

Operational Logistics during the First Gulf War

A Monograph

by

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Abstract

Operational Logistics during the First Gulf War, by MAJ Elias M. Isreal, 58 pages.

The First Gulf War (Operation Desert Shield, August 1990 to January 1991, and Operation Desert Storm, January 1991 to February 1991) demonstrated how logisticians facilitated the force projection of nearly 700,000 US forces into Saudi Arabia. The 22nd Theater Army Area Command support to the 3rd US Army confronted challenges of combat power generation, the extension of operational reach, and endurance throughout the campaign. This monograph examines the First Gulf War Campaign through the lens of operational art. It conducts a structured focus analysis of Operation Desert Shield and Operation Desert Storm by asking ten research questions. These questions focus on the 22nd Theater Army Area Command's sustainment support to the 3rd US Army by integrating, anticipating, responding, and improvising logistics to enable operational maneuver. The analysis suggests that the 22nd TAACOM's mastery of operational sustainment during the First Gulf War employed the principles of sustainment in order to support the 3rd US Army in the achievement of mission accomplishment of all defined military objectives. The study seeks to engage in the reevaluation of US Army CSS formations and doctrine. Lessons identified within the study can be ascertained through the evaluation of operational sustainment in the Gulf War and serve as a possible solution to the US Army's current approach to LSCO.

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Abbreviations

ADP	Army Doctrine Publication
COSCOM	Corps Support Command
CSS	Combat Service Support
FM	Field Manual
GEN	General
HET	Heavy Equipment Transporter
IRGF	Iraqi Republican Guard Force
KKMC	King Khalid Military City
LOG Base	Logistics Base
LSCO	Large-Scale Combat Operations
LTG	Lieutenant General
TAACOM	Theater Army Area Command

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Introduction

The logistics portion of doctrine also worked in the desert but required brute force to ensure success. VII Corps maneuvered logistics in large blocks to support and sustain the main effort. The result was rarely neat and never pretty . . . but it worked. The bottom line is that our logistical doctrine to support fast paced offensive operations needs a major update.

—LTG Fredrick M. Franks, VII Corps Commander, *VII Corps Desert Storm AAR*

Scholars and military professionals have studied large-scale sustainment of moving armies to understand the interplay between sustainment and maneuver operations. History presents examples of how sustainment operations served a key role in supporting successful maneuver operations or in leading to their demise. Operational sustainment gained notoriety during the First Gulf War (Operation Desert Shield, August 1990 to January 1991, and Operation Desert Storm, January 1991 to February 1991) by demonstrating how logisticians facilitated the force projection of nearly 700,000 US forces into the Middle East. Before the First Gulf War, theater logistics systems relied heavily upon a prepositioned stock to sustain corps maneuver formations. The US response to Saddam Hussain's invasion of Kuwait also demonstrated its ability to mobilize forces rapidly. In fact, the mobilization and employment of forces in Iraq and Kuwait changed the realm of possibility with regards to force projection, occurring at a rate three times that witnessed in Vietnam with the same number of troops.¹ This project studies the four sustainment principles of integration, anticipation, responsiveness, and improvisation to understand large-scale logistics and help to improve understanding for future implementation in a large-scale combat operations (LSCO) scenario.

During the Cold War, theater sustainment comprised of a system of supply depots strategically placed to facilitate the US Army's North Atlantic Treaty Organization mission in Europe. The responsibility of implementing the US Army's logistics strategy in the Middle East

¹ Robert H. Scales, *Certain Victory: The US Army in the Gulf War* (Fort Leavenworth, KS: US Army Command and General Staff College Press, 1994), 56.

rested with the 22nd Theater Army Area Command (TAACOM), which was responsible for sustaining maneuver forces in the Gulf War. A comprehensive assessment of the established European theater and the buildup of the Middle Eastern theater in Saudi Arabia suggests a difference in mindset between the two logistics plans. This is most evident in the mobilization of VII Corps and XVIII Airborne Corps to Saudi Arabia, where they transitioned from a deterrence mission to a force projection in an austere environment. Prior to the liberation of Kuwait, 22nd TAACOM supplemented logistics support with contract support. This resulted in an adaptation to logistics concepts that focused on fixed positions rather than on forecasting logistics distribution requirements necessary to extend the battlefield in support of maneuver formations.²

Upon the conclusion of the First Gulf War, senior leaders like VII Corps commander Lieutenant General (LTG) Fredrick M. Franks assessed operational sustainment as a failure as it struggled to forecast classes of supply to the front line of troops.³ Recent research into the campaign contradicts this sentiment by stating that combat service support (CSS) formations were successful in enabling coalition forces to meet the Army Central Command's stated mission objectives. Chris Paparone argues in support of this theory in his work published nearly thirty years after the campaign. Paparone states, "Hindsight also allows us to measure our performance against time tested tenets of logistics success: the sixteen Principles of Logistics defined in the Army Strategic Logistic Systems Plan (which are derived from the principles described by Dr. James A. Huston in his historical study)."⁴ Joseph R. Kurz makes a similar argument when he states that despite logistics problems faced during the campaign, the magnitude of forces moved

² Stephen P. Gehring, *From the Fulda Gap to Kuwait: U.S. Army, Europe, and the Gulf War* (Washington, DC: Department of the Army, 2002), 130.

³ US Department of Defense, *VII Corps Desert Campaign After-Action Report*, vol. 2 (Washington, DC: Government Printing Office, 1992), 2.

⁴ Chris Paparone, "Huston's Sixteen Principles: Assessing Operational Performance During OP Desert Storm," *Logistics in War*, August 18, 2017, 2, accessed March 23, 2020, <https://logisticsinwar.com/2017/08/18/hustons-sixteen-principles-assessing-operational-performance-during-op-desert-storm/>.

to the Middle East in a short span of time was a monumental achievement. Drawing on the work from Paparone and Kurz, this research seeks to understand how theater logistics helped to maintain combat power and enabled commanders to extend operational reach, while also providing endurance for the 3rd US Army.

This study asserts that during the First Gulf War, the 22nd TAACOM demonstrated the sustainment principles of integration, anticipation, responsiveness, and improvisation. This was essential to maintaining the combat power of the 3rd US Army and enabled the commander to extend his operational reach while at the same time providing endurance to subordinate corps and divisions.

This study is significant because it leads to a reevaluation of US Army CSS formations and doctrine. Many lessons can be ascertained through the study of operational logistics in the First Gulf War and possibly provide a solution to the US Army's current approach to LSCO. The 22nd TAACOM actions as a sustainment integrator during Desert Storm can serve as a model for corps operations during LSCO. The logistical lessons identify, illustrate, and reinforce uncertainties regarding the US Army's ability to sustain itself during prolonged expeditionary operations. The analysis of the sources covering this operation provides recommendations are provided that may serve to improve links between logistics and offensive operations.

There are several key terms used throughout the monograph. Each is defined in this section to aid the reader's understanding and to serve as a point of reference. The terms are operational sustainment, operational reach, combat power and endurance.

Operational sustainment is defined as "sustainment at the operational level and is comprised of logistics and support activities required to sustain campaigns and major operations."⁵ The term is also used to describe theater logistics planning and management in the

⁵ US Department of the Army, Field Manual (FM) 100-10, *Combat Service Support* (Washington, DC: Government Printing Office, 1988), 2-2.

current US Army sustainment operation doctrine.⁶ The research monograph focuses on operational sustainment using the definition within US Army Field Manual (FM) 100-10, *Combat Service Support*, while also relying on current sustainment operations doctrine to examine operational reach, combat power, and endurance. The US Department of Defense defines operational reach as “the distance and duration across which a joint force can successfully employ military capabilities.”⁷ Operational reach measures operational sustainment effectiveness on the battlefield. Combat power is defined by current US Army sustainment operations doctrine as “the total means of destructive, constructive, and information capabilities that a military unit or formation can apply at a given time.”⁸ The importance of combat power to operational sustainment is demonstrated in force generation throughout offensive operations presented in the First Gulf War case study. Finally, endurance is “the ability to employ combat power for protracted periods, in any location across the globe.”⁹ Endurance is critical to the study because US Army operations must be sustained until military objectives are achieved.

The theoretical framework of this study uses operational art to link strategic aims to tactical actions in order to achieve military objectives. The US Army’s Field Manual (FM) 3-0, *Operations*, defines operational art as “the cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways and means.”¹⁰ The Russian theorist Georgii Isserson, provides one of the first thoughts on operational

⁶ US Department of the Army, Army Doctrine Publication (ADP) 4-0, *Sustainment* (Washington, DC: Government Printing Office, 2019), 2-11.

⁷ US Department of the Army, Army Doctrine Publication (ADP) 1-02, *Terms and Military Symbols* (Washington, DC: Government Printing Office, 2018), 1-72.

⁸ US Department of the Army, Field Manual (FM) 4-0, *Sustainment Operations* (Washington, DC: Government Printing Office, 2019), G-5.

⁹ US Department of the Army, Field Manual (FM) 3-0, *Operations* (Washington, DC: Government Printing Office, 2019), 1-23.

¹⁰ *Ibid.*, G-13.

art: “In other words, the challenge was to make the chain of combat efforts a highly efficient system coordinated purposefully and sequentially along the front and throughout the depths to bring about the enemy’s defeat.”¹¹ Operational art theoretically links operational sustainment to clearly defined military objectives and demonstrates the relationship between theory and actions taken by leaders on the battlefield.

This monograph explores four hypotheses to examine operational sustainment, which is measured by operational reach, combat power, and endurance. First, if the sustainment staff ensures the integration of sustainment with the operations plan, then unity of command and effort are achieved. Second, when the sustainment staff uses professional judgment, they can understand and visualize future operations and then identify appropriate and required support to the operational commander. Third, when the sustainment staff is responsive, they have the ability to react to changing requirements and respond to what is needed to maintain support for the operational commander. Fourth, when the sustainment staff is able to improvise, they have the ability to adapt to unexpected situations or circumstances affecting a mission.

This monograph uses several sources, to include US Army doctrine, XVIII Airborne Corps after-action reports’ US Army doctrine; US congressional reports investigating logistic training prior to the First Gulf War, sources detailing the complexity of large-scale logistics operations, first-person accounts of soldiers and leaders within 22nd TAACOM and VII Corps, correspondence between US Army leaders during the First Gulf War, summaries of developments for the course of action; and oral history transcripts of interviews conducted with various senior leaders who executed operational sustainment during the Gulf War. To further inform the process, Cold War doctrine is used to establish a clear understanding of the influences of US

¹¹ Georgii S. Isserson, *The Evolution of Operational Art*, trans. by Bruce W. Menning (Fort Leavenworth, KS: Combat Studies Institute, 2013), 26.

Army doctrine and to determine the mindset of logisticians who developed logistics plans leading into the war. In summary, this work traces the 3rd Army's logistics distribution.

There are delimitations of the study. First is the use of a single case study of the First Gulf War, specifically focused on researching Operation Desert Shield, August 1990 to January 1991, and Operation Desert Storm, January 1991 to February 1991. A second delimitation is the exploration of the sustainment operations of the 22nd TAACOM and Cold War logistics. This section addresses the two assumptions made throughout the research project. First, the United States will not increase the size of sustainment formations in the near future. Second, the likelihood of the US Army conducting expeditionary sustainment operation in the near future is high.

