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U.S. ARMY MATERIEL COMMAND

Theater Logistics and the Gulf War



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1994

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THEATER LOGISTICS AND THE GULF WAR

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The views expressed in this book are those of the authors and do not reflect the official policy or position of the Department of the Army, the Department of Defense, or the U.S. Government.

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To all the soldiers who served in the
22nd Support Command in the Gulf War

Foreword

When Saddam Hussein attacked in the Gulf War, he failed to realize America's significant secret weapon:

- Not the outstanding leadership from President Bush down to the troop commanders;
- Not America's advanced technology demonstrated by the superb performance of equipment such as the Apache helicopter, the Abrams tank, and the Bradley fighting vehicle;
- But the superb soldiers, sailors, airmen, and marines, who would not allow Saddam's bully tactics of overpowering a small neighboring country and committing atrocities to go unchecked.

The combat service support soldiers performed magnificently—not one tactical operation was curtailed, delayed, or postponed for the lack of logistical support. This sentence says it all. The Gulf War assembled soldiers from the active, Army National Guard, and Army Reserve combat service components into the greatest logistical force ever assembled in modern history. This book is about the phenomenal efforts of these great Americans.

William G. Pagonis
Lieutenant General, USA
Former Commanding General
22nd Support Command
Dhahran, Saudi Arabia
8 August 1990—2 January 1992

16 June 1992
Kaiserslautern, Germany

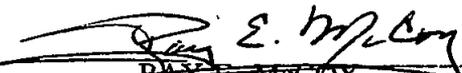
Preface

Colonel Michael D. Krause, now retired, and Captain (now Major) John J. McGrath, U.S. Army Reserve, both served in Operation Desert Shield/Storm as logistical planners and historians. Lieutenant General William G. Pagonis, U.S. Army, Retired, Former Commander of the 22nd Support Command, Dhahran, Saudi Arabia, served to encourage Krause and McGrath in their efforts to document the logistical aspects of ODS. General Pagonis was the source of much of the information contained in this monograph.

Krause and McGrath's monograph on theater logistics in the Gulf War is a comprehensive study of all aspects of theater logistics support in that war. Beginning with a discussion of the improvised development of a logistics structure that was at variance with existing Army doctrine but which ably carried out its mission. It covers such key aspects of the war as the reception of the original deployment and then the reception of the Seventh Corps and the development of logistics bases to support the Seventh Corps' strike into Iraq. It does not end with the cease fire, rather, it recognizes and covers the key and difficult logistical problems associated with redeploying the troops and equipment from Southwest Asia.

This study covers a variety of well known and lesser known aspects of the war, including the development of the "Wolfmobiles," the in-theater modification of tanks by U.S. Army Materiel Command personnel, the use of third nation truckers to keep the equipment moving, General Pagonis' use of "ghostbusters" as trouble shooters, and the tragic Scud missile attack on a building housing the newly arrived 14th Quartermaster Detachment. Augmented by a number of valuable maps and charts, and benefiting from the authors' experience in the Gulf War and from a number of oral history interviews with key personnel, including five interviews with General Pagonis, this is a valuable resource for anyone interested in the Gulf War or in Army logistics.

This is the first monograph published under the auspices of the Logistics Issues Research (LIR) Monograph program, a series begun by our Command Historian, which grew out of the Logistics Issues Research Memoranda (LIRM) program. LIR Monographs are more extensive in coverage than LIR Memoranda. These studies, similar to the shorter LIRMs, also focus on a range of Army logistics issues, such as materiel acquisition, development and readiness, security assistance, logistics assistance and other issues of concern to AMC and Army logisticians. The U.S. Army Center of Military History has reviewed this study for Operations Security.


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Thanks to Lieutenant General William G. Pagonis for allowing us to serve in both logistical plans and historical capacities in the desert, and for his inestimable work of encouragement during this project, checking items of fact as the work progressed, and being a most generous source of information unobtainable elsewhere.

**Michael D. Krause
John J. McGrath**

**15 June 1992
Washington, D.C.**

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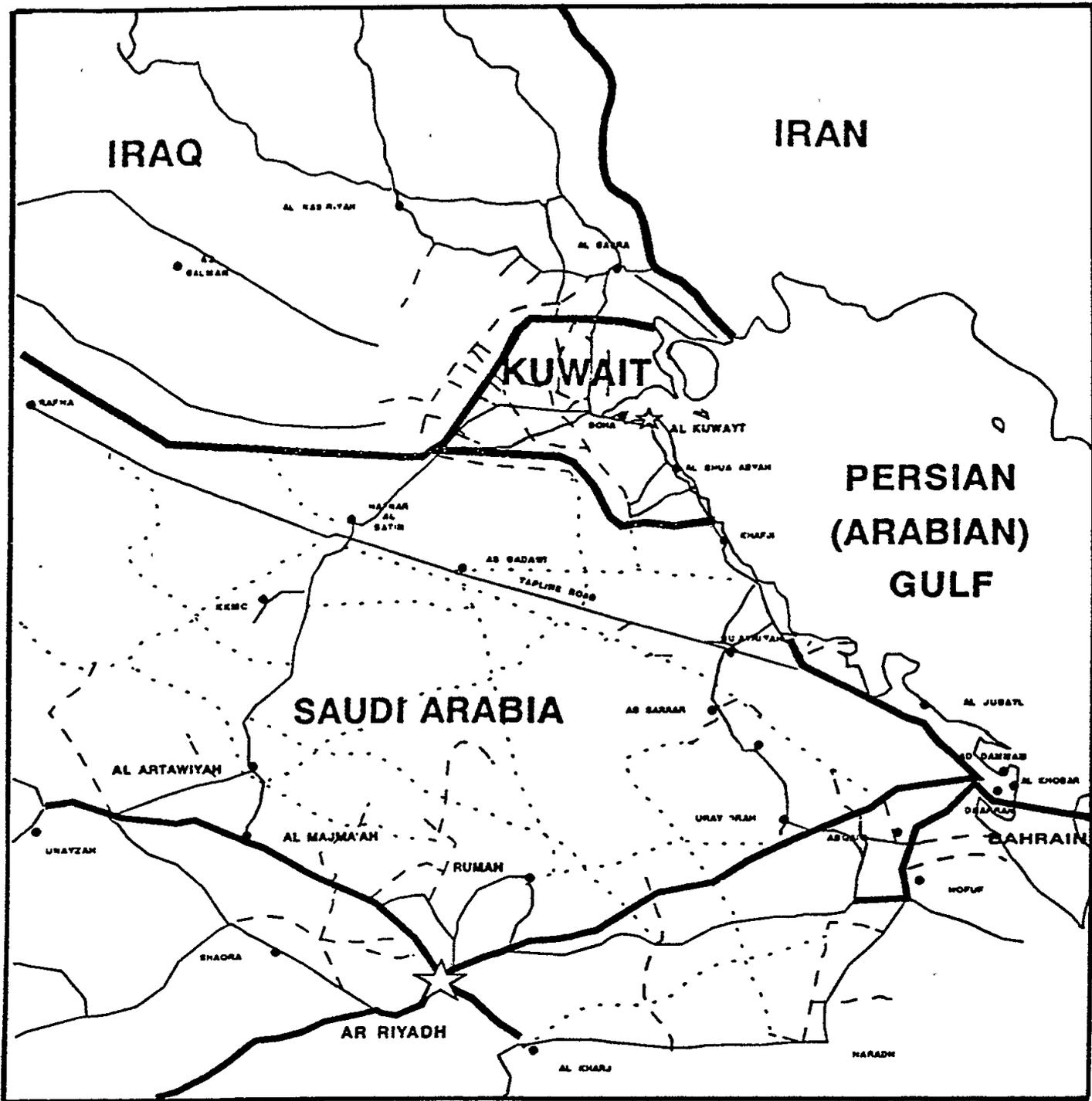
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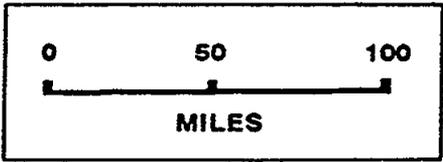
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Southwest Asian Theater

Introduction

Combat operations in the developing world present us with logistical challenges that are almost beyond imagination in scope and magnitude.

—General Carl Vuono, U.S. Army Chief of Staff¹

On 2 August 1990, Iraq invaded Kuwait. This act of international aggression set into motion the events that brought about the sixth major deployment of United States military forces abroad since 1898. In each of these operations, the logisticians were tried and pressed as the U.S. had to bring everything it needed to support its soldiers to foreign theaters. Despite this almost 100-year history of overseas deployments, however, Desert Shield and its follow-on, Desert Storm, was to prove perhaps the greatest challenge for the U.S. Army and its coalition allies.

Numerous aspects of this deployment make it unique. The war with Spain at the turn of the century was essentially a series of glorified amphibious operations, as was the Pacific portion of the Second World War. The two wars against Germany saw logistical development based from an allied infrastructure already at war for several years. Korea was fought from the large logistical base of Japan. In Vietnam the deployment was more gradual, so an adequate support base, after some initial problems, was built up concurrently with the troops' arrival. The Southwest Asian deployment was different. Apart from a small military assistance team, there was no U.S. military presence in the region. While the region had been the focus of intense American strategic interest since the fall of the Shah of Iran in 1979, none of the Gulf Arab states would permit a permanent American presence. Despite great economic advances due to oil revenues, particularly after the successes of the 1973 oil embargo, none of the Gulf states had the infrastructure to support the size of deployment ultimately needed to defeat the Iraqi army.

The deployment of troops and supplies without the infrastructure in place ahead of time was not the only logistical challenge. The buildup itself was one of the fastest in history. The buildup in the first 30 days equated to the first 180 days of the Vietnam War. This buildup was then repeated when a second corps was deployed. All this was done under the threat of imminent invasion from a numerically superior Iraqi army. Additionally, the ground offensive posed difficult logistical challenges, particularly in the areas of transportation of troops and supplies. The buildup of troops and supplies in forward positions was not only massive, but had to be executed within the strict constraints of a tight timetable.

Never before in any of the previous deployments had Americans been in a position to close out the theater. This was the final challenge left to the logisticians by Desert Storm.

¹General Carl Vuono, "Military Might, Skilled Army Won This War," *Army Times*, 18 March 1991, 23.

The Iraqi invasion of Kuwait caught the U.S. Army in the early phases of its post-Cold War drawdown. It was also the first test of the Total Army concept, where reserve component units were earmarked to play key roles in projected operations. Both of these circumstances would present significant complications to the logisticians. Equipment and units had to be shuffled because of the drawdown. Significant shortages of equipment, such as modern cross-country trucks, heavy equipment transporters, and materiel handling equipment, had to be made up for. The manner in which the crisis drew itself out did not, in many cases, call for the smooth mobilization of reserve units to fit into the situation as expected. And the ultimate three-fourths reserve composition of the logistical force created complications when the public wanted its sons and daughters home, since the active army combat units were already home.

All these challenges were met and overcome. The saga of Desert Shield and Desert Storm is not only the story of American resolve and the triumph of American arms, but it is also the story of American ingenuity, adaptability, and flexibility in the face of great demands. This was the lot of the theater logisticians.

Chapter 1

Theater Logistics Doctrine and Organization

Despite a long history of establishing overseas theaters, the U.S. Army's doctrine for theater-level logistics has been in a state of flux. Doctrine is important because, as the concept behind how the Army intends to fight, it is the design behind the establishment of the organizations of the Army. It is also the starting point for any army forced to adjust and innovate in the face of new or unexpected circumstances.

Until the mid-1970s, conventional U.S. doctrine still looked to examples from World War II. This concept, as outlined in *Field Manual 100-10: Combat Service Support* published in March 1973, envisioned a division of the theater into two major geographical subdivisions—the combat zone and the communications zone (COMMZ). The combat zone ended at the rear boundary of the field army. The rest of the theater was the communications zone. Each level of organization had its own logistical or combat service support (CSS) elements. At theater-level, the COMMZ was the responsibility of the Theater Army Support Command (TASCOM). This organization was the theater commander's centralized headquarters for control of theater logistics. The TASCOM controlled all the logistics elements in the COMMZ and provided backup support to those of the units in the combat zone. These logistical units would be grouped under headquarters called area support groups (ASG), which would control all the logistical units within a certain area. When the theater was large, the TASCOM would have an intermediate headquarters, called the Theater Army Area Command (TAACOM), to control multiple ASGs.¹

In addition to geographical commands, the TASCOM also controlled various theater-level functional commands. These headquarters were each responsible for a specific function and included a Personnel Command (PERSCOM), a Materiel Command (MATCOM), a Transportation Command (TRANSCOM) and a Medical Command (MEDCOM). Depending on its mission, an Engineer Command (ENCOM) could also be attached to the TASCOM.² With the coming of automation, a Theater Army Materiel Management Center (TAMMC) became a basic component, replacing the MATCOM.

During the Vietnam War, the unconventional nature of both the troop deployments and their operations did not warrant the establishment of a combat zone and a communications zone. Instead, logistical units established themselves at large bases near ports and other important communications

¹U.S. Department of the Army, *Field Manual 100-10: Combat Service Support* ([Washington, D.C.]: U.S. Department of the Army, 1973), 3-11.

²Ibid.

centers.³ Despite the American dominance in the theater, there was no overall theater logistics command. The northern third of the country was run by the logistical elements of the U.S. Navy and Marine Corps, through the fleet logistics command. The southern two-thirds were under the auspices of the Army's 1st Logistical Command, a subordinate organization of U.S. Army, Vietnam.⁴

In the early days of the Vietnamese deployment, logistical concerns were given short shrift. Combat units were accepted throughout 1965, even though there was minimal logistical support available for them. By the end of that year, the situation had become so drastic that the deployment of combat units was curtailed until support units could be rushed to the theater. The 1st Logistical Command eventually expanded until it was perhaps the largest U.S. Army organization of its time.⁵

The 1st Logistical Command started out as a small logistical planning group and eventually became a theater-wide organization running four subordinate support commands and two major base depots.⁶ The support commands were actually the equivalent of later-day corps support commands. The 1st Logistics Command also took the lead in handing over facilities and operations to the Vietnamese in the later stages of the war under the "Vietnamization" program. As such, the command received its first real taste of using host nation support in logistical activities. At its height, logistical personnel were approximately 45 percent of the total U.S. personnel in South Vietnam.⁷

Following the Vietnam War, and especially drawing upon the Soviet buildup in Germany and the lessons of the October 1973 Arab-Israeli war, U.S. Army doctrine took on a distinctly Central European flavor. Central Europe had a large infrastructure in place, the U.S. had a large presence there, and American forces would be working as part of a larger alliance and would not be the predominant element in the theater. Additionally, in the alliance, the largest combat unit that U.S. forces would expect to deploy would be the corps. U.S. corps would serve directly under NATO two army groups. The field army lost its role in the CSS chain, its functions merging with those of the theater army.

Along with this doctrinal change in the mid-1970s, the Army conducted various studies. One of these was the Echelons Above Division (EAD) Study. The results of this study were incorporated as revisions to doctrine, as represented in the new *Field Manual 100-10: Combat Service Support*, dated April 1976. The Field Army Support Command (FASCOM) was eliminated, and the TASCOM headquarters was merged with that of the theater army. The TASCOM itself ceased to exist. The Corps

³Major General George S. Eckhard, *Command and Control 1950-1969*, Vietnam Studies Series (Washington, D.C.: Department of the Army, 1974), 45.

⁴*Ibid.*, 66.

⁵Shelby L. Stanton, *The Rise and Fall of an American Army: U.S. Ground Forces in Vietnam, 1965-1973* (Novato, Calif.: Presidio, 1985), 23.

⁶Lieutenant General Joseph M. Heiser, Jr., *Logistic Support*, Vietnam Studies Series (Washington, D.C.: Department of the Army, 1974), 10-11.

⁷Stanton, 286-7; Heiser, 33.

Support Command (COSCOM) became the highest-level logistical organization in the combat zone, and the TAACOM became the highest in the COMMZ.⁸

The corps became the largest organization with specific CSS functions. The theater army would be tailored for the specific theater, but would have no overall logistics headquarters. The functions formerly handled by the TASCOM, including COMMZ responsibility, would now belong directly to the theater army commander, exercised through his Deputy Chief of Staff for Logistics (DCSLOG). Depending upon the size of the theater, the theater army commander could further assign responsibility to one or more TAACOMs, which would provide support to units in the COMMZ on a geographical area basis. The functional commands were now directly subordinate to the theater army headquarters.⁹

Theater development was also envisioned by doctrine. The CSS organization to be employed in a theater depended upon the size of the combat force employed. If a single corps were the only combat force employed in a theater, its COSCOM would be employed, with expanded functions. If the theater were in too large a geographical area for the corps commander to control, however, the theater army commander could establish a COMMZ with a TAACOM.

In the early 1980s, the AirLand Battle doctrine was introduced in the Army. The emphasis was now on "fight[ing], often outnumbered, in an extremely hostile environment and win[ning]."¹⁰ For logisticians the new emphasis was on the sustainment of the combat forces through the application of five sustainment imperatives: anticipation, integration, continuity, responsiveness, and improvisation.¹¹ The new doctrine did not bring back the TASCOM. Instead it retained the TAACOM as the area headquarters to control units providing general and direct support services.¹²

As the AirLand Battle doctrine was adopted by the Army, and units and organizations were modified to fit this structure, under the auspices of such programs as Division 86 and Army 86, CSS organizations were converted to structures in line with doctrine. The 21st Support Command, in Germany, was established in 1976 as a unique organization. Despite doctrinal changes, in practice, the 21st was functioning much as a TASCOM would have under the old doctrine. This situation demonstrates the ambiguity found in U.S. Army doctrine for large units. As late as early 1988, the 21st Support Command had a TAACOM as a subordinate unit (the 7th in northern Germany). For many years it was

⁸U.S. Department of the Army, *Field Manual 100-10* ([Washington, D.C.]: U.S. Department of the Army, 1976), Foreword.

⁹*Ibid.*, 3-13, Figure 3-8.

¹⁰U.S. Department of the Army, *Field Manual 100-10: Combat Service Support* ([Washington, D.C.]: U.S. Department of the Army, 1988), 1-6.

¹¹*Ibid.*, 1-10.

¹²U.S. Department of the Army, *Field Manual 100-16: Support Operations: Echelons Above Corps* ([Washington, D.C.]: U.S. Department of the Army, 1985), 2-7.

the only unit in the Army structure of its type. On 11 October 1988, it was finally converted to the TAACOM model to conform with doctrine.¹³

Supply and materiel estimates had been drawn up based on historical examples and codified in a series of Army field manuals, FM 101-10-1 and 101-10-2, *Staff Officers' Field Manual Organizational, Technical, and Logistical Data Planning Factors*. These works provided a framework for the amount of supplies of each type that would be needed in a given theater to sustain and support a particular type of military action. For example, using the tables included in those manuals, a deployment force of 100,000 soldiers would require 201.5 short tons (STONs) of rations daily.¹⁴

The organization of CSS units are usually of one of two types: single functional or multi-functional. Most of the smaller logistics units are single functional, such as a maintenance or truck company. At higher levels are organizations with elements that can do several different missions, such as a supply and services battalion. For the most part, equipment was organized based on unit missions, rather than having a pool of equipment that could be used by the unit with the highest priority at any given time. For example, materiel handling equipment (MHE) could be found in such diverse unit types as direct support maintenance companies, supply companies, and engineer companies. And the equipment could be sitting idle in one type of unit, while in another type, a mission was being accomplished less quickly because of a shortage of MHE. The equipment that was in the inventory to begin with clearly showed the Army's Central European mind set. For instance, there were very few heavy equipment transporters (HET) in the Army. This piece of equipment was viewed as more a piece of recovery equipment than a basic transportation necessity. Tanks wear out if they have to travel great distances just to get to the battle. But in Central Europe, this was not a problem since the fine rail network would be utilized for such moves. In Saudi Arabia, there was only one railroad line, and it ran from the port of Dammam to the capital of Riyadh on an east-west axis; a north south-axis was what was needed.

The emergence of a radical regime in Iran in the late 1970s and the activities of the Red Army in Afghanistan, both of which posed threats to the vital Persian Gulf oil region, led to the organization of the Rapid Deployment Force as a joint task force under the Secretary of Defense. This arrangement was formalized with the creation of the Central Command (CENTCOM) in 1983, a new unified command responsible solely for the Middle East. CENTCOM's Army component was Third (U.S.) Army, which would fill the role of theater army. Since Third Army's mission was a contingency one, active and reserve component units were earmarked to be deployed with it under the Army's mission-oriented affiliation program, CAPSTONE. As such, the principal subordinate logistical organization for Third Army was the Army Reserve's 377th TAACOM out of New Orleans. There was no active component logistical headquarters earmarked for Third Army.

The forces projected for the early phases of any deployment to the Persian Gulf region would come from the Army's contingency force, the XVIII Airborne Corps. Its divisions consisted of the light 82nd Airborne Division and the 101st Airborne Division (Air Assault), whose equipment could all be carried

¹³United States Army Europe (USAREUR), Permanent Orders 146-7, 11 October 1988.

¹⁴U.S. Department of the Army, Field Manuals 101-10-1 and 101-10-2, *Staff Officer's Field Manual: Organizational, Technical, and Logistical Data Planning Factors*, vol. 2 ([Washington, D.C]: U.S. Department of the Army, 1987), Tables 2-1 and 2-3.

in planes, and the heavier 24th Infantry Division (Mechanized), whose tanks and armored vehicles had to be brought in by ships. In exercises and planning, in the initial deployment, logistics was always intended to take a back seat to the deployment of the combat forces. Aside from several prepositioned-equipment (prepo) ships, based out of Diego Garcia in the Indian Ocean, the XVIII Airborne Corps would have to work only with whatever it actually brought with it.

Under such an arrangement, the Kingdom of Saudi Arabia itself would present several unique challenges. It may as well have been the end of the earth, as far as the U.S. Army was concerned. The Army presence in that country was minimal. A tribal monarchy based on strict adherence to Sunni Moslem beliefs, control of the holy cities of Mecca and Medina, and held together by the efforts of the ruling Al Saud family, Saudi Arabia would probably have remained an international backwater, were it not for the discovery of three-fourths of the world's oil reserves lying under or offshore of the kingdom's Eastern Province.

Luckily for U.S. planners, oil revenues—especially after the 1973 oil embargo, which saw oil prices quadruple—had been funnelled back into the economy. Several fine ports were built up in the late 1970s, including the port of Dammam, which would later serve as the primary entry point for U.S. materiel. Numerous large airport facilities were also built, and a good local network of superhighways was constructed around the ports and airports, and between the major cities. There was a building boom that saw edifices of all types erected in and near cities. Several large military encampments were built along the kingdom's frontiers, particularly King Khalid Military City (KKMC). This outpost in the desert near the Iraqi border was a self-contained enclave that could support a military force of more than 75,000 troops.¹⁵ A modern telephone system had also been put into place nationwide during the 1980s.

Saudi Arabia, therefore, possessed modern and new facilities to receive the initial troops and materiel that would be brought in by a deployment. In contrast, however, there were few facilities to provide basic essentials, such as food, shelter, hygiene, and transportation, once the troops were away from the ports of debarkation.¹⁶ Since Saudi Arabia was essentially new territory for U.S. ground forces, no arrangements were in place to provide host nation support, and the U.S. military had no contacts to provide services as soon as the troops landed. These things would have to be worked out as a deployment took place.

¹⁵Bo Eldridge, "Desert Storm: Mother of All Battles," *Command*, 13 (November-December 1991): 14.

¹⁶Major William Epley, "Theater Logistics," TMs, 1991, U.S. Army Center of Military History, Washington, D.C., 1-2.

Part One: Desert Shield

Chapter 2

The Early Days

The sovereign independence of Saudi Arabia is of vital interest to the United States.

—President George Bush, 8 August 1990¹

Initial Response

While the Iraqi invasion of Kuwait set off a flurry of activity in diplomatic channels, CENTCOM had anticipated the potential threat posed by Iraq in its Operation Plan (OPLAN) 1002-90. In this plan, the XVIII Airborne Corps would be deployed to protect vital areas of a friendly nation from the aggression of an outside power. While the XVIII Corps would provide the combat power, Army Central Command (ARCENT) was responsible for sustaining the corps. OPLAN 1002-90 was tested in a series of command post exercises called Internal Look 90, which ended in July 1990. As a result of these exercises, the difficulty of the logistics for any deployment was clearly recognized.²

In light of Iraq's bellicose attitude toward Kuwait, the various involved Department of the Army staff officers met with the Army's Vice Chief of Staff, General Gordon Sullivan, and the ARCENT commander, Lieutenant General John Yeosock, on 1 August 1990 at the Pentagon. Logistics questions were discussed in great detail.³ When Saddam Hussein followed through with his invasion the next day, the Army was prepared to act fast upon the contingency.

On 6 August, King Fahd of Saudi Arabia invited the deployment of American troops into his kingdom. After President Bush gave the go-ahead for the deployment, the Army initiated two actions

¹President George Bush, address to the nation, 8 August 1990, quoted in *The Gulf War Reader*, ed. Micah L. Sifry and Christopher Cerf (New York: Random House, 1991), 198.

²Frank N. Schubert and Theresa L. Kraus, eds., "The Whirlwind War: The United States Army in Operations Desert Shield and Desert Storm," TMs, 1991, U.S. Army Center of Military History, Washington, D.C., 86.

³*Ibid.*, 87.

directly related to the deployment's logistics effort: The 7th Transportation Group, Fort Eustis, Virginia, was alerted, and a host nation coordination cell, under Major General William G. "Gus" Pagonis, the Forces Command (FORSCOM) Chief of Logistics (J-4), was organized and dispatched to Saudi Arabia on 7 August 1990.

The 7th Transportation Group was the Army's premier port terminal organization. It was essential to setting up and organizing the Saudi port facilities so that the heavy equipment of the XVIII Airborne Corps could be received.

Since logistics support would be meager initially, the Saudis would have to provide a lion's share of the support. A host nation coordination cell was essential to line up this support. While conducting his contingency planning, Yeosock had thought of Pagonis, who worked at the same post, Fort McPherson, Georgia, as did Yeosock. He knew Pagonis as the architect of several REFORGER overseas deployment exercises in Europe and kept him in mind as a subject matter expert.⁴

Yeosock had been tasked by the Secretary of Defense, Dick Cheney, to lay out the Army requirements for a deployment. President Bush was sending Cheney to meet with King Fahd to convince him of the need for American help, which would include the deployment of U.S. ground troops to the kingdom.

Yeosock had met with Pagonis and his superior, FORSCOM Commanding General General Edwin H. Burba, Jr., on the evening of 4 August, to discuss the trip to Saudi Arabia. At the meeting, Pagonis was tasked to provide an outline, based on his REFORGER experience, of the logistics requirements that a U.S. deployment would entail. These would be briefed to the Saudi king.⁵

After working out some details with the other two generals, Pagonis drew up a paper listing the requirements as he saw them in the general categories of reception, onward movement (to assembly areas and defensive positions) of the troops, and theater sustainment. Most of the emphasis was on determining the host nation support requirements that the Saudis would have to meet.

Taking two officers from the ARCENT/Third Army G-4 staff with him, Colonels Robert J. Klineman and Larry Grishom, Pagonis accompanied Yeosock the same night by plane to CENTCOM headquarters at MacDill Air Force Base, Tampa, Florida. While Yeosock attended briefings, Pagonis and his small staff drew up the plan requested by Yeosock. The finished product was presented the next morning.⁶

⁴Epley, 2.

⁵Major General William G. Pagonis, interview by Major Larry Heystek, 3 October 1990, U.S. Army Center of Military History, Washington, D.C. (hereinafter referred to as Pagonis interview, 3 October 1990).

⁶Ibid.

Yeosock took the plan with him and briefed the Secretary of Defense. Cheney in turn took the information with him on his mission to Riyadh, which resulted in the Saudi request for the deployment of U.S. troops.

Meanwhile, Pagonis had returned to Fort McPherson, where he prepared the requirements for the host nation coordinating cell. Burba had called him into his home on 6 August and told him he was being temporarily released from his FORSCOM assignment and being sent to Saudi Arabia to assist Yeosock. Burba also told Pagonis that the Chief of Staff of the Army had authorized him to pick as many people as he wanted, army-wide, to take with him to form his host nation coordinating cell. The specific missions of this cell would include organizing the entire theater host nation support effort, to receive and onward move the troops as they arrived, and subsequently to sustain these forces.⁷

Pagonis drew up a list of 22 officers and enlisted men who would form the nucleus of his cell. His selections included people with expertise in all the areas he thought would be required: aerial and sea ports of debarkation (APOD and SPOD), sustainment, and onward movement. There were subject matter experts in the areas of maintenance, food service, contracting, facilities engineering, resource management, and transportation.⁸

Only 5 of the 22 were immediately available. The rest would have to follow later. The President had given the go on deployment, and the CENTCOM forward element was leaving immediately. Pagonis and his five selectees left with that element by C-141 transport aircraft on 7 August. The five were Colonel John B. Tier, who became Pagonis's chief of staff; Colonel Stephen J. Koons, who would initially run reception operations at the Dhahran airport; Colonel Klineman, from the Third Army (ARCENT) G-4 section; Lieutenant Colonel James W. Ireland, who had worked as Pagonis's executive officer in the past and was plucked out of the Pentagon to rejoin his former boss; and Lieutenant Colonel Thomas M. Ehlinger, a member of the Third Army (ARCENT) contracting office.⁹

Simultaneously, the first elements of the XVIII Airborne Corps—the Division Ready Brigade of the 82nd Airborne Division, and the corps assault command post—departed their home station of Fort Bragg, North Carolina, for Dhahran, Saudi Arabia.

On their flight over, the Pagonis cell drew up a theater logistics plan, which Pagonis briefed to Yeosock upon his arrival in Riyadh on 8 August. The plan provided the basic framework that was used in setting up the theater logistics support. In addition to being the host nation coordinator, Yeosock appointed Pagonis as the ARCENT Deputy Commanding General for Logistics. He set up his Logistics Operations Center (LOC) at the MODA (Saudi Ministry of Defense and Aviation) Building in Riyadh, received in-briefings with Yeosock from the Saudi staff, and began an assessment of the situation. The LOC, with its five-man complement, issued the first of 513 daily logistics situation reports (LOGSITREP)

⁷Ibid.

⁸Ibid.

⁹22nd Support Command, Command Report Operation Desert Shield 22nd Support Command, 23 March 1991, U.S. Army Center of Military History, Washington, D.C., Tab A; Epley, 5.

on 9 August. This report went to all the logisticians at FORSCOM and Department of the Army (DA).¹⁰

In Dhahran on 9 August, the first elements of the 82nd Airborne Division and XVIII Airborne Corps headquarters were landing. Three officers, headed by Lieutenant Colonel Edward Lindbaum, from the U.S. Military Training Mission (USMTM) based in Dhahran, were the only U.S. personnel on hand to receive the first elements of the 82nd.¹¹ In the next three days, they received more than 4,000 troops, having obtained buses from the Saudi Air Force, and moved the arriving troops to a Saudi Air Defense Artillery site that had been vacated when its occupants had moved up closer to Kuwait. This site, on the outskirts of the Dhahran Airbase, was promptly dubbed "Dragon Base" in reference to the XVIII Corps' shoulder patch. Since the post was designed for 250 soldiers, most of the 4,000 soldiers lived in tents supplied by the Saudis.¹²

Creating a Support Command

On his second day in country, Pagonis went to Dhahran, the company town of the big Saudi oil company, ARAMCO, which also was the site of a large airport and was ten miles from the modern port facilities at Dammam. He quickly recognized that Dhahran, which was designated as the CENTCOM aerial port of entry, would be the focal point of logistics activity in the theater.¹³ It was located in the critical Eastern Province, now so tantalizingly close to the Iraqi army in Kuwait to the north. The USMTM team, which was receiving the troops, had been working around the clock and was beat. Pagonis immediately sent them to bed, and his team took over responsibilities for running the Aerial Port of Debarkation (APOD) at the Dhahran airport. For the rest of the night they worked out of a Chevrolet Blazer. The next morning, when the USMTM team returned, the Host Nation Coordination Team received two rooms in one of their billets, Building 933 on USMTM's small compound. Within a day or so, the cell completely relocated from Riyadh and reestablished its LOC in Building 933.¹⁴

Pagonis saw almost immediately that a logistical headquarters would be needed to orchestrate the support for the troops being deployed. His cell could fill the role temporarily, but a more beefed-up headquarters, at least a reduced TAACOM headquarters, would be needed.¹⁵ The deployment would

¹⁰Pagonis interview, 3 October 1990; Colonel James W. Ireland, interview by Major Glen R. Hawkins and Major William Epley, 25 February 1991, U.S. Army Center of Military History, Washington, D.C. (hereinafter Ireland interview).

¹¹Pagonis interview, 3 October 1990.

¹²Ibid.

¹³Ireland interview; Pagonis interview, 3 October 1990.

¹⁴Ireland interview.

¹⁵CENTCOM FWD, LOGSITREP #4, 10 August 1990, U.S. Army Center of Military History, Washington, D.C., 2.

soon dwarf the capabilities of the XVIII Corps' COSCOM, the 1st, which was not on the ground, in any event. It was left behind in the initial flow to get the maximum number of combat troops deployed as soon as possible. The TAACOM earmarked for ARCENT, the 377th, was an Army Reserve unit, and at that time there was no clear indication that the reserves would be mobilized. A proposal to move the 13th COSCOM from Fort Hood, Texas, over to assume the TAACOM role was never executed since the airflows and seaflows would not be changed by bumping combat.¹⁶ The logisticians would have to make do with what was available in the theater.

Accordingly, Pagonis's temporary fix soon took on a more permanent nature. Authority for this was confirmed when Yeosock made Pagonis the Commanding General, ARCENT (Forward), on 16 August, thus making his organization a de facto extension of the ARCENT headquarters.¹⁷ Almost from the start, the cell members began referring to themselves as the ARCENT Support Command (SUPCOM), a provisional structure functioning until a more permanent structure could be put in place.¹⁸ Klineman had remained in Riyadh, working as the ARCENT G-4, but the other three initial staffers and Pagonis found themselves working 36-hour shifts. The 18 remaining members of Pagonis's cell were desperately needed. Their departure from Fort McPherson was delayed, however, by a lack of space on military transport aircraft. Additional manpower was borrowed from units as they came in to fill up the headquarters. This was a trend that was to continue until a modified table of organization and equipment was authorized for the SUPCOM in December. The 7th Transportation Group's headquarters, under Colonel David Whaley, arrived on 11 August. One hundred members of the 7th were immediately pressed into service with the ARCENT (Forward) headquarters.¹⁹

The 7th Transportation Group had been deployed with less than 72 hours notice. It brought a force of 300 soldiers tailored specifically to run the seaport—to unload the prepo ships and the ships of the 24th Infantry Division (Mechanized). Initially a slice of the group headquarters, part of the 24th Transportation battalion's headquarters, advance parties from three companies, and the complete 551st Transportation Company (Cargo Transfer) arrived. An Aerial Departure and Arrival Group had already been organized from soldiers borrowed from the 82nd Airborne Division. The 200 soldiers of the cargo company assumed this mission.²⁰

¹⁶CENTCOM FWD, LOGSITREP #3, 10 August 1990, U.S. Army Center of Military History, Washington, D.C.; ARCENT (FWD), LOGSITREP #6, 12 August 1990, U.S. Army Center of Military History, Washington, D.C.

¹⁷22nd Support Command, Chronology—22nd Support Command: Operation Desert Shield/Desert Storm, MTs, U.S. Army Center of Military History, Washington, D.C., 2.

¹⁸Ireland interview.

¹⁹Colonel David A. Whaley, interview by Lieutenant Colonel Wesley V. Manning and Major Glen R. Hawkins, 13 February 1991, U.S. Army Center of Military History, Washington, D.C. (hereinafter Whaley interview).

²⁰Ibid.

Initially, Whaley's group did not function as a separate command, but merely augmented the activities of the headquarters. Whaley himself was cast in the role of Assistant Chief of Staff for Transportation (ACSTRANS).²¹ ARCENT (Forward) was quickly becoming a full-fledged logistical headquarters in its own right, functioning as an ad hoc support command for ARCENT. Its major activities included running the airport, running the port, coordinating host nation support, and sustaining the troops on the ground.

The SUPCOM headquarters was still essentially just the LOC and Pagonis's small command section.²² With the unit augmentees, and elements dispatched from the ARCENT staff by Yeosock, the LOC quickly outgrew its accommodations in the USMTM compound and was moved on 12 August to a nearby USMTM recreational facility, waggishly tagged "Hotel California." Tables were set up with phones. The LOC worked much like the New York Stock Exchange. It was the focal point of all logistics operations in the theater. Charts detailing activities in each functional area were posted on the walls, and problems were often solved by the group as a whole.²³ The LOC included the original Pagonis nucleus, plus fillers from the 7th Transportation Group and liaison officers from each of the supported units.

After landing in Riyadh, the 18 remaining members of the initial Pagonis cell finally arrived in Dhahran on 15 August.²⁴ With the whole team now on site, Pagonis held a meeting to organize into functional areas. Among the appointments included the following: Colonel John Carr, in charge of Field Services; Chief Warrant Officer 4 Wesley Wolf, perhaps the best food service technician in the Army, in charge of theater food service activities; Colonel Roger Scarce, who had served with USMTM and was familiar with the Saudis, chief of host nation activities; and Colonel David Mallory, who became the LOC officer-in-charge. Additional members of the first group were: Lieutenant Colonel John Barb, who initially worked contract issues, Major Jim Burnett, who became the provost marshal. Spread out in various capacities throughout the command included the following: Lieutenant Colonel Richard Cashom, Major Dwight Curtis, Lieutenant Colonel Jim Heffelfinger, Lieutenant Colonel Michael Kenneally, Captain David Kolleda, Lieutenant Colonel Bruce Laferriere, Warrant Officer 1 Mark Otterstatter,

²¹Ibid.

²²Pagonis interview, 3 October 1990.

²³Colonel John J. Carr, interview by Lieutenant Colonel Wesley V. Manning and Major Glen R. Hawkins, 15 February 1991, U.S. Army Center of Military History, Washington, D.C. (hereinafter Carr interview); Ireland interview.

²⁴ARCENT Support Command (Provisional), LOGSITREP #11, 16 August 1990, U.S. Army Center of Military History, Washington, D.C., 4; Lieutenant Colonel Thomas M. Ehlinger, interview by Lieutenant Colonel Wesley V. Manning and Major Glen R. Hawkins, 5 April 1991, U.S. Army Center of Military History, Washington, D.C. (hereinafter Ehlinger interview); Chief Warrant Officer 4 Wesley C. Wolf, interview by Lieutenant Colonel Wesley V. Manning and Major Glen R. Hawkins, 16-17 February 1991, U.S. Army Center of Military History, Washington, D.C. (hereinafter Wolf interview); Carr interview.

Sergeant First Class Michael Renfroe, Lieutenant Colonel Donald Trautner, Lieutenant Colonel Michael Velton, Lieutenant Colonel James Walter, and Chief Warrant Officer 3 Robert Wurms.²⁵

While the logisticians attempted to follow doctrine in terms of organization, it was initially modified until the logistics airflow and seaflow caught up.²⁶ The dynamics of the deployment were never to let up long enough to organize along doctrinal lines. Due to the circumstances of its creation, the SUPCOM organization was being tailored from an ad hoc organization into a unique logistical organization designed to do the mission in Saudi Arabia. Despite references to the organization as a TAACOM (-), and that its table of organization would ultimately be patterned after that of the 21st TAACOM, operationally, the SUPCOM was employed as the theater agency for all land logistical activities for U.S. forces.²⁷ Every combat service support unit that came into the theater and which was not assigned directly to the XVIII Airborne Corps was placed under the SUPCOM, whether it would be under a TAACOM or not, by doctrine.²⁸ The active component units assigned to the SUPCOM during August and September 1990 are listed in Table 1.

Table 1. Active Component Units Attached to ARCENT SUPCOM,
August-September 1990

Headquarters, 7th Transportation Group (Terminal)
Headquarters, 10th Transportation Battalion (Terminal)
73rd Transportation Company
1098th Transportation Company (elements)
558th Transportation Company (elements)
329th Transportation Company (elements)
368th Transportation Company (Terminal Service)
Headquarters, 24th Transportation Battalion (Terminal)
551st Cargo Transfer Company
Headquarters, 593rd Area Support Group
590th Supply and Services Company
608th Ordnance Company
54th Quartermaster Company (Graves Registration)

²⁵22nd Support Command, Command Report Desert Shield, Tab B.

²⁶ARCENT Support Command (Provisional), LOGSITREP #11, 5.

²⁷ARCENT Support Command (Provisional), LOGSITREP #10, 16 August 1990, U.S. Army Center of Military History, Washington, D.C., 2; Lieutenant General William G. Pagonis, interview by Lieutenant Colonel Wesley V. Manning, 9 April 1991, U.S. Army Center of Military History, Washington D.C. (hereinafter Pagonis interview, 9 April 1991).

²⁸Pagonis interview, 9 April 1991.

