook, Samuel. “United States Amphibious Entry Force: A Expensive Necessity.” Strategy Research Project, US Army War College, 2011.
- D’Esta, Carlo. *Bitter Victory: The Battle for Sicily, 1943*. New York: E. P. Dutton, 1988.
- Defense Intelligence Agency. *China Military Power: Modernizing a Force to Fight and Win*. Washington, DC: Defense Intelligence Agency, 2019.

- Department of the Army. Records of the Office of the Chief Signal Officer, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954. Philippine Islands-Luzon-San or Santa F. RG 111-SCA\_Album 2958\_206. National Archives, College Park, MD. Accessed 2 May 2022. <https://catalog.archives.gov/id/80680345>.
- . Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954. Philippine Islands-Luzon-La. RG 111-SCA\_2894\_12. National Archives, College Park, MD. Accessed 2 May 2022. <https://catalog.archives.gov/id/80668078>.
- . Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954. Philippine Islands-Luzon-Le to Lu. RG 111-SCA\_2895\_069. National Archives, College Park, MD. Accessed 2 May 2022. <https://catalog.archives.gov/id/80668173>.
- . Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954. Philippine Islands-Luzon-Lingayen. RG 111-SCA-Album-2896\_183. National Archives, College Park, MD. Accessed 2 May 2022. <https://catalog.archives.gov/id/80668331>.
- . Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954. Philippine Islands-Luzon-Manila. RG 111-SCA\_Album 2902\_009. National Archives, College Park, MD. Accessed 2 May 2022. <https://catalog.archives.gov/id/80669480>.
- . Records of the Office of the Chief Signal Officer, 1860-1985, US Army Signal Corps Photographs of Military Activity During World War II and the Korean Conflict 1941-1954. Philippine Islands-Luzon-Manila. RG 111-SCA\_Album\_2941\_96. National Archives, College Park, MD. Accessed 2 May 2022. <https://catalog.archives.gov/id/80676826>.
- Department of Defense. *The Department of Defense Indo-Pacific Strategy Report: Preparedness, Partnerships, and Promoting a Networked Region*. Washington, DC: Department of Defense, 2019.
- Dickson, Keith D. “The Role of Amphibious Operations within the Multidomain Operational Construct.” In *On Contested Shores: The Evolving Role of Amphibious Operations in the History of Warfare*, edited by Timothy Heck and B. A. Friedman, 320-330. Quantico, VA: Marine Corps University Press, 2020.

- Doyle, James Henry. "Amphibious Operations." Lecture, Army War College, Carlisle Barracks, PA, 12 February 1953. US Army Heritage and Education Center at Carlisle Barracks Archives.
- Eighth Army, 10th Information and Historical Services. *Staff Study of Japanese Operations on Luzon*. 1949. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Friedman, B. A. "Naval Strategy, and the Future of Amphibious Operations." In *On Contested Shores: The Evolving Role of Amphibious Operations in the History of Warfare*, edited by Timothy Heck and B. A. Friedman, 355-363. Quantico, VA: Marine Corps University Press, 2020.
- Geary, John A. *Report on the Invasion of Sicily*. 1944. Maneuver Center of Excellence (MCoE) Libraries, MCoE HQ, Donovan Research Library, Fort Benning, GA. Document Collection Call # D769.2.G261.
- General Staff. *Reports of General MacArthur*. Vol. 1, *The Campaigns of MacArthur in the Pacific*. Washington, DC: Government Printing Office, 1953.
- Gordon, Michael R. "Marines Plan to Retool to Meet China Threat." *The Wall Street Journal*, March 22, 2020. <https://www.wsj.com/articles/marines-plan-to-retool-to-meet-china-threat-11584897014>.
- Gott, Kendall D. *Breaking the Mold: Tanks in the Cities*. Fort Leavenworth, KS: Combat Studies Institute Press, 2006.
- Headquarters, Department of the Army. Army Techniques Publication 3-0.96, *Cavalry Squadron*. Washington, DC: Army Publishing Directorate, 2016.
- . Field Manual 3-0, *Operations*. Washington, DC: Army Publishing Directorate, 2017.
- . Field Manual 3-99, *Airborne and Air Assault Operations*. Washington, DC: Army Publishing Directorate, 2015.
- Heck, Timothy, and B. A. Friedman, eds. *On Contested Shores: The Evolving Role of Amphibious Operations in the History of Warfare*. Quantico, VA: Marine Corps University Press, 2020.
- Historical Division European Command, Operational History Branch. *Division "Hermann Goering" in Sicily 1943, 26 May-5 Jun 44*. 1951. Untranslated copy of MS #C-087A. Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Holland, James. *Sicily '43: The First Assault on Fortress Europe*. New York: Atlantic Monthly Press, 2020.