This paper is organized into six sections. First, the introduction outlines problems addressed within the case study. This is followed by the literature review that examines operational art and operational sustainment, and the reviews both past and present arguments on the First Gulf War campaign. Third, the methodology section lays out the structure of the First Gulf War case study. The fourth section explores a single case study of operational sustainment during the First Gulf War. The fifth section consists of analysis and results. The final section contains conclusions drawn from the case study.

Literature Review

This section contains three subsections of theoretical, conceptual, and empirical literature, which frame the subsequent methodology and case study analysis. The theoretical subsection presents the theory of operational art to evaluate operational sustainment and its role in offensive operations. Next, the conceptual subsection defines key terms and delineates their uses to assess the four hypotheses within the case study. Finally, the empirical subsection explores the First Gulf War sustainment operations research with an emphasis on operational reach, combat power, and endurance.

The theoretical framework of operational art provides this research monograph with a lens through which to assess operational sustainment. US joint doctrine defines operational art as “the cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means.”¹² The US Army defines operational art as “the pursuit of strategic objectives, in whole or in part, through the arrangement of tactical actions in time, space and purpose. Operational art applies to all types and aspects of operations, and integrates ends, ways, and means while accounting for risk.”¹³ Though the US Department of Defense has adopted operational art as a means to link strategic objectives to tactical action, however, the theory does not originate in the United States.

Aleksandr A. Svechin and Georgii Isserson are 1930s-era Soviet Army officers who are considered the theoretical fathers of operational art. Svechin first coined the term and stated, “tactics and administration are the material of operational art and the success of the development of an operation depends on both the successful solution of individual tactical problems by the forces and the provision of all the material they need to conduct an operation without interruption until the ultimate goal is reached.”¹⁴ The focus on the term “material” recounts to the endurance of operations, which relates back to sustainment operations function by enabling tactical action to achieve the strategic objective. Isserson further refines the meaning of operational art by introducing the concept of deep operations. He states, “A modern operation does not constitute a one-act operational effort in a single locale. Modern deep operational deployments require a series of uninterrupted operational efforts that merge into a single whole. In operational

¹² US Department of Defense, Joint Staff, Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Printing Office, 2018), xii.

¹³ US Department of the Army, Army Doctrine Publication (ADP) 3-0, *Operations* (Washington, DC: Government Printing Office, 2019), 6.

¹⁴ Aleksandr A Svechin, *Strategy*, ed. Kent D. Lee (Minneapolis, MN: East View Publications, 1992), 69.

terminology, this whole is known as a series of successive operations.”¹⁵ Isserson’s description of deep operations gives credence to sustainment operations as it combines both Svechin and Isserson’s theories of operational art to create a larger role for operational sustainment in operational and campaign planning to enable operational depth. While the theory of operational art began in the Soviet Union, its revolutionary view of war caused the US Army and most Western militaries to adopt the theory. This changed the conduct of war by extending the battlefield and placing a greater emphasis on logistics to support maneuver operations.

Modern theorists such as Dr. James Schneider, studied the evolution of operational art during the Napoleonic Wars and the US Civil War; Schneider found correlations between dispersion on the battlefield and operational art. His theory of dispersion created opportunities for the employment of operational art for theater armies. He asserted, “Operational art is characterized by the employment of forces in deep distributed operations. These maneuvers consist of deep battles and extended maneuvers punctuated by periods of inaction.”¹⁶ Dr. Schneider further defined theater of war by presenting characteristics of operational art for theater armies, such as “employment of several independent field armies distributed in the same theater of operations; employment of quasi-army group headquarter for command and control; logistical structures to support distributed operations; deep strike; and continuous front, etc.”¹⁷ Schneider’s work also links operational art and theater logistics by pointing out the adaptation made by logisticians to support maneuver as the battlefield became more disbursed.

In his study of the Civil War, Schneider concluded, “the fact that logistics could no longer sustain dense concentration of troops—further reinforcing the trend toward the distribution

¹⁵ Isserson, *The Evolution of Operational Art*, 48.

¹⁶ James J. Schneider, “Vulcan’s Anvil: The American Civil War and the Foundations of Operational Art” (School of Advanced Military Studies Theoretical Paper No. 4, United States Army Command and General Staff College, Fort Leavenworth, KS, 1992), 28.

¹⁷ James J. Schneider, “The Loose Marble-and the Origins of Operational Art,” *Parameters* 19, no. 1 (1998): 90.

of field armies in a theater.”¹⁸ The US Civil War presented field army commanders with a dilemma of stagnation. They relied on magazines and depots or evolving operational sustainment to meet the needs of commanders to create mobility through the employment of disturbed logistics to achieve military objectives. The continuous nature of battle created a need for sustainment planners to envision war with a unified front and rear that created conditions for constant mobilization, which has led to what the US Army now knows as total war.¹⁹ Schneider’s work illustrates the need for theater logisticians to demonstrate the knowledge of distributed battle over a continuous front to effectively support maneuver operations in depth.

Shimon Naveh’s view of operational art further informs the theoretical lens of the research monograph by providing historical research and a systems approach. Naveh viewed the military as an open system whose very essence centers on the presence of interaction between components, such as the introduction of shock to a system that results in disruption.²⁰ Naveh went on to define the physical environment of operational art by providing the variables of time and space.²¹ He postulated that the combination of the physical environment and cognitive processes create a framework to link strategic aims to tactical actions by creating the coherence and continuity of an independent operational level of command.²² This systematic approach to operational art demonstrates how operational sustainment is used to provide theater logistics planners with a cognitive and physical framework in order to manipulate the time and space necessary to create shock the enemy’s system. Furthermore, Naveh’s perspective on operational

¹⁸ Schneider, “The Loose Marble,” 91.

¹⁹ Schneider, “Vulcan’s Anvil,” 33.

²⁰ Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London, UK: Frank Cass, 1997), 6, 11.

²¹ *Ibid.*, 9.

²² *Ibid.*, 12.

art provides an understanding of the relationship between political aims and the operational approach used to achieve the associated military objectives.

This paper addresses the key concepts of logistic integration, anticipation, responsiveness and improvisation. Logistics integration consists of “commanders and staffs applying basic principles, controlling resources and managing capabilities to provide sustained joint logistics.”²³ This research monograph uses the definition provided in US Joint Publication (JP) 4-0, *Joint Logistics*, as opposed to that offered in the US Army Doctrine Publication (ADP) 4-0, *Sustainment Operations*. The joint definition is appropriate since the US Army is the primary provider of sustainment and logistics to the Joint Force. As Bruce Menning points out, increased appreciation for military strategy among logistics planners has allowed for the integration of higher-level planning and preparation, resource orchestration and priority, and objective identification, all of which culminates in the application of military power in support of political aims.²⁴ Sustainment integration is assessed in the four hypotheses of this study, using a qualitative analysis of the coordination and synchronization of plans employed by logistics planners. Furthermore, the study will demonstrate the success or failure of sustainment throughout all the phases of the First Gulf War operations.

Sustainment anticipation is “the ability to foresee operational requirements and initiate necessary actions that appropriately satisfy a response without waiting for operations orders.”²⁵ Anticipation refers to the ability of operational sustainment planners to use “professional judgment, experience, knowledge, education, intelligence and intuition” to visualize the

²³ US Department of Defense, Joint Staff, Joint Publication (JP) 4-0, *Joint Logistics* (Washington, DC: Government Printing Office, 2019), I-8; US Army, ADP 4-0, 1-3, 2-6.

²⁴ Bruce W. Menning, “Operational Art’s Origins,” in *Historical Perspectives of the Operational Art*, ed. Michael Krause and Cody Phillips (Washington, DC: Center of Military History, 2005), 7.

²⁵ US Army, ADP 4-0, 1-3.

battlefield and to ensure sustainment arrives in time to continue operations.²⁶ The use of anticipation enables logistics planners to inform the maneuver plans with sufficient flexibility to conduct deep battle that places the operational headquarters in a position of relative advantage during battle.²⁷ Anticipation of operational sustainment is measured qualitatively within the case study by focusing on operational reach, combat power, and endurance of formation within the case study.

Responsiveness of sustainment operations is “the ability to react to changing requirements and respond to meet necessary requirements to maintain support.”²⁸ The objective of operational sustainment is to support operations throughout a series of tactical missions while maintaining logistical resources at the right place and time.²⁹ Responsiveness requires logistics planners to take a systematic approach to sustainment in order to reduce shock or culmination to maneuver forces. The principle is measured by examining the ability of logistics planners to accumulate and maintain sufficient supply to meet changing requirements on the battlefield.

The relationship between operational sustainment and operational art is illustrated through the principle of sustainment improvisation. Improvisation is described as “the ability to adapt sustainment operations to unexpected situations or circumstances affecting a mission.”³⁰ Logistics planners must possess the ability to visualize solutions to complex sustainment problems in order to support maneuver formations. Improvisation is measured by the number of solutions to sustainment shortfalls that enhance the endurance of the maneuver force.

The study of logistics in the First Gulf War has drawn the interest of academics and military professionals alike. In his historical case study, “VII Corps Logistics in Desert Storm,”

²⁶ Ibid.

²⁷ Schneider, “Vulcan’s Anvil,” 30.

²⁸ US Army, ADP 4-0, 1-3.

²⁹ Svechin, *Strategy*, 69.

³⁰ US Army, ADP 4-0, 1-3.

Dr. James Martin asserted that Corps Support Command (COSCOM) formations facilitated sustainment operations comparable to that of World War II.³¹ He further postulated that logistics planners must have the capacity to calculate risk into operation sustainment in order to build flexible achievable plans.³² Dr. Martin's experience as a 2nd COSCOM logistics planner is a firsthand account of the challenges logistics planners faced while attempting to achieve operational reach in support of maneuver formations. His work demonstrates the conceptual aspect of the research monograph by exploring the actions of logistics planners as well as the principles of sustainment integration, anticipation, responsiveness, and improvisation.

Similarly, the monograph relies upon the work of LTG William G. Pagonis, a First Gulf War operational sustainment commander, and practitioner, which deepens the understanding of wartime operational sustainment. In his book, *Moving Mountains*, Pagonis highlighted the importance of operational sustainment in the First Gulf War and the improvisation needed at 22nd TAACOM to support the campaign.³³ Additionally, Pagonis identified the enormity of operational sustainment and the "constellation of needs of an Army."³⁴ He contended there is a need to operationalize logistics in order to synchronize anticipated support requirements to facilitate combat formations achievement of strategic and military objectives.³⁵ Further support is provided in Pagonis's description of operational sustainment for a theater army. Pagonis illustrated how prewar experiences like the training exercise, Return of Forces to Germany, provided him with the necessary tools to lead the 22nd TAACOM through the initial buildup of

³¹ James B. Martin, "VII Corps Logistics in Desert Storm," in *Historical Case Studies of Sustainment in Large-Scale Combat Operations*, ed. Keith R. Beurskens (Fort Leavenworth, KS: Army University Press, 2018), 142.