The new influx of personnel to the headquarters allowed the organization of provisional subordinate elements. The first of these was ASG Dhahran, under Colonel Koons, which was formed on 16 August. Koons had already been put in charge of reception operations at the airport. ASG Dhahran formalized the process. Under ASG Dhahran was formed Area Support Battalion (ASB) Dhahran, which controlled all the host nation trucks and buses supporting the arriving troops and support services for these troops, and an APOD element, which included the ADAG and various other elements running the Army portion of the airfield reception mission.²⁹ This was the first of many units to be organized on a provisional basis. The units formed from August through November 1990 are listed in Table 2. At the end of August the first elements of the 593rd Area Support Group, an active Army unit from Fort Lewis, Washington, began arriving. The 593rd had experience running logistics operations in Belgium during REFORGER exercises and soon took on part of the logistics operations as additional units arrived in the theater.³⁰

Table 2. Provisional Units Formed by ARCENT SUPCOM,
August-November 1990

Headquarters, ARCENT Support Command (Provisional)
Headquarters, Area Support Group, Dhahran (Provisional)
Headquarters, Area Support Battalion, Dhahran
9001st Provisional Truck Company (Host Nation)
9002nd Provisional Bus Company (Host Nation)
701st Provisional Documentation Company
703rd Provisional Boat Company
Headquarters, 93rd Transportation Battalion (Movement Control) (Provisional)

The SUPCOM quickly outgrew the Hotel California facility, and, on 29 August, it was moved to the large USMTM headquarters building on the Dhahran airbase.³¹ This structure was an office building, and soon the headquarters, which had reached a strength of 130, with another 30 attached from ARCENT (Forward), could not all fit inside.³² The solution was to build a series of tents adjacent to the building. Air conditioners and wooden frames were put in the tents. The biggest of these, a tent of the type used by the Saudi bedouins, including tapestries on the inside top, became the LOC tent.³³ Part of this bedouin tent was sectioned off and devoted strictly to the conduct of briefings.

²⁹ARCENT Support Command (Provisional), Special LOGSITREP, 21 August 1990, U.S. Army Center of Military History, Washington, D.C., 2.

³⁰Ibid.

³¹Ireland interview.

³²ARCENT Support Command (Provisional), LOGSITREP #24, 29 August 1990, U.S. Army Center of Military History, Washington, D.C., 1.

³³Ireland interview.

With this move, the nature of the LOC changed. While it was still the focal point of theater logistics activities, it was now manned by shifts of action officers and liaison officers from subordinate and supported units. A regular staff organization (G-staff) was established. In place of the periodic impromptu meetings, General Pagonis now set up a regular schedule of meetings.³⁴ The 0800 "stand-up" meeting was a quick daily start-up briefing attended by staff officers and unit commanders. The 1700 hours "sit-down" meeting was a much longer briefing, with standardized charts depicting current operations, longer-term projects, and three "ups"—or positive things—and three "downs"—or problem areas—with their solutions. Each staff section and major subordinate unit briefed nightly. Pagonis generally only scanned the charts, looking for any problem areas or drastic changes. He evaluated it as would a doctor looking at X-rays, just to see if there were anything out of the ordinary. Information on each chart was studied and analyzed by the respective staff officers, and issues were discussed in detail.³⁵

On 5 September, the ARCENT Support Command was officially established as an entity separate from and subordinate to the ARCENT Headquarters, rather than just as an extension of it.³⁶ The chain of command for logistics and the initial organization of the Support Command is depicted in Figures 1A and 1B, respectively.

Logistical Dilemma and Solutions

The magnitude of the problem facing the logisticians was tremendous. Thousands of soldiers were on the ground in Saudi Arabia, and there was no military infrastructure to support them. And the troop flow would continue unabated until there were two light divisions (82nd Airborne Division, 101st Airborne Division [Air Assault]), the First Marine Expeditionary Force, two heavy divisions (1st Cavalry Division [Armored] and 24th Infantry Division [Mechanized]), and an armored cavalry regiment (3rd ACR)—a total of more than 100,000 troops—deployed. Logistical organizations were kept to bare bones in the first phases of the deployment. Accordingly, early-arriving units brought totally inadequate support with them. Soldiers arrived in 130 degree Fahrenheit temperatures, with little more than their basic load of ammunition, food, and water. There was no life support in place, no water supplies, no system to provide fresh food, no shelter—even tents were unavailable. There were no sanitation facilities, beds, or cots, or places to move the troops once they got off the planes.³⁷

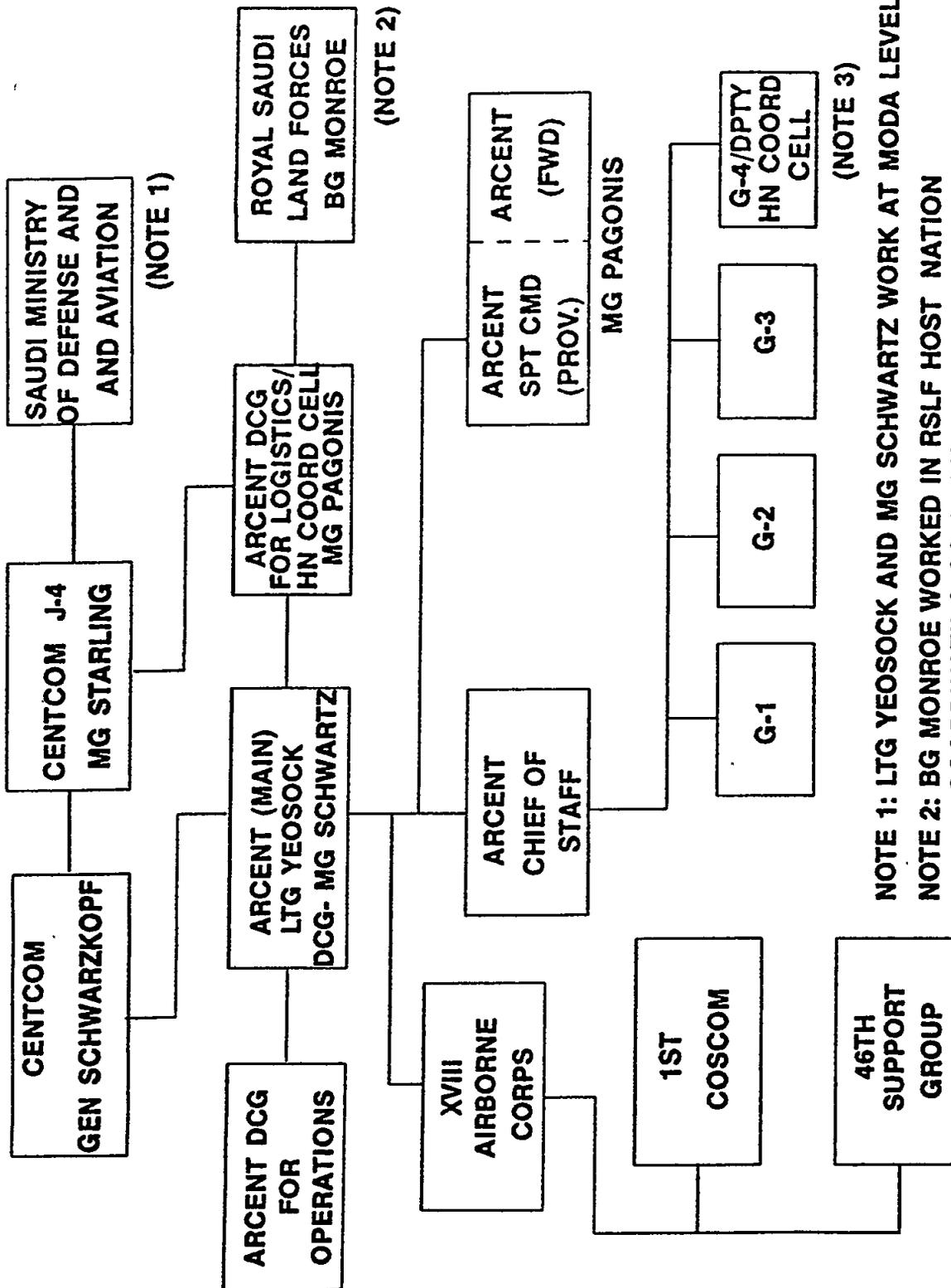
The continuous influx of troops soon overwhelmed local resources. Soldiers had to be quartered on tennis courts and in open areas, and had to dig holes for latrines. Seventh Transportation Group Commander Whaley summarized the situation in early August as follows: "[T]he 82nd [Airborne

³⁴Ibid.

³⁵CG, ARCENT Support Command (Provisional) Bulletin 2, *Management Leadership Style*, U.S. Army Center of Military History, Washington, D.C., 3.

³⁶Ireland interview.

³⁷Epley, 16.



NOTE 1: LTG YEOSOCK AND MG SCHWARTZ WORK AT MODA LEVEL.
 NOTE 2: BG MONROE WORKED IN RSLF HOST NATION COORDINATING COMMITTEE
 NOTE 3: CHAIRED BY BG MONROE.

Figure 1A. Initial Logistics Chain of Command

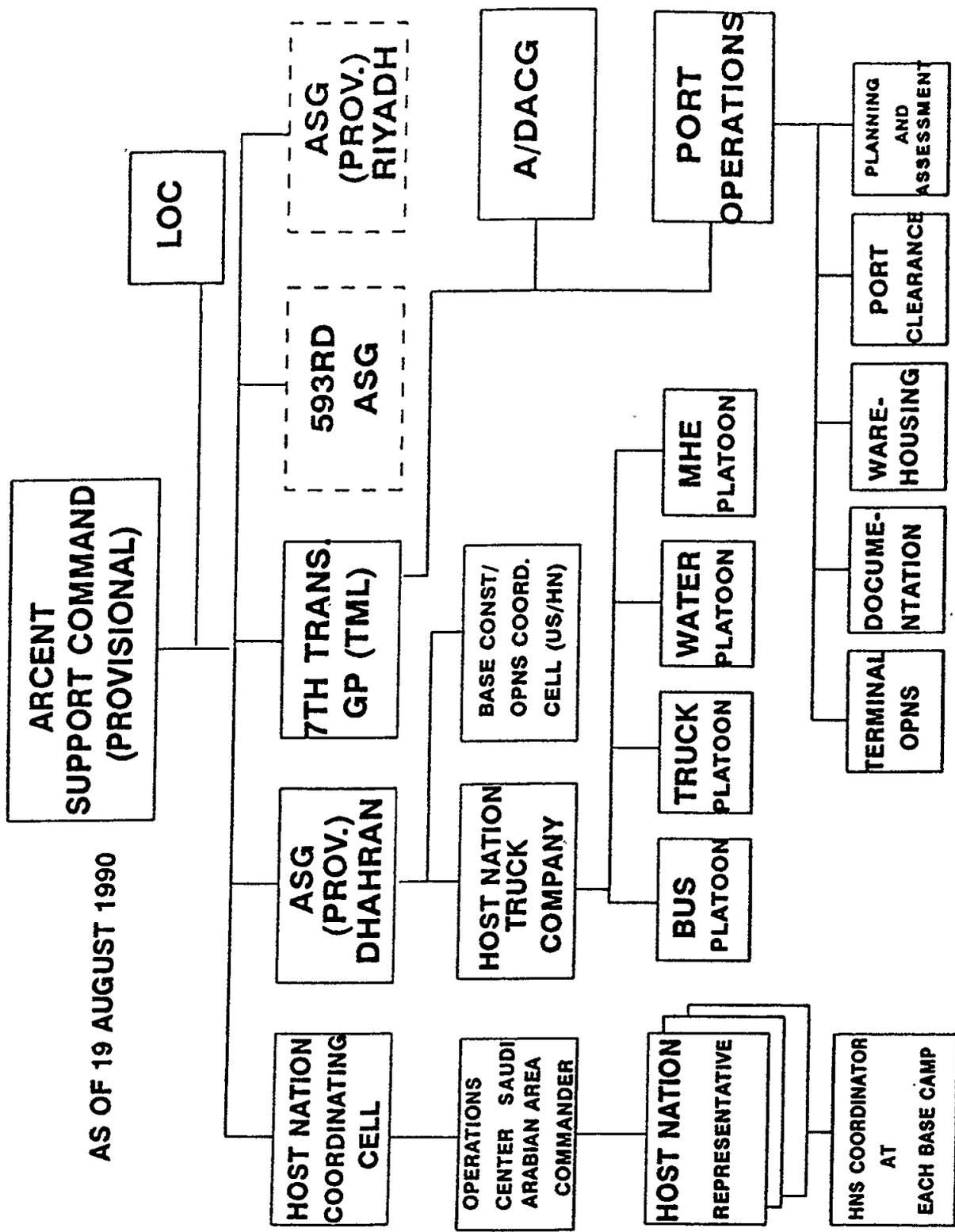


Figure 1B. Initial Organization, ARCENT SUPCOM

Division was] going to die in place either from the Iraqis coming across the border or for the lack of food and water."³⁸

Pagonis and his newborn headquarters had to build a logistical infrastructure from virtually nothing, using borrowed troops and the support of the local Saudi military and the civilian economy. While so doing, troops would still have to be received and moved out to defensive positions and assembly areas.

Despite the tremendous challenge facing the logisticians, as early as 14 August, the command could report that the logistics capacity was visibly improving and that all problems could be managed.³⁹

The first mission of this developing logistical organization was the reception of the troops arriving at the Dhahran APOD every day. Koons, one of the original members of the Pagonis cell, was put in charge of the APOD. As mentioned above, an ADAG was formed from personnel borrowed from the 82nd Airborne Division. These people were soon replaced by members of the 551st Transportation Company and the 7th Transportation Group headquarters.

It quickly became obvious to Pagonis, the SUPCOM commander, that functional operational commands would be needed to get things done, rather than depending on the staff to attempt to do everything themselves.⁴⁰ The first of these commands was Koon's ASG Dhahran (later renamed the 1st ASG). Koon's organization was responsible for the Dhahran APOD and all associated support activities in the Dhahran area. In a nutshell, its mission was to take care of the troops arriving at the airport until they were ready to depart for their assembly areas or defensive positions.⁴¹ This care included reception, providing transient facilities and basecamps, rations, and transportation.

Under ASG Dhahran was organized Lieutenant Colonel Michael Velton's ASB Dhahran. ASB Dhahran began as just a provisional truck company and was set up to put order into the reception and onward movement operations for the XVIII Airborne Corps.⁴² The truck company was an organization with a small cadre of Americans taken from the 7th Transportation Group, overseeing the activities of host nation trucks and their drivers, who were usually not Saudi Arabian nationals, but rather expatriates from third countries, hence the tag "third country national" (TCN). A parking lot near the end of one of the Dhahran runways was established as the truck motor pool. The drivers were all contracted workers, but were under U.S. dispatch and control. The TCNs were made to feel a member of the organization by such techniques as placing the decal of the 9001st Provisional Truck Company (Host

³⁸Whaley interview.

³⁹ARCENT (FWD), LOGSITREP #8, 14 August 1990, U.S. Army Center of Military History, Washington, D.C., 1.

⁴⁰Lieutenant Colonel Michael Velton, interview by Lieutenant Colonel Wesley Manning and Major Glen Hawkins, 2 February 1991, U.S. Army Center of Military History, Washington, D.C. (hereinafter Velton interview).

⁴¹Ibid.

⁴²Ibid.

Nation) onto the sides of their vehicle cabs. After some initial problems, contracts were adjusted to ensure that there were English-speaking host nation foremen to work with the drivers.⁴³

Velton's command expanded its functions, becoming the de facto "special troops" battalion for the SUPCOM. A provisional bus company was added to organize the host nation bus assets. Support for A-rations (fresh food), including transportation and warehousemen, were also added, as well as operational control over the contract dining facilities being established in the Dhahran area.⁴⁴

A transient basecamp, Camp Jack, was established on a beach road on the backside of the Dhahran airbase in an abandoned group of buildings donated to the effort by the airbase commander, Brigadier General Prince Turki bin Nasser. By the last week of August, a contractor was obtained to fix up the buildings, and concrete pads were laid down, over which were erected tents. The camp was called "Jack" because that was the name used by the Saudis for the building complex. It rose to be a large tent city transient center. Behind it was built the aptly named Camp Jill, which was stocked with trailers to serve as housing for the soldiers permanently assigned to the Dhahran area.⁴⁵

ASB Dhahran picked up some functions and retained them. Bus and water distribution throughout the theater became the ASB's responsibility, as well as the execution of many SUPCOM staff initiatives at the theater level.⁴⁶

Eventually a second APOD was established at the partially completed King Fahd International Airport (KFIA), 30 miles northwest of Dhahran. In its incomplete state, KFIA was able to accept only military aircraft.⁴⁷ Elements of the 101st Airborne Division (Air Assault) were to use KFIA as their arrival point and basecamp.

In the first 15 days, the APODs processed more than 40,000 troops.⁴⁸ There would be no let up until the entire 4 1/3 divisions of the XVIII Airborne Corps and the Marine force were landed.

Host nation support was the initial mission of the Pagonis cell. Host nation support was originally supposed to be a temporary fix until the 1st COSCOM arrived.⁴⁹ The three-man USMTM team

⁴³Ibid.

⁴⁴Ibid.

⁴⁵Ibid.

⁴⁶Ibid.

⁴⁷ARCENT Support Command (Provisional), LOGSITREP #20, 25 August 1990, U.S. Army Center of Military History, Washington, D.C., 2.

⁴⁸Pagonis interview, 3 October 1990.

⁴⁹CENTCOM FWD, LOGSITREP #3.

provided the first host nation support in the theater.⁵⁰ The three were incorporated into the developing SUPCOM headquarters for a while. On 15 August, Colonels Scarce and Trautner were put in charge of theater-wide host nation support.⁵¹

What support could not be provided by the army itself, which was most support, had to be provided by the host nation, Saudi Arabia. This support included all elements of life support—what Clausewitz called the simple things needed for war—water, ice, rations, fuel, latrines, showers, refuse collection, shelter, and transportation. The requirements for host nation support were defined. First support was divided into 20 major functional areas, which are listed in Table 3A. Then on 18 August the host nation support section also drew up a list of basic requirements to cover the next 45 days. These requirements are listed in Table 3B.⁵² By 8 September, \$1.83 billion worth of host nation support had been obtained from the Saudis. This total included 51 major site complexes, the use of 190 trucks, 8,416 tents, 738 laborers a day, subsistence to include two meals a day for 116,000 personnel, and community support—electricity, sewage, refuge, telephone, and water costs.⁵³

At the end of August, the host nation section was augmented by personnel from the 96th Civil Affairs Battalion (Airborne) out of Fort Bragg, North Carolina.⁵⁴

Host nation support, to a large degree, depended upon close coordination with Prince Mohammed bin Fahd, the king's son, who was governor of the Saudi Eastern Province, which encompassed the area of the U.S. deployment, and his cousin, Brigadier General Prince Turki, the commander of the King Abdul Aziz Airbase in Dhahran. Their wholehearted support proved essential to gaining the maximum possible host nation support out of the Saudi infrastructure.

One of the first breakthroughs on host nation support occurred on 11 August, when the Saudis essentially turned over the port facilities at Dammam to the U.S. forces.⁵⁵ On 17 August, the 7th Group assumed responsibility for the port when about 100 people were pulled from elsewhere to run cargo transfer and boat and equipment operations to off-load the six ships from Diego Garcia with the prepo equipment.

⁵⁰ARCENT Support Command (Provisional) ACSHNA, Historical Report: 7 August-22 September 1990, 2 October 1990, U.S. Army Center of Military History, 3.

⁵¹Ibid.

⁵²Ibid.

⁵³Ibid., 9.

⁵⁴Ibid., 4.

⁵⁵ARCENT (FWD), LOGSITREP #6, 12 August 1990, U.S. Army Center of Military History, Washington, D.C.

Table 3A. Major Functional Areas of Host Nation Support

Accommodations (including initial shelter upon deployment)
 Airports
 Construction
 Communications
 Facilities
 Fuel
 Hygiene (showers, latrines, laundry, refuse collection)
 Medical
 Maintenance
 Materiel
 Seaports
 Security
 Services
 Specialized equipment
 Storage
 Subsistence
 Supplies
 Transportation
 Utilities
 Water and ice

Table 3B. Basic Requirements of Host Nation Support
 C+12 (19 AUG 90) to C+56 (14 OCT 90)
 (based on 135,000 soldier force projection)

<u>Support</u>	<u>Quantity</u>
Water	1.5 million gallons/day
Ice	95 short tons/day
Subsistence (A-rations)	270,000 meals/day
Fuel	353,000 gallons/day total
MOGAS (gasoline)	181,000 gallons/day
Diesel	120,000 gallons/day
Jet	52,000 gallons/day
Tents	8,416 total
Vehicles	13,530 total
Buses	700 each
Trucks	12,150 (various sizes)
POL tankers	380 (various types)
Water tankers	300 (various types)
Hygiene	
Latrines	2,700 units
Showers	2,250 units
Laundry	40,000 bundles/day
Refuse collection	145,000 short tons/day

After the prepo ships came the *American Cormorant*, the ship containing the marine equipment to run the port and other marine activities, as well as the first of the fast sealift ships carrying the equipment of the 24th Infantry Division (Mechanized).⁵⁶ Two of the ships contained precious ammunition the Air Force would need immediately. The ammunition was placed onto host nation trucks and transported to the Ammunition Supply Point (ASP). The four ships with Army equipment contained items vital to basic Army operations, such as meals ready-to-eat (MRE), refrigerator trailers, lumber, tents, forklifts, and other materiel handling equipment. This prepo equipment allowed food and water to be chilled, field rations to be made immediately available to the troops, and there was lumber to begin construction of needed facilities.⁵⁷

Though a functional command, the 7th Transportation Group soon began playing a multi-functional role. Its role at the port was roughly parallel to that being played by ASG Dhahran at the airport. All activities related to the reception of troops and equipment and their onward movement became the purview of the 7th Transportation Group. This was a departure from the standard procedure employed on REFORGER exercises, where the reception and onward movement mission was handed off by parties from each unit to the next as their respective equipment arrived.⁵⁸

The 7th Transportation Group also took up the role of theater transportation command. The TAMMC and Movement Control Agency (MCA) were reserve component organizations and were not yet on the ground. Their roles, particularly in automated accountability, were taken on by the transportation group.⁵⁹ Colonel Whaley, the group commander, functioned as the SUPCOM ACSTRANS, in addition to carrying out his command responsibilities. In October, when he handed the group command over to Colonel Daniel Brown, Whaley was made Deputy Commanding General, Transportation.⁶⁰

Since the 7th Group ran the port facilities, close coordination with the Saudi Port Director General, Major Ali, was essential. Ali was responsible directly to King Fahd for the operations of the ports.⁶¹ Along with Dammam, the port of Jubayl, 60 miles to the north, was being used. While part of the 82nd Airborne Division secured the Jubayl area, the equipment of the Marines was landed there. Elements of the 7th Transportation Group were there to help run that port also.

⁵⁶Whaley interview.

⁵⁷Pagonis interview, 3 October 1990.

⁵⁸Velton interview; Whaley interview.

⁵⁹Whaley interview.

⁶⁰Ibid.; Colonel Daniel G. Brown, interview by Major Glen R. Hawkins, 15 January 1991, U.S. Army Center of Military History, Washington, D.C. (hereinafter Brown interview).

⁶¹Whaley interview.

The first ships containing the equipment of the 24th Infantry Division (Mechanized) began arriving before the end of August and were off-loaded in record time.⁶²

Contracting support was equally important to logistical activities and essential to host nation support. The Saudi economy was based primarily on the production of petroleum. There was no real industrial base for anything else. Accordingly, both civilians and military were dependent upon the services of domestic and foreign contractors to provide daily services and supplies.⁶³ Contracting would be an important adjunct to host nation activities.

Although Saudi Arabia had long been part of CENTCOM and Third Army's area of responsibility, little or no data had been accumulated on the country for potential contracting purposes. This was primarily because Saudi Arabia was a society generally closed to the outside world, with restrictions on entry visas and free travel. Contracting officers were forced to accept whatever was available from middleman "brokers" for the first two weeks of the deployment until the best sources for services could be determined.⁶⁴

Despite the contingency nature of the deployment, routine peacetime contracting rules still applied. Among these was a restriction that only qualified Army contracting representatives could sign contracts. Each contract had a \$25,000 limit, although exceptions could be asked for, and were. Construction contracts were similarly limited by law to \$250,000.⁶⁵ These standard contracts were prepared on a special form, Standard Form (SF) 44 and could be signed only by a warranted contracting officer. In the early days, there were few officers with the warrant in the theater. The contracting process also had multiple steps. First, the staff section or unit determined the requirement. Next the contracting officer wrote the contract and signed it. The contract then went to Resource Management (RM), which put the correct accounting codes onto the document. From there it went to the Finance Office, which was run in the early days by the XVIII Airborne Corps, where the money was obtained to pay the contractor.⁶⁶ The RM officer had to work hand-in-hand with the contracting office to make sure that adequate funds were budgeted or requested to support contracted requirements.

Lieutenant Colonel Thomas Ehlinger was a warranted contracting officer working at Third Army when he was brought over to Saudi Arabia as part of the initial Pagonis cell. He found a situation like none other he had ever encountered as a contracting officer. USMTM had a small cell that did the initial contracts for host nation support. There was a steady stream of requirements flowing into Ehlinger's small office. Most local contractors wanted cash up front, and the Saudi civil populace in the Dhahran

⁶²ARCENT Support Command (Provisional), LOGSITREP #23, 28 August 1990, U.S. Army Center of Military History, Washington, D.C., 4.

⁶³ARCENT Support Command (Provisional) ACSHNA, Historical Report, 3.

⁶⁴ARCENT Contracting Command, Command Report for Operation Desert Shield, 10 March 1991, U.S. Army Center of Military History, Washington, D.C., Tab M.

⁶⁵ARCENT Support Command (Provisional), Special LOGSITREP, 21 August 1990, 5.

⁶⁶Ehlinger interview.

area was anxious about the threat of an Iraqi invasion. All the while troops were landing who needed to be supported. The pace of activity was very intense. By 18 August, more than 29 SF 44s had been executed—to the tune of \$691,000. The SUPCOM was requesting the ceiling for an SF 44 be raised to \$100,000 and that more warranted contracting officers be dispatched to the theater.⁶⁷ Assistance was provided on the ground when Prince Turki provided a local host nation contracting point of contact on 20 August.⁶⁸

The highest dollar amounts had to be used both to lease compounds and facilities to house soldiers and to provide places for units to work from. By 23 August, authority had been granted for the SUPCOM to lease up to \$2 million worth of real estate. This was to increase in direct proportion to the steadily growing number of troops being deployed.⁶⁹ The Middle East/Africa Project Office (MEAPO) was the Army Corps of Engineer's district representative for the theater area. MEAPO greatly assisted the contracting office by spearheading the effort in leasing real estate, construction, and life support issues.⁷⁰

In the beginning, contracting was decentralized to the units in the theater through ARCENT, but this authority would be transferred to the SUPCOM in January 1991.⁷¹

Ehlinger was joined by additional contracting officers from ARCENT and the 7th Transportation Group, and, like the rest of the SUPCOM headquarters, was supported by borrowed manpower from deploying units.⁷²

One of the first contracts Ehlinger signed was for latrines.⁷³ The lack of sanitation facilities was one of the biggest problems handled by contracting during the early deployment. There just were no latrine, shower, or sink facilities in the theater to support the troops being deployed. The solution was to design prototypes and have a Saudi contractor mass produce them. Captain Tony Gardener, an Engineer officer on the staff of the 7th Transportation Group, designed a wooden latrine, shower, and

⁶⁷ARCENT Support Command (Provisional), LOGSITREP #11, 4; ARCENT Support Command (Provisional), LOGSITREP #13, 18 August 1990, U.S. Army Center of Military History, Washington, D.C., 5.

⁶⁸ARCENT Support Command (Provisional), LOGSITREP #15, 20 August 1990, U.S. Army Center of Military History, Washington, D.C., 4.

⁶⁹ARCENT Support Command (Provisional), LOGSITREP #18, 23 August 1990, U.S. Army Center of Military History, Washington, D.C., 5-8.

⁷⁰22nd Support Command ACSR, Command Report for Operation Desert Shield, 23 February 1991, U.S. Army Center of Military History, Washington, D.C., 3.

⁷¹ARCENT Contracting Command, Command Report, Tab E.

⁷²Ibid., Tab D.

⁷³Ehlinger interview.

wash basin. Whaley, along with Gardener and Chief George Malak of the contracting office, negotiated with the Saudi company SSOC to produce the latrines.⁷⁴ SSOC agreed to produce 100 latrines a day, at a cost of \$360 each.⁷⁵ Arrangements were also made to transport the latrines to basecamp locations. Quickly the first of these basic sanitation devices were put in place at Dragon Base. By early October, 600 latrines, 300 showers, and 200 wash basins would be produced every day.⁷⁶

Another contracting coup was the leasing of two sleeping barges on 19 August. Each barge could sleep more than 1,000 soldiers. They were moored near the port facilities at Dammam to provide accommodations for the 7th Transportation Group.⁷⁷

Hand in hand with contracting was RM—the control of government funds. Major Raymond Davis had been dispatched from Third Army to Riyadh on 8 August to provide funding support to the theater contracting officers. His initial funding authority was for \$500,000. By 16 August, Davis was in Dhahran, collocated with the SUPCOM and XVIII Corps contracting officers. As requirements increased, Davis had to request incremental increases in funding. On 23 August he was reinforced with three more officers from Third Army. Subsequently, all the RM people were transferred to the SUPCOM staff, where they formed the Assistant Chief of Staff—Resource Management (ACSRM) office.⁷⁸

Another big area of initial concern was subsistence. Units were deploying to the theater without their food service equipment and cooks. Chief Warrant Officer 4 Wesley Wolf, although ostensibly the food advisor, soon became involved in all aspects of rations, including storage and procurement of dining facilities.⁷⁹ Wolf had extensive experience in food service, a background he put to good use upon his arrival with the second increment of the Pagonis cell on 15 August. On the ground was the food advisor of the 7th Transportation Group, who, although having been there only two days, was already pulling his hair out. He was buying bags of hamburgers at the Hardee's restaurant in nearby Khobar and issuing them to the arriving troops. There were no cooks, no basic load of rations, and no food equipment on the ground.

Army doctrine on food service had been in a state of flux throughout the 1980s. In an attempt to create more combat slots, cooks, food handlers, and refrigerators had been cut way back in the force structure. In garrison, contracted personnel prepared the meals. In the field, combat rations—MREs, a special individually boxed ration, and T-rations, a semi-perishable meal designed to serve 36 soldiers,

⁷⁴Whaley interview.

⁷⁵ARCENT Support Command (Provisional), LOGSITREP #10, 1.

⁷⁶Pagonis interview, 3 October 1990.

⁷⁷Ibid.

⁷⁸ARCENT Support Command (Provisional), LOGSITREP #14, 19 August 1990, U.S. Army Center of Military History, Washington, D.C., 5.

⁷⁹22nd Support Command ACSR, Command Report, 3.

which required only boiling water to prepare—were to be used. The problem with these rations was that a steady diet of them was demoralizing. Due to the ease of their preparation, they were not as tasty as B-rations (dehydrated rations requiring cooks and equipment to prepare) or A-rations (fresh food, freshly prepared). By the summer of 1990, some cooks and equipment were back in units, and the field feeding of troops was being reevaluated. Wolf, at the U.S. Army Quartermaster School, Fort Lee, Virginia, had been leading the reevaluation effort when he was dispatched to Saudi Arabia. He was afforded the opportunity to test his theories in practice.⁸⁰

One of Wolf's concepts was what he called "the family of operational rations." He felt that what a unit served to its troops should match its capabilities and operational situation. The commander of the unit could decide. A unit in the desert would have to eat MREs. A unit in a basecamp with its own cooks could eat B-rations. A unit without cooks in a basecamp would have to depend on civilian contracted caterers. Additionally, Wolf wanted to determine ration requirements, while at the same time conserving MREs to save for use in a shooting war.

Wolf quickly established his family of rations on a master menu with the four options (MRE, T-ration, B, A). Unfortunately there was no food, and it had to be bought from civilian vendors until the prepo ships were unloaded with their 1.5 million MREs. The Saudi government had appointed one man to work with the Americans on host nation food issues. He did all the legwork and subcontracting, allowing Wolf to worry about ordering rations, storing them, and distributing them.⁸¹

Three hot meals a day were served at Dragon Base, through a civilian caterer, almost from the start. Even though XVIII Corps had its own cooks assigned, this was done because of the uncertainty of where the corps would be. The arrangement worked, despite teething pains while the caterers learned how to cook to please American palates. Further use of catered facilities was initially hampered by a shortage of contractors in Saudi Arabia, which was only later overcome when the supply caught up with the demand.⁸²

In the early days of the deployment, rations were a daily problem. While the prepo ships offered relief, troops at the port were forced to eat three MREs a day, draining reserves. The system was gradually refined, however, as detailed below. By 26 August, host nation support was providing 25,000 meals a day to the U.S. forces.⁸³

Water was an important commodity in the desert climate of eastern Saudi Arabia. The climate there in late summer was hot—the temperature was constantly in excess of 100 degrees Fahrenheit. Except near the coast, it was also very dry, with low humidity. Rainfall was rare. There was a lack of natural

⁸⁰Wolf interview.

⁸¹Ibid.

⁸²Ibid.

⁸³ARCENT Support Command (Provisional), LOGSITREP #21, 26 August 1990, U.S. Army Center of Military History, Washington, D.C., 1.

shelter, and the sand reflected the sun's relentless rays. Acclimatization, while trying to execute an immediate deployment or preparing to defend against an enemy with unknown intentions, was difficult but essential. Accordingly, command policy was to provide each soldier with 4.68 gallons of bottled water a day.⁸⁴ This demand was met by local contractors who provided cases of bottled water. Water in liter-size plastic containers could be carried anywhere, both by distributors and by the soldiers themselves.

With several desalination plants in the area, obtaining water initially was not a problem. But as the force expanded, a need for water purification and storage equipment was realized as the deploying troops moved farther away from the Dhahran area. Distributing the water was also initially totally a host nation operation. To build up a theater reserve of potable water, a purification and storage site was established on 28 August at Half Moon Bay, south of Dhahran, with equipment pulled off one of the prepo ships. Equipment difficulties, however, delayed the commencement of operations.⁸⁵

The Army and Air Force Exchange System (AAFES) was in the theater lining up local concessionaires to help support the troops. By the end of August, post exchanges (PX) had been established at each base camp. The PXs were run by AAFES employees with military assistance and, of course, the ubiquitous host nation support. A warehouse was also established in Dammam near the port.⁸⁶

The logisticians of the provisional support command were moving in a fast-paced environment. Problems were handled as they occurred, but as the deployment moved into its second 30 days, all of the challenges, from sanitation to food to billeting to water were being handled, and the embryonic headquarters staff was actually getting ahead in most areas. The daily LOGSITREP provided a vehicle by which all Army logistical assets were pooled to meet identified requirements. Progress was being made. Troops were able to arrive into ready-made basecamps, and the port was able to off-load quickly all unit equipment. The locations of the initial basecamps and SUPCOM are indicated in Figure 2.

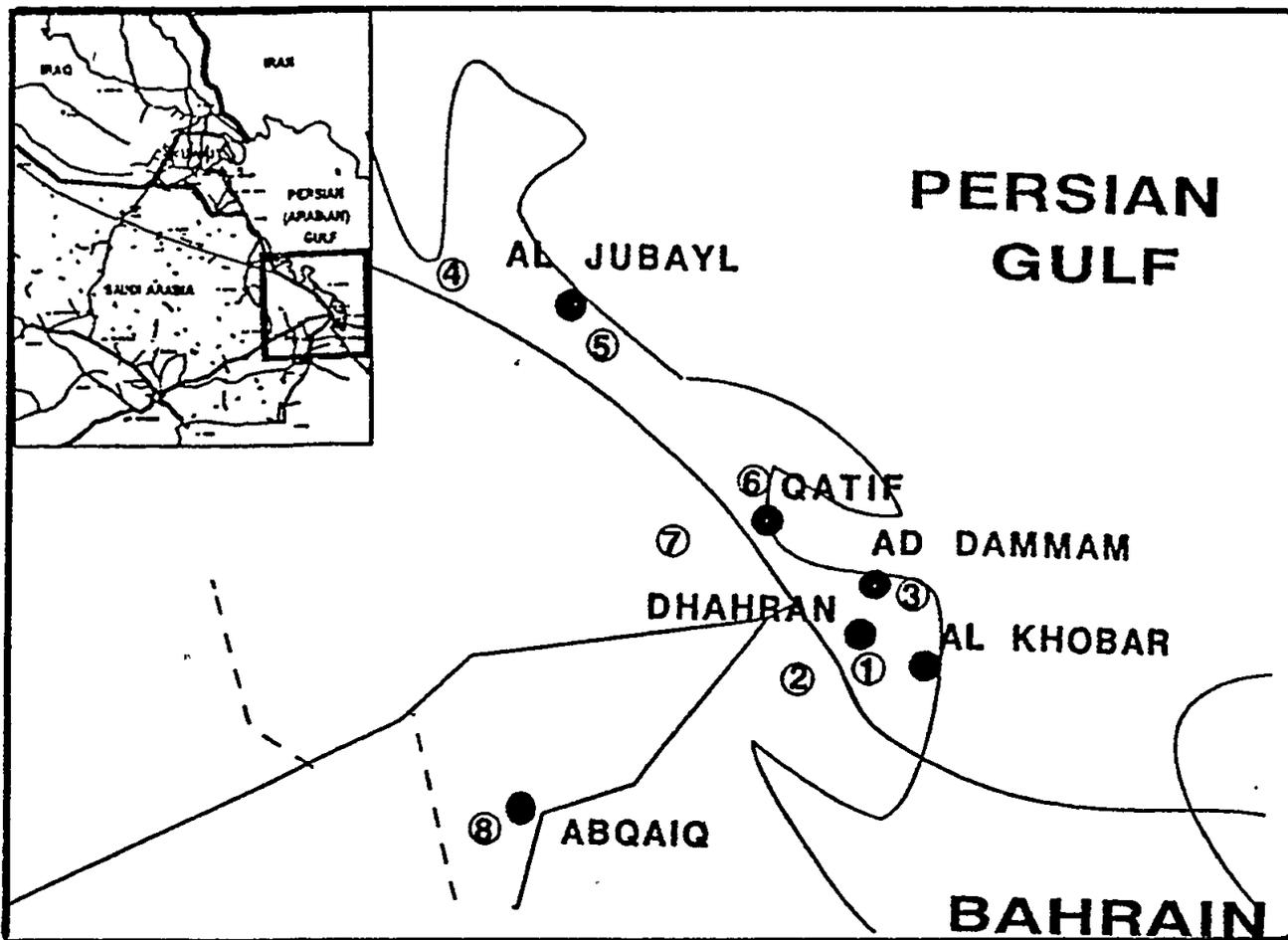
Arrival of the Reserves

The Total Army concept, adopted by the Army after the Vietnam War as a key element in the All Volunteer Army, envisioned the complete integration of the reserve components, the Army Reserve, and Army National Guard (ARNG), into the active component's force structure. Throughout the 1970s and 1980s, while the active force expanded by creating five new divisions of combat troops, more and more of the CSS elements were placed into the reserve structure. By 1990, the active component could not

⁸⁴ARCENT Support Command (Provisional), LOGSITREP #56, 30 September 1990, U.S. Army Center of Military History, Washington, D.C.

⁸⁵ARCENT Support Command (Provisional), LOGSITREP #21, 2; ARCENT Support Command (Provisional), LOGSITREP #24, 29 August 1990, 6.

⁸⁶ARCENT Support Command (Provisional), LOGSITREP #23, 28 August 1990, 2.



KEY:

- 1 Dhahran (King Abdul Aziz) International Airport
ARCENT SUPCOM
- 2 Dragon Base XVIII Airborne Corps Forward
- 3 Dammam (King Abdul Aziz) Port
- 4 Falcon Forward Basecamp
- 5 Marine Amphibious Force Camp
- 6 All American Basecamp (UMM as Sahik)
- 7 King Fahd International Airport
Eagle Forward Basecamp
- 8 Abqaiq Airport

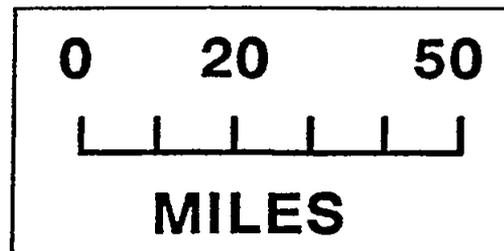


Figure 2. Initial Basecamp/Unit Locations

function in a self-contained manner in a deployment such as Desert Shield. A reserve call-up was essential.

In addition to reserve units, there was a pool of trained reserve manpower of all ranks called the Individual Ready Reserve (IRR). Calling up selected specialists from the IRR had the advantage of not taking individuals away from units.