- House, Jonathan. *Toward Combined Arms Warfare*. Ft. Leavenworth, KS: Combat Studies Institute, 1984.
- Houston, Donald E. *Hells on Wheels: The 2nd Armored Division*. San Rafael: Presidio Press, 1977.
- Huber, Thomas. "The Battle of Manila." In *Block by Block: The Challenge of Urban Operations*, edited by William G. Robertson and Lawrence A. Yates, 98-128. Fort Leavenworth, KS: Command and General Staff College Press, 2003.
- Hunt, Milton. "Use of the Army in Luzon." Student Paper, The Armored School, 1948. Maneuver Center of Excellence Libraries, MCoE HQ Donovan Research Library, Fort Benning, GA.
- Johanningsmeier, Benjamin W. "What's Old is New Again: Army and Marine Corps Cooperation in Amphibious Operations." Monograph, School of Advanced Military Studies, US Army Command and General Staff College, 2019.
- Johnson, David. "The Tank is Dead. Long Live the Javelin, the Switchblade, the...?" *War on the Rocks*, 18 April 2022. <https://warontherocks.com/2022/04/the-tank-is-dead-long-live-the-javelin-the-switchblade-the/>.
- The Joint Board. *Joint Overseas Expeditions*. Washington, DC: Government Printing Office, 1933.
- Kenworthy, Aubrey Saint. *The Tiger of Malaya*. Exposition Press, 1954.
- Kim, Michael B. "Facing Uncertainty: The Role of the M1 Abrams Tank in the U.S. Army of 2015-2025." Master's Thesis, US Army Command and General Staff College, 2015.
- Krueger, Walter. *From Down under to Nippon, The Story of the Sixth Army in World War II*. Washington, DC: Combat Forces Press, 1953.
- Kutz, C. R. "Armored Fighting Vehicles in a Landing Assault." In *Conference On Landing Assaults, 24 May-25 June, 1943*. Vol. 1, 157-163. European Theater of Operations: US Assault Training Center, US Army, 1943. World War II Operational Documents, Combined Arms Research Library, Fort Leavenworth, KS.
- Lampert, James B. "Combat Engineering: Lingayen to Manila." *The Cavalry Journal* (January-February 1946): 50-54.
- MacArthur, Douglas. *Reminiscences*. New York: McGraw Hill, 1964.

- Malone, Joseph. "The Army and the Need for an Amphibious Capability." Monograph, School of Advanced Military Studies, US Army Command and General Staff College, 2015.
- Martin, Bradley. *Amphibious Operations in Contested Environments*. Santa Monica, CA: RAND Corporation, 2017.
- Millett, Allan R. "Assault From The Sea: The Development of Amphibious Warfare between the Wars." In *Military Innovation in the Interwar Period*, edited by Williamson Murray and Allan R. Millett, 50-95. New York: Cambridge University Press, 2009.
- Molly, Brian. "Frustrated Cargo: The U.S. Army Limitations in Projecting Force from Ship to Shore in an A2/AD Environment." *Joint Forces Quarterly* (1st Quarter 2020): 90-95.
- Montanye, Brandon. "Analysis of the Landing Ship Tank (LST) and Its Influence on the Amphibious Warfare during World War Two." Master's Thesis, US Army Command and General Staff College, 2013.
- Murray, Williamson. "Armored Warfare: The British, French, and German Experiences." In *Military Innovation in the Interwar Period*, edited by Williamson Murray and Allan R. Millett, 6-49. New York: Cambridge University Press, 2009.
- Ogden, David A. "Amphibious Operations of Especial Interest to the Army." Lecture, Engineer School, Fort Belvoir, VA, 1951.
- Patton Jr., George S. *War as I Knew It*. Boston: Houghton Mifflin Company, 1947
- Raumberger, Phillips. "The Need for the United States Army to Possess a Landing Craft with Maneuver Capabilities." Master's Thesis, US Army Command and General Staff College, 2015.
- Reynolds, Nick, and Jack Watling. "Your Tanks Cannot Hide." *RUSI Defence Systems* 22 (5 March 2020). <https://rusi.org/explore-our-research/publications/rusi-defence-systems/your-tanks-cannot-hide>.
- Rottman, Gordon L. *US World War II Amphibious Tactics: Army & Marine Corps, Pacific Theater*. Oxford: Osprey Publishing, 2004.
- Secretary of Defense. Department of Defense Directive 5100.01, *Functions of the Department of Defense and Its Major Components*. Washington, DC: Department of Defense, 2020.