³² Martin, "VII Corps Logistics in Desert Storm," 140.

³³ William G. Pagonis and Jeffrey L. Cruikshank, *Moving Mountains* (Boston, MA: Harvard Business School Press, 1992), x, xi.

³⁴ *Ibid.*, 1.

³⁵ *Ibid.*, 2.

theater logistics to support of the 3rd US Army in combat operations.³⁶ Pagonis's work supports the case study framework by linking sustainment principles and operational art to an understanding of logistics planning within the case study.

Additional support for the hypotheses is drawn from the work of Richard M. Swain. Swain's perspective on theater operations suggests the US Army lacked the necessary structure above corps and that "mobilization of an army-level headquarters and support structure had to be affected as events unfolded."³⁷ The 3rd US Army continued to build capacity in the theater headquarter as planning staff grew to meet planning challenges of employing two corps during the Gulf War. According to Swain, one of many challenges for the 3rd US Army was operational reach for its mechanized ground force due to limited heavy equipment transporters (HET) and the US Army's force design to fight a defensive war in Europe.³⁸ Additionally, Swains work presents an objective analysis of the 3rd US Army that demonstrates improvisation and integration as the theater Army adapted to new realities faced during the Gulf War.

Finally, the research monograph incorporates qualitative questions to analyze the case study, and it draws on studies of logistics and sustainment to better understand operational sustainment and the effects on maneuver operations. Historians Frank N. Schubert and Theresa L. Kraus, from the US Army Center of Military History, compiled a historical study of the First Gulf War. By describing the organizational and doctrinal changes within the US Army, their work highlights the scale of sustainment needed to support Coalition Forces in order to achieve strategic objectives through military action.³⁹ Schubert and Kraus also identified challenges

³⁶ Ibid., 58.

³⁷ Richard M. Swain, *Lucky War: Third Army in Desert Storm* (Fort Leavenworth, KS: US Army Command and General Staff College Press, 1997), xvi.

³⁸ Ibid., 78.

³⁹ Frank N. Schubert and Theresa L. Kraus, *The Whirlwind War: The United States Army in Operations Desert Shield and Desert Storm* (Washington, DC: Center of Military History, 2001), 27.

confronted by logistics formations. Their work used the “round out program,” which placed the majority of combat support personnel in the National Guard and Reserves and created an initial a lag in operation sustainment responsiveness during the early phases of the campaign.⁴⁰

Consequently, Schubert and Kraus works serves as a model for depicting integration and responsiveness of operational sustainment.

The aforementioned paragraphs presented theater sustainment’s role in support of the 3rd US Army during the First Gulf War. The theoretical framework of operational art serves to bridge theory with historical events to further understand operational sustainment. The research monograph seeks to explore the myriad of challenges operational logistics planners faced while employing principles of sustainment, integration, anticipation, responsiveness, and improvisation. Thus, this monograph focuses on 22nd TAACOM’s support to the 3rd US Army during the First Gulf War to determine whether the principles of sustainment enabled the theater army to achieve strategic objectives using the theoretical lens of operational art.

Methodology

This section outlines the methodology the monograph uses to examine the First Gulf War Campaign. It describes the structured focused analysis methodology, the historic case study, hypotheses, focused research questions, expected outcomes, and primary sources used. This allows for the testing of the hypotheses and the validation of the thesis that during Desert Shield and Desert Storm the 22nd TAACOM demonstrated the sustainment principles of integration, anticipation, responsiveness and improvisation.

This monograph uses the structured focused analysis research methodology to assess the First Gulf War historical case study.⁴¹ The First Gulf War is presented in a single case study

⁴⁰ Ibid., 73.

⁴¹ Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences* (Cambridge: MIT Press, 2005), 70.

because it provides an example of the link between operational art and theater logistics in LSCO. The case study explores two phases of the First Gulf War: Operation Desert Shield, August 1990 to January 1991, and Operation Desert Storm, January 1991 to February 1991, which demonstrates how the 22nd TAACOM employed operational sustainment to support the 3rd US Army's maneuver through the principles of sustainment. Using this methodology it permits the formulation of a standardized application of the research questions to the historical case study.⁴²

The First Gulf War presents an opportunity for the examination of operational sustainment, which is measured by operational reach, combat power, and endurance. In the first phase of the campaign, Operation Desert Shield outlines the strategic objectives set by the United States and its coalition partners. Likewise, Operation Desert Shield examines the 22nd TAACOM's operational sustainment plan that supported the 3rd US Army, which included the opening of the Middle Eastern Theater of Operations, with the support of the government of Saudi Arabia. Next, the case study examines the 22nd TAACOM's planning and support of the 3rd US Army during the defense of Saudi Arabia. This is followed by the expansion of Operation Desert Shield in preparation for transition to the second phase, Desert Storm. Next, the case study examines the Desert Storm phase of the campaign by analyzing the 22nd TAACOM's preparation of offensive operations conducted by the 3rd US Army. Finally, the case study examines the role, if any, that the 22nd TAACOM played in the US 3rd Army's success in achieving the national strategic objectives.

The four hypotheses and ten research questions focus on theater sustainment's support to the maneuver plan and the linkage to the achievement of the political and military objectives. The first hypothesis claims that, if the sustainment staff ensures the integration of sustainment with the operations plans, then unity of command and effort are achieved. The accompanying research questions aid in understanding the strategic environment and the associated military objectives

⁴² George and Bennett, *Case Studies*, 71.

necessary to achieve strategic aims. First, what were the political and military objectives of Operation Desert Shield? Second, what were the political and military objective of Operation Desert Storm? Third, what was the 22nd TAACOM's mission statement and what was the Theater Logistics plan? Finally, did the logistics planners integrate the sustainment plan with the maneuver plan? The answer to these questions aids in confirming the hypothesis of the 22nd TAACOM's operational sustainment integrated support of the 3rd US Army.

The second hypothesis is that when the sustainment staff uses professional judgment, they can understand and visualize future operations and then identify appropriate and required support to the operational commander. The first research question associated with the hypothesis is, what was the organization of the Theater Logistics? Second, how did the logistics planners anticipate sustainment requirements for the maneuver plan? Answering these questions validates the hypothesis and demonstrates that the 22nd TAACOM logistics planners were able to conduct just-in-time logistics by ensuring sustainment requirements arrived to maneuver units at the right time and place.

The third hypothesis claims that when the sustainment staff is responsive, they have the ability to react to changing requirements and respond to what is needed to maintain support for the operational commander. Two questions aim to validate the hypothesis. The first question asks what sustainment capabilities were inherent to the 22nd TAACOM? Second, how was the execution of the sustainment plan responsive to the maneuver plan? These questions enable the understanding of responsiveness and how the principle enables mission accomplishment.

The final hypothesis states that when the sustainment staff is able to improvise, they have the ability to adapt to unexpected situations or circumstances affecting a mission. The hypothesis has two correlated research questions to substantiate this hypothesis. The first asks, what were the sustainment shortfalls inherent to 22nd TAACOM? The second, how did the logistics planners demonstrate improvisation? Both questions seek to demonstrate the use of operational art by 22nd

TAACOM logistics planners to overcome shortcomings on the battlefield to achieve the 3rd US Army's mission objectives.

This study uses primary and secondary sources to answer the research questions and examine the case study. Primary sources such as *Operational Logistics and the Gulf War*, as well as 22nd TAACOM's operations orders, provide first-person accounts of operational sustainment during the First Gulf War. Secondary sources used to validate hypotheses within the case study consist of *Certain Victory*, *Jayhawk!* and *XVIII Airborne Corps in Desert Storm* which provides analyses of the improvisations made by the 3rd US Army during Operation Desert Storm. The theoretical framework of operational art is used throughout the case study to assist in explaining coalition action during the First Gulf War.

This section explained the methodology the monograph will use to describe how the 22nd TAACOM supported the 3rd US Army during the First Gulf War. Ten focused research questions will either support, not support, or provide mixed results as part of a structured focused analysis research methodology. The data collected for the study includes primary and secondary sources principally from the US Army perspective.

Case Study

This section analyzes the First Gulf War, from a US Army perspective, using the theoretical framework of operational art. The case study begins with an overview of the First Gulf War, which examines the two phases of the war: Operation Desert Shield (August 1990 to January 1991) and Operation Desert Storm (January 1991 to February 1991). Analysis of the two phases of the First Gulf War campaign is followed by the ten structured questions using principles of sustainment of integration, anticipation, responsiveness, and improvisation presented in the methodology section. Finally, the case study is summarized, with findings presented at the end of this section.

The First Gulf War began as a result of Iraq's struggling economy and its government's attempt to gain additional oil fields after an exhaustive war with Iran. The Iraq and Iran War, which ended in 1988, left Iraq's economy in ruins but strong militarily.⁴³ The Iraqi President Saddam Hussein and his Ba'th party began to look outside Iraq's borders to alleviate the country's crushing debt. Kuwait and the other Gulf States, such as Saudi Arabia, served as the solution to Iraq's economic crisis because it allowed Saddam to build resentment of the wealthy nation by claiming the Kuwaiti held Bubiyan and Warbah regions as Iraqi territory.⁴⁴ On August 2, 1990, Saddam Hussein ordered the invasion of Kuwait, sending the Tawakalna mechanized divisions and other military elements to capture Kuwait City before heading south to establish defensive positions along the Saudi Arabian border.⁴⁵

The Iraqi Army in Kuwait consisted of three heavy divisions with tanks varying from T-54 through T-62s and a strategic reserve division of the Iraqi Republican Guard Force (IRGF) equipped with the more modern T72M1.⁴⁶ In all, the Iraqis mobilized twenty-eight divisions, 140,000 troops, 1,100 tanks, 610 artillery pieces, and 610 armored vehicles, along with the necessary logistical support.⁴⁷ The Air Force consisted of French Mirage F-1s and Soviet-built Hind attack helicopters. The Iraqi Army possessed a robust air defense system that included SA-9 and S-13 missiles, complemented by anti-aircraft artillery with 3,700 systems and 10,000 antiaircraft machine gun systems.⁴⁸

Saddam's pause along the Saudi Arabian border elicited outrage within the international community and proved fear that he would continue his offensive into Saudi Arabia. Herbert

⁴³ Schubert and Kraus, *The Whirlwind War*, 21.

⁴⁴ Schubert and Kraus, *The Whirlwind War*, 21.

⁴⁵ Scales, *Certain Victory*, 45.

⁴⁶ *Ibid.*, 113.

⁴⁷ *Ibid.*, 117.

⁴⁸ *Ibid.*, 116.