More than any other command, CENTCOM realized the importance of the reserves to their mission. Nevertheless the decision to call up reserves was delayed, mostly due to the uncertainty over the extent and duration of the deployment. Once the reserves were called up, the time-phased force deployment list (TPFDL), the schedule listing deploying units, was modified repeatedly. This ultimately led to some delays in deploying certain reserve units.⁸⁷

ARCENT's peacetime element, Third Army, was itself made up of about 40 percent active component and 60 percent drilling reservists.⁸⁸ Many of the reservists were on short active duty tours due to the Internal Look exercise ongoing when the deployment started. Without a reserve call-up, however, ARCENT itself was forced to scrape together ad hoc elements to deploy with.⁸⁹

The lack of an early call-up and deployment of reserve units impacted clearly on the logistical operations developing in Saudi Arabia. Several of the major logistical organizations or headquarters, such as the 377th TAACOM, the 321st Materiel Management Center (MMC), the 318th MCA, and the 143rd Transportation Command, were all earmarked for deployment in the Middle East. Several group headquarters, including the 475th Quartermaster Group (POL [Petroleum, Oil, and Lubricants]), were needed in theater also. Even if the reserves had been called up on 7 August (C-Day), the likelihood that the units and headquarters could have deployed before the end of August was nil.

The SUPCOM was forced to adapt to fill in for these holes in its force structure. Initial thought had been given to converting the 13th COSCOM into a TAACOM.⁹⁰ This never happened, due to airflow considerations. Additionally other conversions of active units were considered. The 240th Quartermaster Battalion was to be converted into a provisional POL group to supervise theater petroleum operations.⁹¹ This in fact happened, and the 475th Group was not deployed until mid-November. Thought was given

⁸⁷Tom Donnelly, "From the Top: How Commanders Planned Operation Desert Shield," *Army Times*, 24 February 1992, 20.

⁸⁸Ehlinger interview.

⁸⁹Donnelly, "From the Top," 20.

⁹⁰ARCENT Support Command (Provisional), LOGSITREP #25, 30 August 1990, U.S. Army Center of Military History, Washington, D.C. 2.

⁹¹ARCENT (FWD), LOGSITREP #7, 13 August 1990, U.S. Army Center of Military History, Washington, D.C.

to transfer the MCA in Europe over to control transportation movements.⁹² Instead, the movement control assets were placed under a provisional battalion headquarters subordinate to the 7th Transportation Group.

On 22 August, President Bush approved the mobilization of reserve components to support Operation Desert Shield. Initially the call-up was for 40,000 reserve soldiers, but it was soon raised to 200,000. The list of units was refined and changed several times. The reserve units that arrived in theater to support theater logistics operations from August through early November are listed in Table 4. Ultimately 139,000 reservists were mobilized, 124,500 of them in 1,033 units and 14,900 from the IRR. While 40 percent of the Army's CSS assets were deployed to the theater, 60 percent of those assets came from the reserve components.⁹³

Table 4. Major Reserve Units Arriving in Southwest Asia,
September to Mid-November 1990

September

1208th Supply Company (Water) (Alabama ARNG)
1241st Adjutant General Company (Postal) (DS) (Alabama ARNG)
Headquarters, 176th Maintenance Battalion (DS/GS) (Tennessee ARNG)

Detachments: In September, 21 detachment-size units deployed to the SUPCOM. They included seven ARNG and six USAR transportation detachments responsible for freight, terminal, movement control, and contract supervision operations. Four USAR Judge Advocate General detachments also arrived to provide legal support.

October

450th Ordnance Company (Ammunition) (GS) (South Carolina USAR)
324th Data Processing Unit (Massachusetts USAR)
Headquarters, 365th Supply and Services Battalion (Kentucky USAR)
321st Materiel Management Center (Louisiana/Arkansas USAR)
318th Movement Control Agency (New York USAR)
Headquarters, 370th Quartermaster Battalion (Water Supply) (Montana USAR)
Headquarters, 383rd Quartermaster Battalion (POL Terminal) (Texas USAR)
Headquarters, 394th Quartermaster Battalion (Water Supply) (Puerto Rico USAR)
Headquarters, 731st Maintenance Battalion (DS/GS) (Alabama ARNG)

⁹²ARCENT Support Command (Provisional), LOGSITREP #10, 2.

⁹³U.S. Army, ODCSLOG, *Operation Desert Storm Sustainment* (Washington, D.C.: U.S. Army, 1991), 6.

Table 4 (cont.). Major Reserve Units Arriving in Southwest Asia,
September to Mid-November 1990

October (cont.)

311th Quartermaster Company (Graves Registration) (Puerto Rico USAR)
287th Transportation Company (Heavy Truck) (Alabama USAR)
715th Maintenance Company (Non-divisional) (Alabama ARNG)
724th Transportation Company (Medium) (POL) (Illinois USAR)
776th Maintenance Company (Non-divisional) (Tennessee ARNG)
1175th Quartermaster Company (POL) (Tennessee ARNG)
Headquarters, 844th Engineer Battalion (Combat Heavy) (Tennessee ARNG)
452nd Ordnance Company (Ammunition) (South Dakota USAR)
Headquarters, 112th Military Police Battalion (Kentucky ARNG)
123rd Supply and Services Company (Alabama ARNG)
318th Chemical Company (Decon) (Alabama ARNG)
Headquarters, 226th Area Support Group (Alabama ARNG)
251st Supply Company (DS) (Tennessee ARNG)
Headquarters, 490th Chemical Battalion (Alabama USAR)
Headquarters, 419th Transportation Battalion (Illinois ARNG)

Detachments: A total of 17 detachments arrived in October, four each USAR and ARNG transportation movement control detachments, four USAR and two ARNG quartermaster detachments associated with water purification, and several miscellaneous detachments.

November

386th Transportation Company (Medium Truck) (Kentucky ARNG)
479th Ordnance Company (Ammunition) (GS) (Kentucky ARNG)
1015th Maintenance Company (Non-divisional) (DS) (Georgia USAR)
1122nd Transportation Company (Light-Medium Truck) (Arkansas ARNG)
398th Supply Company (Heavy Materiel) (GS) (North Carolina ARNG)
1113th Transportation Company (Medium Truck) (California ARNG)
1133rd Transportation Company (Medium Truck) (Iowa ARNG)
1148th Transportation Company (Medium Truck) (POL) (Georgia ARNG)
778th Maintenance Company (Non-divisional) (Alabama ARNG)
2220th Transportation Company (Light-Medium Truck) (Arkansas ARNG)
107th Maintenance Company (Non-divisional) (Wisconsin ARNG)
371st Chemical Company (Decon) (South Carolina USAR)
1058th Transportation Company (Light-Medium Truck) (Massachusetts ARNG)
1244th Transportation Company (Light-Medium Truck) (Illinois ARNG)
114th Military Police Company (Kentucky ARNG)
281st Transportation Company (Medium) (POL) (New Mexico USAR)
988th Supply Company (Repair Parts) (Georgia USAR)
1461st Transportation Company (Light Truck) (Michigan ARNG)

Table 4 (cont.). Major Reserve Units Arriving in Southwest Asia,
September to Mid-November 1990

November (cont.)

826th Ordnance Company (Ammunition) (Wisconsin USAR)
131st Transportation Company (Medium Truck) (Pennsylvania ARNG)
165th Supply Company (Heavy Materiel) (Georgia ARNG)
172nd Transportation Company (Medium Truck) (Missouri ARNG)
298th Transportation Company (Medium) (POL) (Pennsylvania USAR)
638th Ordnance Company (Ammunition) (Alabama ARNG)
842nd Quartermaster Company (POL Supply) (Kansas USAR)
2123rd Transportation Company (Medium Truck) (Kentucky ARNG)
199th Supply Company (Repair Part) (Indiana USAR)
209th Supply Company (Heavy Materiel) (Indiana USAR)
348th Transportation Company (Medium) (POL) (Arizona USAR)
619th Transportation Company (Medium Truck) (Maine USAR)

Detachments: In the first half of November, five detachment-size units arrived, two each USAR and ARNG water purification detachments, and a USAR tactical water distribution detachment.

The first reserve units began to deploy in early September and were small detachments of legal and transportation specialists. By the middle of September, larger functional units began to arrive. Still recognizing the imminent military threat, the first substantial Army National Guard unit to arrive was the 130th Rear Area Operations Center from Tennessee. This unit provided necessary security planning for the developing cluster of basecamps around Dhahran; some of its soldiers were also farmed out onto support missions that were of more immediate concern.⁹⁴ Other reserve component functional units were put into place to do specific jobs. Missing from the first wave of deployments were the higher headquarters organizations, 377th TAACOM and 143rd TRANSCOM, and the 321st MMC and 318th MCA. There was still a lot of uncertainty as to the duration and extent of the deployment. This uncertainty was displayed in a hesitancy to call up the higher reserve units initially. The smaller, functional units were clearly needed to perform specific tasks, such as water purification, movement control, or supply. As for introducing a TAACOM and TRANSCOM, with the Iraqi invasion threat still great, it seemed unwise to replace the functioning, though ad hoc, logistical organizations with new headquarters that would have to relearn the ropes in the middle of the deployment. Pagonis had in fact requested the deployment of the 377th TAACOM and had offered to become its deputy commander, but he was overruled.⁹⁵

⁹⁴130th RAOC, Command Report for Operation Desert Shield, 18 February 1991, U.S. Army Center of Military History, 2.

⁹⁵Pagonis interview, 9 April 1991.

The SUPCOM did request 48 specialists in particular areas, however, to fill out the SUPCOM headquarters.⁹⁶ These specialists were selected by combing through the IRR by personnel officers at the Army Reserve Personnel Center (ARPERCEN) in Saint Louis, and finally arrived in Saudi Arabia on 10 October, more than a month after they were requested. The delay forced the SUPCOM to borrow personnel temporarily from subordinate units.⁹⁷

Many of the arriving functional units were truck companies. Most of the transportation capability, especially in nondivisional units, had been moved to the reserve components. Almost every state had at least one truck company, and many of them were mobilized to take on the problem of the great distances and mass of materiel assembling in Saudi Arabia.⁹⁸

The arriving reserve units were fully integrated into the command structure of the SUPCOM at all levels. As had become customary, the SUPCOM headquarters would usually borrow some of the newcoming unit's personnel to shore up the headquarters. In this manner, reserve and active soldiers became fully integrated, even in the SUPCOM headquarters itself.

The arrival of the 321st MMC and 318th MCA on 10 October put in place, however, two critical cogs in the theater-level logistics structure. The relatively late arrival of these units and their lack of preparation for the magnitude of the mission facing them, however, required a period of on-the-ground training. Both units had participated in Bright Star Egypt as their only real preparation, and Desert Shield was an ongoing mission far different from the parameters of that week-long exercise.⁹⁹

The late arrival of the 321st resulted in the formation of a de facto theater materiel management function executed by the collocated 2nd and 4th MMCs, which were already in country. The 2nd MMC was the organic MMC to the XVIII Airborne Corps. It was designed to support the light divisions normally assigned to the corps. With the addition of the heavy units from the III Corps (the 1st Cavalry Division and the 3rd Armored Cavalry Regiment), the 4th MMC from III Corps was also dispatched to support the requirements of these units.

By doctrine and organization, the theater-level MMC was to function as "the nerve center for supply and maintenance management [by providing] centralized management of certain functions for the TAACOM MMC and COSCOM MMC....The TAMMC provides theater-wide materiel management and allocation of supply items in accordance with priorities established by the TA [theater army]

⁹⁶ARCENT Support Command (Provisional), LOGSITREP #30, 5 September 1990, U.S. Army Center of Military History, Washington, D.C., 8.

⁹⁷Major Gary Braddock, interview by the authors, 20 December 1991; Pagonis interview, 3 October 1990.

⁹⁸Brown interview.

⁹⁹Whaley interview.

commander."¹⁰⁰ The 321st, though organized as a TAACOM MMC, was in fact designated as the theater MMC and placed directly under the SUPCOM.

MMC operations in the theater were not centralized under the 321st, however. As TAMMC, the 321st was supposed to be linked to the subordinate MMCs and the CONUS supply base by automation.¹⁰¹ The 321st had initial problems in getting its automation on line, as well as other teething pains in adjusting to the magnitude of the theater.¹⁰² Ultimately Pagonis decided not to centralize supply requisitions through the 321st immediately, intending to wait until the deployment of the XVIII Corps was complete. This centralization did not actually occur until the end of the ground war in March 1991.¹⁰³ Having originally filled out the office of the SUPCOM Assistant Chief of Staff for Logistics (ACSLOG), the 321st gradually assumed responsibility for materiel management activities throughout the theater, particularly with the logbase buildup (discussed later in this work).¹⁰⁴

The 318th MCA arrived to find many of its missions assumed by the 7th Transportation Group. It arrived with inadequate automation assets, which were made up by elements of the 7th Group.¹⁰⁵ By doctrine, the 318th should have been placed directly under ARCENT, but was instead placed under SUPCOM DCG-TRANS Whaley. This was done since General Norman Schwarzkopf, the theater commander, and Yeosock, the theater army commander, wanted Pagonis to be the single point of contact for logistics.¹⁰⁶

The uncertainty of the length of the deployment was a concern when it came to the deployment of reserve units, most of which were called up for a period of 90 days. On 13 November, the period was extended to 180 days for all reservists.¹⁰⁷ The period was eventually extended to 365 days, although no reserve units stayed that long.

¹⁰⁰FM 100-16, *Echelons Above Corps*, 6-12, 6-13.

¹⁰¹*Ibid.*, 6-13.

¹⁰²Whaley interview.

¹⁰³22nd Support Command, MMC After Action Review-6 April 1991, videotape, U.S. Army Center of Military History, Washington, D.C.

¹⁰⁴Pagonis interview, 3 October 1990.

¹⁰⁵Whaley interview.

¹⁰⁶Pagonis interview, 9 April 1991.

¹⁰⁷Pagonis interview, 3 October 1990; ODCSLOG, *Operation Desert Storm Sustainment*, A-8.

Theater Matures

The crisis management phase had passed. The logisticians began to get slightly ahead of the game. Despite irregularities in the airflow, soldiers were now able to come into country with fully functional basecamps established for them.¹⁰⁸ The SUPCOM staff was formed into functional areas and staffed with personnel, either individual fillers or people borrowed from units. A better handle on projected requirements was developed. For example, Colonel Carr had his ACSLOG section quantify all materiel requirements within a couple of days of his arrival, and projections were then made for future requirements.¹⁰⁹

The ration program continued to grow. Food supplements, provided by host nation caterers and consisted of fruit, milk, and other fresh foods, were issued with MREs and T-rations. As the host nation catering effort expanded, more contract dining facilities were opened for breakfast and dinner meals. Each of the little compounds and basecamps soon had such facilities. On the Dhahran airbase, there were three Army-sponsored facilities (one joint with the Air Force) and the fast-food facility, "the Pentagon." All served food from master menus designed by the theater food advisor and cooked to American specifications.¹¹⁰

An adjunct to this fast-food facility was the creation of the mobile food trucks popularized by the press as the "Wolfmobiles." Chief Wolf, the theater food advisor, had made and given barbecue-style grills to forward units. While brainstorming with Pagonis on this, the idea for mobile fast-food trucks came up. Wolf drew up specifications, gave them to Mr. Mossari, the Saudi host nation food contractor point of contact. In a month he had the first "Wolfmobile," which was given to the 1st Cavalry Division as it deployed into the theater. The Wolfmobiles caught on, and over the course of the next several months, more than 100 were made and issued to units or otherwise located at strategic points.¹¹¹

Troops from ASB Dhahran were placed under Wolf's operational control to run several warehouses for rations and to haul the rations to the units.¹¹²

The 593rd Area Support Group, commanded by Colonel John Ritter, deployed in late August and soon was responsible for most CSS functions in the greater Dhahran-Dammam area. The primary initial focus of the 593rd was the establishment of ASPs in support of the XVIII Airborne Corps and of Logistics Base (Logbase) Bastogne, the first of many large, pre-stocked supply points to be established

¹⁰⁸Ibid.

¹⁰⁹Carr interview.

¹¹⁰Wolf interview.

¹¹¹Ibid.

¹¹²Ibid.

in the theater to support projected operations. The 593rd also ran chemical operations, bulk water operations, and maintenance operations.¹¹³

The theater was maturing. Theater reserves of supplies were beginning to be accumulated. The force structure was growing to accommodate the level of support needed. Host nation support also had matured into an orderly structure. The Saudis were proving to be very supportive hosts. In mid-October the kingdom agreed to pay all costs for A-rations, water, fuel, internal transportation, and facilities after 1 November.¹¹⁴

The ports were beginning to operate to full capacity. Between 2 and 5 October, 116 ships were en route, at the ports, or returning from the theater. Elements of the 1st Cavalry Division and 3rd ACR were slated to receive upgraded replacements for their M1 tanks from prepo equipment stocks in Europe. These were shipped in early November and issued to the units.¹¹⁵ The Army Materiel Command (AMC) oversaw the execution of this action.

To assist in theater logistics, AMC established an organization called U.S. Army Support Group (USASG) on 17 November 1990. USASG's role was to provide supply and maintenance support from the Army's wholesale system directly into the theater. AMC had been sending special maintenance teams into the theater to perform various tasks since 9 August. Among these tasks were a program to upgrade USMC M60 tanks with applique armor, and the M1/M1A1 program described above. The latter was to evolve into a program where depot-level modifications were made to M1 tanks at the port in theater to upgrade them to M1A1 standards. AMC's personnel were mostly Department of the Army civilian employees who rotated in to work for various lengths of time. USASG also oversaw the contract maintenance program in the theater.¹¹⁶ Activities at the port also included the painting in desert tan hues of any equipment that arrived needing it.

Since the SUPCOM facilities and billets were stretched out over a sizeable area, the need for administrative vehicles to move personnel around was great. In CONUS-based units, soldiers would have used privately owned vehicles for many of these functions.¹¹⁷ In Saudi Arabia, while buses were available, they were not convenient. And since the SUPCOM owned no equipment of its own, there were no military vehicles to use. An interim solution had been to lease vehicles from the civilian sector. The ultimate solution came from an unlikely source—Japan. The government of Japan (GOJ) initially provided 785 4x4 commercial-style vehicles for use in the theater. Later additions would bring this total

¹¹³593rd Area Support Group, Command Report: Operation Desert Shield, 25 February 1991, U.S. Army Center of Military History, Washington, D.C., 1, Tab C 1, 2.

¹¹⁴Epley, 22.

¹¹⁵ODCSLOG, *Operation Desert Storm Sustainment*, A-8, A-9.

¹¹⁶*Ibid.*, A-10.

¹¹⁷Ehlinger interview.

up to almost 2,000. They arrived in late September and were immediately put to use.¹¹⁸ The government of Germany (GOG) also was to donate vehicles, mostly from the defunct East German Army. The German vehicles included military vehicles of all sizes, including ambulances. Both Japan and Germany also provided sizeable funds to support the logistical effort.

Communications were a concern due to both a lack of communications equipment in the organizational structures of combat support units and the great distances between points in Saudi Arabia. As in other areas, dependence upon host nation assets became essential. While Saudi Arabia had an established civil telephone network, it did not reach into all areas of the country. Sometimes units would locate in areas where host nation communications assets were not available. Additionally, there was a reluctance on the part of the Saudi Public Telephone and Telegraph Company to install additional phones where service was available.¹¹⁹

The SUPCOM G-6 (Information Management) section provided workable solutions to the communications difficulties through a combination of creative use of Army tactical communication assets and host nation support. The phone system at the Dhahran airbase complex was upgraded by the addition of 300 phone connections. A hand-held radio system, with tower-mounted repeaters, was established to provide communications along 250 miles of the developing main supply route on the TAPLINE road. Twenty-six Army radio-teletype systems were fielded at remote locations. Fifty portable satellite phones hooked into the INMARSAT system were deployed throughout the theater to provide instant long-range communications. The host nation provided 150 commercial-style vehicles with mobile cellular phones. These were given to general officers and colonel commanders, and were also positioned at locations that would otherwise be without communications means. This hybrid of communications systems worked effectively and proved to be the best method of doing communications for logistics.¹²⁰

In this age of mass communications, soldiers wanted a way to call home from the theater. In response to this need, phone banks were established throughout the theater, even in remote areas, operated by commercial vendors utilizing satellite communications.¹²¹

A recreational facility was established on 30 September at the beach at Half Moon Bay that provided various services, including movies, swimming, and bowling. This was to be the first of numerous recreational facilities made available to soldiers as the theater developed.¹²²

¹¹⁸ODCSLOG, *Operation Desert Storm Sustainment*, A-5.

¹¹⁹22nd Support Command, ACSIM, G6 Input to the Historical Report, 23 February 1991, U.S. Army Center of Military History, Washington, D.C., 1.

¹²⁰*Ibid.*, 2.

¹²¹*Ibid.*

¹²²ARCENT Support Command (Provisional), LOGSITREP #54, 28 September 1990, U.S. Army Center of Military History, Washington, D.C., 10.

As the theater matured, there were still problems. The 1st COSCOM initially arrived in country without its equipment and the corps had to be supported for a time by the provisional support command.¹²³ When the COSCOM set up, it did so in Dammam, intermingling locations of corps support elements with those of the echelons above corps (EAC) belonging to the SUPCOM. Unit locations on C+93 (4 November 1990) are shown in Figure 3.

Water purification units arrived early in the airflow, but since their supporting water supply units came later, the purification units could not store any water of the they purified.¹²⁴

Materiel handling equipment was precious and in short supply, affecting all types of operations. To facilitate the use of this precious equipment, provisional MHE companies were organized and tasked out for specific jobs, ensuring that the equipment received maximum usage and responsiveness to the highest-priority tasks. This centralization was a novel concept for the employment of service support assets.

While the 24th Infantry Division (Mechanized)'s tanks, cannons, and infantry vehicles were off-loaded in record time and moved to forward assembly areas (FAA) on host nation HETs, the division's support command (DISCOM) was delayed. The ship that the DISCOM's equipment was on, one of the last in the division's seafloor to begin with, broke down at Rota, Spain, and had to be replaced. For the first month and a half, the SUPCOM also functioned as the support command for that division. Somehow the assets were scraped together to support this task. In so doing, the SUPCOM organized its first Forward Area Support Team (FAST), under the control of a Forward Area Support Coordination Officer (FASCO), usually a field grade officer.¹²⁵ The FASCO provided an organization to command and control a tailored slice of combat service support assets and would be used repeatedly to tailor supported unit needs with available service support assets. Finally, on 5 October, the 24th was able to support itself when its main support battalion became operational.¹²⁶

Ammunition off-loading from the prepo ships was also a problem. Ammunition units did not arrive in a timely manner to permit the expeditious off-loading of ammunition. The establishment of theater storage areas (TSA) was delayed.¹²⁷

By doctrine, certain logistical functions for supporting the other U.S. services became the Army's responsibility after specific cutoff dates in the deployment. Accordingly, on C+60, 3 October, the

¹²³Pagonis interview, 3 October 1990.

¹²⁴ARCENT Support Command (Provisional), LOGSITREP #52, 26 September 1990, U.S. Army Center of Military History, Washington, D.C., 3.

¹²⁵ODCSLOG, *Operation Desert Storm Sustainment*, 13.

¹²⁶ARCENT Support Command (Provisional), LOGSITREP #60, 5 October 1990, U.S. Army Center of Military History, Washington, D.C., 7.

¹²⁷ARCENT SUPCOM (Provisional), Missile and Munitions Branch, ACSLOG, *Lessons Learned: Operation Desert Shield*, 10 October 1990, U.S. Army Center of Military History, Washington, D.C., 1.

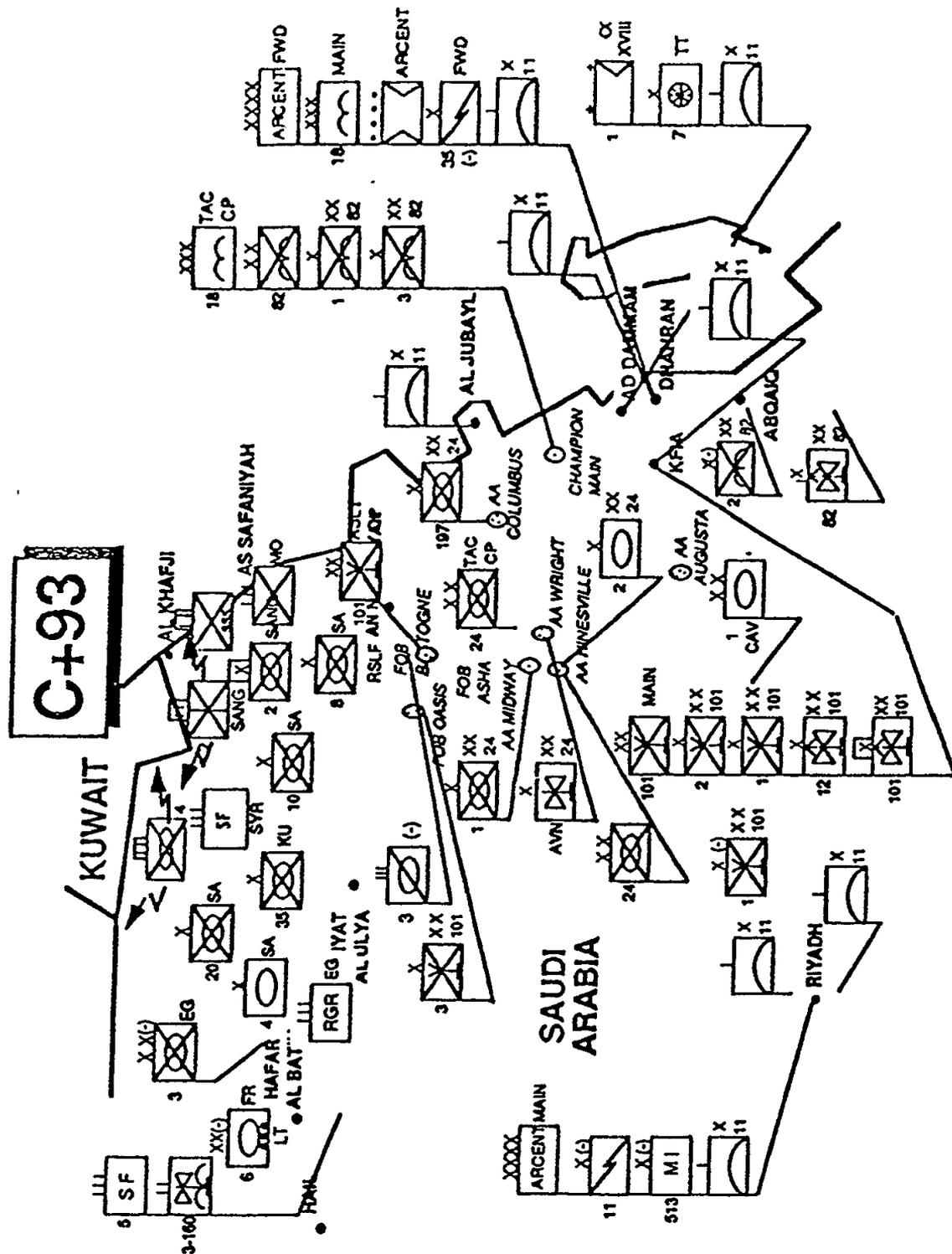


Figure 3. C+93 Unit Locations

SUPCOM became responsible for providing fuel distribution to the Air Force, and on C+80, 23 October, ration support.¹²⁸

As the end of the deployment of the XVIII Airborne Corps appeared in sight, the SUPCOM sought to improve its ability to support the combat troops forward in projected defensive positions and projected offensive operations. As early as mid-September, sites were chosen that led to the establishment of the first two logistical bases, Bastogne and Pulaski. Since there was no doctrinal provision for a logbase, these were first called assembly areas, with the nomenclature redefined later. Both bases were designed to hold stockpiles of all classes of supplies to be utilized as necessary by the combat units to support combat operations.

The bases were organized to facilitate the stockpiling of supplies and to provide ease for supporting the growing force. They were located specifically to take advantage of the road network. Pulaski was 75 miles west of Dhahran along a secondary road tagged as Main Supply Route (MSR) Mercedes, which traveled from the Dammam-Riyadh expressway in the south to the coast road near Nu'ayriyah in the north. Pulaski supported the 1st Cavalry Division's nearby assembly areas. Bastogne was established 150 miles north of Dhahran outside Nu'ayriyah, near where the road following the line of the Trans-Arabia Pipeline (TAPLINE)—which traveled west, roughly paralleling the Iraqi border—met the north-south coast road. Bastogne provided support for the 101st and 24th Divisions. The establishment of these bases allowed supplies to be pulled away from the ports and placed where they ultimately would be needed. Due to its proximity to the Kuwaiti and Iraqi frontiers, Bastogne soon became the focal point of logistical preparations. Although eventually garrisoned by a brigade of the 101st Airborne Division (Air Assault), when it was first set up, it was forward of the most forward defensive positions of the XVIII Airborne Corps, although behind the Arab forces guarding the Kuwaiti border.¹²⁹

The planning for the logbases was done by a special planning cell created by Pagonis in the SUPCOM headquarters. This cell worked apart from daily operations, allowing the command to project ahead. Called the Log Cell, this element began early logistical planning on potential offensive options and the possible reception of additional troops in the theater, which enabled the support command to draw up operations plans and orders quickly, when given the mission. One of its other initial missions was the preparation of lessons learned from the first 60 days of deployment.¹³⁰ Additionally, the planning cell augmented short-handed sections, such as Whaley's small DCG-TRANS staff, with planners.¹³¹

On 4 November 1990, the XVIII Airborne Corps completed its deployment to Saudi Arabia. Operation Desert Shield's initial defensive phase was basically completed. And the logisticians had met the challenge. In the 93 days from the first troop deployments, more than 112,484 troops of the XVIII

¹²⁸ODCSLOG, *Operation Desert Storm Sustainment*, 14.

¹²⁹Epley, 25.

¹³⁰ARCENT Support Command (Provisional) G3/Log Planning Cell, *Lessons Learned/Force Flow*, 25 September 1990, U.S. Army Center of Military History, Washington, D.C.

¹³¹Whaley interview.

Airborne Corps and supporting units were processed through the APODs. The ports discharged more than 106 ships, including 4,123 tracked vehicles, 31,547 wheeled vehicles, and 703 aircraft. Fifty-nine reserve units with 2,973 troops now were part of the SUPCOM, whose strength had reached 11,849, including 1,398 women soldiers.¹³²

The deployment was completed during the hottest time of the year in Southwest Asia, under the constant threat of invasion and with no pre-arranged logistical support to facilitate the operation. Given the conditions and circumstances, it was a remarkable achievement. But the logisticians would not be granted a pause to enjoy their success.

¹³²22nd Support Command, Chronology, 4.

Chapter 3

Preparing for an Offensive Option

I have today directed the Secretary of Defense to increase the size of U.S. forces committed to Desert Shield to insure that the coalition has an adequate offensive military option.

—President George Bush, 8 November 1990¹

We did it one time—it'll be a lot easier the second time.

—Major General William Pagonis²

Adding a Corps

On 8 November 1990, President Bush addressed the nation. To provide an offensive option to eject the Iraqi forces from Kuwait, he announced the deployment of an additional 200,000 troops to Southwest Asia. For the Army, this meant the unprecedented deployment of troops from Europe—the VII Corps headquarters, 1st and 3rd Armored Divisions, a brigade-size force from the 2nd Armored Division, and the 2nd Armored Cavalry Regiment. The deployment also included the reduced-size 1st Infantry Division (Mechanized) from the United States. The cumulative effect of the new deployment package would result in 34 percent of the Army's total strength being in the Persian Gulf, a larger percentage than in either the Korean or Vietnam Wars.³ For years the Army had been conducting its series of REFORGER exercises, which tested the deployment of additional forces to Europe. Now VII Corps was about to execute an unprecedented REFORGER in reverse.

As early as late August, CENTCOM had been working on preparing an offensive option once the deployment of the XVIII Airborne Corps was completed. While General Schwarzkopf had always felt that more forces would be needed, particularly in light of an increased deployment of Iraqi troops into the Kuwait Theater of Operations, an initial planning concept, using the forces on hand, was developed.

¹Sifry and Cerf, *The Gulf War Reader*, 228-9.

²Molly Moore, "Logistics Bedevil U.S. Gulf Forces: New Troops to Stretch Supply Lines Further," *Washington Post*, 11 November 1990, A28.

³Bill McAllister and Dana Priest, "Deployment One of Largest by U.S. Since World War II," *Washington Post*, 9 November 1990, A34.

When in mid-October President Bush asked about such an option, Schwarzkopf sent his chief of staff, Marine Major General Robert Johnston, to Washington to brief the President. The result of this briefing was approval for the projected air campaign, but a reworking of the ground campaign, which would require additional troops, preferably elements of the armored divisions in Germany, which had the best and latest equipment.⁴

A general concept for the use of these additional troops—on the left or western flank, advancing through the southern Iraqi desert—was briefed to the President on 31 October and approved by him.⁵ This was after the Joint Chiefs of Staff planners had determined that such an action could be supported logistically.⁶

On 8 November President Bush made his announcement, and the VII Corps and the other affected units were alerted. CENTCOM planning was so far along that Schwarzkopf was able to brief the commanders of the VII Corps on 12 November with the Desert Storm plan, which was eventually executed with only a few changes in detail.⁷ During that briefing, initial assembly areas and ports of debarkation were selected, as was a TPFDL for the deployment.⁸

Doubts were immediately raised in congressional circles and among some military analysts that the U.S. could support such a large force for a long period of time or in a war itself. The major fear was that support difficulties would force the President to use the troops rather than more prudently waiting out Saddam Hussein. Senator Sam Nunn, Chairman of the Senate Armed Services Committee, voiced concerns that it would be hard to sustain the force even without a war.⁹

But General Colin Powell, Chairman, Joint Chiefs of Staff (CJCS), among others, allayed these fears by stating that the force could be supported for a year. Improved supply lines, depot support, and Saudi assistance, coupled with the experiences learned through the early deployment crises, facilitated extended sustainment.¹⁰

⁴U.S. News and World Report, *Triumph without Victory: The Unreported History of the Persian Gulf War* (New York: Times Books, 1992), 155-6, 166-7.

⁵*Ibid.*, 171.

⁶*Ibid.*, 167.

⁷Tom Donnelly, "The General's War: How Commanders Fought the Iraqis," *Army Times*, 2 March 1992, 14.

⁸Lieutenant Colonel Peter S. Kindsvatter, "VII Corps and the Gulf War," *Military Review*, January 1992, 5-6.

⁹Rick Atkinson and Molly Moore, "Desert Shield Supply System Built to Sustain Long Wait: Pentagon Calls Task Costly but 'Manageable'," *Washington Post*, 13 December 1990, A1.

¹⁰*Ibid.*

Time remained critical, however, but due to other factors. On 29 November, the United Nations issued Resolution 678, which authorized member nations to take all necessary means to force Iraq to withdraw from Kuwait after 15 January 1991.¹¹

Another factor that possibly impacted on timetables was the rotation dilemma. Because of the large size of the deployment, there were no equivalent backup units to replace those already deployed. As one observer remarked concerning combat troops: "[T]he rotation plan just turned into a reinforcement plan."¹² For combat service support units, the force structure was even more shorthanded. If the deployment became protracted, the Army would probably be forced to pull out of service support elements in its remaining active and reserve component divisions and separate brigades to replace deployed units. Otherwise the troops would be there for the duration. Would troop morale remain high if nothing happened? Would the American public tolerate an extended deployment without end, particularly for its reservists?

These factors drove policy makers and war planners toward the 15 January cut-off date. The Army, including the logisticians, had to be ready to execute after 15 January.

Theater Logistics Planning

The acceptance of a general concept for the employment of the new troops facilitated the theater logisticians' preparations. The SUPCOM planning cell began working on a five-phase plan for theater logistical support in early November, which would cover the entire duration of the operation to the end of the deployment. The phases were as follows:

- Phase Alpha—Prepositioning of supplies and shifting around of SUPCOM units to provide support for the larger force, while at the same time receiving and moving the VII Corps to its assembly areas.
- Phase Bravo—Simultaneous movement of the two corps to their attack positions through the use of SUPCOM and COSCOM transportation assets and the establishment of new logbases to support the corps' maneuver.
- Phase Charlie—Support and sustainment of the ground offensive into Iraq and Kuwait.
- Phase Delta—Support for the defense and restoration of Kuwait.
- Phase Echo—Redeployment of the troops and materiel and closure of the theater.

¹¹Lieutenant Colonel Joseph P. Englehardt, *Desert Shield and Desert Storm: Chronology and Troop List for the 1990-1991 Persian Gulf Crisis*, Strategic Studies Institute, U.S. Army War College Special Report (Carlisle, Pa.: U.S. Army War College, 1991), 34.

¹²Patrick E. Tyler, "New Deployment Signals U.S. Switch to Offensive," *Washington Post*, 9 November 1990, A1.

The first phase, Alpha, was to last up until the commencement of the air campaign, sometime after the 15 January deadline. Phase Bravo would begin on order several days after the commencement of the air campaign and last between two and three weeks. Phase Charlie, the support of the ground campaign, was projected to last about two weeks. Upon the cessation of hostilities, Phases Delta and Echo would begin concurrently. The redeployment would last as long as it took. Early estimates of how long it would take to move the materiel out of the theater were several years.¹³

This phased plan was included in various operations plans and orders and was briefed by Pagonis to the officers and noncommissioned officers of the support command on 4 December.¹⁴

Each phase had subphases and timetables, which are discussed in detail in the parts of this work dealing with each operation. Planning was continuous and updated constantly. Initial guidance from ARCENT and CENTCOM was based on an ARCENT message, dated 14 November, which spelled out the logistical support concept for the receipt of the additional forces.¹⁵ A follow-on directive was ARCENT's Operations Plan Operation Desert Storm 001 issued on 5 January 1991. This plan provided ARCENT's guidance for what remained of Phase Alpha and for Phases Bravo and Charlie.¹⁶

Expanding the Logistical Structure

Planning for Phase Alpha was far advanced, based on the general operational concept, so that the SUPCOM was able to issue its SUPCOM Operations Plan (OPLAN) 91-1 on 12 November. This plan outlined the prepositioning of supplies and the reception of the VII Corps. VII Corps representatives arrived the next day to begin preliminary coordination.¹⁷

Unlike the deployment of the XVIII Corps, the CSS units of the VII Corps would go in first.¹⁸ With a theater logistical structure in place, the VII Corps logisticians could set up and prepare for the

¹³Lieutenant General William G. Pagonis, interview by Lieutenant Colonel Wesley V. Manning and Major Glen L. Hawkins, 17 February 1991, U.S. Army Center of Military History, Washington, D.C.

¹⁴22nd Support Command, Command Report Operation Desert Storm 22nd Support Command, 17 January-15 March 1991, 5 April 1991, U.S. Army Center of Military History, Washington, D.C., 2.

¹⁵USARCENT, Message, Subject: Logistics Support Concept for Receipt of Additional Forces, 141340Z November 1990.

¹⁶COMUSARCENT, OPLAN Operation Desert Storm 001, Annex D (Logistics), 5 January 1991, U.S. Army Center of Military History, Washington, D.C.

¹⁷ARCENT Support Command, LOGSITREP #100, 13 November 1990, U.S. Army Center of Military History, Washington, D.C.

¹⁸Donnelly, "General's War," 14.

arrival of their troops. The theater logistics structure itself needed to be expanded. The reception and onward movement of the corps' units would be done in a well-thought out and orderly fashion.

The reception/prepositioning plan, as outlined in OPLAN 91-1, was to be executed in several phases. Since it would take time for the equipment of the VII Corps to be packed up and shipped to the theater, the first phase was a preparatory phase that provided for expansion of the logistical structure. Whereas Logbase Bastogne had been the logistical focal point, KKMC, farther to the north and west, was to become the focal point with the deployment of the VII Corps. In the general deployment concept, the VII Corps would end up near KKMC, so a logbase, Bravo, for theater supplies was established there by the 226th Area Support Group, an Alabama National Guard unit commanded by Colonel Joel Norman, which arrived in theater at the end of October. The 226th assumed responsibility for the area around KKMC under OPLAN 91-1. The SUPCOM also directed the 226th to establish an additional logbase, Alpha, near the VII Corps assembly area, designed to support that corps.¹⁹

All classes of supplies were received and stockpiled at both logbases. Showers, latrines, and washstands, which had proven so vital in August, were also prepositioned. Emphasis at Logbase Alpha was on accumulating supplies of rations, water, bulk petroleum products, and ammunition.²⁰

Logbase Alpha was established on 23 November and initially managed by the 731st Maintenance Battalion. This battalion exercised administrative control over all support units in the vicinity, including the elements of the VII Corps' corps support command, the 2nd COSCOM, until it was able to operate on its own.²¹

Directly under the 226th, the 394th Quartermaster Battalion managed Logbase Bravo, the major theater prepositioned supply hub, located a little south of KKMC. Positioned at this base were also theater stocks of clothing and organizational equipment, barrier and other engineer-type materials, rental cars, buses, and trucks.²²

A third logbase, Charlie, was planned to be established northwest of KKMC to support the XVIII Airborne Corps from that corps' attack positions. This was a task to be accomplished only when specifically directed by ARCENT.²³ It was not established before 15 January, in order to deceive the Iraqis as to U.S. intentions. The Commander-in-Chief (CINC), CENTCOM, General Schwarzkopf, would not allow any movement west of KKMC until after the air campaign had commenced. This was

¹⁹ARCENT Support Command, OPLAN 91-1, 12 November 1991, U.S. Army Center of Military History, Washington, D.C., 2.