- Seventh Army Staff. *Report of Operations of the United States 7th Army in the Sicilian Campaign 10 July-17 August 1943*. Paermo, Sicily: The Staff of the Seventh Army, 1943. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Seventh Infantry Division. *Operation Report, 7th Infantry Division King II*. 12 March 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Sharpe, Alexander. "The Failure of Joint Integration during the 1943 Sicily Campaign." The Strategy Bridge, 21 November 2017. <https://thestrategybridge.org/the-bridge/2017/11/21/the-failure-of-joint-integration-during-the-1943-sicily-campaign>.
- Sixth Army, Office of the Assistant Chief of Staff, G2. *Enemy on Luzon: An Intelligence Summary*. December 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Sixth United States Army. *Report of the Leyte Operation, 20 October 1944-25 December 1944*. 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Sixth United States Army. *Report of the Luzon Campaign, 9 January 1945-30 June 1945*. Vol. 1. 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- Smith, Aaron. "Purpose-Built Antiarmor Teams: An Imperative for the Marine Corps Ground Combat Element." *Joint Force Quarterly* (4th Quarter 2021): 50-54.
- Smith, Robert Ross. *Triumph in the Philippines*. Washington, DC: Center for Military History, 1993.
- Spencer, John, and Harshana Ghoorhoo. "The Battle of Shusha City and the Missed Lessons of the 2020 Nagorno-Karabakh War." Modern War Institute at West Point, 14 August 2021. <https://mwi.usma.edu/the-battle-of-shusha-city-and-the-missed-lessons-of-the-2020-nagorno-karabakh-war/>.
- Stone, John. *The Tank Debate*. Amsterdam, Netherlands: Hardwood Academic Publishers, 2000.
- United States Marine Corps. *Force Design 2030*. Washington, DC: Department of the Navy, Headquarters Marine Corps, 2020.
- . *Tentative Manual For Landing Operations*. Washington, DC: Navy Department, Headquarters US Marine Corps, 1933.

- United States Navy. FTP 167, *Landing Operations Doctrine*. Washington, DC: Government Printing Office, 1938.
- US Naval War College. “Large-Scale Amphibious Warfare in Chinese Military Strategy.” Quick Look Report, China Maritime Studies Institute, Center for Naval Warfare Studies, US Naval War College, Newport, RI, 2021.
- US Army Training and Doctrine Command (TRADOC). TRADOC Pamphlet 525-3-1, *The U.S. Army in Multi-Domain Operations in 2028*. Fort Eustis, VA: US Army Training and Doctrine Command, 2018.
- War Department. Armored Force Field Manual 17-33, *The Armored Battalion, Light and Medium*. Washington, DC: Government Printing Office, 1942.
- . Field Manual 17-33, *Tank Battalion*. Washington, DC: Government Printing Office, 1944.
- . Field Manual 17-36, *Armored: Employment of Tanks with Infantry*. Washington, DC: Government Printing Office, 1944.
- . Field Manual 31-5, *Landing Operations on Hostile Shores*. Washington, DC: Government Printing Office, 1944.
- . FM 100-5, *Field Service Regulations: Operations*. Washington, DC: Government Printing Office, 1941.
- War Department, Military Intelligence Division. *Japanese Defense against Amphibious Operations*. Special Series No. 29. Washington, DC: Government Printing Office, 1945.
- Witwer, Richard. “The Future of Armor in Anti-Access, Area Denial Environment.” Master’s Thesis, US Army Command and General Staff College, 2014.
- XIV Corps. *After-Action Report, XIV Corps, M-I Operations*. July 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- XIV Corps. *Japanese Defense of Cities as Exemplified by the Battle of Manila*. Assistant Chief of Staff, G-2, Headquarters, Sixth Army, July 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.
- XXIV Corps. *Operation Report, XXIV Corps, Leyte, 20 October 1944–25 December 1944*. February 1945. World War II Operational Documents, Ike Skelton Combined Arms Research Library Digital Library, Fort Leavenworth, KS.

Zollin, Jeremy. "The Case for a Medium Tank to be Incorporated into the Joint Force."  
Master's Thesis, US Army Command and General Staff College, 2018.