“Norman” Schwarzkopf Jr., an Army General, assessed that a rapid buildup of Coalition Forces would be necessary to deter Iraq’s invasion of Saudi Arabia.⁴⁹ The Iraq crisis caused the US Army to pivot from its focus on a Soviet attack in Europe to the emerging threat of Iraq. Schwarzkopf told the Senate Armed Forces Committee that “Iraq is now the preeminent military power in the Gulf, and it is assuming a broader leadership role throughout the Arab World.”⁵⁰ To combat the threat, US CENTCOM presented a regional contingency strategy that suggested, “should deterrence fail, rapid deployment of additional US combat forces to assist friendly state in defending critical ports and oil facilities on the Arabian Peninsula” were at the ready. Once sufficient combat power had been generated and the enemy had been sufficiently attrited, CENTCOM’s strategy was to amass forces and conduct a counter offensive to recapture critical port and oil facilities which may have been seized by enemy forces in earlier stages of the conflict.”⁵¹ The strategy required sixty brigades, 640 fighter/ground-attack aircraft and 3,200 tanks, with a planning assumption of three- to six-months of force availability for employment.⁵² Operation Desert Shield was born from this strategic approach and began as a counter to Iraqi’s invasion of Kuwait and the enhanced threat to US ally, Saudi Arabia. Operation Desert Shield was executed in three phases that incorporated each element of the US service component and served to integrate capabilities against the Iraqi threat. Phase one of Operation Desert Shield used a naval blockade in the Red Sea and UN sanctions that enabled land operations in later phases of the operation. The second phase of the campaign involved the deployment of attack aviation, fighter jets, US Army soldier’s and a US Marine Expeditionary Brigade. The third phase consisted of mechanized divisions, sea lift and heavy sustainment (see figure 1).⁵³ The US

⁴⁹ Ibid., 60, 65.

⁵⁰ Swain, *Lucky War*, 5.

⁵¹ Ibid., 7.

⁵² Ibid.

⁵³ Ibid., 37.

CENTCOM, led by General Herbert “Norman” Schwarzkopf Jr., selected Lieutenant General John J. Yeosock as Theater Army Commander, giving him command of the 3rd US Army. LTG Yeosock maintained overall control of theater operations in Desert Shield and received the XVIII Airborne Corps in Saudi Arabia as deterrence to Iraqi Forces along its borders.

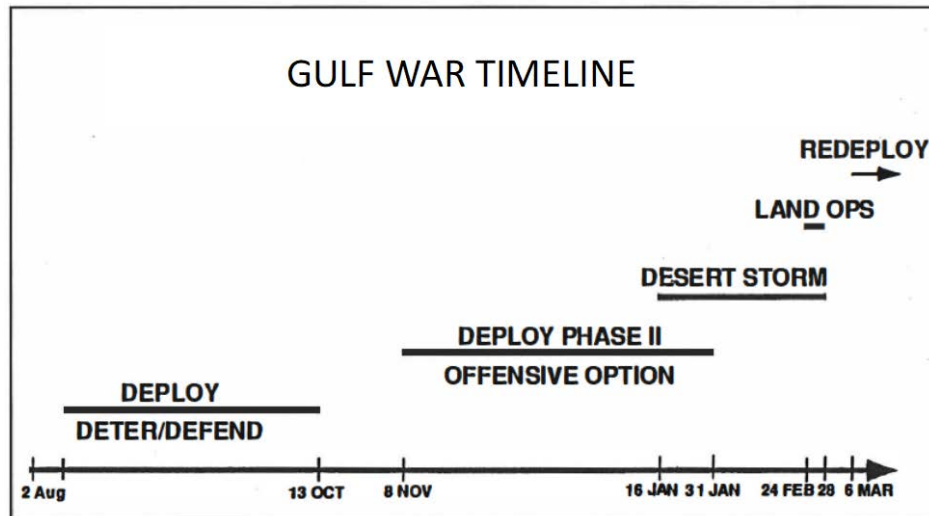


Figure 1. Gulf War Timeline. Richard L. West, Thomas D. Byrne, James D. Blundell, and Sandra J. Daugherty, *Operations Desert Shield and Desert Storm: The Logistics Perspective* (Arlington, VA: The Institute of Land Warfare, Association of the United States Army, 1991), 13.

Key to the build-up of forces in Saudi Arabia was the role played by Major General William “Gus” Pagonis, who moved from Forces Command to Command of the 22nd TAACOM in support of the 3rd US Army. The first days of Desert Shield began with 76 planners from XVIII Airborne Corps and a small contingent from MG Pagonis’s staff who developed the plan for coalition buildup in Saudi Arabia.⁵⁴ The 22nd TAACOM led the immature Middle Eastern Theater of Operations into a developed theater capable of receiving two corps, subordinate divisions, and separate brigades. The 22nd TAACOM expanded the Middle Eastern Theater of Operations in an unprecedented manner, by receiving 180,000 Soldiers and associated equipment eighty-eight days after the conflict began.⁵⁵ The speed with which the 22nd TAACOM developed

⁵⁴ Scales, *Certain Victory*, 49.

⁵⁵ *Ibid.*, 59-60.

the theater proved a double-edged sword. Although it enabled coalition forces to rapidly build combat power in Saudi Arabia, the efficiency of the 22nd TAACOM posed unforeseen challenges as buildup operations transitioned to offensive operations.⁵⁶

The XVIII Airborne Corps arrived to execute the 3rd Army's Operations Plan 1002 and assumed command of newly arriving divisions as the Corps 1st COSCOM quickly assisted in developing the austere theater. The corps' recent return from Operation Just Cause gave a small group of leaders and staff within the corps relevant combat experience operating as a tactical headquarters.⁵⁷ The XVIII Airborne Corps' role in defending Saudi Arabia during Operation Desert Shield consisted of multiple operations conducted between August 13 and September 3, including Desert Dragon I, Desert Dragon II, and Desert Dragon III which halted Iraqi forces within Kuwait and enabled the buildup of Coalition Forces.⁵⁸ The Corps' commander, LTG Gary E. Luck, quickly mobilized his staff to oversee operations to secure major ports and counter-attack the Iraqis in the event of an invasion of Saudi Arabia.⁵⁹ To ensure his troops' preparedness, LTG Luck began moving brigades into defensive positions to deter an Iraqi invasion. For the next three months, the XVIII Airborne Corps prepared tactical assembly areas and continued to build combat power.

The refusal of Iraq to acknowledge Kuwait's sovereignty and the threat to Saudi Arabia drew the United States and coalition forces into armed conflict with Iraq to re-establish Kuwait's national border and to expel Iraqi Army forces. On November 8, President George H. W. Bush announced the authorization of offensive operations, which provided Desert Shield with an additional corps to oust Iraqi divisions from Kuwait. A day later, the VII Corps received

⁵⁶ Swain, *Lucky War*, 143.

⁵⁷ Charles L. Toomey, *XVIII Airborne Corps in Desert Storm: From Planning to Victory* (Central Point, OR: Hellgate Press, 2005), 48.

⁵⁸ Scales, *Certain Victory*, 83-86.

⁵⁹ Schubert and Kraus, *The Whirlwind War*, 56.

deployment orders to Saudi Arabia in support of Operation Desert Shield's expansion. The change of mission from forward-deployed to expeditionary power projection operations caused logistics planners to develop non-standard solutions to problems. The VII Corps developed its own guidelines for deployment and used the 2nd COSCOM to begin moving corps equipment to German ports for a Saudi Arabian destination. Corps staff, along with the US Army Europe staff, planned for the corps' deployment from Europe to Saudi Arabia with the forces available.⁶⁰ Upon arrival, the VII Corps Commander, LTG Fredrick M. Franks, directed his staff to develop Operation Plan Saber. The plan was comprised of six phases: (1) Movement from ports to Tactical Assembly Areas (TAA); (2) Movement from TAA to Attack Positions; (3) The breach of the forward Iraqi defensive position; (4) Defeat of Iraqi Defenses with VII Corps' tactical reserves behind the front line; (5) Destruction of the Republican Guard Forces Command that served as the theater Reserve; and (6) Defense of Northern Kuwait after the end of hostilities.⁶¹

As land forces gathered combat power, the Joint Force shaped the battlefield through the employment of the US Air Force's air campaign. In mid-January, the US Air Force began its strategic air campaign, targeting command and control nodes, logistics convoys, and air defense artillery. The campaign proved effective in finding and destroying strategic, high-payoff targets. On February 7, special forces found and destroyed communication sites, scud launching sites and microwave towers.⁶² The air campaign achieved its desired effect by reducing Saddam's scud missile attacks and the overall ADA threat to the coalition air force.⁶³ This set the stage for the transition to a ground offensive that would become Operation Desert Storm.

⁶⁰ Stephen A. Bourque, *Jayhawk!: The VII Corps in the Persian Gulf War* (Washington, DC: Department of the Army, 2002), 40.

⁶¹ *Ibid.*, 35.

⁶² Scales, *Certain Victory*, 186.

⁶³ *Ibid.*, 186-187.

On February 24, 1991, the 3rd US Army Operation's main attacking force—VII Corps—executed the penetration of Iraqi defenses to an envelopment north. The corps' Armored Cavalry 2nd ACR enveloped Iraqi defenses to the north while the 1st Infantry Division breached the center of Iraqi defenses.⁶⁴ The XVIII Airborne Corps conducted a supporting attack tasked to destroy Iraqi infantry divisions and, on orders, seized Objective Anvil in support of VII Corps envelopment.⁶⁵ The 3rd US Army experienced success in disintegrating Iraqi mechanized divisions within the first twenty-four hours of combat operations. However, ongoing offensive operations in pursuit of IRGF caused some maneuver formations to report fuel shortages requiring emergency resupply.⁶⁶

The VII Corps' tempo during the first seventy-two hours degraded its operational reach because of the tremendous strain continuous operations placed on the Corps and 2nd COSCOM. On February 25, 1991, the VII Corps executed the first of two operational pauses conducted during Operation Desert Storm. The first was a planned pause to allow the lead element of the 2nd ACR to reorganize after an overwhelming success against the enemy during the first days of battle.⁶⁷ Fatigue from prolonged combat operations began to create weakness in the 2nd COSCOM's concept of support. This resulted in VII Corps' second unplanned operational pause between February 27 and February 28, 1991, where lack of fuel delayed the Corps' final attack of retreating Iraqi Forces.⁶⁸ The offensive, led by the 1st Armored Division, attacked and destroyed the remainder of the IRGF within forty-five minutes upon beginning the attack.⁶⁹ The VII Corps

⁶⁴ Bourque, *Jayhawk*, 258.

⁶⁵ Swain, *Lucky War*, 143.

⁶⁶ Bourque, *Jayhawk*, 352.

⁶⁷ *Ibid.*, 280.

⁶⁸ *Ibid.*, 393.

⁶⁹ *Ibid.*

did not capitalize on the degraded enemy because the Corps had all but culminated in the seven days of continuous operations.⁷⁰

On February 28, 1991, President Bush suspended offensive combat operations, leaving the VII Corps to consolidate the gains. The VII Corps nearly reached the end of its operational reach and suspended combat operations that saw the corps stop in place. Both the VII Corps and the XVIII Airborne Corps effectively achieved the 3rd Army US military's objective by destroying the IRGF as well as defenses along the Saudi Arabia border.⁷¹ The battlefield was littered with destroyed vehicles and surrendering Iraqi soldiers. The Corps needed to reorganize itself in the event the suspension was lifted. The VII Corps' problem toward the conclusion of offensive operations was extended ground line of communication from the communication zone to the forward edge of battle.