²⁰Ibid.

²¹226th ASG, OPORD 91-1, 19 November 1990, U.S. Army Center of Military History, Washington, D.C., 2; 226th ASG, FRAGO 91-1-5, 22 November 1990, U.S. Army Center of Military History, Washington, D.C.

²²22nd Support Command, OPLAN 91-1, 3.

²³226th ASG, OPORD 91-1, 3; COMUSARCENT OPLAN ODS 001, D-2.

because the Iraqis had already reacted to the American buildup around KKMC by deploying several divisions roughly opposite KKMC in southern Iraq. Hence, Schwarzkopf's operational scheme of maneuver required the logistician to leave no tracks in the sand that could give away the operational maneuver intention.²⁴

Two theater ammunition supply activities (TSA) were also established, TSA 4 near KKMC and TSA 5, at a Saudi site at Artawiyah, roughly halfway between KKMC and Riyadh.²⁵ The Artawiyah site, which would house selected stocks of ammunition, was also designated Logbase Delta.²⁶

As envisioned in OPLAN 91-1, 50 percent of theater stocks were to be moved to the forward logbases by 15 January. Total theater stockage goals, by class of supply, are given in Table 5. Logbase Alpha and Logbase Bravo were to stock supplies for general support of the VII Corps at the following levels: rations (MREs), five days supply; water, three days supply; fuel, five days supply; and ammunition, five days supply. Logbase Alpha was to plan for the support of 113,000 troops, Logbase Bravo, 250,000. Logbase Charlie, when established, was to also have five days supply for 111,000 soldiers. Sustainment supplies were to be on hand so that theater stocks would not have to be touched.²⁷ All logbases, except Charlie, of course, were to be operational with required stockage levels before 15 January.²⁸

The establishment of the forward logbases resulted in a greatly expanded network of main supply routes (MSRs) traversing great distances. KKMC was 202 miles farther out in the desert to the northwest than Logbase Bastogne, the previous forward logbase. It was also 302 miles north of Riyadh. Two MSRs were established to push supplies and troops forward. The first was the northern route, which began at the port of Dammam and followed the north-south coast highway (MSR Audi), then following the TAPLINE road to the northwest (MSR Dodge). The total distance on this route to KKMC was 334 miles. The southern route was 528 miles and ran from Dammam, following the westward Dammam-Riyadh expressway (MSR Toyota) to Riyadh, then north along the Riyadh-Hafr al Batn road (MSR Sultan) to KKMC.²⁹

²⁴Donnelly, "General's War," 15.

²⁵Headquarters, 226th Area Support Group, Command Operations Report Operation Desert Storm, 13 April 1991, U.S. Army Center of Military History, Washington, D.C., 1.

²⁶USARCENT OPLAN ODS 001, D-2.

²⁷22nd Support Command OPLAN 91-1, Annex D, Appendix 1; COMUSARCENT OPLAN ODS 001, D-2.

²⁸226th ASG, Command Operations Report, 1-1.

²⁹Briefing slide, USARCENT Support Command Logistics Support Briefing, prepared for General Carl Vuono, Chief of Staff of the Army, 24 December 1990, U.S. Army Center of Military History, Washington, D.C.

Table 5. Theater Stockage Goals

<u>Class</u>	<u>Days of Supply</u>
I Rations	20
II Individual equipment	23
IIIB POL bulk	26 ^a
IIIP POL package	23
IV Construction	23
V Ammunition	45
VI Sundry items	20
VII Major end items	Selected
VIII Medical	0
IX Repair parts	b

Source: ARCENT SUPCOM OPLAN 91-1.

^a18 days host nation storage.

^bSelected major assemblies only.

The volume of traffic necessitated the use of these two major routes. Additionally, despite the longer distance, the southern route offered better roads, being the equivalent of an interstate highway for almost two-thirds of the route. The northern route, on the other hand, was primarily a low-grade, two-lane highway along MSR Dodge, which initially had no shoulders.³⁰ Due to the limited number of roads, these two routes were in fact the only routes available. Toward Iraq there were no routes at all. To support an offensive maneuver, roads would have to be built or supplies would have to go cross-country.

MSR Dodge's TAPLINE road was a treacherous and bottle-necked stretch of highway. The volume of traffic moving along the road far exceeded its design features. With only one lane in either direction and poor or no shoulders, traffic jams were common. Where the shoulders were good, military traffic drove on them, allowing civilian traffic to drive on the pavement, thus converting the road into a substandard four-lane highway. Frustrated drivers, particularly host nation drivers, attempting to pass could cause head-on collisions with travelers going in the opposite direction. Added to such poor driving conditions were the extremely aggressive driving patterns of the typical Saudi or TCN driver. Their fierce driving habits had been long remarked upon by western observers.³¹ The heavy volume of traffic,

³⁰Brown interview.

³¹Steve Vogel, "Metal Rain," *Army Times*, 16 September 1991, 12; J. Paul Scicchitano, "Night Strikes: The Secret War of the 1st Cavalry Division," *Army Times*, 23 September 1991, 14; Sandra Mackey, *The Saudis: Inside the Desert Kingdom* (New York: Signet, 1990), 183-4.

poor roads, and local driving habits were to result in more U.S. casualties from road hazards than from the war itself.³²

The movement of supplies and units northward increased transportation requirements considerably. Since trucks had a minimum turnaround of three days, at least triple the daily requirement had to be available. By 15 January, trucks supporting the U.S. effort were driving roughly 1.2 million miles a week, with almost 1,200 vehicles on the road every day.³³ Host nation support had to provide more than 600 additional trucks by 15 January. Additional military drivers were provided from active Army volunteers, most of whom were not truck drivers by military occupational specialty.³⁴

To ease the distance on the southern route, the 7th Transportation Group established trailer transfer points (TTP). Primarily military vehicles and drivers were used on this route, since host nation tractors and trailers were an incompatible hodgepodge of types. Trailers were dropped off and picked up by units based out of Riyadh and KKMC. Additionally, the 7th Group also had contingency plans in case one of the MSRs had to be shut down.³⁵

In addition to TTPs, another innovation adopted to ease the drivers' burden on the long routes was the convoy support center (CSC). Essentially a truck stop placed along an MSR, the CSC provided services for drivers, including a fuel point, food facilities—often provided by Wolfmobile—latrine and showers, medical evacuation heliports, and even a place to spend the night, if necessary. CSCs were set up approximately every 150 miles along the MSRs and were capable of refueling more than 100 trucks an hour. They also served as communications hubs and control points for long-range convoys. The 226th ASG was responsible for establishing three CSCs—Oxen on MSR Dodge, and Vulture and Wombat on MSR Sultan. The 593rd ASG established CSC Zebra on MSR Audi near the junction with MSR Dodge.³⁶

The 7th Transportation Group ran not only the port operations, but also clearance and linehaul transportation operations. This was not the procedure used previously by the Army. Once again, force structure limitations caused doctrine to be altered. The 7th Group effectively integrated transportation functions, which allowed the ports to be cleared rapidly.³⁷

³²Lieutenant General William G. Pagonis, interview by the authors, 8 November 1991, U.S. Army Center of Military History, Washington, D.C.

³³Brown interview.

³⁴Ibid.

³⁵Ibid.

³⁶226th ASG, Command Operations Report, 1-1; 593rd ASG, Command Report: Operation Desert Shield, 1; Colonel Peter Langenus, "Moving an Army: Movement Control for Desert Storm," *Military Review*, September 1991, 42.

³⁷Brown interview.

Another headquarters, the 32nd Transportation Group, Florida USAR, Colonel Michael Gaw commanding, was mobilized on 29 November to orchestrate transportation operations in the north. The unit arrived in theater on 4 January 1991 and soon took control of five truck battalions, including a battalion composed of commercial HETs with a mix of civilian and military drivers, a battalion with military HETs, two medium truck battalions, and a HET battalion attached from the Egyptian Army. 7th Transportation Group retained control of transportation assets in the south and the port facilities of Dammam and Jubayl.³⁸

The change in focus also prompted metamorphoses in the SUPCOM headquarters. A second, or northern, LOC (NLOC), was immediately established in KKMC on 12 November as the SUPCOM (Forward).³⁹ This NLOC initially consisted of 68 individuals, including between 4 and 10 representatives from each staff section.⁴⁰ From this austere beginning would evolve a headquarters at KKMC virtually identical to the one in Dhahran. The concept was to have the main SUPCOM headquarters handle incoming ships, warehousing, fixed facilities, and other routine matters. The NLOC used identical charts for information tracking and was set up much like the original in the Hotel California. Both had identical capabilities, except that only the Dhahran headquarters could issue changes to operations orders, called fragmentary orders (FRAGO). Both had the same types of daily briefings, and personnel were frequently switched between the two headquarters to provide good interfacing. Pagonis himself began to spend most of his time in the north, but was in Dhahran several times a week.⁴¹

If doctrine had been followed strictly, two TAACOMs would have been deployed to Saudi Arabia, one at Dhahran and one at KKMC. Both would have worked directly under the ARCENT commander and his logistics staff. But the Support Command had evolved, purposely, into the single point of contact for theater logistics. While two headquarters were in fact deployed, they were both under the same commander, Major General Pagonis.⁴²

Manning for this headquarters clone required reinforcements. A request was made to dispatch the Army Reserve's 21st TAACOM (CONUS Augmentation) unit, headed by Brigadier General Thomas P. Jones, from Indianapolis, Indiana.⁴³ This unit was really an organization designed to augment the 21st TAACOM in Germany upon mobilization. It was ideally suited, therefore, to augment the SUPCOM

³⁸32nd Transportation Group (Composite), Command Report for Operation Desert Shield, 28 February 1991, U.S. Army Center of Military History, Washington, D.C., 1-2.

³⁹ARCENT Support Command, LOGSITREP #99, 12 November 1990, U.S. Army Center of Military History, Washington, D.C., 2; ARCENT Support Command, OPLAN 91-1, 8-9.

⁴⁰ARCENT Support Command, OPLAN 91-1, 8-9.

⁴¹Pagonis interview, 17 February 1991; Pagonis interview, 8 November 1991.

⁴²Pagonis interview, 8 November 1991.

⁴³ARCENT Support Command, LOGSITREP #101, 14 November 1990, U.S. Army Center of Military History, Washington, D.C., 15.

headquarters. After the usual hang time, the unit was mobilized and deployed to Dhahran on 19 December 1990. The unit's 186 personnel were immediately assigned throughout the SUPCOM headquarters at both locations in various assignments, depending upon the individual's experience. Jones, the unit commander, became the SUPCOM Deputy Commanding General for Materiel and Services.⁴⁴

Incorporated into the NLOC was an element called the Jump Command Post (CP), under the SUPCOM Deputy Commanding General, Brigadier General Kenneth Guest, with a small staff that eventually reached about 50. Guest's mission was to go forward, find out what was going on, and facilitate the solving of logistical problems quickly.⁴⁵

In the Jump CP also was a hand-picked group of specialists called the "ghostbusters." Ghostbusting was another Pagonis innovation. The ghostbusters were staff officers with expertise in certain areas, usually of field-grade rank, who were sent out throughout the command to act as troubleshooters, finding problems and helping to solve them based on their understanding of Pagonis's intent. They provided an unbiased view from individuals outside the organization where the problem existed and offered recommendations for solutions.⁴⁶

As part of the repositioning of supplies, the 1st Cavalry Division was removed from the XVIII Corps and placed in theater reserve. It was to move from its assembly area northwest of Dhahran to a new assembly area just west of KKMC. The division's mission was to protect MSR Dodge from a spoiling attack by the Iraqis against KKMC or Hafr al Batn, the town at the junction of MSR Dodge and MSR Sultan. The movement was executed during the period 7 to 15 January, using the northern route.⁴⁷

The 1st Cav had been using the 1st Brigade, 2nd Armored Division, almost always referred to as the "Tiger Brigade," as its third maneuver brigade. During the move of the division, the Tigers were detached from the division and attached to the Marine Forces, Central Command (MARCENT), to provide an added armored punch to the 1st and 2nd Marine Divisions. This role had formerly been filled by the 1st United Kingdom (UK) Armored Division. But the British had been promised a role in the main effort, and their division was transferred to VII Corps control.⁴⁸

⁴⁴DCG-MS, 22nd Support Command, Command Report for 21st TAACOM (CA), 28 February 1991, U.S. Army Center of Military History, Washington, D.C., 1-3.

⁴⁵Pagonis interview, 8 November 1991.

⁴⁶Ibid.; Whaley interview.

⁴⁷Kindsvatter, "VII Corps in the Gulf War," 14; COMUSARCENT OPLAN ODS 001, 10, 11; Briefing slide, "Unit Moves," 29 December 1990; Scicchitano, "Night Strikes," 14.

⁴⁸Donnelly, "The General's War," 15.

The deployment of the Tiger Brigade resulted in the need for CSS assets from the support command that were beyond both the units' and the Marines' capability to provide. A FASCO was established to provide this support.⁴⁹

Bringing in the VII Corps

The second subphase of Phase Alpha was the actual reception and onward movement of the VII Corps units. Dhahran was the primary APOD and was being supplemented with KFIA from 9 December on. Original planning had Jubayl as the only SPOD, since it was 60 miles closer to the projected VII Corps assembly areas. But Jubayl had been used only to deploy a small force of Marines and the 3rd ACR. There was no established infrastructure, such as billeting, to handle a whole corps. Additionally, the port facilities were not big enough. The use of just a single port would also hurt flexibility due to delays at the port.⁵⁰ The plan was modified through the efforts of Colonel Daniel Brown, the 7th Transportation Group commander, so that ultimately both ports were used. At Jubayl the equipment of the 2nd COSCOM, 1st Armored Division, 3rd Armored Division, 2nd Armored Division (Forward), and the 2nd ACR was to be disembarked. At Dammam would arrive the materiel of the 1st Infantry Division (Mechanized), corps artillery, and other corps-level units.⁵¹ Flexibility was built into the plan since the order of unit arrival was not yet definite, and unloading times could be variable.⁵²

The commander of the VII Corps, Lieutenant General Frederick Franks, originally had the goal of having his corps ready to fight by the 15 January—the United Nations deadline. This would have included a two- to three-week training period for all the units.⁵³ This goal, due to the seafloor and the manner in which ships were packed, proved to be illusionary.

The focus of the 2nd COSCOM was to pass through the ports quickly and to establish itself to receive the rest of the corps in the TAAs out in the desert.⁵⁴ Accordingly, the main concern of the SUPCOM was to ease the deployment of the VII Corps and get them out of the ports into their assembly areas in good order. To do this, an administrative structure was established (Figure 4). The troops would land at the APOD in Dhahran. In the lead would be unit advance parties, engineer troops, and support troops from the COSCOM. The advance parties would be bused to staging and marshalling areas (STAMA), which would already be partially established. These troops would finish their establishment.

⁴⁹22nd Support Command, Command Report Desert Storm, 5.

⁵⁰Brown interview; 1st Infantry Division (Forward), Desert Shield/Desert Storm After Action Review of VII Corps Debarkation and Onward Movement, 10 May 1991, U.S. Army Center of Military History, Washington, D.C., 10.

⁵¹22nd Support Command, OPLAN.

⁵²Brown interview.

⁵³1st ID (Forward), After Action Review, 2.

⁵⁴Ibid., 3-4.

Mechanics and drivers would be taken to driver holding areas near the ports. They would be used to form port support activities (PSA) to assist the 7th Group in discharging their equipment. Once a ship was discharged, the equipment would be moved to an intermediate staging area (ISA), then formed into convoys and moved to the STAMA. When the unit main bodies arrived at the APOD, they would be transported to the STAMA to link up with their advance parties and equipment.⁵⁵

While at Dammam, holding areas and ISAs were already in place to house 7,000 troops, and there was a lot of room at the port itself. At Jubayl, these facilities would have to be established in a smaller area. An ISA was established in the desert eight miles from the port. The 7th Group built a tent city and facilities to house 10,000 troops there in about 14 days. Due to port constraints, vehicles would not be staged at the port, as they were at Dammam, but rather would be taken to the ISA and organized there. Additional billeting facilities were also found in Jubayl.⁵⁶

Departure difficulties in Europe caused by dock-worker strikes, bad weather and other unforeseen calamities delayed the corps deployment. While the lead elements of the corps deployed quickly, by the end of December the seaflow was out of synch with the airflow. As early as 14 December, the staging areas already had exceeded the projected capacity of 17,000. In Europe there was a lot of subtle pressure to deploy all the troops and equipment before the 15 January deadline. Often troops arrived before their equipment and had to be housed and sustained for longer than anticipated near the ports. During the last week of December and the first two weeks of January, unit personnel began arriving seven to ten days ahead of their equipment. By 15 January, while 91 percent of the corps troops, including almost all the active component combat elements, were in theater, only 67 percent of their tracked vehicles had arrived.⁵⁷

Additionally, equipment on ships had to be sorted out since, in haste, it was often not packed strictly to ensure unit integrity. Often the equipment from a unit was dispersed among several ships. An average combat battalion had its equipment loaded on seven different ships, which arrived over the course of 26 days. Combat service support battalions were even worse—equipment dispersed among an average of 17 ships arriving over 37 days. Twenty-nine company-sized units had equipment arrive at both ports. This was the biggest cause for delays at the port.⁵⁸

Despite these problems, the reception of the VII Corps proceeded in an orderly manner. The deployment occurred in three distinct phases: 1-27 December, the deployment of support elements, including limited security elements; 28 December-28 January, the corps' main combat elements arrived;

⁵⁵ARCENT Support Command, OPLAN 91-1, 2.

⁵⁶Brown interview.

⁵⁷Schubert and Kraus, *Whirlwind War*, vol. 5, 1956; 1st Infantry Division (Forward), After Action Review, 9-10, 12-13.

⁵⁸Whaley interview; Kindsvatter, "VII Corps in the Gulf War," 9; 1st Infantry Division (Forward), After Action Review, 12, 13-14.

29 January-18 February, arrival of corps round-out capabilities and late-arriving reserve units.⁵⁹ In Table 6 are listed the major units deployed to Southwest Asia from mid-November to 24 February 1991.

Table 6. Major Units Deployed to Southwest Asia,
Mid-November 1990 to 24 February 1991

Headquarters, 475th Quartermaster Group (POL)
Headquarters, 387th Quartermaster Battalion (POL TML OPNS)
Headquarters, 32nd Transportation Group (Composite)
Headquarters, 766th Transportation Battalion (Motor)
Headquarters, 185th Transportation Battalion (Motor)
Headquarters, 369th Transportation Battalion (HET)
Headquarters, 301st Area Support Group
Headquarters, 89th Military Police Brigade (and assigned units) (Assigned to SUPCOM during period)
Headquarters, 800th Military Police Brigade (PW) (and assigned units)
Headquarters, 49th Movement Control Battalion
Headquarters, 111th Ordnance Group
Headquarters, 440th Ordnance Battalion
Headquarters, 416th Engineer Command (Assigned to SUPCOM during period)
Headquarters, 411th Engineer Brigade
Headquarters, 690th Maintenance Battalion
Headquarters, 736th Supply and Services Battalion
Headquarters, 352nd Civil Affairs Command

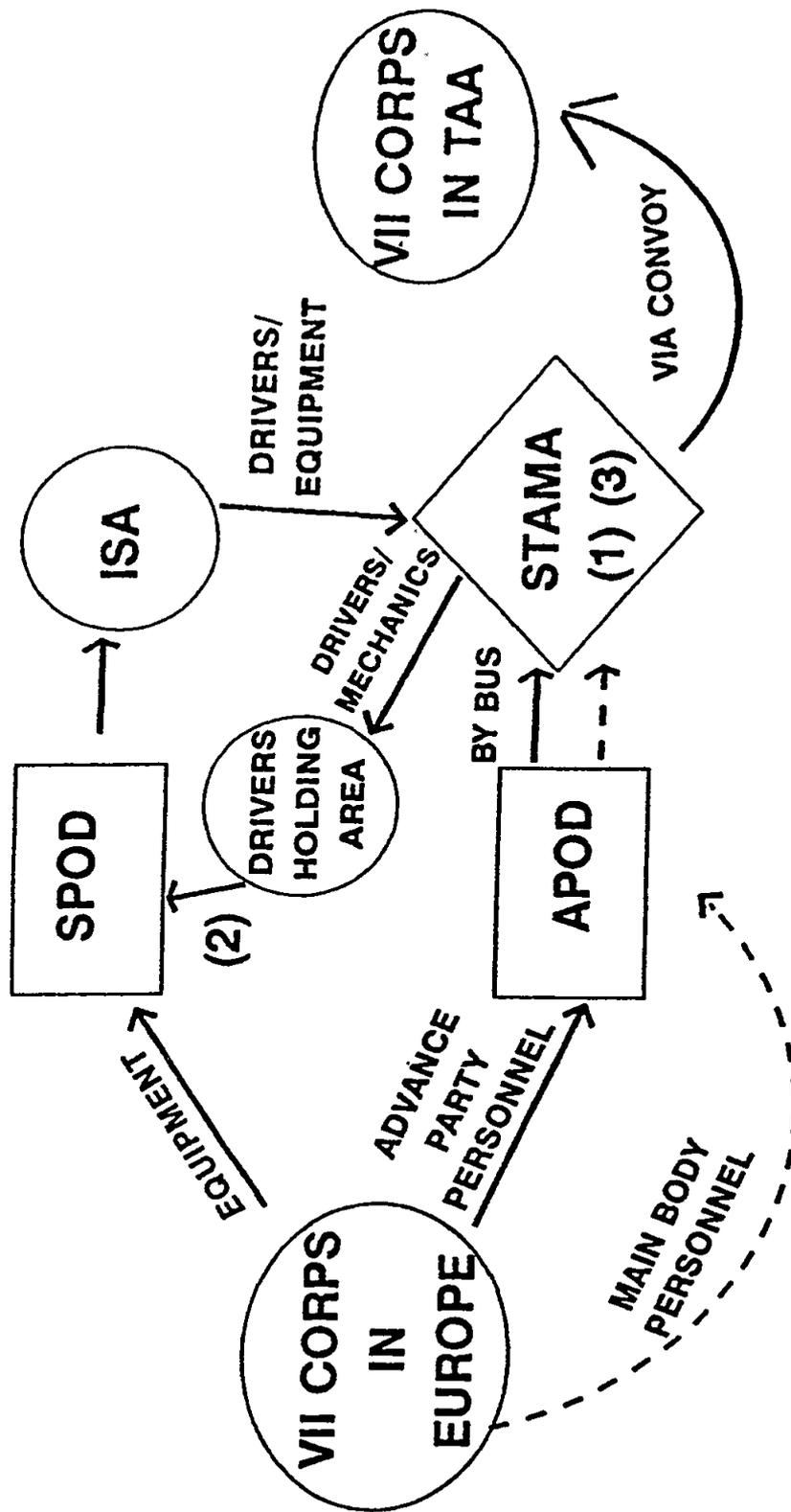
Learning from its own experiences, the SUPCOM tried to have facilities set up in advance for the use of the incoming troops. ISAs were established ahead of time. Some form of entertainment, usually televisions and VCRs would be available to the troops. Hot meals were served and rented vehicles and buses were already lined up to facilitate the units' activities prior to the arrival of their equipment.⁶⁰

While the 7th Transportation Group was responsible for port activities, the corps had to provide assistance. Each division sent a senior officer, usually a brigadier general, to coordinate the port operation. At each port were 750 to 800 troops from the incoming divisions organized as PSAs.⁶¹ These personnel served mainly as drivers and actually drove equipment off the ships and moved it to staging areas.

⁵⁹1st Infantry Division (Forward), After Action Review, 6.

⁶⁰Whaley interview; Kindsvatter, "VII Corps in the Gulf War," 9.

⁶¹Brown interview; 1st Infantry Division (Forward), After Action Review, 4.



NOTE 1: STAMA PARTIALLY ESTABLISHED BY ADVANCED PARTY
 NOTE 2: FORM PORT SPT ACTIVITY AND UNLOAD SHIPS
 NOTE 3: MAIN BODY LINKS UP WITH ADVANCE PARTY AND
 EQUIPMENT IN STAMA

Figure 4. Organization for the Reception of the VII Corps

Initially the corps set up an ad hoc PSA under the corps forward headquarters at the Hotel California facility on the Dhahran airbase to coordinate the airflow, seafloor, and linkup between each. The 1st Infantry Division (ID) (Forward), a European-based brigade preparing to be deactivated, gradually replaced the divisions by first providing drivers, then troops, from two infantry battalions and elements of a brigade headquarters. The 1st ID (Forward) also provided fillers for the deploying units and performed functions not available in the deploying corps' structure.⁶²

By late December, the need for a more self-contained PSA organization was recognized and the Headquarters, 1st ID (Forward) itself, under Brigadier General William Mullen, was sent in from Germany to assume the mission. The duties of this unit included off-loading and staging equipment, coordinating unit billeting in the staging area, managing the movement of the units to the TAAs, and coordinating support and training requirements for the arriving units.⁶³ The organization of the PSA headquarters is shown in Figure 5.

Due to the seafloor, the 3rd Armored Division was diverted from Jubayl, where the 1st Armored Division was still off-loading, to Dammam. This shift, though on relatively short notice, went off without a hitch.⁶⁴

The increased billeting requirements were handled in various ways. The Jubayl ISA was expanded to house 10,000 when additional tents became available. In the Dammam-Dhahran region, which housed as many as 30,000 troops in waiting areas for periods of up to two weeks, a tent city to accommodate 6,000 was built at the port. The XVIII Corps let part of its Cement City tent city, outside Dammam, be used. In the city of Khobar, near Dhahran, was a large, unoccupied, public high-rise housing complex. There were 219 apartment buildings with more than 4,100 individual apartments in this facility, called Khobar Towers. Negotiations were ongoing to allow U.S. forces to use a portion of this facility. Between 14 November and 19 December, 62 of the Khobar Towers buildings, on the western side of the complex facing the Dhahran airfield, were opened to house the influx of VII Corps personnel. At one point in early January 1991, some 23,000 VII Corps soldiers were housed there. The opening of this complex decreased the numbers of soldiers living in tent cities, and it eventually became the billets for the majority of the personnel permanently assigned to the Dhahran area. Reliance on leased facilities in the Dhahran area, however, did not diminish.⁶⁵

The delays caused by the lack of unit integrity among ship loads was to exacerbate the shortage of HETs needed to move the units from the ports to the tactical assembly areas. The SUPCOM had accurately estimated the transportation requirement in November, but there was a fixed supply of

⁶²1st Infantry Division (Forward), After Action Review, 5, 7.

⁶³Kindsvatter, "VII Corps in the Gulf War," 11; 1st Infantry Division (Forward), After Action Review, 7.

⁶⁴Brown interview.

⁶⁵Epley, 34-35; 1st Infantry Division (Forward), After Action Review, 33.

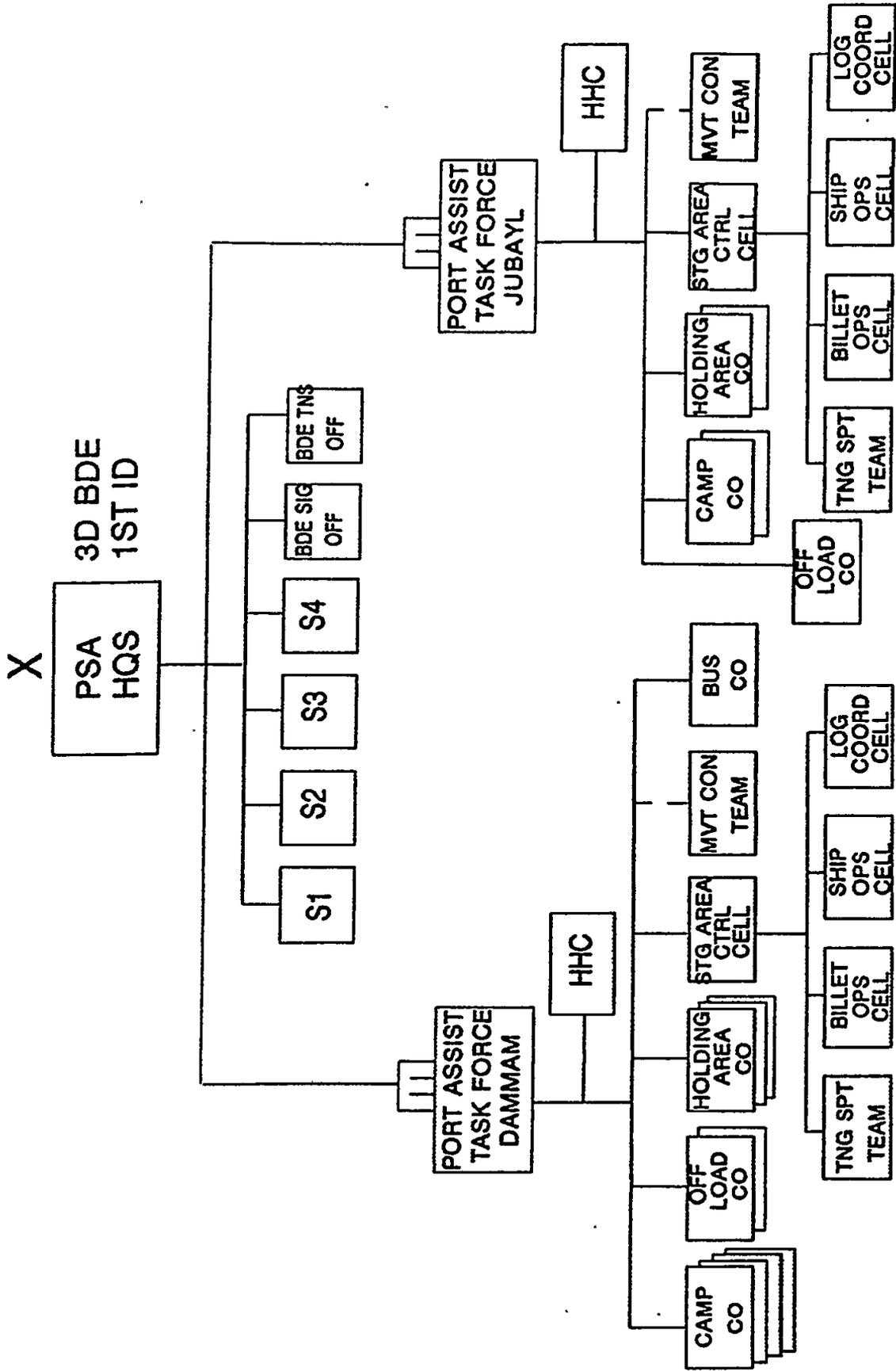


Figure 5. Port Support Activity Organization

available vehicles—fewer than were needed.⁶⁶ The SUPCOM and VII Corps found themselves "squeezed between an inflow not controlled and a constrained outflow."⁶⁷ The transportation backlog started on 7 January. By then, the camps at the ports were already near their peak occupancy level. The transportation problem forced troops already waiting at the port to wait longer. The average unit at Dammam waited at the port 22 days.⁶⁸

As of 17 January, roughly 116 tanks, 232 infantry fighting vehicles, and 176 self-propelled howitzers were still waiting for transportation. Finally, on 22 January, some units of the 1st and 3rd Armored Divisions began to road march on their own tracks.⁶⁹ Two mechanized infantry battalions from the 1st Armored Division completed the 400-mile road march and were rewarded with an extra week to train in the desert.⁷⁰

The HETs caused confusion even after the equipment moved out of the port. Since most of them were host nation vehicles driven by civilian drivers, normal military convoy rules did not apply. The only actual control was a point at the end of the route that stopped the HETs and escorted them into the assembly areas.⁷¹

Despite such difficulties, the deployment continued. The 2nd ACR, which had been in country since late December, covering the corps tactical assembly areas, moved to its own assembly area on 23 January. On 28 January, the 1st Armored and 1st Infantry Division (Mechanized) occupied their respective assembly areas, followed by most of the 3rd Armored Division on 5 February.⁷² The corps assembled in the desert in large assembly areas located around the TAPLINE road between Logbase Bastogne and KKMC. This was west of the assembly areas and defensive positions occupied by the XVIII Airborne Corps near Logbase Bastogne. These locations are shown in Figure 6. Logbase Alpha supported the corps. Near Logbase Alpha, the 226th ASG established four STAMAs, one for each division and the 2nd ACR. On 1 January 1991, the 2nd COSCOM assumed responsibility for these STAMAs.⁷³

⁶⁶Ibid., 6.

⁶⁷Ibid., 33.

⁶⁸Ibid., 13.

⁶⁹Kindsvatter, "VII Corps in the Gulf War," 11.

⁷⁰Vogel, "Metal Rain," 12.

⁷¹Ibid.

⁷²Kindsvatter, "VII Corps in the Gulf War," 16.

⁷³226th ASG, FRAGO 91-1-9, 4 January 1991, U.S. Army Center of Military History, Washington, D.C.

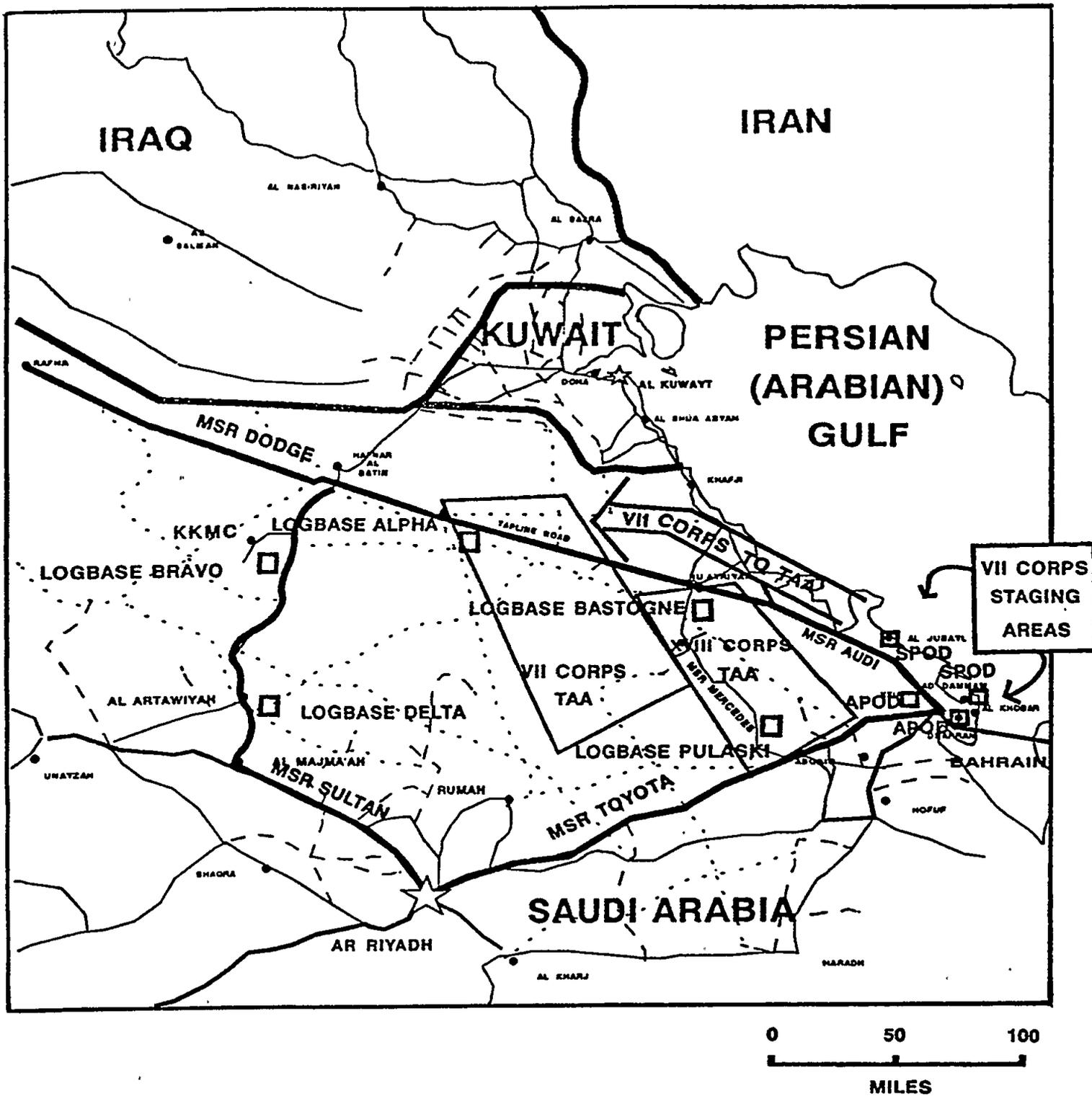


Figure 6. Logistical Support Structure Prior to the Movement of the Corps

On 17 January 1991, the air campaign, converting Desert Shield into Desert Storm, began. As the bombs went off to the north and Scud missiles were targeted towards Saudi Arabia, the last parts of the VII Corps deployment continued. It was not until 7 February that the last elements of the 3rd Armored Division were deployed, and the last major unit attached to the corps, the Army National Guard's 196th Field Artillery Brigade, was not deployed until 21 February.⁷⁴

Between 5 December and 18 February, the VII Corps deployed 50,000 vehicles, including 6,000 armored vehicles, and 107,000 troops passed through the aerial ports and were billeted in staging areas. Thirty-five hundred containers of unit equipment and essential supplies were brought into the theater. Nine hundred convoys took the troops, vehicles, and containers 330 miles into the desert into TAAs.⁷⁵ While the deployment had taken 97 days from start to finish, due to shipping and TPFDL decisions, the mass of the corps arrived during a 45-day period. In fact, most of the 6,000 tracked vehicles disembarked during a three-week period.⁷⁶ Whereas during the XVIII Corps deployment, an average of 1,168 soldiers a day entered the theater, during the VII Corps deployment, the average was twice as high—2,330.⁷⁷

This compressed deployment of a heavy armored force from two continents to a third was unprecedented in modern military history and provided a graphic example of the United States' ability to project military power around the globe.

Sustainment and Special Programs

The final subphase of Phase Alpha was sustainment. Despite the effort going into the deployment of the VII Corps, routine theater sustainment activities for EAC units, the XVIII Corps, and for the arriving VII Corps units had to continue. In the east, the 1st COSCOM continued to support the XVIII Corps, backed up by the 593rd ASG, which also supported the EAC units. In the northwest, until units became self-sustaining, the 226th ASG provided the support. By 15 January, the 2nd COSCOM came on line to provide support directly to the VII Corps units.⁷⁸

Other programs continued. The M1 tank conversion program was ongoing. Units equipped with older model tanks (M1) armed with the 105mm cannon replaced theirs with newer models (M1A1) armed with a 120mm cannon and a high-quality chemical protection system. AMC originally sent civilian

⁷⁴ODCSLOG, *Operation Desert Storm Sustainment*, A-13.

⁷⁵1st Infantry Division (Forward), After Action Review, 2.

⁷⁶Major William L. Brame, "From Garrison to Desert Offensive in 97 Days," *Army*, February 1992, 28; 1st Infantry Division (Forward), After Action Review, 6.

⁷⁷Briefing slide, 22nd Support Command Briefing to the Secretary of Defense, "Theater Logistics Concept," December 1990, U.S. Army Center of Military History, Washington, D.C.; 1st Infantry Division (Forward), After Action Review, 10.

⁷⁸ARCENT Support Command, OPLAN 91-1, 3.

technicians from Anniston (Alabama) Army Depot to Dammam to refurbish tanks taken out of prepositioned warehouses in Europe to replace the M1s of the 24th and 1st Cavalry Divisions and 3rd Armored Cavalry Regiment with the more modern warehoused M1A1s. Additional modifications, including mounting of sights, painting, and the installation of additional armor plating, was accomplished. German technicians were also on hand to assist with preparing the German-made 120mm cannons on the M1A1s.⁷⁹

The introduction of the VII Corps into the theater meant these additional forces needed the M1A1. By the beginning of the ground campaign, 948 tanks had been modernized, including all of the XVIII Corps and all but two battalions of the VII Corps' 1st Infantry Division (Mechanized).⁸⁰ Also issued were 836 improved versions of the Bradley infantry fighting vehicle, the M2A2. VII Corps' 2nd ACR used them instead of its older M3A1 cavalry fighting vehicles.⁸¹

The arrival of the VII Corps, with their vehicles painted green, prompted the implementation of a massive repainting program to convert the vehicles to desert tan. In early December, AMC's USASG in Dammam was given the project with only three days' notice. USASG purchased equipment on the local economy, received labor and site support from the 593rd ASG, and promptly established sites at Dammam and Jubayl. After the air war commenced, two additional sites were established in the desert at the TAAs of the 1st and 3rd Armored Divisions.⁸² More than 10,000 vehicles were painted, including 8,600 VII Corps vehicles, using some 30,000 gallons of paint.⁸³ Painting was done as late as 22 February, when vehicles of the VII Corps tactical command post were painted in a field location.⁸⁴

AMC support permeated an army equipped with complicated products of the high technology era. Logistics Assistance Representatives (LARs) and personnel from government contractors were assigned to each major unit to assist soldiers in maintaining their equipment. Chemical equipment experts from Pine Bluff (Arkansas) Arsenal tested and repaired more than 12,000 pieces of chemical defense equipment in the theater. As problems with the HETs arose, AMC organized special roving teams to correct mechanical problems with the HETs on the spot. At one location, 52 inoperative HETs were put back into running order within a couple of days.⁸⁵

⁷⁹U.S. Army Materiel Command, Command Report Operation Desert Shield/Storm, AMC-SWA, 31 March 1991, U.S. Army Center of Military History, Washington, D.C., 2.