The first question asks what were the political and military objectives of Operation Desert Shield? On August 8, 1990, President George H. W. Bush authorized the deployment of forces to the Persian Gulf in response to Saddam's invasion of Kuwait. The Bush administration published four strategic objectives: "1) the withdrawal of Iraqi Forces from Kuwait, 2) Restore the legitimate government of Kuwait, 3) Defend Saudi Arabia, 4) Protect American citizens abroad. Operation Desert Shield's strategic objectives were clear, allowing subordinate commanders to create well defined military objectives with measurable outcomes."⁷² The coinciding military objectives set by the Joint Chief of Staff, General Colin Powell, were to: (1) Deter further Iraqi aggression; (2) Improve Saudi Arabian military and defensive capabilities; and (3) Defend Saudi Arabia.⁷³ General (GEN) Powell assigned the mission to the US

⁷⁰ Ibid.

⁷¹ Swain, *Lucky War*, 290-291.

⁷² Ibid., 32.

⁷³ Ibid.

CENTCOM GEN Schwarzkopf. LTG Yeosock translated the strategic and military objectives into operational approach as he established the 3rd US Army in Riyadh to coordinate the buildup, sustainment and US Army combat planning for units arriving to Saudi Arabia in support of Desert Shield.⁷⁴

The second question asks what were the political and military objectives of Operation Desert Storm? The political objectives established for Operation Desert Storm did not differ from those for Desert Shield. Desert Storm achieved the first and second strategic objectives by first execution of an extensive air bombardment campaign, then transitioning to a ground offensive to eject Saddam's forces out of Kuwait and re-establish its sovereign borders.⁷⁵ Planners assumed the military objectives included the destruction of Iraqi offensive capability, which would result in a regional balance of military power.⁷⁶ The 3rd US Army aligned military objectives by attacking Iraqi defensive positions with the XVIII Airborne Corps and VII Corps. In preparation for the offensive, the 3rd US Army expanded the Middle Eastern theater to train, sustain, and receive the additional soldiers from the VII Corps. LTG Yeosock ordered the two corps to focus on training and fighting, while the 3rd US Army staff concentrated on planning, coordinating, and executing offensive operations.

The third question asks what was the 22nd TAACOM's mission statement and what was the Theater Logistics plan for Desert Shield and Desert Storm? The mission for the 22nd TAACOM during Operation Desert Shield was twofold: "first, develop and Army level support command using arriving US unit and host nation elements. Second, to provide theater-wide logistics support for the reception, onward movement, and sustainment of US and combined

⁷⁴ Schubert and Kraus, *The Whirlwind War*, 52.

⁷⁵ Colin Powell and Joseph E Persico, *My American Journey* (New York: Random House, 1995), 488.

⁷⁶ Swain, *Lucky War*, 78.

forces.”⁷⁷ Phase Alpha consisted of the reception and sustainment of forces and the expansion of theater sustainment during Operation Desert Shield. The focus of this phase was on building theater facilities and supply depots, as well as on the reception of the XVIII Airborne Corps and VII Corps.⁷⁸ The integration of sustainment formed the foundation of the plan because it relied upon the preparedness and prepositioning networks of supply depots to support newly arriving soldiers.⁷⁹ Throughout Operation Desert Shield, the 22nd TAACOM supported the 3rd US Army’s military objectives by leading theater sustainment, planning sustainment operations and the buildup in Saudi Arabia.

The next phase, Bravo, involved the “movement of the corps” to forward strategic positions with sustainment material and equipment. Bravo served as a transition phase to move combat supplies, equipment, and material to logistics bases (LOG bases) and to prepare theater support for offensive operations. Combat supplies consisted of fuel, ammunition, equipment, vehicles, maintenance mechanisms, shelter, food, water, and medical supplies.⁸⁰ Phase Bravo was the most time consuming and tedious portion of the 22nd TAACOM’s plan. It required planners to coordinate theater sustainment with CENTCOM and the Saudi Arabian government to facilitated the transition to Phase Charlie.

Phase Charlie directly supported Operation Desert Storm. According to LTG Pagonis, Phase Charlie, “the ground offensive,” supported the VII Corps and XVIII Airborne Corps’ operations into Kuwait and Iraq.⁸¹ The theory of the 90-mile rule of delivering supplies held the theater and COSCOM’s logistics concept of support together. LTG Pagonis used the 90-mile rule

⁷⁷ Richard L. West, Thomas D. Byrne, James D. Blundell, and Sandra J. Daugherty, *Operations Desert Shield and Desert Storm: The Logistics Perspective* (Arlington, VA: The Institute of Land Warfare, Association of the United States Army, 1991), 10.

⁷⁸ Schubert and Kraus, *The Whirlwind War*, 140.

⁷⁹ Pagonis and Cruikshank, *Moving Mountains*, 118.

⁸⁰ Pagonis and Cruikshank, *Moving Mountains*, 120.

⁸¹ Ibid.

to deliver theater supplies to the XVIII Airborne Corps and VII Corps' logistical bases, Oscar and Nellingen, which had a limit of ninety miles from the 22nd TAACOM logistical bases of Alpha, Bravo, and Delta for supplies (see figure 2).⁸² The 22nd TAACOM's integration of sustainment operations into the maneuver plan supported the 3rd US Army in aligning military objectives with President Bush's stated strategic aim of achieving the withdrawal of Iraqi Forces from Kuwait and restoring the Kuwaiti government.

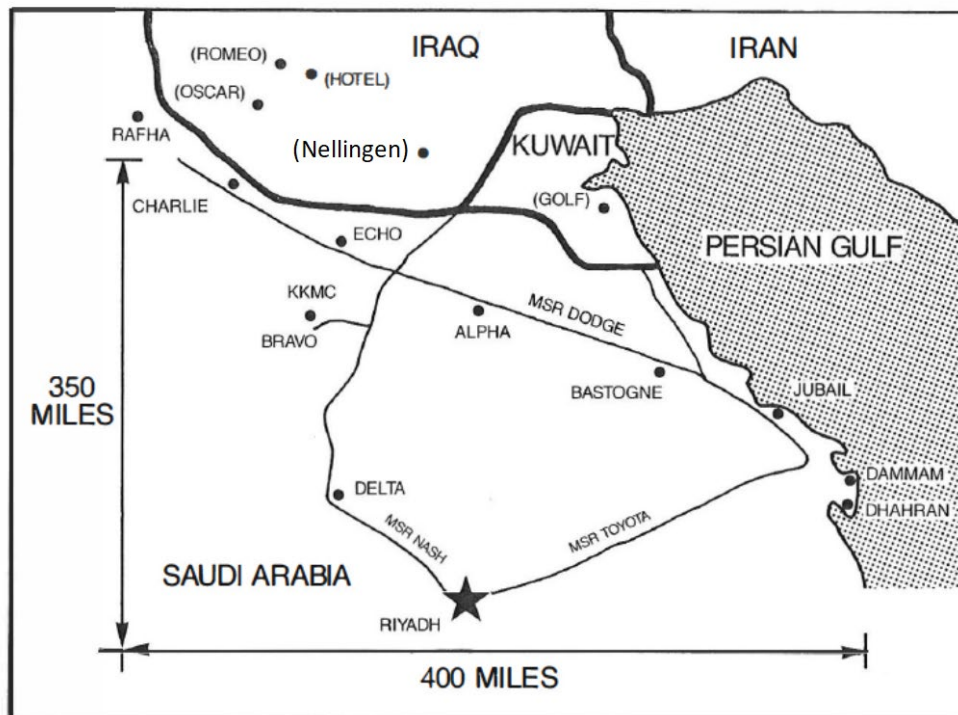


Figure 2. Desert Shield: Major Supply Routes and Logistical Bases. Richard L. West, Thomas D. Byrne, James D. Blundell, and Sandra J. Daugherty, *Operations Desert Shield and Desert Storm: The Logistics Perspective* (Arlington, VA: The Institute of Land Warfare, Association of the United States Army, 1991), 13.

The fourth question asks what was the organization of Theater Logistics? The 22nd TAACOM started out as a provisional headquarters before becoming a permanent command on December 16.⁸³ LTG Pagonis wore multiple hats as the FORSCOM G4, 3rd Army Deputy, and General Support before eventually becoming the full-time commander of the 22nd TAACOM.

⁸² Schubert and Kraus, *The Whirlwind War*, 140.

⁸³ Pagonis and Cruikshank, *Moving Mountains*, 133.

Pagonis consolidated all theater-level CSS commands, including theater transportation, as the first step in solving the problem of the rapid buildup of forces in Saudi Arabia. The consolidation of the 22nd TAACOM's task organization made support to the 1st and 2nd COSCOM more efficient throughout each phase of the First Gulf War (see figure 3).

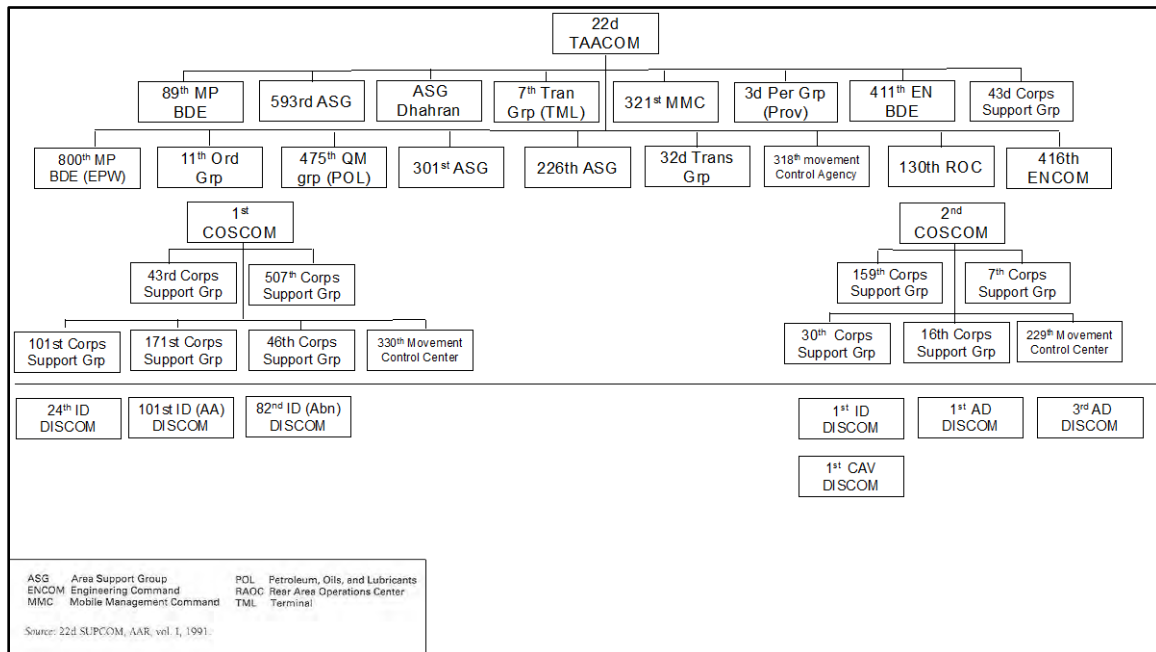


Figure 3. 3rd US Army Task Organization, January 1991. Army Central Command, Morning Briefing, February 24, 1991, Swain collection. Author referencing Stephen A. Bourque, *Jayhawk!: The VII Corps in the Persian Gulf War* (Washington, DC: Department of the Army, 2002), 88.

The fifth question asks what sustainment capabilities were inherent to the 22nd TAACOM by classes of supply? The TAACOM grew in operation sustainment capacity beginning in Operation Desert Shield. In the first days of Operation Desert Shield, the 22nd TAACOM received “170,000 personnel, 160,000 tons of cargo, 7,500,000 square feet of cargo and equipment by sea. During the transition to Operation Desert Storm, the TAACOM moved 460,000 tons of ammunition, 300,000 desert camouflage uniforms, 200,000 tires and 150 million military meals to sustain the 540,000 soldiers, sailors, airmen and marines deployed.”⁸⁴

⁸⁴ Richard L. West, Thomas D. Byrne, James D. Blundell, and Sandra J. Daugherty, *The US Army in Operation Desert Storm* (Arlington, VA: The Institute of Land Warfare, Association of the United States Army, 1991), 9.

The 22nd TAACOM operated at full capacity during Operation Desert Storm and used 1,400 army trucks and 2,100 host-nation vehicles to move the VII Corps and XVIII Airborne Corps' equipment and vehicles to tactical training areas and LOG bases.⁸⁵ During Desert Storm, the 22nd TAACOM developed the capacity to support combat operations, requiring a daily total of 14,000 short tons of ammunition and 4.5 million gallons of fuel.⁸⁶ LTG Pagonis structured the 22nd TAACOM to sustain the 3rd US Army on the move by using the two-wheel plan. This plan required that all LOG bases be no further than a day's drive away and have a 22nd TAACOM LOG base capable of moving forward to maintain operational reach.⁸⁷ He framed the theater from ports approximately 334 miles to King Khalid Military City (KKMC) and built depots of all classes of supply at LOG bases. In addition, LTG Pagonis created a sustainment network that rapidly expanded support of the Middle Eastern Theater and established conditions to receive armored divisions assigned to the XVIII Airborne Corps and VII Corps. The 22nd TAACOM planned and executed operational sustainment support to LOG bases, Charlie and Echo. Each base had approximately five days worth of rations, 3.4 million gallons of fuel, and 1,500 to 45,00 short tons of ammunition for both corps.⁸⁸

The sixth question asks what were the sustainment shortfalls inherent to 22nd TAACOM? Many of the 22nd TAACOM's LOG shortfalls were limited to Operation Desert Shield. By the time the coalition transitioned to Desert Storm, many of the shortfalls had been addressed and work-around solutions developed by the 22nd TAACOM staff. Receiving the correct personnel through the Time-Phased Force Deployment List presented challenges for LTG Pagonis early on. The initial personnel requested were not the people required once they arrived

⁸⁵ Ibid., 13.

⁸⁶ West et al., *The US Army in Operation Desert Storm*, 15.

⁸⁷ Pagonis and Cruikshank, *Moving Mountains*, 120-24.

⁸⁸ Swain, *Lucky War*, 108.

in theater due to changes as the Operation Desert Shield campaign developed.⁸⁹ An example of the difficulty is demonstrated in the arrival of the VII Corps and 2nd COSCOM personnel and equipment. These factors left planners guessing about both the number of forces allocated to the operations as well as equipment authorizations.⁹⁰

Next, HETs became a limited resource theater-wide and reduced the 22nd TAACOM's ability to move heavy armor around the battlefield.⁹¹ The 3rd US Army planned to use HETs to extend operational reach by transporting tanks and fighting vehicles into the depth of the Iraqi defenses. In late December, the 3rd Army only possessed 461 of 1,295 HETs required to execute Operation Desert Storm.⁹² The 3rd US Army executed Operation Desert Storm with 759 HETs, just over half of the critical pieces of equipment necessary to extend the operational reach of armored maneuver units.

Finally, the 22nd TAACOM's rapid expansion of the Middle Eastern Theater created unintended consequences as the theater began to expand with the arrival of the VII Corps. The theater had access to few multi-lane roads, leading from the port in Dhahran to King Khalid Military City, which allowed the theater to move heavy equipment into LOG bases. Road management of the Tapline road from ports to KKMC worsened as the theater matured. New growth in vehicle traffic required LTG Pagonis to open a second route, MSR Dodge, connecting Dhahran to Riyadh.⁹³ Roads quickly became saturated with vehicles moving logistics stores and required additional new roads to release log jams created by traffic control points designed to manage movement along large roads.⁹⁴ Limitations associated with roadways

⁸⁹ Pagonis and Cruikshank, *Moving Mountains*, 125.

⁹⁰ US Department of Defense, *Tab L (Logistics) to VII Corps* (1992), 3.

⁹¹ Scales, *Certain Victory*, 62.

⁹² Swain, *Lucky War*, 157.

⁹³ Pagonis and Cruikshank, *Moving Mountains*, 122.

⁹⁴ Scales, *Certain Victory*, 77.

restricted traffic flow for CSS units and remained a point of friction for the 22nd TAACOM until the end of Operation Desert Storm.

The seventh question asks how did the logistics planners demonstrate improvisation? The first and most important demonstrated improvisation was the establishment of the 22nd TAACOM as a permanent operational sustainment headquarters. The 22nd TAACOM planning accounted for each CSS element fit into the First Gulf War logistics' concepts to support maneuver.⁹⁵ LTG Pagonis served as a logistic integrator communicating theater logistics requirements by executing just-in-time logistics, leveraging army systems, contractor support, employment of military civilians, and host nation support. His centralized plans allowed for decentralized execution by communicating the commander's intent through the use of 3x5 cards, which increased communication across the 22nd TAACOM allowing every member of the organization to have a voice.⁹⁶ In conjunction with 3x5 cards, Pagonis used "Please-See-Me" time as a vehicle to allow his staff down to PVTs in his command to ask questions and address problems without retribution or retaliation.⁹⁷ He used the method to communicate the constant changes in theater sustainment requirements throughout the campaign. This empowered planners to develop creative and adaptive solutions beginning in Operation Desert Shield and carrying over to Desert Storm.

Subsequently, the 22nd TAACOM played a substantial role in modernizing the newly arriving forces of the XVIII Airborne Corps and the VII Corps' equipment. Newly arriving forces exchanged old Abrams M1 tanks with the smaller 105mm main gun to the newly fielded M1A1 with the 120mm main gun and upgraded chemical and armor.⁹⁸ The TAACOM issued 400 heavy

⁹⁵ William G. Pagonis and Michael D. Krause, *Land Warfare Papers: Operational Logistics and the Gulf War*, The Land Warfare Papers no. 13 (Arlington, VA: The Institute of Land Warfare, 1992), 14.

⁹⁶ *Ibid.*, 13.

⁹⁷ Pagonis and Cruikshank, *Moving Mountains*, 191.

⁹⁸ Pagonis and Krause, *Land Warfare Papers*, 13.

expanded mobility tactical trucks (HEMTT) to the XVIII Airborne Corps and VII Corps to supplement the less mobile 5,000-gallon fueler to support Desert Storm February 1991.⁹⁹ Theater sustainment assisted VII Corps in changing vehicle camouflage from forest green, by painting all vehicles equipment tan to match the desert environment.¹⁰⁰

Staff coordination with the US Defense Logistics Agency and Army Materiel Command ensured industry-supported theater logistics efforts in Saudi Arabia during the buildup of forces in Desert Shield. Both agencies leveraged the US industry to support the First Gulf War campaign in less than ninety days. The US Defense Logistics agency accounted for “1,000 civilian contract valued at over \$4.6 billion and accelerated production and delivery of desert uniforms, chemical defense clothing, desert boots, rations, repair parts, equipment, weapons and fuel.”¹⁰¹ US Army Materiel Command assisted the 22nd TAACOM in processing “4,000 contracts valued at over \$2 billion and accelerated production and delivery of munitions, waters, repair parts, chemical and environmental system, generators and maintenance and support systems.”¹⁰²

The 22nd TAACOM used creative solutions to overcome shortages of repair parts for multiple pieces of equipment such as cables for patriot system, generators, and tires for 5-ton trucks. The staff instituted four methods of maintaining equipment through the 22nd TAACOM maintenance practices-first, trading in parts with other units, second using the DoD supply system; third, rebuilding or reusing parts, fourth purchasing parts in Saudi Arabia.¹⁰³ Saudi Arabian host nation support lead to the 22nd TAACOMs logistical plan overcoming shortfalls as Saudi officials circumvented regulations to provide for coalition troops.¹⁰⁴

⁹⁹ Scales, *Certain Victory*, 79.

¹⁰⁰ Pagonis and Krause, *Land Warfare Papers*, 13.

¹⁰¹ West et al., *Operations Desert Shield and Desert Storm*, 8.

¹⁰² Ibid.

¹⁰³ General Accounting Office, *Desert Shield/Storm Logistics: Observations by US Military Personnel* (Washington, DC: General Accounting Office, 1991), 26.

¹⁰⁴ Pagonis and Cruikshank, *Moving Mountains*, 125.

During Operation Desert Storm, the 22nd TAACOM adapted pre-plan LOG bases Oscar, Romeo, Hotel, and November into trailer transfer points (see figure 2).¹⁰⁵ The TAACOM dropped off theater trailers for corps to maintain the offensive and extend operational reach. Theater resupply support consisted of trailers loaded with food, water, fuel, and ammunition, and enabled operational sustainment forward of theater LOG bases.¹⁰⁶ The change enabled the 3rd US Army to attack deeper into Iraq if the operation had been extended.

The eighth question asks how did the logistics planners integrate the sustainment plan with the maneuver plan? The 3rd US Army developed two maneuver plans for Operation Desert Storm, which required the 22nd TAACOM to make significant changes to the theater concept of sustainment in order to integrate logistics into the maneuver plan. The initial plan presented on October 6 consisted of a single penetration conducted by the XVIII Airborne Corps with coalition forces protecting the western flank and US Marine Forces conducting amphibious landings northeast along the Kuwaiti coast.¹⁰⁷ The concept planned for the XVIII Airborne Corps to advance into southern Kuwait between the “elbow” and the tri-border area then turns east toward Kuwait City.¹⁰⁸ The plan relied upon a significant air campaign that would reduce the Iraqi ground forces by 50 percent. However, the risk remained that the Iraqi Army outnumbered Coalition ground forces and this factor ultimately added two weeks to the planned ground campaign.¹⁰⁹

Beginning in September, LTG Pagonis instructed his staff to begin planning for the use of small forward mobile LOG bases along with the XVIII Airborne and Coalition Forces axis of

¹⁰⁵ West et al., *Operations Desert Shield and Desert Storm*, 14.

¹⁰⁶ West et al., *Operations Desert Shield and Desert Storm*, 14, 15.

¹⁰⁷ Scales, *Certain Victory*, 126.

¹⁰⁸ Ibid.