⁸⁰Kindsvatter, "VII Corps in the Gulf War," 7.

⁸¹Ibid.

⁸²U.S. Army Materiel Command, Command Report, Tab B, After Action Report, 7.

⁸³Headquarters, 22nd Support Command, 22nd Support Command Operation Desert Shield and Desert Storm Summary of Key Statistics, 12 June 1991, U.S. Army Center of Military History, Washington, D.C., 2; 1st Infantry Division (Forward), After Action Review, 2.

⁸⁴Kindsvatter, "VII Corps in the Gulf War," 4.

⁸⁵U.S. Army Materiel Command, Command Report, Tab B, After Action Report, 8.

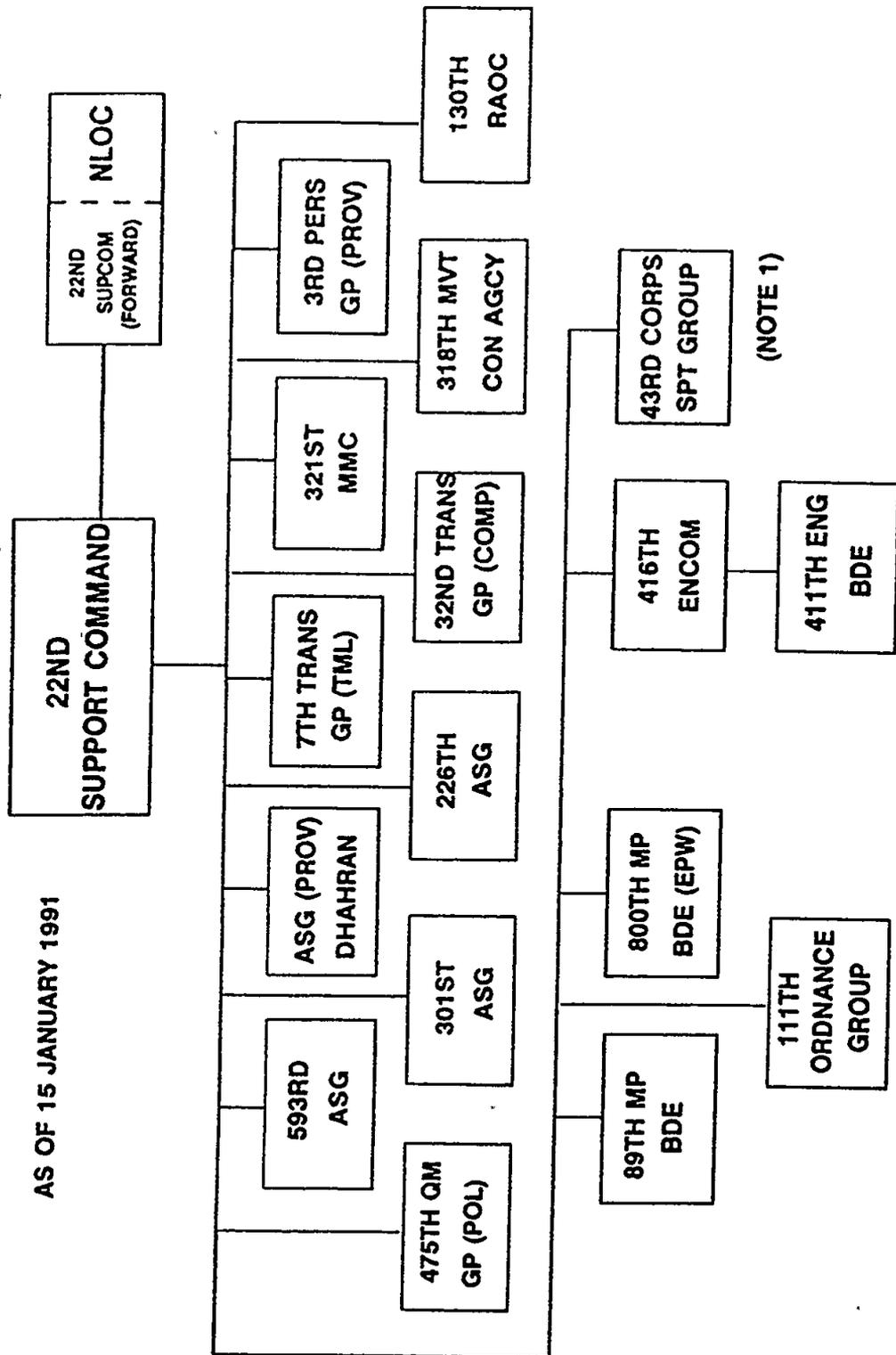
With the support of such Army agencies as AMC, the support command was able to come to grips with the whole spectrum of problems associated with supporting such a large force so far from home.

On 16 December 1990, the provisional ARCENT Support Command was formally redesignated as the 22nd Support Command, assuming the name and lineage of an Army unit from the Vietnam era. Along with the redesignation, the command was given a modified table of equipment and allowances, enabling it to requisition personnel to fill spaces for the first time ever. The days of stealing people from subordinate units were virtually over.⁸⁶

The logistics force structure continued to expand as more units were brought into the theater. The structure of the 22nd Support Command on 15 January 1991 is shown in Figure 7. Even units that arrived with their whole CAPSTONE trace soon discovered that such peacetime configurations were irrelevant in the sands of Saudi Arabia. Units showed no loss of effectiveness, however, by working with unfamiliar units.⁸⁷ The new deployment also involved an expansion of the reserve component call-up. Even long-established units, such as the 2nd COSCOM, required extensive augmentation by reserve units. The COSCOM had long depended upon German host nation support and the tremendous infrastructure of Western Europe. Upon deployment, the strength of the COSCOM grew from 8,000 to more than 24,000, most of it from the 166 reserve component units that were attached to the VII Corps.

⁸⁶Headquarters, Forces Command, Permanent Orders 223-1, 14 December 1990.

⁸⁷Pagonis interview, 8 November 1991.



NOTE 1: ATTACHED TO PROVIDE SUPPORT TO 1ST CAV DIV AND TIGER BRIGADE WHILE IN THEATER RESERVE

Figure 7. 22nd Support Command Organization, 15 January 1991

Part Two: Desert Storm: The Ground Campaign

Chapter 4

Preparing for the Ground Campaign

It was a gigantic accomplishment and I can't give credit enough to the logisticians and transporters who were able to pull this off.

—General Norman Schwarzkopf, 27 February 1991¹

The Challenge

For the logisticians of Operation Desert Shield and Desert Storm, one challenge followed another. The deployment of the VII Corps had not even been completed when the problem of supporting preparations for the ground campaign came up. In the five-phase logistical plan promulgated by the 22nd Support Command, this was Phase Bravo—the movement of the corps to their attack positions and the establishment of additional logbases to support the scheme of maneuver of the ground attack forces.

The basic difficulty with these movements was twofold: time and geography. There was a very narrow 21-day window in which to move the corps and establish the forward logbases. This was due to the need to deceive the Iraqis, who had responded to the initial limited U.S. movements around KKMC by redeploying some of their forces into the desert west of Kuwait.² Accordingly, General Schwarzkopf would not allow any major movements west of KKMC until the air campaign commenced. But once it did commence, the supply buildup and troop movements had to be completed no later than 31 January, since 1 February 1991 had been selected as the earliest possible date for G-Day, the commencement of the ground offensive. This date was soon moved to 16 February, due to time delays in the arrival of the VII Corps. G-Day was somewhat flexible, based on the effectiveness of the air campaign. Nevertheless, the ground forces had to be ready to go by 15 February.³

¹Richard Pyle, *Schwarzkopf in His Own Words* (New York: Signet, 1991), 242.

²Donnelly, "General's War," 15.

³Briefing slides, ARCENT Logistics Briefing, 28 December 1990, U.S. Army Center of Military History, Washington, D.C.; briefing slides, OPOD ODS 001 MAPEX, December 1990, U.S. Army Center of Military History, Washington, D.C.; COMUSARCENT OPLAN ODS 001, 17.

Geography was also a problem. The movements were limited to the two routes described in the previous chapter. Additionally, the scheme of maneuver was the inverse of the manner in which the two corps were placed in their TAAs. The XVIII Corps was to the right of the VII Corps, but in the plan for the ground offensive, the XVIII would be on the VII's left. To get the XVIII Corps there required a movement of up to 540 miles for the farthest unit, the 82nd Airborne Division.⁴ The VII Corps was still moving up from the port to its TAAs, a movement that passed through the very routes the XVIII Corps would need to move. In terms of geography, the corps would have to cross each other's paths to reach their start positions.

December was a month of meetings and high-level briefings for the leaders of the major units slated to be involved in the ground campaign. First, plans were briefed to the major commanders within CENTCOM. Then, after adjustments based on guidance from these commanders, they were briefed again to the two top men in the Defense Department, the Secretary of Defense and the CJCS.

The corps commanders briefed first before Christmas. On 27 December, General Pagonis briefed the theater logistics concept to the Secretary, Mr. Dick Cheney, and to the CJCS, General Colin Powell.⁵

During the same period, ARCENT held a map exercise (MAPEX) to examine the plan in detail and make any adjustments, both to tactical operations and to logistical support operations. Timetables for the movements of the corps and the establishment of two additional forward logbases west of KKMC were finalized.⁶

The original requirement was to complete the movement of the corps in 14 days. A special planning group was formed with the SUPCOM transportation planner and representatives from ARCENT and the 32nd Transportation Group. After extensive detail work, 21 days was developed as a more realistic estimate of the time needed to move the corps and supplies. When briefed to Schwarzkopf, he readily accepted the added week, but was firm about completing the movement in 21 days.⁷

By the end of December, commanders and staff officers throughout ARCENT and CENTCOM were faced with the last-minute anxiety that was coupled with their realization that after 15 January, a shooting war could be at hand. Doubts were raised in the logistics arena. Some felt more trucks were needed or that the deception plan had to be abandoned to ensure that the logbases could be stocked adequately. These doubts soon reached Schwarzkopf's ear. He did not like what he was hearing. Accordingly, on 29 December, he called his staff together with Yeosock and representatives from the corps. He had

⁴Briefing slides, "Theater Logistics Concept" briefing for the Secretary of Defense, 27 December 1990, U.S. Army Center of Military History, Washington, D.C.; briefing slides, MAPEX.

⁵22nd Support Command, Chronology, 6.

⁶Schubert and Kraus, "Whirlwind War," 22; briefing slides, MAPEX.

⁷Major Paul Willis, "Theater Linehaul Transportation Operations During Desert Shield and Desert Storm," TMs, 1991, U.S. Army Center of Military History, Washington, D.C., 9.

Pagonis flown into Riyadh to brief the logistics plan personally. Pagonis had already briefed the plan, but before the emphasis was on "what." This time it would be on "how."

After the briefing, Schwarzkopf went around the room asking who supported the plan. No hands were raised. Piqued at this sudden opposition to a plan that had been briefed to the Secretary of Defense, and undoubtedly to the President himself, Pagonis stated that he would make it happen, and that everyone in the room would help. In response, as a dramatic gesture, Schwarzkopf asked Pagonis to sign a contract that he would make it happen; Pagonis signed the briefing slide that outlined the unit movement timetables. Pagonis wrote: "Logisticians will not let you or our soldiers down."⁸ Schwarzkopf promptly placed the slide under the glass on his desk. Schwarzkopf relished the doubts raised by his own subordinates. He felt that if they didn't think it could be done, then neither would the Iraqis.⁹

The contract had a great psychological effect on the command. Everyone now recognized the seriousness of the situation and worked together as a team to accomplish the monumental tasks facing them. The CENTCOM and ARCENT staffs and the corps got behind Pagonis so that he could meet his pledge. In the SUPCOM, Pagonis called his commanders and staff together and had them disseminate the contract story throughout the command. Soon soldiers were pushing to help their commanding general meet his commitment.¹⁰

The doubts were well founded. In the period between 17 January (D-Day—the commencement of the air campaign) and 15 February, the logisticians would have to accomplish four concurrent tasks, each monumental by itself—the completion of the reception of the VII Corps; the establishment of two additional forward logbases, one to support each corps; the movement of the two corps; and the continued sustainment of the force as a whole.

To do all this, control of transportation assets facilities and routes became very important. The 318th Movement Control Agency, Colonel Peter Langenus commanding, was designed to do just such planning and coordination.

The 318th deployed a movement control battalion (MCB), a movement control center (MCC), and 33 movement control teams to facilitate movement control throughout the theater. The MCB and MCC had area responsibilities. The 93rd provisional battalion was responsible for the southern area, including Dhahran, Jubayl, Dammam, and Riyadh. The 49th MCC was responsible for the northern area. Units requested transportation assistance from their supporting movement control team, which in turn tasked

⁸Briefing slide, "Unit Movements," 29 December 1990, U.S. Army Center of Military History, Washington, D.C.; Lieutenant General William Pagonis, interview by the authors, 19 March 1992 (hereinafter Pagonis interview, 19 March 1992).

⁹Otto Friedrich, ed., *Desert Storm: The War in the Persian Gulf* (Boston: Time Warner, 1991), 73.

¹⁰Pagonis interview, 19 March 1992.

one of the two transportation groups for vehicles. Movement control teams were made responsible for one location, usually a port or a logbase.¹¹

The 318th created a theater movement control center (TMCC), which coordinated all convoy traffic. The TMCC was formed from the 318th's Highway Traffic Division's Traffic Control Section. It also included liaison officers from the MCCs of both corps, the 93rd MCB, and had direct access to the military police, engineers, and the host nation support cell at SUPCOM. Units requested movement clearances through their MCB or MCC (for the corps). The requests in turn were forwarded to the TMCC to coordinate any conflicts. Deconflicting convoys became a major management activity of the TMCC. Closing reports were routed through these same channels once a convoy reached its destination. Lack of long-range radios in the movement control teams sometimes delayed the receipt of closing reports.¹²

Blocks of time were issued to the two corps to perform their moves. All other movements had to be coordinated around these moves. The time blocks were detailed in ARCENT's OPLAN Operation Desert Storm 001. The XVIII Corps was assigned 16 consecutive hours per day on the northern route and two 8-hour blocks on the southern route. No vehicle or convoy could start a movement outside its assigned block. The corps MCC in turn established detailed plans.¹³

One of the biggest potential problems facing the transporters, with the advent of the air campaign on 17 January, was the possible loss of large numbers of host nation drivers. These civilians, mostly from countries other than Saudi Arabia, could hardly be expected to be willing to drive their vehicles into places where enemy action could place them at risk. One of the reasons the Army requested filler military drivers was as a backup in case there was a mass defection by civilian drivers upon the commencement of hostilities.¹⁴ By 25 January 1991, a total of 1,789 military drivers had arrived in theater to provide a pool of replacements.¹⁵

A defection by civilian drivers did not occur, however. The reasons were both cultural and psychological. Psychologically, the host nation truck companies had prepared the drivers by showing care for their welfare. The drivers' greatest fear was chemical attack. Accordingly, if the drivers signed pledges to drive during hostilities, they were issued gas masks. The mask had to be issued as part of the truck's equipment since it was against Saudi government policy to issue masks to expatriate workers. Sixty-five percent of the drivers signed up. Once signed, actual absenteeism was low. Middle Eastern cultures, where most of the drivers were from, placed great value on their word as bond. After the initial

¹¹318th MCA, Command Report Operation Desert Storm, 1 April 1991, U.S. Army Center of Military History, Washington, D.C., 3.

¹²318th MCA, Command Report, Highway Traffic Division After Action Report Narrative, 1; Langenus, "Moving an Army," 46-47.

¹³Langenus, "Moving an Army," 50; Willis, "Theater Linehaul," 10.

¹⁴Velton interview.

¹⁵22nd Support Command, Chronology, 8.

Scud threat somewhat dissipated, most of the drivers were willing to go anywhere. The civilian drivers played an important part in the movement of supplies to the logbases.¹⁶

The civilian drivers nevertheless were hard to control. Planning based on them had to take into account that about 15-20 percent did not return from a mission on time.¹⁷ Many owned their own trucks and were under subcontract to a major contractor. They therefore did not feel the urgency to maintain priority schedules.

In final preparation for Phase Bravo, the SUPCOM conducted a two-day logistics exercise (LOGEX), which included all commanders down to battalion-level, staff officers, and representatives from the corps and ARCENT. Every detail of plans was coordinated and finalized during the exercise, and subordinate commanders were briefed on how they were going to execute their assigned tasks. After the LOGEX, Pagonis conducted a detailed briefing to all support command company commanders on the overall concept and standards of performance. When the bombs started falling, the logisticians were ready.¹⁸

The Corps Move

The XVIII Airborne Corps had deployed behind the pan-Arab forces directly opposite the Kuwaiti border. An elaborate defense plan was developed and constantly updated for the defense of eastern Saudi Arabia. When the VII Corps deployed, its units were placed in assembly areas to the left, or west, of the XVIII Corps.

The VII Corps, with its three heavy divisions, had been assigned the main attack. During the ground campaign, the XVIII Corps, with its lighter units, was now to be placed on the VII Corps' left to cover its flank and seal the Kuwait Theater of Operations off from interference from hostile forces deployed in the rest of Iraq. As such, the corps had to be redeployed completely around the VII Corps from its right to its left. In order to be ready for G-Day, this had to be accomplished while the VII Corps was moving and while the supply buildup was continuing.

Given the limited routes, the time frame, and the need to move supplies concurrently with the movement of the corps, the corps' movement was indeed a challenge, but a manageable challenge.

The XVIII Airborne Corps movements were complicated. The move was over a great distance—as much as 540 miles. The corps actually had a defensive sector which had to be handed over to the U.S. Marines. The corps units were scattered over a large geographical area. The 82nd Airborne Division, for example, had a brigade north of Riyadh, one at Al Hassa, 100 miles south of Dhahran, and a brigade north of Dhahran. The 101st Airborne Division (Air Assault) had a brigade with the 1st Cavalry Division at Hafr al Batn covering MSR Dodge from an Iraqi spoiling attack. Another brigade was forward in the

¹⁶Velton interview.

¹⁷Langenus, "Moving an Army," 43.

¹⁸Willis, "Linehaul Transportation," 6-7.

sector to be given up to the Marines, while the third was near KFIA. Organic transportation assets were limited. The heavy division, the 24th, was 150 miles north of Dhahran, between the two 101st brigades.¹⁹

The VII Corps was vehicle heavy and had a much shorter route to get to its attack positions—an average of 80 miles. Accordingly, once its elements were closed into their TAAs, the corps would conduct a tactical road march with its own vehicles to its forward assembly areas (FAA).²⁰

Two major problems with the VII Corps movement were identified. The first was that MSR Sultan would have to be crossed by the 2nd ACR and the 1st and 3rd Armored Divisions and their supporting units south of Hafr al Batn. While the corps crossed, convoys supplying the two new forward logbases and sustaining the XVIII Airborne Corps would not be able to use that route. The second problem was that the corps had to cross MSR Dodge itself as it swung north into its FAAs. In addition to the same anticipated problems with closing this vital route as would be faced on MSR Sultan, MSR Dodge had the above-ground TAPLINE oil pipeline, which paralleled it to the south and which also had to be crossed.²¹

To solve these problems, the engineers were put to work. Around Hafr al Batn, they built a bypass road that passed south of KKMC and then back up to MSR Dodge between Logbases Charlie and Echo. Use of this bypass would allow convoys to move to Logbases Bravo, Charlie, and Echo without disrupting or being disrupted by the VII Corps move.²² Of course civilian traffic would have to be stopped in any event. To protect the oil pipeline, the engineers constructed huge piles of sand over the line in 50 places to provide crossing sites. MSR Dodge itself would have to be blocked to traffic while whole divisions crossed it on line. With the bypass road operation, little would be disrupted. A plan was even postulated for the engineers to build an overpass with bridges, over which convoys would pass even as the VII Corps crossed underneath. That plan never left the drawing-board stage.²³

The movement of the XVIII Corps was executed well despite the complexities involved. The 185th Transportation Battalion of the 32nd Group provided medium truck lift to the corps through its four companies. Additional companies were added as necessary to facilitate the move. A total of 22 truck

¹⁹James Blackwell, "Georgia Punch: 24th Mech Puts the Squeeze on Iraq," *Army Times*, 2 December 1991, 13-14; Katherine McIntire, "Speed Bumps: 82nd Airborne's Shaky Line in the Sand," *Army Times*, 21 October 1991, 14; Sean Naylor, "Flight of Eagles: 101st Airborne Division's Raids into Iraq," *Army Times*, 22 July 1991, 11-12; Sean Naylor, "Home of the Brave," *Army Times*, 27 January 1992, 14.

²⁰COMUSARCENT, OPLAN ODS 001, D-2.

²¹Langenus, "Moving an Army," 49-50.

²²Ibid.; briefing slide, MAPEX.

²³Langenus, "Moving an Army," 50; Pagonis interview, 19 March 1991; Willis, "Linehaul Transportation," Enclosure 10.

companies were ultimately employed to move the corps. A convoy consolidation point for the northern route was established at Logbase Bastogne.²⁴

The 3rd Armored Cavalry Regiment moved its 2,400 vehicles down the TAPLINE from Nu'ayriyah to the west 560 kilometers during the period 17-25 January. The 24th Infantry Division (Mechanized) moved in 67 convoys of about 150 vehicles each. During the movement, all vehicles were fully loaded, and the crews were ready to fight as soon as they got to their new assembly areas. The vehicles mounted on HETs had their crews inside them with weapons pointed skyward. The move took 10 days, 16 hours a day.²⁵

Intra-theater air transportation proved vital to the movement of the XVIII Airborne Corps. The 120 C-130 transport aircraft executed 1,340 sorties of personnel and equipment to move the air-portable elements of the 82nd and 101st Divisions from three different locations to the small airfield at Rafha during the period 17-24 January. A patch of MSR Dodge was also cleared and used as an airstrip. This support from the Air Force was managed through Army operations channels and overseen by the Movements Division of the 318th MCA.²⁶

The 101st Airborne Division (Air Assault) already had a brigade near Hafr al Batn to support the 1st Cavalry Division on 9 January. Beginning on 18 January, the rest of the division moved in seven days by ground convoys and by C-130 transport aircraft 540 miles to a new assembly area 45 miles southeast of the town of Rafha, six miles southwest of the Iraqi border. Here it was joined by the detached brigade.²⁷

Vehicle convoys for both the 101st and 82nd took the southern route through Riyadh. The 82nd moved with its 44 tracked and 2,559 wheeled vehicles. The 101st followed with 3,640 wheeled vehicles over a seven-day period. While the two light divisions moved on the southern route, the 3rd ACR and 24th Division moved on the northern route. Convoys were carefully planned and could use the roads only during the blocks of time allocated to them by the TMCC. What troops could not be carried by air were moved in a variety of host nation buses, which proved to be the primary means of transporting troops throughout the theater. By 10 February, the XVIII Airborne Corps was in place in its FAAs.²⁸

²⁴32nd Transportation Group, *Command Report*, 2.

²⁵Naylor, "Home of the Brave," 14; Blackwell, "Georgia Punch," 20; Margot C. Hall, ed., *The Victory Book: A Desert Storm Chronicle* (Fort Stewart, Ga.: 24th Infantry Division [Mechanized], 1991), 78-79.

²⁶Langenus, "Moving an Army," 48-49; 318th MCA, *Command Report*, Movements Division Desert Storm After Action Report, 2.

²⁷Naylor, "Flight of Eagles," 12.

²⁸Langenus, "Moving an Army," 48; briefing slide, ARCENT Desert Storm After Action Review, 12 March 1991.

The VII Corps movement was complicated by the late arrival of the units. While the XVIII Corps shifted westward, major elements of the VII Corps were still arriving at the ports. With each delay, the planners moved back a little the window for the corps' movement.²⁹ Once all the major elements were at their TAAs, the movement was executed.

The corps initially moved small security elements to its new sector at the beginning of February.³⁰ The main body of the corps moved from 14 to 17 February. Most elements moved as part of a corps exercise, which had the units advance to their new FAAs in tactical formation.

The 1st Infantry Division (Mechanized) moved on 14 February in a 70-mile road march that was completed in less than 24 hours. The move was done in tactical formation. The 1st ID linked up with the 1st UK Armoured Division, which was to pass through its lines after the Iraqi defenses were breached. The 2nd ACR led the western force of the VII Corps by moving the 75 miles to its attack position on 14 February as a dress rehearsal for its movement once the offensive began. The regiment was in place in front of the western corps forces on 16 February. The 1st Armored Division road marched the 100 miles to its FAA in two days starting on 14 February. The 3rd Armored Division moved last, commencing on the 16th. All corps elements were in place by 17 February.³¹

Despite the efforts to minimize disruption on MSR Sultan, the bypass road proved to be unusable when heavy rains turned it into mud. Detailed planning on the part of the 318th MCA and the corps MCC made up for the setback. Specific time blocks were designated when the corps would cross Sultan and convoys were adjusted. As each division approached its crossing sites, movement control teams were waiting to halt civilian and military traffic. The crossings were shielded from view by a series of *shamals*—Saudi winter sandstorms.³²

The crossings across MSR Sultan created major problems with local Saudi-U.S. relations. The Saudis were not informed ahead of time as to when the U.S. crossings would occur. This resulted in Saudi troops not getting fed several meals because of the delays on the highway. Saudi food was prepared at KKMC and trucked to them for each meal. The crossings also stopped produce from getting north to several villages, including Hafr Al Batn. This created excitement in the civilian sector since the civilian population purchased fresh food for each meal, and the crossings created temporary shortages. The villagers did not know the shortages were temporary, of course, and the disruption caused

²⁹Briefing chart, ARCENT Logistics Briefing, 28 December 1990.

³⁰Jim Tice, "Coming Through": The Big Red Raid," *Army Times*, 26 August 1991, 18.

³¹Ibid.; Vogel, "Metal Rain," 12; Steve Vogel, "A Swift Kick: 2nd ACR's Taming of the Guard," *Army Times*, 5 August 1991, 18.

³²Langenus, "Moving an Army," 50-51.

consternation. The lack of coordination resulted in heated discussions between U.S. and Saudi military/civilian authorities.³³

The crossing of MSR Dodge was done by each division on line with the military police and movement control teams blocking each end of the road.³⁴

By 7 February, exactly 21 days after its start, the corps deployments were completed. Only some late-arriving VII Corps equipment was still to be unloaded at the port.³⁵ Both corps were in position, conducting training, and preparing last-minute adjustments to their tactical plans. Figure 8 depicts the movement of the corps. While they prepared for G-Day, the logisticians continued the supply buildup essential to support the campaign.

Moving the Supplies

Concurrently with the movement of the corps, the supply buildup continued. West of KKMC, new forward logbases needed to be established, Charlie to support the XVIII Corps and Echo to support the VII Corps. Only limited stocks of fuel and rations had been allowed to be prepositioned at these sites before the beginning of the air campaign. The desired stockpiles were 60 days worth of rations, fuel, and ammunition.³⁶

The logbase was not a concept found in normal doctrine. Logistical doctrine called for the establishment of support areas with CSS assets located near MSRs. The units would be found on small bases clustered together for defensive purposes.

A combination of a lack of cover, the hostile environment of the desert, and the great distances made logbases the best solution to support and sustain the combat forces. Pagonis and Schwarzkopf came up with the concept by reviewing previous military operations in desert regions, particularly the expeditions of Alexander the Great and the German-British campaign in North Africa during World War II, where the British used light logistical bases to keep supplied, while the Germans were forced to fall back repeatedly on their supply bases.³⁷ The goal of the logbases was to provide needed service support as far forward as possible so that the operations by the combat units would not be delayed by a lack of supplies or a need to move the supplies forward.

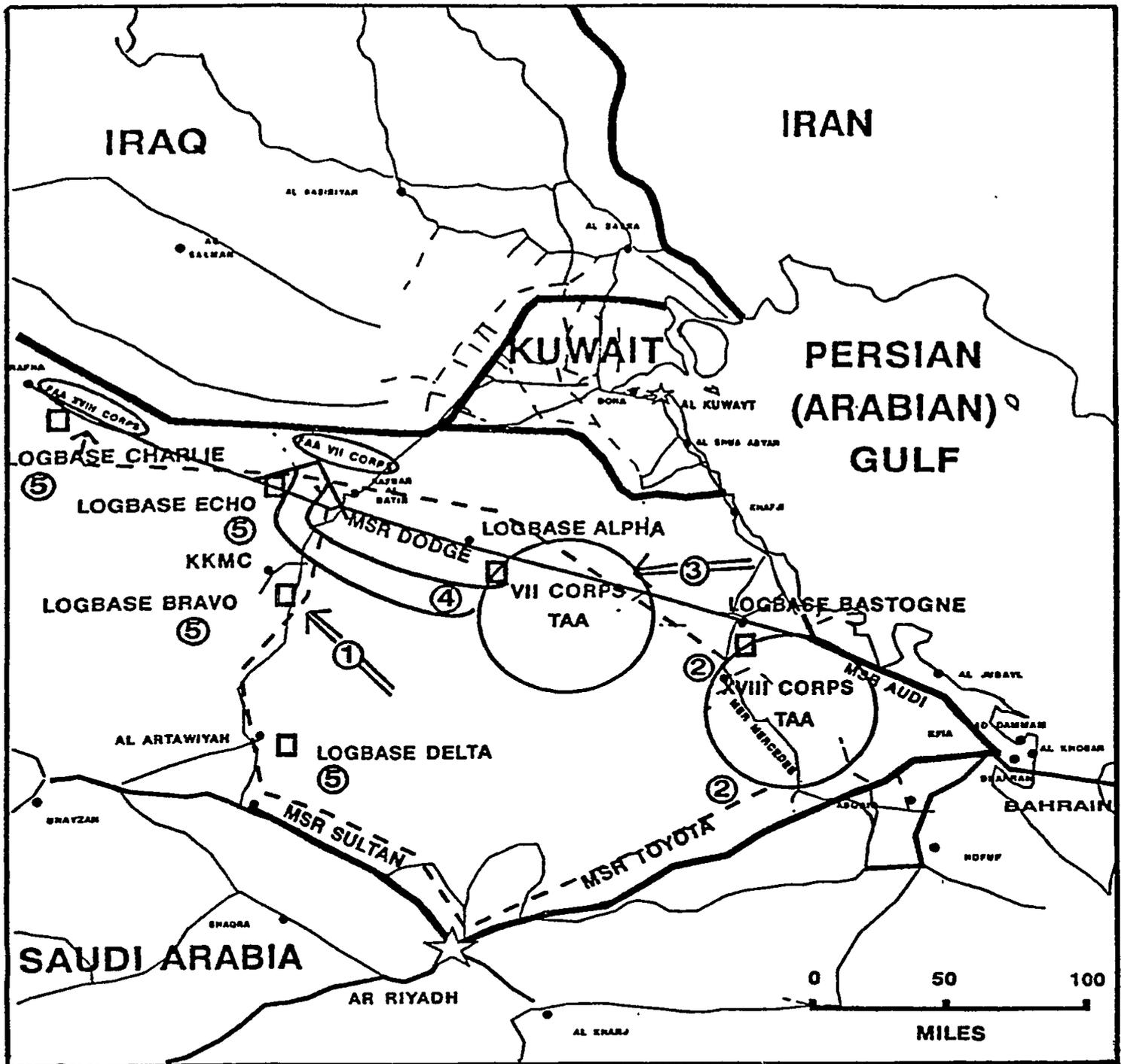
³³Colonel Robert H. Sholly, Chief, Histories Division, U.S. Army Center of Military History, Washington, D.C., note to authors.

³⁴Langenus, "Moving an Army," 50-51.

³⁵Willis, "Linehaul Transportation," 10.

³⁶Schubert and Kraus, "Whirlwind War," 264; briefing chart, ARCENT Logistics Briefing, 28 December 1990.

³⁷Pagonis interview, 8 November 1991; briefing slides, Briefing to the Secretary of Defense, 27 December 1990.



- 1 1ST CAV DIV/ 1BDE 101 DIV MOVE TO KKM AS THEATER RESERVE 9 JANUARY 1991
- 2 XVIII CORPS MOVES TO FAA BY AIR AND ROAD 17-25 JANUARY 1991.
- 3 VII CORPS COMPLETES DEPLOYMENT TO TAA 7 FEBRUARY 1991.
- 4 VII CORPS MOVES TO FAA ON ITS OWN TRACKS 14-17 FEBRUARY 1991.
- 5 CONCURRENT WITH STEPS 1-4: SUPPLY BUILD-UP CONTINUES.
LOGBASES CHARLIE AND ECHO ESTABLISHED.

Figure 8. Movement of the Corps

Two types of logbases were developed. The first was the large type typified by Logbases Bastogne, Alpha, and Bravo. These provided all types of supplies and equipment, developing into theater reserves. These bases were prepared and stockpiled before the ground tactical plan was finalized. Pagonis wisely wanted to ensure a forward support capability as soon as possible. His experience had taught him that the combat arms planners often addressed logistical issues last, and if the bases were already set up, adjusting to the plan would not be a problem.³⁸

The second type of logbase was developed specifically to support the attacking corps—a light logbase containing only food, fuel, water, and ammunition stocks. This was to keep them austere so that they could be mobile. Mobility was a problem when it came to ammunition and fuel, both of which required extensive setup facilities. The tactical petroleum terminal (TPT), which provided fast refueling capabilities, needed 22 flatbed trailers just to upload two-thirds of its equipment. Most of the ammunition was kept uploaded on trailers. The ubiquitous wooden latrines, showers, and sinks were also brought forward, as were refrigerator vans to provide fresh bread, fruit, and cold drinks to the troops.³⁹ The logbases often required advance preparation, particularly the theater-level bases. For protection, a large berm was usually constructed around each one. Roads had to be built and graded in and out. Hospital sites had to be prepared, as did facilities for fuel and food.⁴⁰

Logbases were run by small cells called FASCOS. Usually one specific unit was given responsibility for a specific logbase, and support was tailored from other units to perform the mission at each base.⁴¹

Prior to the buildup, it was estimated that 7,576 truckloads of ammunition and 7.2 million gallons of fuel would have to be pushed forward. Pagonis had anticipated that the goal of 60 days supply would not be achieved in certain areas, since there were supply shortages in theater that would not be made up before the start of the ground campaign.⁴² Fuel consumption was expected to be high. Logbase Echo was located due north of KKMC, just north of MSR Dodge. Since it was on the extreme western limit of allowable movement prior to the beginning of the ground war, limited stocks of fuel were placed there before the start of the air campaign beginning on 10 January. A TPT was established at the extreme southern end of Logbase Echo.⁴³ On G-Day, 24 February, there were stockpiled 29 days worth of rations, 5.2 days of fuel, and 45 days of ammunition.⁴⁴

³⁸Ibid.

³⁹Ibid.

⁴⁰Briefing slide, MAPEX.

⁴¹Pagonis interview, 8 November 1991.

⁴²Briefing slides, Briefing to the Secretary of Defense, 27 December 1990.

⁴³22nd Support Command, LOGSITREP #161, 13 January 1991, U.S. Army Center of Military History, Washington, D.C., 14; Pagonis interview, 19 March 1992.

⁴⁴Schubert and Kraus, "Whirlwind War," 264.

To ensure that Logbase Charlie would be established expeditiously, the SUPCOM stockpiled supplies for it at Logbase Bravo. These supplies were kept uploaded on trailers and were moved out as soon as the air campaign started.⁴⁵

Containers were very important to supply operations. They held all types of supplies except ammunition and bulk petroleum. The containers were easily off-loaded from ships and placed on vehicles at the port for transportation to their ultimate destination. During the logistic buildup from 15 January through 15 March, as many as 128 containers a day were pushed forward to the logbases. Fully 3,758 containers were dispatched to the forward logbases from 15 January on. Logbase Bravo, the theater reserve base, received 2,086 containers during that period, more than half of which contained rations (1,494). Logbase Echo, supporting the heavy VII Corps received 858, while Logbase Charlie, supporting the lighter XVIII Airborne Corps, stockpiled 446.⁴⁶

Containers filled with repair parts (Class IX supply, in Army parlance) were packed with different parts. This made them very hard to use—each would have to be unpacked separately and be repacked before it could be forwarded to the users. Fortunately maintenance proved not to be a great problem, but if it had become so, the plan would have been to cannibalize parts from disabled vehicles to make up for shortcomings in the Class IX supply system.⁴⁷

The size of the logbases—the theater bases were as large as 30 miles by 30 miles, Charlie and Echo each being 3 miles by 5 miles—soon required all incoming vehicles to report to one point as a control measure. This first destination reporting point (FDRP) helped drivers and convoy commanders find the final destination for their cargo within the logbase.⁴⁸

Signs and strip maps for the drivers were also vital. The 318th and the engineers who constructed the logbases placed more than 490 traffic signs along the MSRs. Strip maps were used to ensure that drivers got their cargo to the right place; the maps were distributed at FDRPs.⁴⁹ The routes were well marked because there was a certain amount of risk since minimal combat forces were located between the MSRs and the Iraqi Army. In fact, two truck drivers from the 2nd COSCOM (VII Corps) were captured near Khafji, when they missed a turn from MSR Toyota to MSR Dodge. One of the drivers was the first woman prisoner of war of the conflict.⁵⁰

⁴⁵Pagonis interview, 19 March 1992.

⁴⁶318th MCA, Command Report, Movements Division Desert Storm After Action Report, 4.

⁴⁷Pagonis interview, 8 November 1991.

⁴⁸318th MCA, Command Report, Movements Division Desert Storm After Action Report, 6-7; Langenus, "Moving an Army," 44; Schubert and Kraus, "Whirlwind War," 264.

⁴⁹Langenus, "Moving an Army," 44-45.

⁵⁰Pagonis interview, 8 November 1991.

With so many miles to drive, the liberal driving habits of the civilian drivers who were competing for the same road space, and the poor condition of MSR Dodge, accidents were also a cause of concern. While the 22nd Support Command depended upon an extensive drivers' education program that minimized accidents within the command, other commands were not as fortunate. Nevertheless, including the divisional and corps units, MSR Dodge averaged about three fatalities a week during the peak period.⁵¹ To one participant, the drive on MSR Dodge was "scarier than the war."⁵²

On 31 January, the Tiger Brigade, 2nd Armored Division, was detached from the 1st Cavalry Division and put under the operational control of the MARCENT, where it was placed in turn under the 2nd Marine Division.⁵³ The brigade had its own support slice, but it was inadequate to support the unit away from the Army's corps and EAC support framework. The Marines' support base was tailored for its own unique organizations. Support for the brigade would have to come "out of the hide" of the 22nd Support Command.

The 593rd Area Support Group provided a tailored support slice out of Logbase Bastogne, now a theater-level logbase since the XVIII Corps had moved west. The support slice was organized as a task force under a headquarters organized from elements of the 176th Maintenance Battalion. Support to the brigade included back-up support of all classes of supply and direct support and general support maintenance.⁵⁴ This was the FASCO concept, which would be used wherever a specially designed logistical task force was needed.

With the ground campaign looming, Schwarzkopf felt uneasy with the rank structure in his Army component. While Yeosock, the Army commander, and Waller, the CENTCOM deputy who replaced him while he was ill, were three star generals, and two of their three principal subordinates, the corps commanders, were also three stars, Pagonis, the logistics chief, was only a two star. Schwarzkopf feared that when it came to reallocating logistical assets in the heat of battle, the corps commanders would not respond when pressed by a two star. To remedy this situation, and perhaps as a reward for the success of the logistical organization, Pagonis's name was forwarded by President Bush to the Senate on 30 January for nomination for promotion to lieutenant general. The appointment was approved on 6 February 1991.⁵⁵ On 12 February, Schwarzkopf, assisted by Pagonis's son Gus, who was serving as a transportation corps captain and company commander in the theater, personally pinned the third star onto Pagonis's collar.⁵⁶

⁵¹Ibid.

⁵²Vogel, "Metal Rain," 12.

⁵³22nd Support Command, Chronology, 8.

⁵⁴ARCENT Support Command, Memorandum: "Support for the 1st Cavalry Division and the Tiger Brigade," 4 January 1991, U.S. Army Center of Military History, Washington, D.C.

⁵⁵*Congressional Record*, Senate, 6 February 1991, S1754.

⁵⁶22nd Support Command, Chronology, 8.