¹⁰⁹ Ibid.

advance.¹¹⁰ LOG bases in Dhahran and Jubail served as theater sustainment locations to support the single corps penetration concept. The main supply route on the Tapline road served as a ground line of communication for the 22nd TAACOM to support the continuous supply of water, rations, fuel, and ammunition for the ground offensive.¹¹¹ The initial theater logistics plan was challenged by concerns of limited operational reach. The limited number of HETs available and the distance between Dhahran and Kuwait City placed the bulk of the operational sustainment on the host nation and allied forces to achieve the 3rd Army's military objectives. High risk and uncontrollable mission variables caused planners to conclude that mission success was not guaranteed without an additional corps and an additional ninety days to generate combat power.¹¹²

The 3rd Army adopted a second maneuver plan as the ground offensive plan during Operation Desert Storm. On October 16, the 3rd Army planners developed a concept of operation for a two corps offensive deep inside the Iraqi desert.¹¹³ The VII Corps was tasked with destroying Iraqi armor defenses along the Saudi Arabian border. The addition of a second corps provided further logistical challenges, but provided "limitless opportunities to exploit the unmatched agility of American armored forces."¹¹⁴ The plan required the XVIII Airborne Corps to serve as the covering force for the VII Corps further west to prevent direct engagement with Iraqi armored forces. The VII Corps would conduct an envelopment into Iraq to destroy the IRGF, while Coalition Forces in the east served as the penetration force.¹¹⁵ In order for the 3rd

¹¹⁰ Pagonis and Cruikshank, *Moving Mountains*, 134.

¹¹¹ West et al., *Operations Desert Shield and Desert Storm*, 12.

¹¹² Scales, *Certain Victory*, 128.

¹¹³ *Ibid.*

¹¹⁴ *Ibid.*, 129.

¹¹⁵ *Ibid.*, 140.

Army's plan to succeed, the 22nd TAACOM's concept of support needed significant changes to support the ground maneuver plan.

The 22nd TAACOM demonstrated responsiveness by changing the theater concept of sustainment through establishing forward LOG bases Alpha, Bravo, Charlie, Delta, and Echo to support the 3rd US Army's updated ground maneuver plan (see figure 2). Theater sustainers stocked the LOG bases with food, water, clothing, fuel, construction material, ammunition, major items such as M1A1 tanks, as well as medical and repair parts.¹¹⁶ During the first phase, the 22nd TAACOM "repositioned units and supplies to the new LOG bases while supporting the reception and movement of VII Corps."¹¹⁷ Next, the 22nd TAACOM supported heavy transportation and the movement of each corps forward to attack positions in preparation for the ground offensive.¹¹⁸ The 3rd US Army covered the 22nd TAACOM theater logistics realignment by conducting a series of feints to mask the logistic movements and confuse the Iraqi Forces as to the true intent of the plan. The Marines and Navy rehearsed invasions into Kuwait from the Persian Gulf, while the air campaign served to inflict maximum damage to Iraqi defenses.¹¹⁹

The ninth question asks how did the logistics planners anticipate sustainment requirements for the maneuver plan? Throughout the First Gulf War, the 22nd TAACOM anticipated theater sustainment needs for both Operation Desert Shield and Desert Storm. The 22nd TAACOM command structure created conditions for theater sustainment to arrive "just in time" to support combat forces. LTG Pagonis created two command posts, one in Dharan and the other forward at KKMC. Both command posts functioned to generate and disseminate information in support of the ground campaign during Operation Desert Storm.¹²⁰ The 22nd

¹¹⁶ West et al., *Operations Desert Shield and Desert Storm*, 12.

¹¹⁷ Ibid.

¹¹⁸ Ibid.

¹¹⁹ West et al., *The US Army in Operation Desert Storm*, 15.

¹²⁰ Pagonis and Cruikshank, *Moving Mountains*, 142.

TAACOM's two-command post system enabled a specific division to report their repair part requisitions back to the United States each day. High priority parts were delivered to Dhahran within twenty-four hours, with host nation contractors delivering seventy pallets of varying parts daily, ensuring parts reached division at the right time and place.¹²¹ The 22nd TAACOM ensured that both corps remained well stocked with enough supplies to remain self-sustaining by continuous resupply of forward LOG base.

The buildup phase of Operation Desert Shield, October 1990 to January 1991, provided the 22nd TAACOM with the supply stores necessary to anticipate the sustainment needs of the 3rd US Army during Desert Storm. The forward LOG base concept developed by the 22nd TAACOM staff enabled theater logistics to facilitate throughput of sustainment for the XVIII Airborne Corps and VII Corps to extend operational reach into Iraq. The 22nd TAACOM anticipated resupply consisted of 900 truckloads of fuel a day, executed by ten petroleum, oil, and lubricants companies during Operation Desert Storm.¹²² Finally, theater transportation assets supported the daily movement of 5,000 short tons of ammunition daily.¹²³

The tenth question asks how was the execution of the sustainment plan responsive to the maneuver plan? Before the commencement of Desert Storm, GEN Schwarzkopf stated to LTG Pagonis, "Gus, we cannot move the troops before the 16th of January, when the UN deadlines expires. We want all the necessary supplies in place by February 1st to support them out west and up north. Can you deliver on that schedule?"¹²⁴ LTG Pagonis's response was, "Sir, in two weeks we may be able to get the logistics bases in some semblance of order—using every available soldier and truck in the theater, and working around the clock on all eight cylinders."¹²⁵ The 22nd

¹²¹ West et al., *Operations Desert Shield and Desert Storm*, 15.

¹²² West et al., *Operations Desert Shield and Desert Storm*, 15.

¹²³ Ibid.

¹²⁴ Pagonis and Cruikshank, *Moving Mountains*, 138.

¹²⁵ Ibid.

TAACOM staffs responsiveness was demonstrated through a well-organized “log cell” that managed road traffic schedules and tracked vehicle theater supplies moving to LOG bases. In so doing the 22nd TAACOM crisscrossed the XVIII Airborne Corps and VII Corps and associated supply which successfully executed “Phase Bravo” movement of corps to starting positions.

Once Operation Desert Storm commenced, the 22nd TAACOM enacted the 90-mile rule of moving theater sustainment stock to forward LOG bases. The well-stocked LOG bases contained twenty-nine days of food and water, 5.2 days of fuel, and forty-five days of ammunition.¹²⁶ The staff’s precision in planning and management of operational sustainment consisted of a constant stream of vehicles and supplies moving from ports along mains supply routes to forward LOG bases Echo and Charlie.¹²⁷ LTG Pagonis ensured theater sustainment remained responsive to the 3rd Army’s maneuver throughout the first Gulf War campaign.

This section analyzed the two phases of the First Gulf War: Operations Desert Shield and Desert Storm and addressed research questions developed in the methodology. The evidence presented suggests that the 22nd TAACOM demonstrated the principles of integration, anticipation, responsiveness, and improvisation. This was essential to maintaining the combat power of the 3rd US Army and enabled the commander to extend his operational reach while at the same time providing endurance to the subordinate corps and divisions.

Findings and Analysis

This section conducts a structured, focused analysis of the First Gulf War, focusing on two phases, Operation Desert Shield and Desert Storm. First, the findings subsection reviews the empirical evidence presented in the case study, concentrating on the ten research questions. Second, the analysis subsection compares the findings and tests the four hypotheses to determine if they support, do not support, or have mixed results. Ultimately, this section seeks to validate or

¹²⁶ Pagonis and Cruikshank, *Moving Mountains*, 147.

¹²⁷ Ibid.

invalidate the work's overall thesis that during the First Gulf War, the 22nd TAACOM demonstrated the sustainment principles of integration, anticipation, responsiveness, and improvisation.

The first question is, what were the political and military objectives of Operation Desert Shield? President Bush established four political objectives: (1) the withdrawal of Iraqi Forces from Kuwait; (2) the restoration of the legitimate government of Kuwait; (3) the defense of Saudi Arabia; and (4) the protection of American citizens abroad for Operation Desert Shield. The political objectives enabled the United States to gain international support and allowed the US Army to establish attainable military objectives. The coinciding military objectives were: (1) to deter further Iraqi aggression; (2) improve Saudi Arabian military and defensive capabilities; and (3) defend Saudi Arabia; these were established by General Powell and aligned to achieve the strategic objectives. LTG Yeosock's operational approach for Desert Shield provided the 22nd TAACOM with the necessary planning priorities to integrate the operational sustainment needed to achieve the 3rd US Army's defined objectives.

The second question is, what were the political and military objectives of Operation Desert Storm? Political objectives did not change during the transition to Operation Desert Storm. The military objectives became focused on achieving the first and second political objectives: (1) the withdrawal of Iraqi forces from Kuwait; and (2) the restoration of the legitimate government of Kuwait. This required the 3rd US Army to build up the theater, sustain, train, and employ the XVIII Airborne Corps, VII Corps, and Coalition Forces. The 3rd US Army set conditions for both corps through the employment of an extensive air campaign and the integration of the 22nd TAACOM's concept of sustainment to assist in supporting each corps' maneuver deep into Iraq and Kuwaiti territory.

The third question is, what was the 22nd TAACOM's mission statement and what was the Theater Logistics plan for Desert Shield and Desert Storm? The mission for 22nd TAACOM during Operation Desert Shield was twofold: "First, develop and Army level support command

using arriving US unit and host nation elements. Second, to provide theater-wide logistics support for reception, onward movement and sustainment of US and combined forces.”¹²⁸ Phase Alpha created the rapid expansion of the theater through building theater facilities and supply depots, as well as on the reception of the XVIII Airborne Corps and the VII Corps. Integration of sustainment formed the foundation of the plan because it relied upon the preparedness and prepositioning networks of supply depots to support newly arriving soldiers.¹²⁹ Staff preparation throughout Operation Desert Shield set the conditions for the execution of the 3rd US Army’s ground offensive during Desert Storm.

The next phases were Bravo, movement of the corps, and Charlie, direct support of Operation Desert Storm ground offensive. Phase Bravo was the most critical of all three sustainment phases and served as the decisive point for the 22nd TAACOM’s concept of sustainment. The movement of the XVIII Airborne Corps and VII Corps, and associated food, water, shelter, fuel, ammunition, medical supplies, and repair parts to starting positions demonstrated the 22nd TAACOM’s sustainment responsiveness. Phase Charlie integrated 22nd TAACOM’s theater sustainment plan into the ground maneuver plan by employing sustainment methods refined during phase Bravo. The 3rd US Army received an overabundance of sustainment support from the 22nd TAACOM during phase Charlie that enabled the ground offensive to continue until completion without interruption.

The fourth question is, what was the organization of Theater Logistics? The 22nd TAACOM’s task organization was fluid during the early stages of Operation Desert Shield. LTG Pagonis’s eventual installment as commander provided stability to theater sustainment. Once in command, his reorganization of theater logistic formations made the buildup and support to 1st and 2nd COSOCOM more efficient. The permanency of the 22nd TAACOM gave LTG Pagonis

¹²⁸ West et al., *Operations Desert Shield and Desert Storm*, 10.

¹²⁹ Pagonis and Cruikshank, *Moving Mountains*, 118.

the ability to improvise theater sustainment to align with the 3rd US Army's support requirements.