The corps' movement and supply buildup was one of the most intense periods of the whole deployment for the theater logisticians. Under the gun, they performed well. The troops and supply stockpiles were moved and placed well within the desired window. The sheer volume of the effort may never again be surpassed. Two corps were moved, five logistical bases were established in which were stockpiled 70 million packaged meals, 1.1 million cases of bottled water, 120 million gallons of bulk fuel, and 300,000 short tons of ammunition. The main supply route that had to be traversed to create these stockpiles was up to 2,746 miles long. During this buildup phase, 1,400 Army trucks and 2,100 host nation trucks were used. Traffic along the main supply routes was so thick during this period that 18 vehicles a minute would pass any given point, 24 hours a day.⁵⁷

⁵⁷22nd Support Command, Summary of Key Statistics, 2.

Chapter 5

The 100-Hour Ground War

Kuwait is liberated. Iraq's army is defeated. Our military objectives are met.

—President George Bush, 28 February 1991¹

Supporting Forward

The actual date of the start of the ground campaign was a closely guarded secret, based on a combination of factors—the effectiveness of the air campaign, the readiness of the corps, and the completion of the supply buildup. President Bush dispatched Defense Secretary Dick Cheney and the CJCS, General Colin Powell, to make a personal estimate of the situation. On 10 February they sat through a nine-hour series of briefings on the ground campaign. The date of G-Day, though still a secret, was tentatively set based on a projection of when the Iraqi mobile forces and artillery would be attrited down to 50 percent and the artillery in the vicinity of the VII Corps breach site attrited down to 10 percent. G-Day was also tied into the movement of the VII Corps from its TAAs to its FAAs. The corps was timed to move from seven to five days before commencement of the ground campaign.² The original planning date of 15 February was moved back to the 21st and finally to the 24th as the Soviet Union attempted a last-ditch peace initiative with the Iraqis.³

Planning for the logistical support of the ground campaign was concurrent with the reception of the VII Corps and the movement of the two corps and logbase buildup. Logistic planning was fully integrated with the tactical planning throughout.⁴ Final instructions for the theater-level logisticians were included in the 22nd Support Command's Operation Order 91-2, Desert Storm Phase III (Ground Attack), issued on 21 February from the forward headquarters at KKMC.

¹President George Bush, address to the nation, quoted in "The 100 Hour War," *Army Times*, 11 March 1991, 44.

²22nd Support Command, Commander's Conference, 10 February 1991, videotape.

³Lieutenant Colonel Peter S. Kindsvatter, "VII Corps in the Gulf War: Ground Offensive," *Military Review*, February 1992, 17-18.

⁴22nd Support Command, Commander's Conference.

ARCENT's goal was to destroy the Iraqi Republican Guard divisions, which were positioned mostly in eastern Iraq, just north of Kuwait and west of the city of Basra. Both the VII and XVIII Corps were expected to make rapid advances. XVIII Corps' 24th Division alone was expected to advance to the Euphrates River valley, more than 200 miles north of KKMC, in 48 hours.⁵ After securing the left flank of the advance, the XVIII Corps would leave units to guard the flank and turn eastward to join the VII Corps attack on the Republican Guard. The VII Corps was the main effort, which included a breaching operation in the east, and an advance by two armored divisions and an armored cavalry regiment in the west. The 1st Cavalry Division, as the theater reserve, was poised to be committed to support the VII Corps, or to support the Northern Arab Command (NAC) advance to the right of the VII Corps. The ground maneuver and its logistical support plan are depicted in Figure 9.

The distances involved, the rapid advance, the turn east, the dispersal of the XVIII Corps, and the need to support the 1st Cavalry Division, if it were attached to a foreign contingent, all posed challenges for the logisticians. The long lines of communication and the expenditures of supplies, particularly in fuel and ammunition, were specific matters of concern as the ground campaign approached.

The supply expenditure rate was estimated to be three times greater than the SUPCOM could replenish. This would mean that the logbases would gradually be drained of supplies. Fortunately the foresight to stockpile multiple days of supplies at the logbases would delay this effect. General Pagonis additionally planned to use his Jump CP and ghostbusters to determine any critical shortages, particularly of fuel and ammunition, and redirect resupply efforts directly to the area(s) needing the supplies.

The SUPCOM also had to support the attached 1st UK Armoured Division and 6th French Light Armored Division and the 1st Marine Expeditionary Force.

The general logistical concept was a continuation of the forward support program that had been ongoing with the establishment of the forward logbases. With the logbases established and stocked to support the corps from their attack positions, the initial problem facing logistics planners was how to support the corps once they made their advances deep into Iraq and Kuwait. Additional logbases were established in each corps sector—Oscar and Romeo for the XVIII Corps, November (or Nelligen) and Hotel for the VII Corps. The establishment of these bases would be the responsibility of each corps' COSCOM, although a SUPCOM FASCO cell would be collocated at each base.⁶ Theater reserves of fuel and ammunition would be uploaded and ready to resupply from Logbase Echo, behind the VII Corps' main effort. Once the XVIII Corps swung eastward, most of its resupply would be sent up to Logbase Hotel, along with that of the VII Corps.

A new MSR, Packard, which ran through the center of the VII Corps sector, would become the new main supply artery. The 226th ASG would be prepared to provide a support slice to the 1st Cavalry Division if it were attached to the NAC. While all this was happening, Logbases Charlie and Echo would

⁵Ibid.

⁶22nd Support Command, Operation Order 91-2: Desert Storm Phase III (Ground Attack), 24 February 1991, U.S. Army Center of Military History, Washington, D.C., 5.

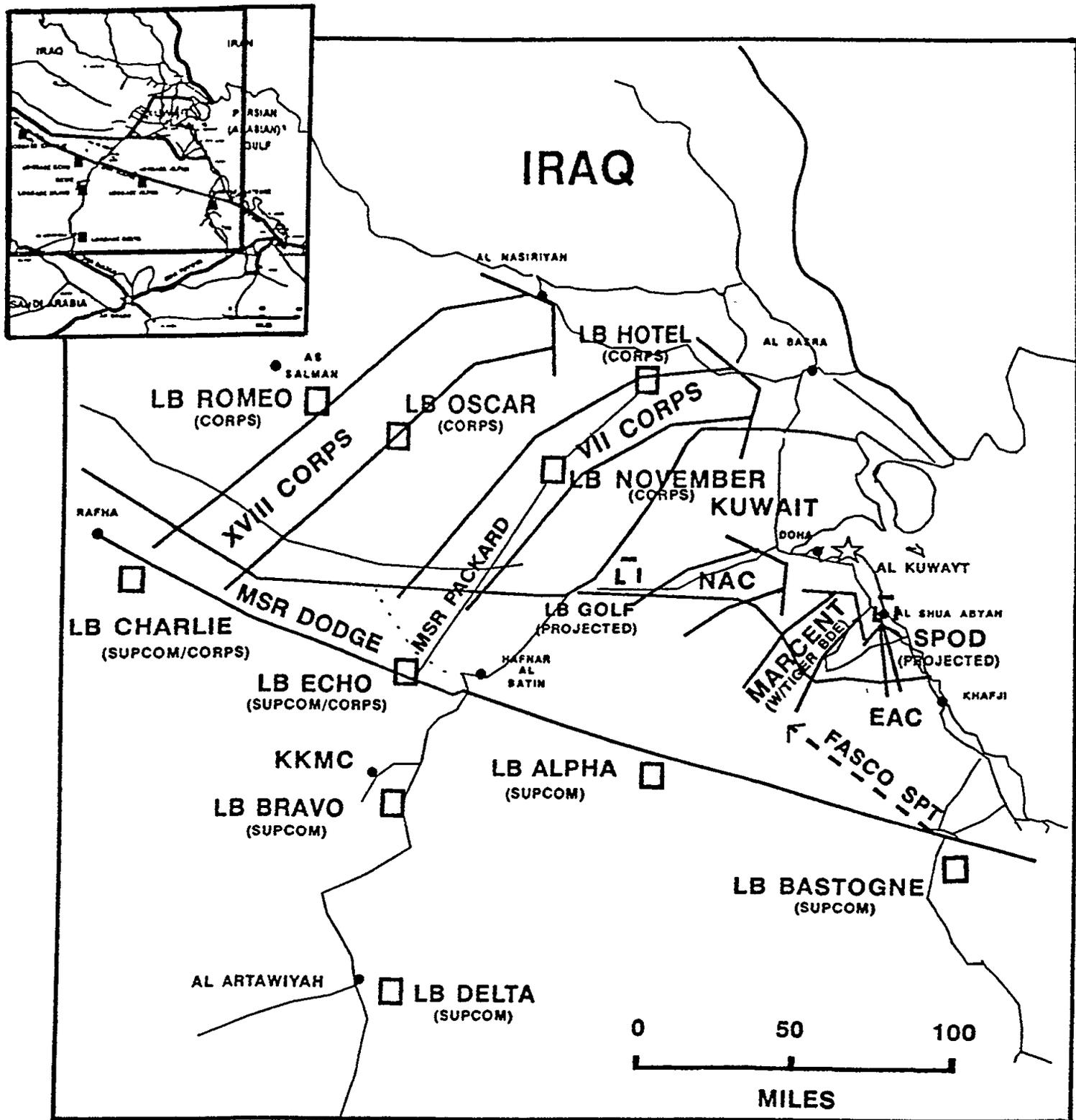


Figure 9. Ground Maneuver and Logistical Support for the Ground Campaign

be replenished continually with supplies arriving daily at Dammam and Jubayl.⁷

Command and control of the resupply effort became paramount. Great lengths were taken to ensure the control of convoys, including the extensive use of control points. Pagonis wanted to convert the convoy system into mobile warehouses that could be diverted on short notice to new priorities.⁸

To move the supplies forward to the corps, the support command was prepared to use its transportation assets to augment the capabilities of the corps, based upon their requirements. The estimated daily requirement was 8,040 STONs for the XVIII Corps and 10,240 STONs for the VII Corps. With the available assets and the required supplies, SUPCOM transportation planners determined that two trips a day would have to be made by each available truck. To keep distances at a level where this could be accomplished, it was agreed that SUPCOM assets would only push the resupply effort forward 90 miles to trailer transfer points (TTPs) in the corps support areas from Logbases Charlie and Echo.⁹

North of the TAPLINE road few roads existed, and most were little more than desert tracks. The M915 tractor, which was the workhorse of the SUPCOM's truck support, was designed to travel across Western Europe or North America's extensive road network, not to move cross country through a desert, chasing after M1 tanks. Roads would have to be built north from Logbases Echo and Charlie to provide adequate MSRs to keep the resupply rate sufficient. The engineers were tasked to build roads behind the advancing corps.¹⁰ Contingency plans were drawn up in case the engineers could not build roads fast enough, particularly in the XVIII Corps sector. One option called for the use of circuitous routing of the improved roads in the VII Corps sector to keep the XVIII Corps supplied.¹¹

Building of roads was one answer to the problem of long supply routes. Two other solutions were projected. Both were designed to shorten the supply lines and involved the establishment of a new logbase in Kuwait called Golf.

The first solution was to establish a new logbase in southwestern Kuwait. Supplies would be rerouted from Logbases Bravo and Echo (Charlie no longer being needed) up to the new base, and from there to the corps in northern Kuwait and southern Iraq. The distance would be cut by a third. The 475th Quartermaster Group would establish a 4- to 6-million-gallon TPT in the new logbase.¹²

⁷Ibid., 2-3.

⁸22nd Support Command, Commander's Conference.

⁹Ibid., 2; Willis, "Linehaul Transportation," 14.

¹⁰Willis, "Linehaul Transportation," 14; Pagonis interview, 9 April 1991.

¹¹COMUSARCENT OPOD ODS 001, Appendix 5 to Annex N.

¹²Pagonis interview, 8 November 1991; 475th Quartermaster Group (POL), 475th Quartermaster Group After Action Report, 7 April 1991, U.S. Army Center of Military History, Washington, D.C., 2.

The second solution was for the 7th Transportation Group to open a new SPOD in Kuwait. Once a port had been liberated by the ground advance, it would be cleaned up and used as a logistics-over-the-shore (LOTS) operation. This option would have greatly reduced supply distances. The port of Al Shuaybah on the Kuwaiti coast south of Kuwait City was selected. The new port would have a logbase built up around it.¹³

The 32nd Transportation Group reorganized to provide exclusive support to the advancing corps. All units not used to support the corps were reassigned to the 7th Transportation Group. This left the 32nd with four battalions. A medium truck battalion supported each corps—the 766th for the VII and the 185th for the XVIII. A U.S. HET battalion (369th) and the Egyptian HET battalion were in general support for taskings as necessary. In preparation for G-Day, almost every available trailer was uploaded with ammunition.¹⁴

The 7th Transportation Group was left with two terminal battalions and five truck battalions. Its mission, aside from continuing to run the ports, was to provide theater-level replenishment of Logbases Alpha, Bravo, Charlie, and Echo.

The 475th Quartermaster Group (POL), commanded by Colonel John Koshan, an Army Reserve outfit from Pennsylvania, was responsible for all petroleum, oil, and lubricants, and water operations for the support command. The group managed the relocation of POL truck companies to resupply both the Army and the Marine forces. Most POL resupply would be done by civilian tankers supplied by the Saudi SAMOREC company, driven by host nation drivers. The group was also responsible for establishing a POL pipeline that would have eliminated the need for 500 host nation tankers a day. The pipeline took many manhours to construct and was one of many POL projects the 475th was working on. If the ground campaign had proven to be a little more protracted, the pipeline would have been operational. As it happened, it was not completed in time.¹⁵

Weapons Systems Replacement Operations, the Army's program to provide immediately available equipment and crews to replace combat losses, was also implemented. In the period leading up to G-Day, 225 M1A1 tanks and 206 M2 and M3 fighting vehicles with crews were assembled at Logbase Bravo to provide a pool of replacements.¹⁶

The ground attack commenced with the supporting attacks of the XVIII Airborne Corps, MARCENT, and the Arab coalition forces on 24 February 1991. Within the first 12 hours the success of the operation was so apparent that the main attack by VII Corps was pushed up and commenced almost a day earlier than expected. The deception worked. Operational surprise was achieved against the Iraqi

¹³22nd Support Command, *Operation Order 91-2*, 2.

¹⁴Willis, "Linehaul Transportation," 14-15.

¹⁵475th Quartermaster Group, After Action Report, 3; Pagonis interview, 9 April 1991; Pagonis interview, 8 November 1991.

¹⁶22nd Support Command, Key Statistics, 3; briefing slides, MAPEX.

Republican Guard forces. The flank maneuver advances were swift. Within four days the ground offensive was over in a total success for the coalition forces. The 1st Cavalry Division was committed with the VII Corps and not the NAC. The new logbases were established only as TTPs. Logbase Golf did not have to be established. Things had just moved too fast. The engineers built the roads. Despite rainy weather that turned tracks into mud, the M915 tractors performed better than expected, mostly through the sheer determination of the drivers. A long-recognized shortage of forklifts was the only problem identified at all levels of logistics during the ground campaign.¹⁷

The Support Command had placed everything on the ground before the campaign began. The plan itself was relatively simple, but depended on the common sense and initiative of the soldiers executing it for its success. No combat mission was slowed down or hindered for supply or maintenance purposes, which was amazing, considering the distances traveled, the size of the enemy forces, and the hostile desert environment.¹⁸

Supply expenditures were not as high as projected. The campaign went so quickly that there was no need to divert the "mobile warehouses" while they were moving. By the 25th, there were still 25 days supply of rations and 66 days supply of ammunition in theater stocks. Fuel stood at only 5.6 days supply.¹⁹ Fuel became a cause of concern near the end of the ground campaign when certain units of the 3rd Armored Division were running into shortages. The SUPCOM ghostbusters detected the problem and a fleet of 300 host nation tankers under control of the DCG, Brigadier General Guest, were poised to move out, without specific orders, to resupply the division. The corps cross-leveled its own fuel assets and the problem was solved.²⁰

Despite the success of the logistics effort, some consternation was expressed by divisional-level support units, which, because of an overall, theater-wide shortage of transportation assets, found themselves pulling supplies forward more than expected despite theater and corps efforts to push supplies as far forward as possible to the divisions. Some saw themselves at the edge of their logistical envelope.²¹

Maintenance of the vast fleet of armored vehicles had been a concern before the initiation of the campaign. After all, most of the system being used by the Army had never before been tested in combat, particularly in desert combat. The long advances were expected to take a toll on equipment. This

¹⁷Pagonis interview, 9 April 1991; Willis, "Linehaul Transportation," 15.

¹⁸Ibid.; 22nd Support Command, Briefing to the Secretary of the Army, 17 March 1991, videotape.

¹⁹First Lieutenant Frank Behan and Sergeant Ronald Miller, "Draft Logistical History of Operation Desert Shield/Desert Storm," TMs, 1991, U.S. Army Center of Military History, Washington, D.C., 11.

²⁰Pagonis interview, 9 April 1991; Pagonis interview, 8 November 1991.

²¹1st Infantry Division (Mechanized) DISCOM, Desert Shield/Storm Support Operations, 15 January 1992, 1st ID DISCOM, Fort Riley, Kansas, I-2.

equipment performed better than could have been expected. The breakdown rate was relatively low. For example, on 3 March, there were 1,647 M1A1 tanks in the theater, of which 1,513 were operational, an operational readiness rate of 92 percent. This is after a strenuous ground campaign. The U.S. forces did not wither away due to mechanical difficulties.²²

The 90-mile rule for transfer and pickup could not be followed everywhere. For example, the 24th Infantry Division (Mechanized) advanced so swiftly that adherence to the rule would have slowed the resupply effort. Accordingly, SUPCOM trucks brought their trailers all the way to transfer points established at Logbase Oscar.²³

The success of the campaign resulted in a steady influx of enemy prisoners of war (EPW). While high EPW totals were expected, there were almost a thousand EPWs before the ground campaign even started—like everything else, they came more quickly than projected.²⁴ Fully 60,000 EPWs were taken in the ground campaign, followed by almost 10,000 more after the cease-fire.²⁵ Obtaining interpreters for the camps was a problem for the 22nd SUPCOM; the difficulty was solved initially by obtaining Kuwaiti military volunteers, who were slowly phased out by Saudi volunteers from various sources as a part of the host nation effort.²⁶

The 800th Military Police (MP) Brigade (PW), a USAR unit commanded by Brigadier General Joseph F. Conlon, III, arrived in theater on December 25 and immediately began preparing to oversee the theater EPW operation. The brigade established four EPW camps in two locations, one to support each corps. Since the engineers were committed elsewhere, the MPs built the camps themselves, beginning on 20 February. The first EPWs arrived within one hour of the completion of the first compound. Each camp was designed to accommodate up to 24,000 EPWs. The brigade expected to process about 500 enemy prisoners a day per camp. The capture rate rapidly escalated to 4,000 a day as the war ended.²⁷

Transportation of the EPWs to the camps from the corps holding areas became a problem. The plan had been to use the trailers that hauled the ammunition forward. However, due to the low ammunition

²²22nd Support Command, LOGSITREP D+47, 4 March 1991, U.S. Army Center of Military History, Washington, D.C., 6-10.

²³22nd Support Command, Briefing to the Secretary of the Army, 17 March 1991, videotape.

²⁴800th MP Brigade (PW), "After Action Report, 800th MP Bde (PW)," 1 June 1991, U.S. Army Center of Military History, Washington, D.C., A-1.

²⁵Behan and Miller, "Draft Logistical History," 13.

²⁶Colonel Robert H. Sholly, Chief, Histories Division, U.S. Army Center of Military History, Washington, D.C., note to authors.

²⁷800th MP Brigade, "After Action Report," 2-3, A-1.

expenditure, these trailers were still loaded. Various vehicles were rounded up to haul in the EPWs—buses, civilian trucks, and a variety of military vehicles.²⁸

The EPWs were cared for, provided sanitation facilities, medical attention, food, and housing. Each was issued a blanket and a sleeping mat and housed in 10x20-meter tents. Eventually, per prior agreement, they were transferred to the control of the Saudi Arabian Ministry of Defense and Aviation—most within 30 days, all by 15 April.²⁹

Dhahran was still a large logistical hub, even when the focus had shifted farther north. Accordingly, it offered a lucrative target for Iraqi Scud missile gunners. By 25 February, almost 70 Scuds had been fired in the general direction of Saudi Arabia, Israel, Bahrain, and Qatar. Most had landed harmlessly in the sea or desert, or been destroyed in midair by Patriot air defense missiles. On the evening of 25 February, all this changed. A Scud struck the Al Jan warehouse and exploded. This was one of many small building complexes in the Dhahran-Khobar-Dammam area being used to house U.S. forces. The building housed troops of the 475th Quartermaster Group, which had recently arrived in the theater. It was located between two familiar landmarks in the Khobar area—the Souks supermarket and Toyland toy store.³⁰

The building was destroyed by the explosion. The Scud created a crater that went into the foundation of the edifice. The walls were blown out and the roof collapsed. Twenty-eight soldiers, including 3 women, were killed, and 97 were wounded. Medical support and rescue crews and the Saudi mayor of Khobar were all on the scene within minutes. The injured were rushed to nearby Saudi hospitals. Eventually the more seriously wounded were dispatched to Walter Reed Army Medical Center in Washington, D.C.³¹

The death toll bore heavily on the 14th Quartermaster Detachment, a USAR unit from Greensburg, Pennsylvania, which lost ten killed in the attack. The unit had just arrived in the country and was slated to move into southern Iraq to assist in drilling wells and providing water. The speed of the war made the unit's mission superfluous, so the tragedy impacted little on the overall logistics effort. The 15 members still in theater after the cease-fire were the first support command soldiers to be sent home.³²

²⁸Willis, "Linehaul Transportation," 15.

²⁹800th MP Brigade, "After Action Report," A-2, A-3.

³⁰Greg Seigle, "Nightmare of Scud Attack Comes to Life," *Army Times*, 2 March 1992, 29.

³¹Margaret Roth, "Scud Leaves Scar on a Pennsylvania Town," *Army Times*, 11 March 1991, 8; George Leopold and Caleb Baker, "Ironic Twist Lands Missile at its Mark," *Army Times*, 11 March 1991, 8; Katherine McIntire, "Scud Survivors Win Heart with Pride, Grief," *Army Times*, 18 March 1991, 14; Behan and Miller, "Draft Logistical History," 14.

³²Pagonis interview, 8 November 1991; Grant Willis, "More Reserve Call-Ups May Aid 'Steady Flow' Home," *Army Times*, 18 March 1991, 4.

It was ironic that the single greatest loss of U.S. troops in the war from enemy action was incurred by logistical soldiers far from the front lines. Housing arrangements in the Dhahran area had been designed specifically to disperse soldiers to minimize the effect of a Scud hit. Most fears had centered on chemical warheads, and rehearsals with chemical protective equipment were routine. This hit and two other harmless strikes—one in Riyadh, the other in Hafr al Batn—did not affect the logistical effort. Despite it all, morale remained high.³³

While there were fears of terrorist activities against American logistical activities in Saudi Arabia, which were guarded against throughout the Desert Shield and Desert Storm phases of the deployment, no such attacks ever materialized. The only actual threat to logistical activities proved to be the long-range threat brought by the random actions of the Scud missiles.³⁴

On 28 February, President Bush announced a cease-fire, readily agreed to by the Iraqis. The ground campaign was over.

The final solidification of General Pagonis as the single theater logistics point of contact took place during the ground war. As the war ended, plans were made to place the EAC-level engineers under the SUPCOM. They were the last major EAC component not already under the support command.³⁵

Restoring Kuwait

The end of the ground campaign presented multiple missions for the theater logisticians. The forces in southern Iraq and Kuwait still needed to be supported. Only requirements for fuel and ammunition would be decreased. Kuwait had to be defended, and restoration of essential services for the civilian populace and government began. This was Phase Delta of the SUPCOM's five-phase plan. Details of its execution were included in ARCENT Support Command Operations Plan 91-3, Combined OPLAN for the Defense and Restoration of Kuwait, issued 15 February 1991.

To facilitate the relief and restoration of Kuwait, ARCENT formed a special task force, Task Force Freedom, under Deputy ARCENT Commander and Chief of Staff Brigadier General Robert Frix, on 13 February. The task force included a special civil affairs cell called the Combined Civil Affairs Task Force (CCATF). One of its components was a specially designed element called the Kuwaiti Task Force (KTF). The KTF was to work with the Kuwaiti civilian authorities to provide relief and restoration services in seven critical areas: food, water, medicine, transportation, telecommunications, sanitation, and power. The members included reserve officers with civilian expertise in providing such services. Among

³³Pagonis interview, 8 November 1991.

³⁴Behan and Miller, "Draft Logistical History," 14.

³⁵Pagonis interview, 9 April 1991.

its members were a State Department expert on the Middle East, several attorneys, four civil engineers, a construction company owner, several computer scientists, and teachers.³⁶

The civil affairs effort was spearheaded by the 352nd Civil Affairs Command, a reserve unit from Maryland commanded by Brigadier General Howard T. Mooney, Jr. The 352nd had organized the KTF informally under Colonel Randall Elliott in November 1990. Its members were activated on 1 December, deploying to the theater on 26 January 1991. They began immediate coordination with officials of the Kuwaiti government in preparation for the restoration effort. The rest of the 352nd was mobilized on 25 January and deployed on 31 January. The CCATF was organized under Mooney from the 352nd's headquarters and included two civil affairs companies formerly earmarked to support the two ACRs, as well as the KTF.³⁷

The SUPCOM organized a logistical support package led by Brigadier General Guest and his Jump CP staff, which was an integral part of Task Force Freedom.³⁸ The task force moved into Kuwait on the heels of the combat troops and established Camp Freedom as the hub of the restoration effort. Logbase Golf was finally established, in the area where the borders of Iraq, Kuwait, and Saudi Arabia meet, to support the relief effort. Several refugee camps were also established in southern Iraq and Saudi Arabia for displaced civilians, the largest one at Rafha, Saudi Arabia.³⁹

To provide area support for Kuwait, the 301st Area Support Group, formerly responsible for the area around Riyadh, had moved up to assume responsibility for the Kuwait area. The ASG worked out of Logbase Golf and provided Task Force Freedom with service support.⁴⁰ Kuwait International Airport was opened for military traffic almost immediately. The port Shuaybah was reopened on 11 March 1991.⁴¹

The Iraqis had plundered and pillaged Kuwait during their occupation. Large quantities of basic necessities had to be sent to the country to help the civilian population: blankets, food, clothing, tents, and medical supplies. The formal relief effort continued until the end of April 1991. Task Force

³⁶John R. Brinkerhoff, "Waging the War and Winning the Peace: Civil Affairs in the War with Iraq," TMs, 1991, U.S. Army Center of Military History, Washington, D.C., 58, 66-67.

³⁷Ibid., 54-55, 65-66.

³⁸Ibid., 67.

³⁹Behan and Miller, "Draft Logistical History," 13; Pagonis interview, 8 November 1991; ARCENT Support Command, Operations Plan 91-2: Combined OPLAN for the Defense and Restoration of Kuwait, 15 February 1991, U.S. Army Center of Military History, Washington, D.C., 3.

⁴⁰301st Area Support Group, After Action Review, 1 April 1991, U.S. Army Center of Military History, Washington, D.C., 3.

⁴¹22nd Support Command Log Cell, Memorandum, "'One Liners' Regarding Combined Civil Affairs Task Force Activities and Accomplishments in the Relief and Restoration of Kuwait City," 16 April 1991, U.S. Army Center of Military History, Washington, D.C., 2.

Freedom employed the special abilities and expertise of its civil affairs elements to good use in restoring Kuwait to a semblance of order to support its populace.⁴²

Restoration operations were totally successful. Seventy-five truckloads of relief supplies arrived in Kuwait City within 12 hours after the commencement of operations by the CCATF on G+4 (28 February 1991). During the first three weeks of the relief effort, 12,500 tons of emergency foodstuffs and 12.8 million liters of water were distributed, along with 1,250 tons of emergency medical supplies. Relief operations left the emergency phase by the end of eight weeks, and Task Force Freedom's mission was accomplished. In that time, 98 percent of Kuwait's medical establishment was restored. All major roads were repaired and reopened. Telecommunications were restored. Public transportation and electrical power were restored, though at reduced levels compared to prewar standards. The specialists in the task force familiar with all the services and functions found in the infrastructure of modern society proved instrumental in getting Kuwait back up on its feet within only a couple of months. On 15 April, Frix moved his ARCENT (Forward) Headquarters back to Riyadh, and on 30 April, Task Force Freedom was disestablished.⁴³ This was an extraordinary success story for the usage of the skills of the reserves.

In northern Iraq, the Kurds had revolted. This created new refugee problems. The European Command had initiated Operation Provide Comfort to aid the refugees who fled to Turkey and to provide some sort of limited protection for the remaining Kurds in northern Iraq. Concurrent with the relief support to Kuwait and southern Iraq, the support command also provided support to Provide Comfort, mostly in the form of essential supplies such as food and medicine.⁴⁴

The Achievement

The six-month theater buildup and three-week corps deployment and logbase buildup had been vindicated by the quick, impressive victory in the ground campaign. The campaign had moved so fast that many planned combat service support contingencies did not need to be employed. The success enjoyed by the combat troops was directly attributable to the logistical support they received in executing the fastest opposed rate of advance in military history. The flexibility of support was demonstrated by the accommodations made for the restoration of Kuwait.

⁴²Behan and Miller, "Draft Logistical History," 13; Brinkerhoff, "Waging the War," 67.

⁴³22nd Support Command Log Cell, "One Liners," 1-3.

⁴⁴Brinkerhoff, "Waging the War," 73-74.

Part Three: Redeployment

Chapter 6

Redeployment of the Personnel

It is our objective to get U.S. forces out as quickly as possible....The president has made it clear that we don't want a permanent ground presence in the Gulf.

—Secretary of Defense Dick Cheney¹

Redeployment Planning

A swift redeployment upon the conclusion of hostilities had always been a key point in American policy. The Arab states, particularly Saudi Arabia, did not desire a long-term foreign presence in their nations. The redeployment commenced almost immediately after a beleaguered Iraq signed a truce on 3 March 1991 at Safwan, an air strip in U.S.-occupied Iraq and the site of the initial cease-fire agreement. As early as 7 March, a small contingent from the 24th Infantry Division (Mechanized) became the first soldiers to redeploy from the theater.

Redeployment planning had long been on the minds of the support command staff. As early as December, the long-range planning cell had been devising plans for redeployment. Early projections on the duration of the redeployment were that it could last anywhere from one and a half to four years.² The magnitude of equipment and supplies, coupled with the lack of Army experience in closing a theater, forced these long time estimates.³ Raw estimates, based on plane and ship requirements and availability, foresaw 90 days to move out the personnel and a minimum of 11 months to load all the equipment and

¹"Memorandum for Correspondents No. 252-M," 17 May 1991, Annex O (Public Affairs) to 22nd Support Command, Operation Plan 91-6, Reception, Staging, and Employment of the 11th ACR (-), U.S. Army Center of Military History, Washington, D.C., 0-3-1.

²Pagonis interview, 17 February 1991.

³Pagonis interview, 8 November 1991.

supplies. The basic concept was to get the bulk of the troops out within 90 days and leave behind a residual force of between 30,000 and 10,000 troops to get the equipment and supplies out.⁴

These estimates projected roughly 5,000 troops departing a day and five ships a day being loaded out at the ports of Dammam and Jubayl, with an average of 1.4 ships a day departing the port. While it took 550 ships to bring in the force, only 400 were projected to take it out; the lower figure was achieved due to better loading procedures. The speed of uploading the equipment and materiel was keyed mostly to space at the ports to stage the equipment and the numbers and rate of work that the portside cranes could accomplish. Container ships and roll-on/roll-off (RORO) ships could be loaded very quickly, in a matter of two or three days. Break bulk and ammunition ships, due to special loading requirements, could take longer, up to ten days.⁵

The CENTCOM J-4, then Major General Dane Starling, held a logistics redeployment conference in Riyadh on 4 March. The conference provided general guidance for the redeployment, including a rough timetable of major unit departures. The 22nd Support Command would be the executive agent for surface transportation and the movement of units and equipment to the seaports and airports.⁶

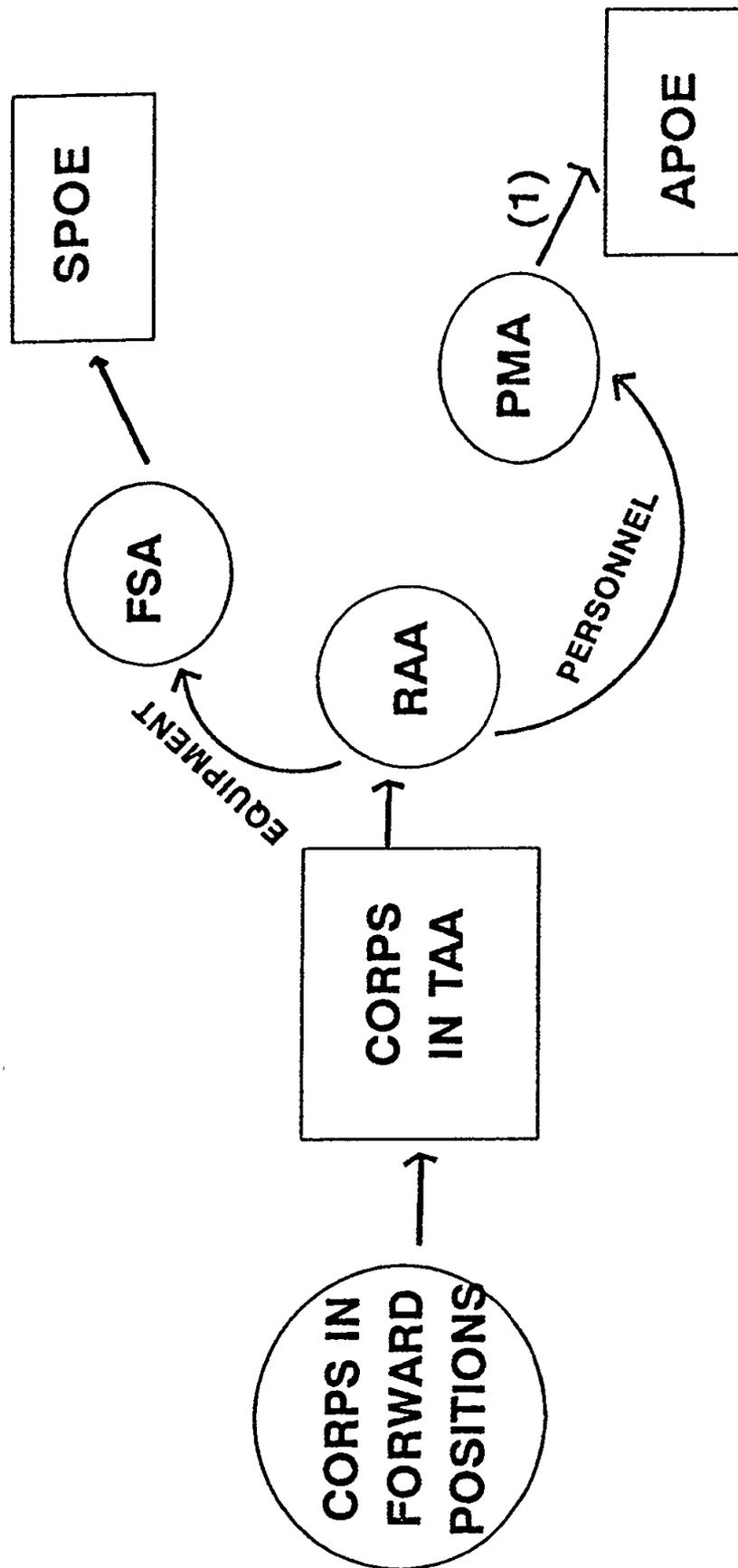
Based on the guidance, ARCENT issued its COMUSARCENT OPLAN for Redeployment on the same day. The plan provided general guidance, building on previous operations orders, particularly COMUSARCENT OPORD DESERT SHIELD 002 and 003. The SUPCOM published its own detailed plan as Operations Order 91-4, Desert Farewell (Redeployment), on 7 March. It was subsequently revised and reissued on 18 March. The plan envisioned eight stages, some of which would run concurrently. A schematic of the redeployment organization is shown in Figure 10. The locations of key redeployment activities are shown in Figure 11.

The first stage consisted of the so-called "ceremonial redeployments." Immediately after the conclusion of hostilities, small detachments from all the CENTCOM units, including ARCENT—in total, about 17,000 service members, including about 5,000 soldiers from all the services—were sent home as the spearhead of the redeployment effort. The ceremonial redeployments were symbolic of both the victory and, for the Arab and American public, an indication of President Bush's resolve to bring the

⁴Briefing slides, 22nd Support Command Redeployment Briefing to the Secretary of the Army, 17 March 1991, U.S. Army Center of Military History, Washington, D.C. (hereinafter Secretary of the Army Redeployment Briefing); 22nd Support Command Briefing to Secretary of the Army, 17 March 1991, videotape, U.S. Army Center of Military History, Washington, D.C. (hereinafter Secretary of the Army Briefing).

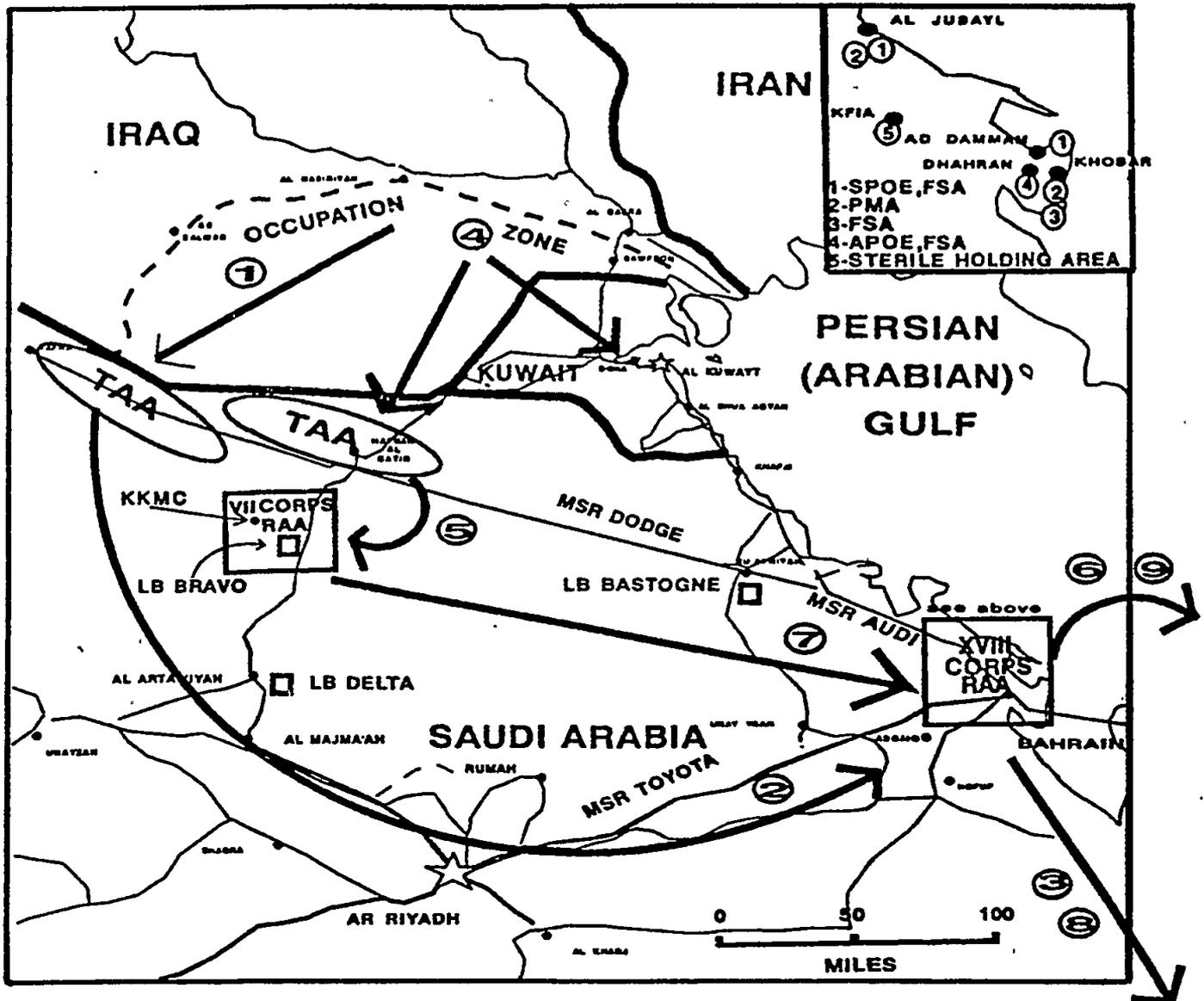
⁵Secretary of the Army Briefing. This videotape uses 481 for the number of ships. The actual number was 550; Lieutenant General William G. Pagonis, interview with the authors, 27 April 1992.

⁶Briefing slides, CENTCOM Logistics Redeployment Conference, 4 March 1991.



NOTE 1: TRAIL PARTY REMAINS BEHIND UNTIL EQUIPMENT IS SHIPPED

Figure 10. Redeployment Organizational Schematic



- 1 XVIII CORPS MOVES TO TAA- VII CORPS TAKES OVER THEIR SECTORS
- 2 XVIII CORPS MOVES TO RAA 13-24 MAR 91
- 3 XVIII CORPS PERSONNEL FLY OUT (BY 11 MAY 91)
- 4 VII CORPS MOVES TO TAA, 1/3 AD MOVES TO CAMP DOHA
- 5 VII CORPS MOVES TO RAA, 12-21 APR 91.
- 6 XVIII CORPS EQUIPMENT DEPARTS BY SHIP (TO 12 JUN 91).
- 7 VII CORPS MOVES TO PORT AREA IN STAGES BEGINNING ON 24 APR 91.
- 8 VII CORPS PERSONNEL FLY OUT 10 MAY- 1 JUN 91.
- 9 VII CORPS EQUIPMENT DEPARTS BY SHIP (UP TO 15 AUG 91).

Figure 11. Redeployment Locations

troops home as quickly as possible. The first detachments left on 7 March. The SUPCOM sent home several of the small reserve detachments that had arrived in September 1990 and the remaining soldiers of the Scud-ravaged 14th Quartermaster Detachment.⁷

For the bulk of the force, redeployment would not be so swift. The next stage called for the movement of division and corps units not involved in the defense and restoration of Kuwait from their forward deployed positions to TAAs. The TAAs were near the locations from which the corps started the ground campaign. In the TAAs, units would consolidate, clean equipment, and, in general, recover from the ground campaign.

For the following stage, units would move from their TAAs to RAAs. This was a concept taken from the REFORGER exercises in Europe.⁸ In the RAAs, units readied for redeployment by conducting intensified maintenance on equipment, identifying excess supplies and turning them in, and preparing equipment and cargo for shipment. The support command was to provide equipment wash sites, coordinate unit movements, and establish life support and morale, welfare, and recreation (MWR) services for the redeploying units. While in the RAA, VII Corps vehicles returning to Europe would be repainted in the same greenish-brown, woodland pattern with which they had come to the theater. As in the REFORGER exercises, the divisions would work directly with the support command while in the RAAs.⁹

One of the MWR services offered beginning in December 1990 was the Armed Forces Recreation Center (AFRC) Bahrain. Located in the island nation's capital city, Manama, AFRC Bahrain consisted primarily of the luxury ship *Cunard Princess* docked at the port. While soldiers did not actually go on a cruise, they were given a three-day period to experience all the liner's services, as well as to participate in cultural, historical, and social tours sponsored by the Bahrain branch of the USO. Of course, the liner was referred to as the "Love Boat." It was even featured in the Doonesbury comic strip, which appeared in the European edition of *Stars and Stripes*, the Armed Forces newspaper that was flown into the theater with the mail. Bahrain, connected to the Dhahran area by a 16-mile-long causeway, offered a break for the troops from the restrictions faced in Saudi Arabia. Though also primarily an Islamic state, Bahrain is a former British protectorate and proved a bit more liberal in its policies. The "Love Boat" remained on station for the departing troops' use until mid-September 1991.

Since the earliest deployed forces had priority for redeployment, the XVIII Airborne Corps would redeploy first. The corps would return to the vicinity of Dhahran, revisiting essentially the same locations it had occupied prior to its move north. The corps headquarters, for example, returned to

⁷Willis, "More Reserve Call-Ups," 4.

⁸22nd Support Command, OPORD 91-4: Desert Farewell, Operations to Redeploy U.S. Army Forces from Saudi Arabia, 18 March 1991, U.S. Army Center of Military History, Washington, D.C., 5; Secretary of the Army Briefing.

⁹Secretary of the Army Briefing; OPORD 91-4, 5.

Dragon Base. The VII Corps' RAAs were located in the north in the desert around KKMC at Logbase Bravo.¹⁰

The RAAs were run by the corps units, but each had its own SUPCOM coordinator. The area support groups, 226th for the VII Corps and 593rd for the XVIII Corps, provided support to the units in the RAAs.¹¹

While in the RAA, units would conduct the next stage: classes of supply turn-in. Excess or unused supplies of all types were to be turned in by the units. SUPCOM units were tasked with supporting this turn-in, both at Dhahran and at Logbase Bravo. At Logbase Bravo were two ammunition companies and a heavy materiel supply company. In Dhahran were two ammunition companies and three supply companies, including the 144th Heavy Materiel Supply Company, which was solely responsible for receiving captured enemy equipment.¹²

The fifth stage was personnel and materiel staging. Within or near the RAAs were final staging areas (FSA) for equipment and personnel marshalling areas (PMA) for personnel. The FSAs were places where equipment was consolidated and maintained. There it would be washed, and equipment and supplies would be containerized for shipment. For the VII Corps, equipment returning to Europe or to the United States would be brought to FSAs near Dhahran and Jubayl after the departure of the XVIII Corps for final clean-up prior to being brought to the port.¹³

Equipment would be brought from the final staging area to the SPOEs (sea ports of embarkation) of Dammam and Jubayl for redeployment from the theater. Detailed plans were drawn up for each wash facility. Upon washing, vehicles and equipment would be driven along clean roads to "sterile" holding areas. Helicopters, upon washing, would be flown directly to the port, to be staged from there.¹⁴

PMAs were areas where personnel actions and activities were to occur. Personal equipment would be washed, new uniforms issued, and post exchange and recreational facilities would be available. Prior to departure, troops would be processed through customs and await their flight in a sterile holding area. In this area were set up VCRs with movies and refreshments and food for the troops while they waited. Due to restrictions imposed by U.S. agricultural inspectors, who feared that red meat would bring

¹⁰Secretary of the Army Briefing; briefing slides, Secretary of the Army Redeployment Briefing; briefing slides, CENTCOM Logistics Redeployment Conference.

¹¹22nd Support Command, OPOD 91-4, 6; briefing slides, Secretary of the Army Redeployment Briefing.

¹²Briefing slides, Secretary of the Army Redeployment Briefing.

¹³Ibid.; 22nd Support Command, OPOD 91-4.

¹⁴Secretary of the Army Briefing.

bacteria into the United States, the traditional "Wolfburgers" were replaced by chicken and fish sandwiches.¹⁵

A similar process would take place with equipment. Shipping was the sixth stage, which involved the actual preparing for shipment in the FSA and at the port. Equipment would be sorted by type, drained of any excess fuel and fluids, and shipping paperwork would be prepared.¹⁶

The next to last stage was the establishment of the POMCUS and the redeployment of forces. Elements of every VII Corps division, except the 1st Infantry Division, were slated for deactivation as part of the Army's drawdown from Europe when the call to the desert came. Rather than return to Europe with their equipment, these units were tasked by ARCENT (Forward)/22nd Support Command Operation Plan 91-5, ARCENT (FWD)/SUPCOM Army Preposition Plan SWA, to leave their equipment behind at Logbase Bravo, where it would be sorted out. Planning was in initial stages to preposition equipment in the theater, commonly referred to as POMCUS (prepositioned organizational materiel configured in unit sets), after the acronym used for such equipment in Europe.¹⁷

The original goal was to preposition a heavy division's worth of equipment, along with EAC assets, in unit sets somewhere in the theater. The details had to be worked out through agreements with the Gulf states. The deactivating units would leave behind more than enough equipment to satisfy this POMCUS requirement. Since the units leaving the equipment behind were relatively late in the redeployment timetable, the Army hoped to have the POMCUS requirements identified and sites prepared before the units turned in their equipment. SUPCOM units would sort out, clean, and bring up to Army standards equipment not to be prepositioned. It would then be retrograded out of the theater.¹⁸

To spearhead this effort, the SUPCOM established its POMCUS Task Force, which evolved into the provisionally organized Combat Equipment Group—Southwest Asia (CEGSWA, pronounced, inexplicably, KEGSWA). CEGSWA, patterned after a similar unit in Europe, replaced the 736th Supply and Services Battalion headquarters as the major supply element at Logbase Bravo.¹⁹

The divisions would prepare the equipment and move it to seven temporary storage locations (TSL) near KKMC, where it would be inventoried and signed over to CEGSWA. The deactivating units would

¹⁵Ibid.

¹⁶Briefing slides, Secretary of the Army Redeployment Briefing; 22nd Support Command, OPOD 91-4, 6.

¹⁷ARCENT (FWD)/22nd Support Command, OPLAN 91-5: Army Preposition Plan, SWA, 15 April 1991, U.S. Army Center of Military History, Washington, D.C., 4-5; briefing slides, CENTCOM Logistics Redeployment Conference.

¹⁸ARCENT (FWD)/22nd Support Command, OPLAN 91-5, 2-3; briefing slides, CENTCOM Logistics Redeployment Conference.

¹⁹22nd Support Command, Command Report: 22nd Support Command, 16 March 1991—2 January 1992, 2 January 1992, U.S. Army Center of Military History, Washington, D.C., Annex C, 1.

turn in their equipment concurrent with the redeployment of the corps during a 30-day window beginning on 20 April. CEGSWA would in turn reorganize the equipment into unit sets and prepare for final disposition.²⁰

The final stage of the redeployment was the cleaning up of loose ends. All leases and contracts would be closed out by the departing corps. The SUPCOM would in turn dispose of all materiel left in the theater, either turning it in as unusable to the Defense Re-utilization and Marketing Office or otherwise shipping it home. Then the Support Command would close out its own contracts and redeploy, leaving the POMCUS equipment in the theater to be maintained over the long term by AMC.²¹

Host nation contracting support, as had been the case throughout the operation, would be critical to the drawdown. The more contracts, the quicker the drawdown and the fewer forces required to support it.

To orchestrate the redeployment, the 22nd Support Command would become the senior headquarters in the theater upon the departure of both ARCENT and CENTCOM headquarters. General Pagonis would become both the ARCENT (Forward) and CENTCOM (Forward) commander, as well as retaining command of the Support Command.²²

Redeployment of the XVIII Airborne Corps

Within a three-week period, the whole XVIII Corps moved from the TAAs to their RAAs near Dhahran and Jubayl. The 82nd Airborne Division, being the Army's lightest, most air-transportable division, was the first to leave, its personnel flying out and leaving the equipment to follow on ships. The airflow out received priority on all support command activities. 10 March 1991 was designated as R-Day, the day the redeployment officially began. As early as the next day, the lead elements of the XVIII Corps' heavy units, the 3rd ACR and 24th Division, were at the ports preparing vehicles for shipment. The personnel of the 3rd ACR were also flown out immediately, leaving behind a rear detachment to load the equipment onto the ships.²³

Helicopters required special wrapping so that the salt water would not damage them on the return passage. It took nine days to wrap the aircraft of the 3rd ACR.²⁴ The regiment's equipment was loaded at the port of Jubayl onto six RORO ships. Such ships were designed specifically so that vehicles could

²⁰ARCENT (FWD)/22nd Support Command, OPLAN 91-5, 2-3.

²¹Briefing slides, CENTCOM Logistics Redeployment Conference.

²²Secretary of the Army Briefing.

²³22nd Support Command, LOGSITREP D+50, 7 March 1991, U.S. Army Center of Military History, Washington, D.C., 15; ODCSLOG, *Operation Desert Storm Sustainment*, A-14.

²⁴Secretary of the Army Briefing; 22nd Support Command, LOGSITREP R+13, 23 March 1991, U.S. Army Center of Military History, Washington, D.C., 1.

be driven right into the ship, facilitating loading and off-loading. Each ship took an average of three days to load. The last ship with regimental equipment departed on 31 March.²⁵

Troops left the theater long before their equipment did. While 99 percent of the corps' personnel had departed by 11 May, leaving an 867-member rear detachment, all heavy equipment and vehicles were not gone until 12 June. The loading took 88 days. The corps used 109 ships. The heavy divisions (24th and 1st Cavalry) used 16 ships each, while the lighter 82nd Airborne Division needed only 7 and parts of 2 others, and the helicopter-intensive 101st Airborne Division fit onto 11 ships. The 1st Cavalry Division was the last unit to be loaded.²⁶

On 13 June, all but nine soldiers of the rear detachment also departed the theater. These last personnel elements of the XVIII Corps finally departed on 27 June.²⁷

Redeployment of the VII Corps

Until final acceptance of the United Nations resolutions by the Iraqis, the situation of the VII Corps was confused. The corps had two missions: defense of the northern Kuwaiti frontier and movement of the corps to its RAAs near KKMC. As the XVIII Corps moved to its RAAs near Dhahran, VII Corps units repositioned to assume responsibility for the XVIII Corps sector. The destruction of most of the mobile forces of the Iraqi Army, along with a good bit of its infantry, made this defense a much easier task for the corps. The 3rd Armored Division was slated to remain north, while the rest of the corps redeployed after the final cease-fire was signed. The bulk of the 3rd Armored Division would follow, leaving behind its 1st Brigade as a defensive force in Kuwait.²⁸

Eighty percent of the corps was projected to be out of theater by R+66. In the interim, most of the corps remained in the desert of southern Iraq, training, conducting volleyball and softball tournaments, and live firing on hastily erected ranges. On 11 April, Iraq signed the official United Nations cease-fire agreement. Between 12 and 21 April, the VII Corps completed its movement to its RAAs.²⁹

²⁵22nd Support Command, LOGSITREP R+21, 31 March 1991, U.S. Army Center of Military History, Washington, D.C., 11.

²⁶22nd Support Command, LOGSITREP R+95, 14 June 1991, U.S. Army Center of Military History, Washington, D.C., 17; ship statistics compiled from LOGSITREPs during the period 11 May to 13 June 1991.

²⁷22nd Support Command, LOGSITREP R+109, 28 June 1991, U.S. Army Center of Military History, Washington, D.C., 12; 22nd Support Command, LOGSITREP R+95, 12; ODCSLOG, *Operation Desert Storm Sustainment*, A-15.

²⁸22nd Support Command, Command Report, 16 March 1991-2 January 1992, 4.

²⁹1st Battalion, 5th Field Artillery, Desert Storm After Action Report, U.S. Army Center of Military History, Washington, D.C., 21, 23-24; 22nd Support Command, LOGSITREP R+33, 12 April

While in the RAA, the 1st Infantry Division (Mechanized) completed turning in its M1 tanks for M1A1s. When the division redeployed, it did so with its tank fleet completely modernized.³⁰

While the original plan had postulated the preparation of vehicles and equipment near Logbase Bravo, followed by the flying out of troops directly from KKMC, the plan was modified. The facilities near the ports, made available by the departure of the personnel of the XVIII Corps, were utilized as PMAs and FSAs. The units that were not turning in their equipment to CEGSWA moved their vehicles, by unit convoy for the wheeled vehicles and on host nation HETs and flatbeds for the tracked vehicles, down to FSAs in the Dhahran-Dammam area, or at Jubayl for the corps artillery and 2nd Armored Division (Forward). The port of Jeddah, located on the Red Sea in the western part of Saudi Arabia, had been used by the French and Egyptians to withdraw their forces. Now to help speed the redeployment, this port was used for some materiel and Air Force ammunition.³¹

At the FSA, corps vehicles and equipment received their final washing and were turned in to sterile areas after U.S. Department of Agriculture and Customs inspectors checked the equipment. The troops in the Dhahran area were housed in a large PMA at Khobar Towers. After vehicles were cleaned, all the troops had to do was to wait for their designated flights.³²

During the redeployment, VII Corps vehicles returning to Europe were repainted. Between 19 April and 21 June, 4,740 wheeled and 3,256 tracked vehicles were repainted as part of the staging process.³³

Shiploading for the VII Corps did not commence until 8 June, following the departure of the XVIII Corps. By that time only a 3,000-soldier rear detachment remained in the theater, the rest of the soldiers having been flown out in May.³⁴

Loading lasted until 15 August, taking 68 days. The use of Jeddah for ammunition and fast turn-around on ships used by the XVIII Corps helped accelerate the loading of the corps.

1991, U.S. Army Center of Military History, Washington, D.C., 1; ODCSLOG, *Operation Desert Storm Sustainment*, A-15; Secretary of the Army Briefing.

³⁰1st Infantry Division (Mechanized) DISCOM, Desert Shield/Storm Support Operations, 15 January 1992, DISCOM, Fort Riley, Kansas, 6.

³¹Secretary of the Army Briefing.

³²1st Battalion, 5th Field Artillery, Operation Desert Storm, 25.

³³22nd Support Command, LOGSITREP R+102, 21 June 1991, U.S. Army Center of Military History, Washington, D.C., 14.

³⁴22nd Support Command, LOGSITREP R+89, 8 June 1991, U.S. Army Center of Military History, Washington, D.C., 9.

Half of the equipment of the 1st Armored Division was left behind in theater storage, along with almost a third of that of the 3rd Armored Division. Corps artillery left behind 17 percent of its stocks and a small slice of corps and COSCOM equipment.³⁵

The example of one unit is illustrative of the experience of the VII Corps. The 1st Battalion, 5th Field Artillery, commanded by Lieutenant Colonel Harry Emerson, was a 155mm self-propelled howitzer unit in the 1st Infantry Division (Mechanized). The battalion had deployed out of Fort Riley, Kansas. After the ground campaign, it moved to the western sector with the rest of the division. A small advance party preceded the battalion to its RAA near KKMC. On 10 April, the battalion shifted to a staging area prior to its move to its RAA, RAA Huebner, on 15 April. The 136-mile move took three days.³⁶

In the RAA, preliminary vehicle washing commenced immediately, utilizing chemical decontamination apparatus. Ammunition was downloaded and turned in. Unit equipment was loaded onto containers, tents were cleaned, and personal equipment was mailed home.³⁷

On 24 April the battalion divided into three groups. The largest group road marched the battalion's wheeled vehicles to the washrack at KKMC, where the vehicles were staged for a convoy to the FSA in Dhahran, which took place on 26 April. Another group cleaned up RAA Huebner, then drove the tracked vehicles to a point where HETs picked them up to take them to the FSA. The drivers were then trucked or flown to Dhahran. A rear element was left at Huebner to pack up and then fly to Fort Riley on 2 May as the battalion's advance party.³⁸

The battalion moved right to its PMA at Khobar Towers, which now had many health and welfare services for the troops, such as several PXs, many local concessionaires, movie theaters, recreation centers, and gyms. The high-rise suites were jammed with soldiers; as many as 20 shared a room.

The battalion's vehicles were washed at a wash facility near the desalinization plant south of Khobar Towers, near the causeway to Bahrain. All the vehicles were washed, inspected, then moved to a sterile holding area at King Fahd International Airport. The 1st Division was retaining its desert-tan coloring on its vehicles, so no repainting was required. It took 48 hours of intensive washing to complete the tracked vehicles, followed by a day and a half on the wheeled vehicles. By the end of 2 May, all the battalion's vehicles were in the sterile area waiting for the ships and the berths to become available at the port of Dammam. On 10 May the battalion's soldiers flew back to Fort Riley from Dhahran on three flights. Fifty soldiers were left behind with the division's rear party to assist the loading of the vehicles

³⁵22nd Support Command, LOGSITREP R+154, 12 August 1991, U.S. Army Center of Military History, Washington, D.C., 15.

³⁶1st Battalion, 5th Field Artillery, Operation Desert Storm, 23.

³⁷Ibid.

³⁸Ibid., 24.

onto the ships. Shipping for the division was backlogged into July, and it was not until 5 July that the last elements of the 1st Division were loaded.³⁹

The 1st Brigade, 3rd Armored Division, was retained in Kuwait as the rest of the VII Corps left. The brigade was slated to stay in Kuwait only until U.N. forces took over the peacekeeping mission from the brigade. However, the government of Kuwait wanted to retain an American combat force as a safeguard while the country recovered from the devastation of the Iraqi occupation. To replace the brigade, the decision was made to bring in another unit from Germany, one that had not participated in the war. The 11th Armored Cavalry Regiment was selected.

The 11th ACR deployed in mid-June. With reinforcing elements, it was called Task Force Victory. Upon arrival in theater, the regiment drew equipment from CEGSWA at KKMC and road marched to the Doha compound just west of Kuwait City. The 1st Brigade then joined the rest of the corps in redeployment processing.⁴⁰

With the corps streaming out of the theater, the higher organizations also departed when the need for them was no longer there. The CENTCOM headquarters departed after the signing of the U.N. cease-fire. The main body of the ARCENT headquarters redeployed on 11 May. The 22nd Support Command became the theater headquarters.

Throughout the redeployment, the support command conducted after action reviews with the departing units and subordinate units to facilitate the drawing up of lessons learned from the deployment and the ground campaign. The lessons were then incorporated directly into future planning. On 1 April all major commands within the 22nd Support Command, as well as the logistical organizations of the corps, conducted a formal after action review. A follow-on after action review for the MMCs in the theater was conducted on 6 April.

In less than 90 days, 365,000 soldiers were moved out of the theater. In six months the equipment of the two corps was also moved out of the theater. The structure built up to receive the troops and conduct the ground war had been successfully expanded and modified to redeploy the troops. The challenge of completing the closeout of the theater was still ahead for the theater logisticians.

³⁹Ibid., 25.

⁴⁰22nd Support Command, Command Report, 16 March 1991—2 January 1992, 5.

Chapter 7

Residual Force Operations

Complete the Mission.

—Motto of the 711th Transportation Group (Provisional)

Planning the Retrograde

With the departure of the corps, emphasis now shifted to the prepositioning of materiel and the retrograde of the equipment and supplies not needed for prepositioning.

There was no precedent in Army experience for a theater closeout operation. In the past the Army had either stayed, abandoned materiel hastily, or handed it over to allies. This time that was not possible. The size of the deployment, catching the military during a period of drawdown and reduced budgets, meant that a large proportion of the materiel had been sent to the theater. In many ways the Army's future had been mortgaged to execute the deployment. The materiel had to be returned; it was irreplaceable.¹

To command the redeployment of personnel and the retrograde of materiel, General Schwarzkopf took a unique action—he appointed his chief logistician, Lieutenant General Pagonis, to be his successor as the on-site theater commander. As Commanding General, CENTCOM (Forward), Pagonis had not only the Army elements under his command, but also all the Marine, Navy, and Air Force troops still in the theater. This allowed for a single point of contact for the retrograde. It marked the first time in Army history that an overseas theater was commanded by the chief logistician in that theater.

In the event, the redeployment proved to be the toughest part. This final chapter in the desert campaign included redeployment of all personnel and materiel, creating reserve provisional units, repositioning a guard force in Kuwait, conducting exercises with combatant forces, bringing in a Patriot brigade, and creating a permanent presence in Kuwait of prepositioned equipment and caretaker personnel—all accomplished six months ahead of schedule.

Detailed planning for this final stage continued as the corps moved to the ports. Revisions now divided this final operation into three phases. Phase I, Retrograde and Reception, was projected to last from 1 June to 15 August. This included the completion of the departure of the corps materiel; the

¹Michael Gordon, "Removing Troops and Equipment Isn't Easy Either," *New York Times*, 26 April 1991.

reception of the 11th ACR to replace the 1st Brigade, 3rd Armored Division, in Kuwait; and the reception of replacements for the logistical units departing the theater. Phase II, Materiel Movement, was projected to last from 15 August through 15 December and was heavily dependent upon decisions on the size and location of prepositioned equipment and supply stocks, and host nation contracts. Once these issues were resolved, necessary prepositioned stockpiles would be established and the remaining equipment and supplies would be moved to the port and shipped out of the theater. Phase III, projected to last from 15 December until April 1992, was Transition to Closeout, the closeout of theater facilities, and the establishment of a small residual force to take care of the prepositioned equipment and supplies. Shipments not previously completed would also continue. Ammunition, in particular, was expected to move through the port rather slowly and was programmed deliberately to leave last.²

The major redeployment problem facing theater logisticians was a tough one—who was going to do it? Roughly three-quarters of the CSS units in the theater were reserve component units. With the withdrawal of the active component combat troops, it would be hard to justify the retention of reserve units to the public and politicians back home. All the equipment left in the theater had to be organized, cleaned up, and sent home. And there was little force structure in the active Army to do this mission.

Public clamor for the return of the reservists was high. The activation of many more reserve units, of which there were few service support units already untouched, seemed unwise, as did the retention of the units already in theater. Eventually the Department of the Army directed that all nonvolunteer reservists were to be out of the theater by 1 July. It became clear that the residual force would have to include mostly volunteers.³

The 22nd Support Command came up with a unique solution to this dilemma—the establishment of 61 provisionally organized units made up of individual replacements. These units would be supported by the deployment of six active component units and the mobilization for 120 days of four USAR terminal transfer units (TTUs). Individual replacements would also be used to replace members of units staying in the theater. Host nation contracting was to be employed to the maximum extent possible to leave the residual force as austere as possible. Port operations, which were handled by subordinate elements of the 7th Transportation Group during the deployment and corps redeployment, would be carried out by civilian stevedores, supervised by elements of the Military Traffic Management Command (MTMC). The plan was outlined in the 22nd Support Command's OPLAN 97-1, Reception, Staging, and Onward Movement of Replacement Units and Individuals, published on 5 June.⁴

Forces retained in the theater after the Fourth of July were designated as the Southwest Asia Residual Force (SWARF). It was under the auspices of SWARF that replacement units and individuals were assembled. Detailed planning went into the structure of the residual force. An analysis of the mission was utilized to determine the exact composition of the force. As lists of units to redeploy were drawn

²22nd Support Command, briefing slides, 3-Phased Brief, 1991, U.S. Army Center of Military History, Washington, D.C.

³22nd Support Command, Command Report 16 March 1991—January 1992, Tab B, 3.

⁴Ibid., 8-9.

up, determinations were made as to whether there were a need to replace them. New missions and taskings were also identified.

The goal of planning was to establish the residual force structure with minimal impact on the retrograde mission. The virtual replacement of the whole command had to be a smooth transition. Individual replacements would come from three sources: active and reserve personnel who volunteered to stay after their units departed, active component volunteers, and reserve component volunteers.

Soldiers in theater who voluntarily extended their tours after the departure of their unit were allowed to take leave during the May-July time frame when the replacement operation would be beginning. Transportation to the United States was accomplished through the utilization of the Military Airlift Command's Channel flight program. This program provided regularly scheduled chartered commercial air flights from Dhahran to Philadelphia. Small units, individual replacements, and soldiers on leave and temporary duty were able to use this means to get to Philadelphia. Soldiers on leave were then responsible for making their own way to their leave destinations and then back to Philadelphia for a return flight.

In early June, the Department of the Army called for volunteers of various military specialties throughout the reserve components. A parallel search was also conducted throughout the active component. The result was the amassing of 6,000 volunteers around which the provisional units were organized.⁵

Replacement units were organized using three methods. The first was the retention of the flag and name of a departing unit in theater. Several reserve component units would then actually exist in two places at once—demobilized back at their home station in the United States and as a provisional unit, filled up with individual replacements and volunteers from the original unit, in Southwest Asia. Several of these replacement units, such as the 321st MMC, were actually given new names, the 11th MMC in the case of the 321st, but the old name was still used within the theater to avoid confusion.⁶

The second method was to form a provisional unit from scratch in the theater. The first unit formed this way during the redeployment was the 2nd Area Support Group (Provisional), which was organized on 1 June, to fill the void at KKMC created by the departure of the 226th ASG.⁷

The last method was to leave an existing unit, usually an active component one, in the theater, but to completely turn over all its personnel except those who volunteered to stay. The 593rd Area Support

⁵22nd Support Command, Command Report 16 March 1991—January 1992, 8.

⁶Memorandum, 22nd SUPCOM G3 Force Modernization, "SWA Residual Force," 5 August 1991, U.S. Army Center of Military History, Washington, D.C.

⁷22nd Support Command, Command Report 16 March 1991—January 1992, Tab B, 2.

Group and the 22nd Support Command headquarters were restocked with fresh replacements in this manner.⁸

Equipment for replacement units would come from departing units. The departing unit would, in a sense, sponsor its own replacement and sign over its organizational equipment to the follow-on unit.⁹

The only reserve component units to be specifically mobilized for the retrograde phase were four of the MTMC's terminal transfer units (TTU). These units were organized without field equipment and were not designed to be deployed out of CONUS; accordingly, they were mobilized only for 120 days. The TTUs were composed of experts in seaport terminal operations who were organized to manage the activities of civilian contracted labor at the port—exactly the mission awaiting them in Saudi Arabia. These unique units employed the LOGMARS automated system for loading ships, under which each piece of cargo was marked with a small, scannable tag, thus facilitating cargo assignments and accountability.

As the retrograde entered its final stages, the residual force would be drawn down. When a unit's function was over, the unit would be dissolved and its members redeployed. A small caretaker force would be left to supervise the last of the ammunition retrograde. CEGSWA would also remain as a permanent organization to look after the prepositioned equipment.

As a final preparation to executing the retrograde mission, the 22nd Support Command conducted a commander's conference in Dhahran on 7 July. Each subordinate unit reviewed its plans for the three phases and briefed it to General Pagonis. The conference served as an in-progress review of the operation.¹⁰

Prepositioning Planning

Prepositioning of equipment configured in unit sets had been long projected to allow a swift American response to future threats to the Arabian Peninsula and to facilitate the conduct of joint exercises on a periodic basis in the region. The Gulf states had long resisted a permanent U.S. presence in the area, but after the threat to the region's security posed by Iraq in August 1990, hopes were raised high that the local nations would now allow such a presence.

The prepositioning issue went through an evolutionary process that ultimately resulted in the storage of a battalion 3x3 (three tank companies and three mechanized infantry companies) task force set with limited service support and 45 days of supplies in Doha, Kuwait.

⁸Ibid., 8, Tab B, 2-3.

⁹ARCENT SUPCOM, OPLAN 91-7: Reception, Staging, and Onward Movement of Replacement Units and Individuals, 5 June 1991, U.S. Army Center of Military History, Washington, D.C., 3.

¹⁰22nd Support Command G-3 Force Modernization, Memorandum, " July 7, 1991, Commanders Conference," 9 July 1991, U.S. Army Center of Military History, Washington, D.C.

Original U.S. projections in the immediate wake of the 100-hour victory envisioned the prepositioning of equipment for an armored division, two-thirds in Saudi Arabia and one-third in Kuwait. On 12 April the Department of the Army established a special team from the Office of the DCSLOG, headed by Major General Charles Murray, to establish POMCUS requirements for Southwest Asia and provide equipment disposition instructions.

The team arrived in Saudi Arabia in the midst of the redeployment of the VII Corps and subsequently worked with the corps and the support command in turning in equipment for deactivating units. The team worked on the POMCUS problem until the end of May, reporting to the Vice Chief of Staff of the Army with its results. The Murray Report gave a detailed breakdown of the on-ground POMCUS to establish the prepositioned armored division and supporting elements, totalling 51 unit sets. The team also addressed the organization of CEGSWA to maintain the equipment.¹¹

The Murray Report also broke down theater supplies into two general categories—operational projects and war reserves. Operational projects included six major systems to be stored in the theater that were designed to specifically support the special conditions found there. Included were an inland petroleum distribution system, with 310 miles of pipeline, water production, and storage equipment; material to support the aerial delivery of supplies; port handling equipment; the stockpile of equipment donated by Germany and Japan; and life support equipment, mostly the familiar washbasins, showers, and latrines, to support a troop population of 6,000.¹²

War reserves were more conventional supply stockpiles to support a mission for up to 45 days. The Murray Team gave a detailed listing of these to the 321st MMC to process for retention in the theater.¹³

Negotiations with the Saudis continued. On 3 July, CENTCOM submitted a comprehensive proposal for prepositioning, which included requirements for warehouse facilities and plans for combined exercises utilizing the prepositioned stocks. The Saudis hesitated. As the negotiations continued, the need for guidance to plan and begin the materiel retrograde was necessary. On 18 July, CJCS General Colin Powell, through a memorandum to the Chief of Staff of the Army, provided further guidance indicating that, as negotiations continued, planning should be made to retrograde all materiel out of the theater, but that items currently projected for prepositioning would be programmed to leave last.¹⁴

Negotiations with the Saudis ended on 18 August when the Saudi Chief of Armed Forces Operations, Major General Yousef Mohammed al Madani, indicated that while his government would allow certain

¹¹HQDA Disposition Team, HQDA Southwest Asia Disposition Team After Action Report, 30 May 1991, U.S. Army Center of Military History, Washington, D.C., 4.

¹²Ibid., Section III, 1.

¹³Ibid., Section III, 2.

¹⁴Chairman, Joint Chiefs of Staff, Memorandum, "SWA Prepositioning—Decision Deadline," 18 July 1991, U.S. Army Center of Military History, Washington, D.C.

Air Force materiel to be positioned, there would be no prepositioning of any U.S. Army materiel in Saudi Arabia.¹⁵

As a result, prepositioning attention was refocused on Kuwait, which showed a willingness to allow prepositioning. The Kuwaitis wanted as large a force as possible to be prepositioned. Initial planning began with the armored division force originally planned for Saudi. This size force, while acceptable to the Kuwaitis, was too much prepositioned materiel, too far forward, for policy makers to accept. The proximity of the emirate to Iraq and Iran would place the equipment in a vulnerable position, so a much smaller amount of prepositioned materiel was judged more appropriate.

Camp Doha, a gutted warehouse complex on a peninsula jutting out into the Gulf of Kuwait just west of Kuwait City, was chosen as the POMCUS site. The 11th ACR, based at Doha, was in the process of cleaning up the camp. As part of the drawdown, CEGSWA would now move to Doha after its mission was completed in KKMC, reorganize, and take charge of the Army's mission in Kuwait.¹⁶

Retrograde and Reception

On 8 June, the Desert Storm victory parade was held in Washington, D.C. In Saudi Arabia and Kuwait, the theater logisticians began concentrating on the transition to replacement units and individuals. While the expected replacement rate was planned to be 350 soldiers a week, the replacement flow did not keep up; at one point the command group of the support command was down to just four people. The influx of replacement units began on 8 July with the arrival of the 365th Supply and Services Battalion headquarters. Simultaneously, the provisional 165th Heavy Materiel Supply Company replaced the original 165th, a pattern that would be repeated throughout the theater until the last provisional unit was stood up on 17 September. A list of provisional units is found in Table 7.¹⁷

Individual replacements reported first to the reception center at Fort Dix, New Jersey. Reservists were put on individual temporary tours of active duty. As such they and many of their active component counterparts were technically still assigned to the unit from which they came, but only attached to their SWA unit. The result were myriad different patches on the left sleeves of the SWARF soldiers' uniforms, where under normal conditions, the soldiers would all be wearing the same patch.

At Fort Dix replacements were organized into units prior to deployment. The unit chain of command was established immediately. Upon arrival at the Dhahran APOD, the new units were greeted by members of the 442nd Personnel Service Company, who put the newcomers in temporary quarters at Khobar Towers, called the "Arabian Hotel," until they finished in-processing and were sent to their permanent locations. Fillers for the SUPCOM headquarters were grouped together under their senior

¹⁵22nd Support Command, Command Report 16 March 1991—2 January 1992, 9, Tab B, 4.

¹⁶Ibid, 4; 22nd Support Command, Executive Summary to After Action Review, 1991, U.S. Army Center of Military History, Washington, D.C., 4.

¹⁷22nd Support Command, Command Report 16 March 1991—2 January 1992, Tab B, 3.

officer and then dispatched to their permanent section shortly after their arrival. New units took over for other units.

Table 7. 22nd Support Command Replacement Units:
Residual Force Provisional Units

HHC, 22nd Support Command
HHC, 22nd Support Command Forward (Provisional)
HHC, 6th Signal Command
HHC, 2nd Aviation Brigade
HHC, 57th (1st) Area Support Group (Provisional)
HHC, 58th (2nd) Area Support Group (Provisional)
HHC, 593rd Area Support Group
HHC, 711th Transportation Group (Truck) (Provisional)
11th (321st) Materiel Management Center (Provisional)
HHC, Combat Equipment Group, Southwest Asia (Provisional)
HHC, 102nd (1st) Area Support Battalion (Provisional)
HHC, 210th Military Police Battalion (Provisional)
HHC, 22nd Ordnance Battalion (Provisional)
HHC, 33rd (3rd) Personnel and Administration Battalion (Provisional)
HHD, 54th Signal Battalion
HHD, 365th Supply and Services Battalion (Provisional)
HHC, 88th Supply and Services Battalion (Provisional)
HHC, 72nd (702nd) Transportation Battalion (Provisional) (Companies B, C, F)
HHD, 1103rd Transportation Battalion (Provisional) (Companies A, D, 72nd Trans Det)
HHC, 17th Maintenance Battalion (Provisional) Task Force 11 (Provisional)
Co A, 7/158th Aviation Battalion (Provisional)
107th Maintenance Company (DS) (Provisional)
164th Maintenance Company (DS) (Provisional)
304th Maintenance Company (Heavy Equipment) (Provisional)
216th Medical Company (Ambulance) (Provisional)
438th Military Police Company (Provisional)
445th Military Police Company (Provisional)
838th Military Police Company (Provisional)
442nd Personnel Support Company (Provisional)
144th Heavy Materiel Supply Company (Provisional)
165th Heavy Materiel Supply Company (Provisional)
207th Signal Company
550th Signal Company
251st Supply and Services Company (Provisional)
295th Supply Company (GS)
539th Supply Company (GS) (Provisional)
590th Supply and Services Company
946th Heavy Materiel Supply Company (Provisional)

Table 7 (cont.). 22nd Support Command Replacement Units:
Residual Force Provisional Units

1355th Supply and Services Company (Provisional)
650th Terminal Transfer Company
31st (9003rd) Transportation Company (Heavy Truck) (Provisional)
471st Transportation Company (Light/Medium Truck)
2220th Light/Medium Truck Company (Provisional)
338th Finance Support Unit (Provisional)
122nd Medical Detachment (Dental) (Provisional)
483rd Medical Detachment (Vet)
146th Ordnance Detachment (EOD)
16th ATMCT (Provisional)
158th ATMCT (Provisional)
271st Movement Control Team (Provisional)
253rd Movement Control Team (Provisional)
256th Movement Control Team (Provisional)
259th Movement Control Team (Provisional)
262nd Movement Control Team (Provisional)
267th Movement Control Team (Provisional)
588th Movement Control Team (Provisional)
628th Movement Control Team (Provisional)
ISEC-CA
Engineer Housing Support Center, Detachment 2
MTMC-SWA
HHC, 2nd Area Support Battalion (Provisional)
HHD, Combat Equipment Battalion-K (Provisional)
Company A, 17th Maintenance Battalion (Provisional)
555th Materiel Handling Equipment Company (Provisional)
9004th Transportation Company
Combat Camera Detachment (Provisional)
U.S. Army Terminal Transfer Unit (Provisional)
ARCENT Contracting Command
HHD, Support Command Medical Group (Provisional)

NOTE: Provisional units were organized using individual replacement volunteers from the active component and reserve component (RC). Most retained the name of the organization they were replacing. Several methods were used: (1) Organizations were retained in theater and filled with individual replacements and volunteers from the original organization who chose to stay in theater; (2) RC units were filled with replacements, but retained the original unit designation on a provisional basis; (3) Several new provisional organizations were raised from theater assets; (4) RC units were filled with replacements, retaining original unit designation on a provisional basis within the theater (in parenthesis), but given a new designation outside the theater.

General Pagonis personally briefed all 6,000 newcomers as they came into the theater to emphasize the importance of their mission and to get them functioning as a team as soon as possible, with them realizing they were now members of the 22nd Support Command.

As already discussed, a reduced 11th Armored Cavalry Regiment deployed to replace the 1st Brigade of the 3rd Armored Division in Kuwait in mid-June. Saudi, Egyptian, British, Syrian, and United Nations forces were still in Kuwait, responsible for specific sectors. The regiment arrived at KKMC and received equipment from the CEGSWA stocks left behind by the VII Corps for prepositioning. After receiving the equipment, regimental units road marched to Camp Doha and relieved the 1st Brigade in place one battalion at a time. The 3rd Armored Division equipment was loaded up and moved to the port of Dammam for shipment. Then the brigade's troops departed.¹⁸

The 593rd Area Support Group had established a FASCO at Doha to support the brigade. This mission continued with the arrival of the 11th ACR, which, with its attached and supporting units, was called Task Force Victory. In preparation for the arrival of the regiment, the FASCO had prestocked supplies and prepared Camp Doha.¹⁹

FASCO Doha had laid the groundwork for logistical support at Camp Doha. Its members negotiated contracts and assisted businesses to provide support to the camp. It conducted battle damage assessment and recovery, which resulted in the collection of thousands of pieces of captured enemy equipment and the disposal of up to 5,000 pieces of ordnance a day. The FASCO was also instrumental in the establishment of a 350-bed hospital at Doha and worked closely with the Defense Reconstruction Assistance Office, which brought U.S. companies into Kuwait to assist in the restoration effort. Once again the FASCO concept played a key role in CSS operations.²⁰

The 11th ACR was deployed to provide a U.S. combat presence in Kuwait while that nation was still recovering from the effects of the Iraqi occupation. Additionally, the regiment was tasked to establish Camp Monterey and Gibbs Range, two training facilities in the desert northwest of Camp Doha, which were projected to be used by units from Europe rotating in to train there. The ACR was also responsible for helping establish Camp Doha as a viable facility to store equipment and supplies to be used by these units.²¹

The continued danger of unexploded ordnance on the ground in Kuwait was demonstrated by two large explosions that occurred at Camp Doha during the period that the 11th ACR was there. On 11

¹⁸22nd Support Command, Executive Summary to *After Action Review*, 1991, 2.