The fifth question is, what sustainment capabilities were inherent to the 22nd TAACOM by classes of supply? The 22nd TAACOM's buildup of the Middle Eastern Theater during Operation Desert Shield created responsiveness in sustainment support to the 3rd US Army throughout the First Gulf War campaign. The 22nd TAACOM operated at full capacity during Desert Shield moving both the XVIII Airborne Corps and VII Corps from assembly areas to attack positions while simultaneously building forward LOG bases Charlie and Echo. LTG Pagonis organized the 22nd TAACOM to support the theater sustainment using the 90-mile rule, which extended the 3rd Army's operational reach throughout Operation Desert Storm. The 22nd TAACOM's stockpile of supplies at theater LOG base created an almost endless stockpile of material and sustainment goods distributed by both COSCOMs.

The sixth question is, what were the sustainment shortfalls inherent to 22nd TAACOM? The 22nd TAACOMs shortfalls improved throughout the First Gulf War campaign. Early on, LTG Pagonis had difficulty with the Time-Phased Force Deployment List, which was not responsive to receiving the correct personnel to support Operation Desert Shield. Time corrected inefficiencies in the system but added to theater reception, staging, onward movement, and integration. Another 22nd TACAACOM shortfall was the availability of HETs, which caused friction in heavy equipment movement throughout the First Gulf campaign. HETs limited 22nd TAACOMs ability to anticipate the movement of large numbers of heavy equipment due to their limited availability. Finally, road networks in Saudi Arabia were not designed to handle the coalition's influx of vehicles and equipment moving into the theater. Vehicle traffic extended the time of movement during phase Bravo and caused reduced responsiveness within the 22nd TAACOM's concept of support throughout the phase.

The seventh question is, how did the logistics planners demonstrate improvisation? LTG Pagonis executed just-in-time sustainment by leveraging US Army systems, contractor support,

employment of military civilians and host nation support. LTG Pagonis used each entity to streamline communication within the 22nd TAACOM through his technique of the please-see-me time. This allowed LTG Pagonis to gain a first-hand understanding of organizational challenges through conversations with everyone from privates to staff members. Next, he leveraged national and department-of-the-Army-level assets to sustain and support the 3rd US Army through contract support and modernization. LTG Pagonis demonstrated operational art in utilizing national level assets to improvise operational sustainment support to the 3rd US Army.

The eighth question is, how did the logistics planners integrate the sustainment plan with the maneuver plan? The 22nd TAACOMs early involvement in maneuver support planning during Operation Desert Shield ensured that sustainment remained integrated with the maneuver plan. The TAACOM's phase Charlie remained integrated into the 3rd Army's ground offensive plan as it changed from a single corps concept to a two-corps ground campaign. The two-corps ground maneuver plan integrated forward LOG bases and corps LOG Bases that provided the 3rd US Army with mobile LOG bases capable of achieving operational reach for prolonged durations. The 22nd TAACOMs logistics concepts answer the 3rd Army Commander LTG Yeosock's need to build combat power while extending operational reach.

The ninth question is, how did the logistics planners anticipate sustainment requirements for the maneuver plan? The 22nd TAACOM command structure enabled the staff to anticipate the needs of the 3rd US Army by systematically dividing sustainment efforts. The use of a forward command post in KKMC allowed LTG Pagonis to lead theater sustainment support for the ground campaign during the ground campaign. While the rear headquarters located in Dhaharn leveraged notational level sustainment into theater support to ensure a continuous flow of material, ammunition, repair parts arrived at the front just in time.

The tenth question is, how was the execution of the sustainment plan responsive to the maneuver plan? LTG Pagonis designed the 22nd TAACOM to provide the endurance to the 3rd US Army throughout the First Gulf War campaign. The 22nd TAACOM's responsiveness was

demonstrated in moving two corps from tactical assembly areas to attack positions without adversely affecting the ground campaign. Throughout the First Gulf War, 22nd TAACOM's operational support of the 3rd US Army responded to changes in the operational environment and on the battlefield.

The first hypothesis asserts that if the sustainment staff ensures the integration of sustainment with the operations plan, then the unity of command and effort is achieved. The evidence suggests that this hypothesis is supported. The 22nd TAACOM's integration of sustainment operations into the maneuver plan supported the 3rd US Army in aligning military objectives with President Bush's stated strategic aim of achieving the withdrawal of Iraqi Forces from Kuwait and restoring the Kuwaiti government. Overwhelmingly, the 22nd TAACOM demonstrated early preparation and involvement in 3rd Army operations planning ensured that theater support remained seamlessly integrated without interruption. LTG Pagonis's understanding of operational sustainment remained flexible to adjust to support requirements of the 3rd US Army. This is best illustrated in the abundant stockpiles of supplies positioned in forward LOG bases. The LOG bases complemented the 3rd Army's operation plan by extending the theater army's operational reach.

The second hypothesis asserts that when the sustainment staff uses professional judgment, they can understand and visualize future operations and then identify appropriate and required support to the operational commander. The evidence suggests that this hypothesis is supported. Throughout the First Gulf War, the 22nd TAACOM anticipated theater sustainment needs for both Operation Desert Shield and Desert Storm. The 22nd TAACOM command structure created conditions for theater sustainment to provide just-in-time to support to combat forces. LTG Pagonis provided the best example of anticipation of the sustainment needs of LTG Yeosock. Pagonis's visualization of operational sustainment in Operation Desert Shield set conditions for success during the transition to the ground maneuver plan in Desert Storm. LTG Pagonis's integration of two command posts into theater sustainment allowed the 22nd

TAACOM staff to anticipate the 3rd Army's sustainment requirements by facilitating throughput of national level sustainment into the theater logistics concept.

The third hypothesis asserts that when the sustainment staff is responsive, they have the ability to react to changing requirements and respond to what is needed to maintain support for the operational commander. The evidence suggests that this hypothesis is also supported. US 3rd Army developed two maneuver plans for Operation Desert Storm, which required 22nd TAACOM to make significant changes to the theater concept of sustainment to integrate logistics into the maneuver plan. The 22nd TAACOM's integration of sustainment operations into the maneuver plan supported the 3rd US Army in aligning military objectives with President Bush's stated strategic aim of achieving the withdrawal of Iraqi Forces from Kuwait and restoring the Kuwaiti government. Throughout the First Gulf War, the 22nd TAACOM demonstrated the ability to respond to changes in the operational environment to provide support to the 3rd US Army. Beginning with phase Alpha, the 22nd TAACOM demonstrated the ability to respond to operational needs through the buildup of personnel, equipment, supplies, fuel, and ammunition while constructing theater infrastructure to house 177,000 soldiers and equipment. Furthermore, the 22nd TAACOM continued to maintain responsive theater sustainment in phases Bravo and Charlie by positioning the 3rd US Army corps in attack positions and sustaining them throughout the ground campaign.

The fourth hypothesis asserts when the sustainment staff is able to improvise, they can adapt to unexpected situations or circumstances affecting a mission. The evidence suggests that this hypothesis is supported. An important demonstration of improvisation was the establishment of the 22nd TAACOM as a permanent operational sustainment headquarters. The 22nd TAACOM planning accounted for each CSS element employed in the First Gulf War logistics' concepts. LTG Pagonis's role as the sustainment integrator was demonstrated throughout the case study. He understood the four strategic objectives established by the Bush administration and applied operational sustainment to achieve the defined military objectives defined by General

Powell. Moreover, Pagonis's integration of national sustainment assets gave him the flexibility to leverage host nation support to supplement theater sustainment into the 22nd TAACOM's theater logistics concept of support.

Significantly, the analysis supports the thesis that during the Gulf War the 22nd TAACOM demonstrated the sustainment principles of integration, anticipation, responsiveness, and improvisation. This was essential to maintaining the combat power of the 3rd US Army and enabled the commander to extend his operational reach while at the same time providing endurance to the subordinate corps and divisions. Ultimately, the 22nd TAACOM operational sustainment support resulted in the 3rd US Army's achievement of the defined military objectives established by the Joint Chief of Staff General Powell.

The empirical evidence and the analysis demonstrate that the four hypotheses are supported. LTG Pagonis's understanding of the strategic environment and military objectives allowed the 22nd TAACOM to align theater sustainment to support the 3rd US Army's battlefield success. The 22nd TAACOM demonstrated mastery of operational sustainment during the First Gulf War by employing the principles of sustainment to support the 3rd US Army in the achievement of all defined military objectives. Therefore, this study validates the thesis that during the First Gulf War, the 22nd TAACOM demonstrated the sustainment principles of integration, anticipation, responsiveness, and improvisation.

Conclusion

This study analyzed the First Gulf War from the US Army perspective through the lens of operational art. Until recently, the campaign was evaluated through the observation of practitioners who assert operational logistics did not fully support the 3rd US Army's operations in the First Gulf War. Recent analysis suggests gaps in the literature in the 22nd TAACOM's support to the 3rd Army's ground campaign. This research seeks to fill the gap. The empirical evidence and the analysis validate the thesis that during the First Gulf War, the 22nd TAACOM

demonstrated the sustainment principles of integration, anticipation, responsiveness, and improvisation. This was essential to maintaining the combat power of the 3rd US Army and enabled the commander to extend his operational reach while at the same time providing endurance to the subordinate corps and divisions. Ultimately, the 22nd TAACOM operational sustainment support resulted in the 3rd US Army achieving the defined military objectives established by the Joint Chief of Staff General Powell.

The First Gulf War campaign was assessed using a structured focused analysis, focusing on research questions to evaluate two phases of the campaign, Operation Desert Shield August 1990 to January 1991 and Operation Desert Storm January 1991 to February 1991. The research collected empirical data from US Army primary sources and secondary sources of theater sustainment documents. Furthermore, the theoretical framework of operational art provided the monograph with a lens to view operational sustainment. The ten research questions focused the study and validated the thesis through the assessment of the four hypotheses.

The study seeks to engage in the reevaluation of Army CSS and doctrine. Lessons identified within the study can be ascertained through the evaluation of operational sustainment in the First Gulf War and serve as solutions to the US Army's current approach to LSCO. The 22nd TAACOM's actions as a sustainment integrator during the First Gulf War campaign can serve as a possible solution to the US Army's current approach to LSCO. The logistical lessons identify, illustrate, and reinforce uncertainties regarding the US Army's ability to sustain forces and to maintain endurance during expeditionary operations.

The US Army's renewed focus on large-scale-combat operations makes the First Gulf War campaign a valuable case study to draw additional lessons. Further research is needed into the relationship between coalition partners and the combat support challenges faced during Operation Desert Storm. Second, further investigation is required into the US Marine Corps' sustainment shortfalls and the methods used to prepare for an extensive ground campaign and amphibious operations into Kuwait. Lastly, additional research is required to explore the US

CENTCOM commander's role as the land component commander as well as the senior commander throughout the First Gulf War campaign.

The First Gulf War campaign has long been examined through the perspective of Gulf War practitioners, who have challenged the 22nd TAACOM's effectiveness to support the 3rd Army's ground maneuver plan. The investigation of the relationship between theater sustainment support to operational commander, viewed through the lens of operational art, was the purpose of this study. The aim of this study was to contribute to the body of work of operational sustainment during large-scale-combat operations. Furthermore, it provides critical insight into integration, anticipation, responsiveness, and improvisation.

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