¹⁹ARCENT SUPCOM, OPLAN 91-6: Reception, Staging, and Employment (RSE) of the 11th ACR (-), 20 May 1991, U.S. Army Center of Military History, Washington, D.C., 2-3.

²⁰"FASCO Operations," TMs, 1991, U.S. Army Center of Military History, Washington, D.C., 2.

²¹ARCENT SUPCOM, OPORD 91-9: Redeployment of Task Force Victory "Operation Logger Store," 14 August 1991, U.S. Army Center of Military History, Washington, D.C., 4.

July, 53 soldiers were injured when ammunition exploded and caused a fire in one of the motor pools. Twelve days later, two soldiers from the ordnance disposal team, which was clearing up the remnants of the previous accident, and one soldier from the 11th ACR, were killed when some of the ammunition they were clearing accidentally detonated. Ammunition, mines, bombs, and other ordnance remained scattered around Kuwait and soldiers were allowed to travel only through cleared areas and required to remain on roads.²²

The 11th ACR had been planned to be deployed to Kuwait only for 90 days. As early as 28 July, plans were drawn up to redeploy the regiment at the beginning of September.²³ The government of Kuwait requested a continuation of U.S. presence, and, in response, a battalion task force consisting of two tank companies, two mechanized infantry companies, an engineer platoon, and CSS elements was assembled under the 8th Infantry Division (Mechanized) in Germany. This smaller force, christened Task Force Victory II, would take over the 11th ACR's responsibilities for Camp Monterey and Gibbs Range. The 593rd FASCO would assume responsibility for Camp Doha.²⁴

Some of the equipment used by the 11th ACR would be retained in Kuwait to form the POMCUS set, the equipment for a reinforced battalion with three tank companies and three mechanized infantry companies. What was not needed for repositioning would be hauled to Dammam to join the materiel retrograde.²⁵

In preparation for the arrival of the new task force, FASCO Doha prepositioned seven days of supply at Doha. Task Force Victory II, like its predecessor, drew its equipment from CEGSWA at KKMC and convoyed to Doha, where it relieved the 11th ACR. The 11th ACR ended all its operational missions on 1 September and was supplanted by the battalion task force on 14 September. 11th ACR personnel redeployed by air back to Germany.²⁶

Although Iraq had signed a peace treaty, it soon became clear that it would not follow the conditions of the treaty without being pressured, particularly when it came to United Nations inspectors checking for weapons of mass destruction. In mid-September the government of the Kingdom of Saudi Arabia became fearful that Iraqi intransigence would result in renewed Scud missile attacks on its citizens and requested renewed U.S. support. Accordingly, elements of the 94th Air Defense Artillery Brigade, including two Patriot missile battalions, were alerted in Germany for deployment to Southwest Asia.

²²22nd Support Command, Executive Summary to After Action Review, 1991, 2-3.

²³ARCENT SUPCOM, OPORD 91-8: Class VII and V Retrograde Plan, 28 July 1991, U.S. Army Center of Military History, Washington, D.C., 3.

²⁴ARCENT SUPCOM, OPORD 91-9, 2.

²⁵Ibid., 3.

²⁶ARCENT SUPCOM, OPLAN 91-10: Reception, Staging, and Employment of Task Force 2x2 (TF 2X2), 17 August 1991, U.S. Army Center of Military History, Washington, D.C., 2-3.

Despite this deployment, the materiel retrograde was to continue. In fact, the deployment had to be taken in stride without hindering the retrograde.²⁷

The brigade completed its deployment by 1 October. Patriot batteries were placed around Riyadh, KKMC, Dhahran airfield, and at Dammam port. Some of the elements of the 94th Brigade had served in Israel during the air and ground campaigns, having the distinction of being the only Army units to be redeployed to the theater after having been there previously.²⁸

Organization for the Materiel Retrograde

With the establishment of the replacement units and the decision to preposition no combat vehicles in Saudi Arabia and only a battalion task force in Doha, Kuwait, the materiel retrograde could be put into focus. The SUPCOM's OPORD 91-8, Class VII and V Retrograde Plan, outlined the plan. The plan called for the maximum use of all available resources. Wash facilities would operate on a 24-hour basis. Major units in the theater were given daily quotas of vehicles to be moved to Dammam for shipment.²⁹

For the retrograde of materiel, the 22nd Support Command once again reconfigured to execute a mission (Figure 12). The command was divided essentially into two groups. A northern group, under Headquarters, 22nd Support Command (Forward), headed by Brigadier General Jones, was based at KKMC. Its principal operating units were the 2nd Area Support Group and CEGSWA. This group's mission was to continue the sorting out of the materiel and its movement to the ports or into POMCUS storage sites. All the supplies from the logbases had been consolidated at Logbase Bravo at KKMC with the materiel originally earmarked for prepositioning. Ammunition was stored at TSA 4, near Logbase Bravo, and TSA 5, located at Artawiyah, halfway between KKMC and Riyadh.³⁰

The second group was the main 22nd Support Command headquarters in Dhahran. Its principal operating units were the 1st and 593rd Area Support Groups, centered in the Dammam-Dhahran area. Most replacement units assigned to the Dhahran area were housed in the Khobar Towers complex, now under-utilized with the departure of the last VII Corps troops. Khobar Towers was used in order to close most of the other smaller compounds in the Dhahran area. Additionally, Air force personnel were moved into Khobar Towers, which was located within minutes of the Dhahran flightline.³¹

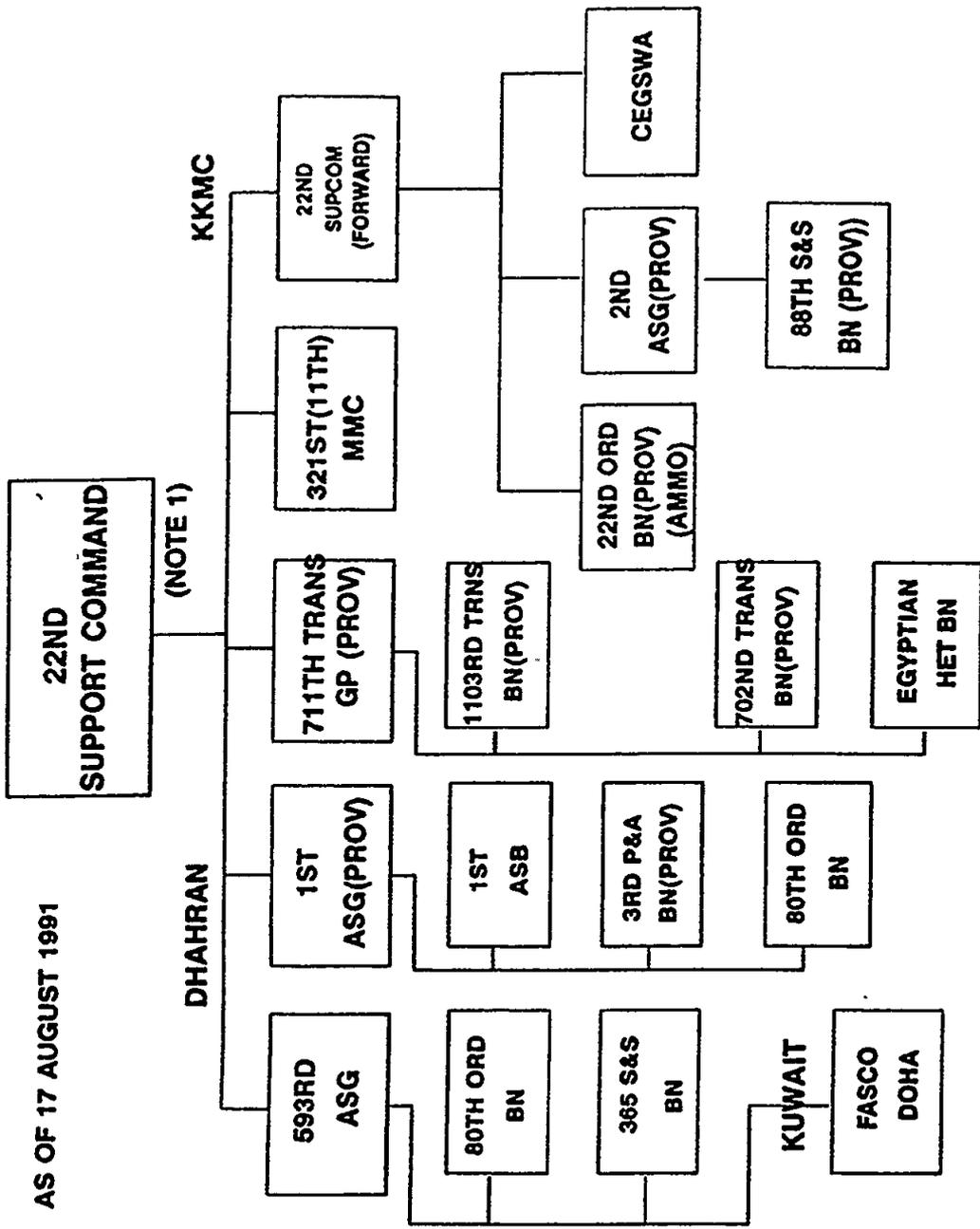
²⁷ARCENT SUPCOM, OPLAN 91-11: Logistical Support of Operation Determined Resolve, 19 September 1991, U.S. Army Center of Military History, Washington, D.C., 2-3.

²⁸22nd Support Command, Command Report 16 March 1991—2 January 1992, 6.

²⁹ARCENT SUPCOM, OPORD 91-8, 3.

³⁰22nd Support Command, Command Report 16 March 1991—2 January 1992, 3, 7.

³¹Ibid., Tab B, 2.



**NOTE 1: ADDITIONAL UNITS DIRECTLY UNDER THE SUPCOM HQS:
2ND AVN BDE, 6TH SIGCOM AND SUPCOM MED GP (PROV).**

Figure 12. 22nd Support Command Redeployment Organization

A third, smaller group was located at Camp Doha in Kuwait. This group began as a FASCO from the 593rd ASG to support the 1st Brigade, 3rd Armored Division. The FASCO continued to support the 11th ACR and the follow-on Task Force Victory II.

With the final repositioning decision made, fine tuning of plans took place. CEGSWA would now transition from KKMC to Doha, where it would establish a technical relationship with the only other similar units in the Army's structure under the 21st TAACOM in Europe.

Camp Doha began as a war-ravaged collection of gutted warehouses and other buildings. Debris was cleared and more troops were brought in as CEGSWA shifted operations there. Plans to move sleeping barges there proved to be too expensive. Accordingly, warehouses were converted into barracks, with plywood dividers separating living areas. Wooden latrines, washbasins, and showers were again the primary means of sanitation. Doha strength grew progressively as CEGSWA moved there in early November. Washracks and other equipment-cleaning places were established.

The continued deployment of the Patriots beyond the departure of the 22nd Support Command headquarters necessitated command and control realignments. Brigadier General Harvey Brown, the head of AMC-SWA and DCG for Logistics, 22nd Support Command, was redesignated as DCG, ARCENT (Forward). Upon departure of the support command on 1 January, General Brown would become CG, ARCENT (Forward), the umbrella headquarters over all the Army troops remaining in the theater. CEGSWA would then be renamed U.S. Army Kuwait (USAK).³²

The materiel retrograde began as soon as the last elements of the corps departed. While repositioning plans were modified and replacement units brought in, the retrograde continued. Once the final decision on reposition was made and the replacement units and individuals were on the ground, the retrograde picked up momentum. On 9 September, the SUPCOM conducted a logistics exercise to review the closeout of the theater in detail. Each subordinate unit and staff section briefed detailed plans for drawing down their organization and executing their part of the materiel retrograde mission.

The materiel retrograde was managed closely by the commodity managers in the 321st MMC, working with points of contact in the SUPCOM LOC for each class of supply.

As it did throughout the deployment, transportation again played a key role. The 711th Transportation Group (Provisional), commanded by Colonel James Burns, had been activated on 16 August 1991 upon the departure of the 7th Transportation Group headquarters. While MTMC and its TTUs had assumed responsibility for the port operations, the 711th addressed the void in command and control over motor transportation operations in the theater. It was organized with the minimum of personnel and equipment, and controlled two provisional transportation battalions, the 702nd and the 1103rd, and the legendary Egyptian HET battalion. The 702nd, under Lieutenant Colonel Charles Fletcher, controlled 1,500 host nation flatbed tractor trailers organized into three companies located at Dammam and KKMC. The 1103rd, led by Lieutenant Colonel William Orrell, controlled 785 HETs and lowboys based out of a large motor pool outside Dammam. The 1103rd also had the 471st Terminal Service Company, which supported the PSA by assisting in ship loading, and the 72nd Transportation

³²Ibid., 6.

Detachment, which provided qualified tracked vehicle drivers wherever they were needed throughout the theater. The Egyptian HET battalion provided 99 commercial-design HETs large enough to carry M1A1 tanks. The 711th was tailored to perform the redeployment motor transportation mission.³³

A comprehensive transportation plan was drawn up to move the materiel systematically to the port. The heavy dependence on TCN drivers required innovative control measures and management techniques. Drivers had to be closely supervised, particularly when hauling ammunition. Convoys were large, sometimes more than 100 vehicles; they were so large because TTPs were impractical due to the hodgepodge of tractor and trailer types used by the host nation contractors. Drivers and vehicles frequently would vanish from convoys taking up more than ten miles of road space, only to reappear several days later at their destination. Only a limited amount of control could be maintained, mostly through fastidious attention to these contracted drivers' time cards. Despite the uniqueness of the situation, the equipment and supplies were successfully delivered to the port in a timely manner.³⁴

When the projected completion date of the materiel retrograde was accelerated by several weeks, the flexibility of the use of contracted labor was displayed. The contracts allowed for the use of 200 more trucks, which in turn were released after the surge period had passed.³⁵

In a period of 91 days, from 16 August through 15 November, trucks of the 711th Group moved more than 260,000 STONs of supplies, 12,000 vehicles, and 6,400 containers. Besides moving materiel to the port, the group also supported humanitarian operations at the refugee camp at Rafha, the relocation of CEGSWA to Kuwait, and the redeployment of both Task Force Victories. The group drivers drove an average of 143,777 miles a day.³⁶

To complete the retrograde, several additional provisional units were organized, and several were given nonstandard missions. CEGSWA received two subordinate battalions to control its subordinate units providing life support functions at Doha, as well as its usual equipment warehousing functions. The 2nd Area Support Battalion was formed to replace FASCO Doha and included a uniquely organized MHE company.³⁷

Two of the keys to the retrograde were the washrack and port. To facilitate support for these activities, several provisional units were organized specifically with them in mind. Washrack units set up assembly-line-style efficiency in the washing of vehicles at the large washracks in the Dhahran-Dammam area. Once the equipment got to the port, the PSA units handled the loading and jockeying around of the equipment there. Departing or arriving units previously had been responsible

³³Colonel James W. Burns, Major Marianne Hook, and Captain Kenneth S. Lundgren, "Complete the Mission," TMs, 1991, U.S. Army Center of Military History, Washington, D.C., 2-3.

³⁴Ibid., 7-8.

³⁵Ibid.

³⁶Ibid., 10.

³⁷22nd Support Command, Command Report 16 March 1991—2 January 1992, 4, 8.

for these functions. But now there was equipment without soldier-operators or units, so such improvisation was called for.³⁸

The washracks were important because of stringent U.S. Department of Agriculture standards that had to be met before equipment could return to the United States. Accordingly, great effort was made to build and man the washracks. Washracks were built in the middle of the desert specifically to accomplish this mission. During peak periods, as many as 2,000 vehicles were worked through the racks each day.

Provisional units were organized for other missions not found in standardized Army doctrine. Several were designed specifically to supervise the execution of host nation contracts by civilian truckers. Others provided convoy escort service for the host nation drivers, thus enhancing control, security, and coordination of border crossings. Once missions were completed, provisional units were stood down.

Another improvisation was the creation of USA-TTU, a unit of volunteers from the four TTU units. USA-TTU provided the functions formerly performed by the TTUs after they departed.³⁹

To Close a Theater

Prior to their departure from Kuwait, Iraqi troops had set the Kuwaiti oil fields on fire. Throughout the redeployment phase, a grey pall hung over eastern Saudi Arabia from the oil plume. Finally, as a harbinger of the theater drawdown, the emir of Kuwait ceremoniously extinguished the last fire on 4 November, and the skies were quickly blue again.

The materiel moved out steadily. On 10 October, the retrograde of the 2,000 M1 tanks still in the theater was completed. The other 14,000 vehicles were gone by 4 November. A stockpile of 180 pieces of captured enemy equipment, to be used as museum pieces, trophies, and instructional aids, was also sent out of the theater.

The large stockpile of supplies was whittled down. Rations were completed on 2 November, packaged petroleum products on 11 November, followed by Class II (individual equipment) supply on the 14th. By 15 December, all materiel was gone except for ammunition, which, due to special loading considerations, would extend until March 1992.⁴⁰

Units also began departing the theater. As the assembled supplies at KKMC decreased, operations there were drawn down. On 18 November, 22nd Support Command (Forward) was deactivated, as the remaining members of the 21st TAACOM (CONUS Augmentation) unit, all of whom were volunteers, redeployed. Task Force Victory II redeployed during the first week of December.

³⁸Ibid., 8.

³⁹Ibid., 9.

⁴⁰22nd Support Command, Command Report 16 March 1991—2 January 1992, Tab B, 7.

As the drawdown culminated, the first joint Kuwait-U.S. exercise took place during the first two weeks of December. Exercise Iris Gold, sponsored by SOCCENT, the Special Operations Component of CENTCOM, featured an airborne assault by a ranger battalion, aviation, and amphibious operations. It was the first-ever U.S. exercise involving ground forces in the Persian Gulf region.

Support command facilities in the Dhahran area were also drawn down. Functions were transferred to ARCENT (Forward), located in a trailer on the tarmac at Dhahran airfield and at Dragon Base. Camp Jill became the primary billeting location, as Khobar Towers was handed over to the Air Force.

On 2 January 1992, General Pagonis and the remnants of his staff departed the theater. Left behind was ARCENT (Forward), controlling the limited operations in the Dhahran area through the 1st Area Support Group, USAK in Kuwait, and the Patriot brigade throughout eastern Saudi Arabia. Its primary responsibility was to complete the ammunition retrograde and size down to cadre strength.

The last ammunition ship departed in March 1992. USAK remained as a small cadre force composed of active Army soldiers on one-year tours. The Patriots were cut back to a token force and ARCENT (Forward) handed over its remaining functions to the USMTM.

The theater was closed. 541,425 soldiers were redeployed. 1.9 million STONs of materiel and 350,000 STONs of ammunition were retrograded. About 13,000 tracked and 117,000 wheeled vehicles and 41,000 containers were moved through the ports and out of the theater. Moving equipment to the ports required more than 52,000 lifts. More than 420 ships and 2,500 aircraft were employed to accomplish the redeployment/retrograde.⁴¹

In many ways, the retrograde phase was the most challenging part of the deployment operation for the theater logisticians. The retrograde had to continue while the force was turned over with the reception of 6,000 replacements and the organization of 61 provisional units. At the same time, the 11th ACR and the 8th ID task forces were brought in and then taken out of Kuwait, and the 94th ADA Brigade was received into Saudi Arabia. Exercises took place. Despite all this, the materiel departed the theater as much as six months ahead of schedule.

⁴¹Ibid., 13-14.

Part Four: Conclusions and Appendixes

Chapter 8

Conclusions and Observations

Conclusions

The Persian Gulf deployment was one of the largest, fastest, and farthest overseas deployments ever executed by the United States military. The United States successfully projected force to a region distant and novel to previous experience. Despite limited planning and the relatively late arrival of logistical units, all basic services were provided immediately to deploying units. The massive troop movements and supply buildup needed to execute the ground campaign were all accomplished so well that no combat mission was curtailed, or even affected, by logistical considerations. The theater was subsequently closed out by the return of all the soldiers, equipment, and supplies to permanent U.S. bases worldwide.

The three distinct phases—deployment, battle, and redeployment—were all unqualified successes. The force was deployed relatively quickly with an adequate supply buildup. The force was re-arrayed to execute and support the ground campaign, which went off in a virtually flawless manner. Troops and materiel were taken out of the theater quickly and efficiently. The war was won, the troops brought home billions of dollars worth of equipment, and supplies were returned to the Army system.¹

The theater logisticians from the start displayed a great flair for innovation and flexibility, which allowed them to deal with unique situations and find solutions where doctrine was inadequate, nonexistent, or in need of modification.

By its nature, theater logistics is tailored for the specific theater and operation. However, good planning can enable this tailoring to take place quickly. Prior to the Desert Shield deployment, theater logistics in the Gulf region was given limited review by CENTCOM planners. CENTCOM planning had only recently shifted to a focus on the defense of the Arabian Peninsula. Planning a package of units to support a deployed force had to be done in a vacuum, without any standing contracts with host nation agencies in Saudi Arabia.

United States Army logistics force structure was inadequate to support such a deployment. The United States has maintained a sizeable force of heavy divisions, but logistical support—particularly,

¹22nd Support Command, Closeout After Action Review, 1991, Lessons Learned Number USASG.OO1, U.S. Army Center of Military History, Washington, D.C. (hereinafter Closeout After Action Review).

sufficient trucks and other services—was lacking. The heavy divisions, with the exception of the XVIII Airborne Corps' 24th Division, were planned to be used only in a European scenario, where 40 years of host nation support, extensive roads, and railroads were in place, as well as prepositioned theater reserve stocks and POMCUS.

Host nation support proved to be essential to all phases of the deployment, in virtually every aspect of the operation. Shortfalls in logistics force structure and logistical units were readily compensated for by support from Saudi Arabia. The caveat here is that other places in the Third World, where the United States may be called for to project military power in the future, may not have the resources that were available in Saudi Arabia. The shortfalls apparent in logistics force structure and logistics cannot afford to be glossed over due to the fact that host nation assets were available to handle the shortfalls. The U.S. Army needs a fully self-contained logistical force prepared to conduct contingency operations anywhere on the globe. Lacking such logistical force structure, full contingency planning, using contracts, resource management, and host nation planning must be carried on to overcome this shortcoming.

The nature of the deployment threw asunder most prewar planning considerations. The hasty but urgent nature of the early deployment, without logistical units, the later buildup, and the ultimate size of the deployment all forced the Army to switch gears. In a nutshell, the Army moved its 40-year European war scenario to the Arabian desert. While force structure, unit designs, and training relationships were not specifically keyed to such a large contingency operation under such particular conditions, many of the lessons learned over the years in conducting the annual REFORGER exercises in Europe were transposed to the new situation. This training, coupled with a flexible force structure, allowed the U.S. forces to pull off the operation.

Many of the lessons learned in Desert Shield/Desert Storm show that flexibility needs to be incorporated into planning for future contingencies to match the flexibility displayed by the soldiers and their leaders as they executed a highly successful operation despite the shortcomings.

The Army's CAPSTONE program is an example of plans thrown asunder. Under CAPSTONE, all Army units have a mobilization (or wartime) mission based on Department of Defense strategic plans. Accordingly, units are grouped together under CAPSTONE chains of command to prepare to execute these missions. If the situation does not match the planning assumptions, then these relationships may become irrelevant. ARCENT contingencies had long been based on a scenario to thwart a Soviet drive through mountainous Iran to secure the Straits of Hormuz at the end of the Persian Gulf. Planning was too embryonic for a scenario of fighting a seasoned, mechanized Army across flat, trackless deserts. Expediency, particularly in theater logistics, became the call of the day. The Iraqi threat was too great. Dependence on the great assets available in the Eastern Province of Saudi Arabia was the only way to go.

Even as units deployed, they were not necessarily used in line with previous CAPSTONE relationships. They were given functional missions and were employed where they were most needed. This calls into question the rather rigid structure of the CAPSTONE unit trace.²

For the long deployment, most theater logistical functions were thrust onto the Army logisticians. Despite untested logistical doctrine to the contrary, a single umbrella theater logistics command evolved from a small host nation coordinating cell into a large command and control headquarters that was able to allow centralized planning and the decentralized execution of logistical support theater-wide. One commander, General Pagonis, controlled all echelons above corps (EAC) logistics assets. Pagonis's command style, coupled with his position as the single point of contact for theater logistics, allowed for the maximum utilization of theater logistical assets. Nothing was done in isolation, a common-enough syndrome among logisticians who often strive to do their own slice of the pie to perfection, but fail to notice that their piece of the jigsaw does not fit with the rest of the puzzle. Pagonis called this syndrome "sub-optimization" and crusaded against it through the use of many provisional multi-functional headquarters, numerous information-sharing meetings, and continual management of a widely decentralized operation.

The support command evolved into an organization long out of Army doctrine—a theater army support command (TASCOM). Confusion about the unique place of the 22nd Support Command in the Army organizational structure is so blatant that several official publications still refer to the command as a TAACOM, an organization it clearly was not. All major theater-level logistical functions except medical ultimately came under control of the SUPCOM. This allowed for centralized management of all assets. The medical command experienced problems due to a lack of transportation assets and warehouse space, which may have been solved easily if the medical personnel had been placed under the SUPCOM, since it controlled most of the theater assets in these areas. Had the war continued beyond the 28 February 1991 cease-fire, medical support would have become more critical, especially if greater friendly losses were incurred.³

The TASCOM concept needs to be incorporated into Army doctrine and organization, since it proved very effective in execution. It is also important that an army's doctrine reflects the way it actually functions.

An abundance of multi-functional logistics headquarters resulted in the first use of tailored provisional units and the organization of FASCO elements. FASCOs provided a predesignated and fully functional team tailored to control and execute a specific service support mission. For its specific mission, the use of a FASCO furnishes a single logistical point of contact. To prevent having to take

²22nd Support Command After Action Review, 5 April 1991, Lessons Learned Numbers 15459-75200 (00003) and 15838-37000 (00011), U.S. Army Center of Military History, Washington, D.C. (hereinafter After Action Review).

³After Action Review, Lessons Learned Number 15943-47300 (00012).

people out of other jobs to form FASCOS, they should be added to the Army's force structure as actual units.⁴

The extensive use of provisionally organized units, such as the broad usage of host nation support, demonstrates the inadequacy of the Army's force structure. The use of provisional units was necessitated by the lack of logistics units in the early days of Desert Shield and the appearance of many nonstandard functions, such as life support activities, control of host nation truck assets, and airport arrival activities. The later use of provisional units was necessitated by the employment of an all-volunteer force to execute the redeployment.

Provisional units, particularly in the redeployment phase, had steep learning curves to overcome, but proved effective, particularly when given adequate time to organize and train. The use of Fort Dix as the organization point gave units a head start. When the newly organized unit deployed, working with its sponsor unit allowed the necessary overlap to train and take over its function successfully. Army doctrine should establish a set procedure to implement the establishment of provisional units. Given the contingency nature of possible future U.S. involvements, the use of provisional units can be expected.⁵

Nonstandard missions became standard in this theater. Washrack units, convoy escort detachments, and PSAs proved essential to the smooth execution of the overall mission. Dedicated PSA units enhanced port operations in both deployment and redeployment phases. Nonstandard missions should be planned for in the Army's force structure.⁶

Army units were not structured for 24-hour shift operations. They were undermanned and under-equipped. In vehicle-intensive transportation units, there were not more operators than trucks, so trucks could not continue to be used while drivers rested. Donated, leased, and purchased equipment and filler personnel, authorized over-strength, and cross-leveling was used to accomplish the 24-hour mission.⁷

The retrograde phase was an intensive management effort that resulted in supplies being returned as much as six months ahead of projected schedules.⁸

Logistics units arrived late in the deployment timetables, a risky decision made by the National Command Authorities in light of the strength displayed by the Iraqi army on the Saudi frontier. In effect the President gambled that showing the colors, represented by fast-deploying combat troops, would make up for logistics deficiencies, and that Saudi Arabia could provide adequate temporary support. On both counts, he was proven right.

⁴Closeout After Action Review, Lessons Learned Number CG.002.

⁵Closeout After Action Review, Lessons Learned Number ASG593.001.

⁶Closeout After Action Review, Lessons Learned Number TRANS.002.

⁷After Action Review, Lessons Learned Number 15459-14200 (00001).

⁸Closeout After Action Review, Lessons Learned Number OPSINTEL.001.

The delay in deployment of logistical units, however, caused the theater logistical structure to be scraped together virtually from scratch. The initiative and management skills of several key individuals were tested to the maximum. Given a free hand, these leaders were able to find solutions. Future planning must take into account such contingencies so that dependence on key personalities will not be as necessary, thus decreasing the risk taken by U.S. forces, particularly if the key personalities do not measure up to the tasks assigned them.

The culture of Saudi Arabia provided at least as many challenges to the logisticians as did the climate. A closed society, the Saudis allowed U.S. forces into their country only because of the dire straits they found themselves in. American soldiers, coming from a culture that emphasizes individual rights above all, were thrust into a theocratic society intolerant of other religions, where alcohol, movies, and casual contact between members of the opposite sex are unknown. It is a society far different from the modern Western model—in Saudi, a man's value is determined by the chastity of his female relatives, all men dress alike in traditional garb, and women are veiled from head to foot and generally kept away from encounters outside their own household. Third country laborers, shopkeepers, and businessmen do most of the nitty-gritty work in the country, providing another melting pot of cultures the U.S. forces had to work with, since these people made up most of the contracted support provided by the host nation. The special status of women—which the Saudis consider to be respect, but which may appear to Western eyes to be inferiority—placed hardships on the female soldiers, who comprised 10 percent of the Army's personnel strength and were integrated in all areas except combat units. Women were particularly integrated into logistical units.

To make the deployment work, special attention had to be paid to cultural considerations. Extensive orientation was given to soldiers. Eventually, particularly in the Eastern Province, soldiers were not allowed into civilian areas of Saudi Arabia, except in military uniform. Soldiers were segregated in compounds where they were able to function in a lifestyle more compatible with American sensibilities, while not hurting those of the Saudis. AFRC Bahrain provided all the comforts of home in the theater, but away from the Saudis on a self-contained cruise ship docked at the more liberal island nation of Bahrain.⁹

For their part, the Saudis also compromised. Women soldiers were allowed to drive and function as soldiers. The legendary religious police were conveniently kept away from large concentrations of U.S. troops.

This was the first extensive use of women integrated directly into the military force. It is ironic that this use came in a country where women have a status far different from that of their American counterparts. Women proved their worth in the logistical units, performing virtually interchangeably with their male counterparts.

Such use of women soldiers presented unique problems, especially in sanitation facilities and supplies. Initially feminine hygiene products were in short supply. What was available from prepo stocks proved to be outdated and old-fashioned by current standards and, accordingly, inadequate. Camps

⁹Closeout After Action Review, Lessons Learned Number PER.004; After Action Review, Lessons Learned Number 52553-61000 (00007).

and facilities had to take into account both genders. Any interface with the conservative Arab culture had to take into account their views on the role and place of women. Given the situation, women were successfully utilized with few actual limitations.

On a different level, the integration of reserve component soldiers and units proved to be an equal success, particularly in CSS functions, where reserve forces totalled almost three-fourths of the work force. Reservists and guardsmen with particular civilian skills proved vital in areas such as civil affairs, contracting, finance, and host nation support.¹⁰

The initial delay in the mobilization of reservists had some key implications for their use in contingency operations. All the major logistical command and control headquarters for ARCENT were reserve component organizations. Under the 1990 environment, they could not be deployed fast enough to respond to the contingency mission. Some of these units, such as the 318th MCA and 321st MMC, arrived late and had to catch up. Others, such as the 377th TAACOM, were never deployed at all, their early absence being made up for in other ways and thus making their deployment superfluous. A possible solution to this problem can be culled from the experience of the 21st TAACOM's Army Reserve augmentation unit. This unit successfully tested the concept of filling out a cadre active component theater-level headquarters with reserve personnel. Reserve logistical headquarters earmarked for early deployment on a contingency basis can be organized with a small, well-trained cadre of active duty or Active-Guard/Reserve soldiers that can deploy immediately and pave the way for the rest of the unit.¹¹

Maintenance of equipment proved to be a success. Only about 10 percent of equipment was inoperable at any time—a tremendous achievement, given the operating conditions. However, the wartime maintenance system was not really tested. The dependence on depot-level technicians from AMC, in many cases, precluded the use of direct and general support maintenance units. The swift conclusion of hostilities and superior performance of the equipment hardly tested these units under battlefield conditions. At the theater level, a lot of credit must go to the technicians of AMC, who not only helped the soldiers maintain their equipment, but additionally fully supported the upgrading of tanks and infantry fighting vehicles—a historic first in an active theater of operations.¹²

Key among the logistical shortfalls was a shortage of transportation assets. The Army did not have enough trucks to fight Desert Storm. Even with a large force of contracted host nation vehicles, operations could have slowed down if the ground campaign had lasted longer, due to a shortage of resupply vehicles. The most common types of trucks, both Army and civilian, were not capable of moving off roads, further adding to the problem. Trucks designed for a European scenario, where there

¹⁰After Action Review, Lessons Learned Numbers 15459-99800 (00004) and 15460-17700 (00005).

¹¹After Action Review, Lessons Learned Numbers 51149-66600 (00014), 15460-33300 (00006), and 15736-21700 (00007).

¹²After Action Review, Lessons Learned Numbers 15346-51600 (00001), 15851-62000 (00016), and 15836-24100 (00010).

are roads in virtually every kilometer of terrain, cannot be expected to be as useful in a theater with hundreds of miles devoid of even poor-quality dirt tracks.

While the Army modernized its armored vehicle fleet in the 1980s, its transportation fleet did not follow suit. Nowhere is this more apparent than in the case of HETs. The fixation on a European scenario, where railroads could be used to move armored vehicles to combat areas, resulted in neglect of HETs. HETs were viewed merely as tools of evacuation, and there were very few of them in the Army inventory. In Saudi Arabia whole armored divisions were moved hundreds of miles using contracted civilian, donated foreign and Egyptian Army HETs. Moves took longer than they should have since there were not enough HETs to go around.

This was the first major deployment where the Army had to ship large amounts of equipment and supplies under tight time deadlines. While all units were successfully deployed with their equipment, there were many shortcomings in the loading and unloading process. Ships were often loaded to maximize space rather than to facilitate the off-loading and subsequent standing up of the unit owning the equipment. A unit's equipment was often scattered over multiple ships, which arrived at staggered intervals. Because of this, troops often sat at the port for weeks, and units were not able to stand up in an expeditious manner.

Loose management of ship loads was not just a problem during the deployment of units, but also with supplies. During the redeployment phase, supplies often continued to arrive after units had departed. In an inverse situation, redeployed units often received equipment and parts to support items they had left behind in Arabia. Obviously the military needs to devise a system to manage shiploads better.¹³

As the premier military power on the globe at the end of the twentieth century, the United States can be justly proud of the achievements of its military forces during Operation Desert Shield/Desert Storm. Essential to this success was the role of the theater logisticians, who met all the challenges posed to them. Dedicated, well-trained and highly professional soldiers with good leaders overcame many shortcomings not readily apparent with a superficial look at the deployment.

Combat troops have a training laboratory in the National Training Center at Fort Irwin, California. There is no comparable facility for logistics troops, who often ply their trade on a daily basis, with contingency training getting short shrift. Examining in detail the Desert Shield/Desert Storm experience will provide logisticians with, perhaps, the closest thing to the National Training Center. Then planners and force structure designers can tailor a self-sufficient force that will be able to successfully project U.S. military power worldwide, with or without the presence of host nation support.

Lessons to be Learned

Throughout the deployment, logisticians sought to draw lessons from current operations, either for immediate application or for Army-wide use later on. A summary of the most important of these, which have not been covered above, follow.

¹³Closeout After Action Review, Lessons Learned Number USASG.003.

Postal units deployed to the theater proved to be inadequate in several ways. Firstly, they lacked equipment, such as meters, MHE, and trucks. Postal units had no assigned transportation and were also undermanned to the point that they had to borrow personnel from other units. The heavy volume of mail, particularly the "any soldier" program—though vital to troop morale—put a strain on the postal system. Postal units were deployed too late and were promptly swamped. Army post office (APO) numbers, the Army's zip code equivalent, were too few, causing frequent address changes when units moved, with subsequent delays in mail catching up. A unique APO number needs to be furnished to each brigade-sized unit in future deployments. The free mail proviso for soldiers in the theater was not just a morale-builder. It also helped postal units by foregoing the administrative headache the sale of stamps would entail.¹⁴

The greatest problem in the personnel area, which was never satisfactorily solved, related to the three different enlisted promotion systems of the active Army, the Army Reserve, and the Army National Guard. Active soldiers required a satisfactory cutoff score to get promoted, while reserve component (RC) soldiers required a specific unit vacancy. This made it hard for reserve component soldiers attached to units other than those to which they were assigned, as was the case during the redeployment phase, to get promoted. Meanwhile, active component soldiers, beside whom they were working, were promoted more easily. The problem was partially dealt with when promotions to sergeant, pay grade E-5, were authorized for reserve component personnel in the theater. Complete implementation of the Total Army program requires a standard promotion system for all components upon mobilization. The same must be said for finance. Reserve soldiers were poorly paid from the start because of differences in pay procedures. This was complicated by the active Army change to a joint Army and Air Force pay disbursement system. Some soldiers were not paid for months, and only casual pays kept them solvent.¹⁵

In budgetary matters, the Army's RM functional area, policies were not established and standardized early enough to prevent some confusion. Finance support had to be supplied by the XVIII Corps until ARCENT could come on line. There was also a shortage of comptrollers in the theater—each division and corps needed its own. The comptrollers should be collocated with the contracting office whenever possible.¹⁶

The contracting effort proved essential to completing the mission in an environment where host nation support was crucial. During the redeployment phase, the extensive use of contracting enabled units to leave earlier. However, there were some organizational and regulatory lessons. Contracting was not consolidated under one head in the theater until the redeployment phase. Before then, various unit contracting officers competed for the same resources. Funds for construction contracts had a \$200,000

¹⁴After Action Review, Lessons Learned Numbers 52550-98700 (00001), 52551-63600 (00002), 52552-03500 (00003), and 52554-51800 (00010).

¹⁵After Action Review, Lessons Learned Number 43053-75400 (00004); Closeout After Action Review, Lessons Learned Number ASG593.003.

¹⁶After Action Review, Lessons Learned Numbers 52551-12000 (00001), 52551-44700 (00002), and 52552-84200 (00004).

limit. Funds for more general purposes were limited to \$15,000 per contract. These limitations proved to be too low for a contingency operation heavily dependent on host nation support and need to be raised by congressional action.¹⁷

The heavy dependence upon contracted support emphasized the importance of well-drawn-up contracts and subsequent supervision. Poorly written contracts could result in uneven performance by the contractors. This was particularly the case in the port and ammunition-loading contracts. Officer professional development neglected contracting, particularly the statement of work, which provides the contract's performance criteria. The importance of the contracting function makes essential contract training a needed universal addition to officer-training programs.¹⁸

In the area of maintenance, the logistics assistance teams dispatched by AMC proved to be a great boon to the maintenance efforts of using units. The unprecedented force modernization of unit equipment with M1A1 tanks and M2A2 infantry vehicles and global positioning systems, which AMC facilitated, improved the gaining units' combat power up to the very eve of the ground campaign. The large inventory of host nation equipment leased for use in the theater was not, in all cases, supported by maintenance contracts until delays in repair were encountered.¹⁹

Supply buildups and planning were based on requirements projected as days of supply (DOS). The DOS system proved excessive, particularly in terms of rations, where 60 days of supply with secure lines of communication were exorbitant. Short tons, with time and distance factors measured in, is perhaps a better method of determining supply requirements.²⁰

Daily rations themselves were based on three-meals-a-day planning factors, which proved to be inadequate for soldiers conducting 24-hour operations in a combat zone. Food supplements and additional MREs were used to make up the difference. The extensive use of contracted Class A meals allowed for the buildup of combat meals as soon as possible.²¹

The use of extensive host nation bottled water contracts could have been precluded with the early deployment of tactical water distribution teams. The contractors frequently did not pack the cases of water so that they survived the journey to field locations, a problem that can be solved by expanding the

¹⁷After Action Review, Lessons Learned Numbers 15339-39700 (00002), 15340-00100 (00005), and 15340-13700 (00006); Closeout After Action Review, Lessons Learned Numbers ENGDEH.004 and CON.003.

¹⁸Closeout After Action Review, Lessons Learned Number CON.002.

¹⁹After Action Review, Lessons Learned Number 15346-93800 (00003).

²⁰After Action Review, Lessons Learned Numbers 15348-79200 (00002) and 15349-28100 (00003).

²¹After Action Review, Lessons Learned Number 15348-43100 (00001).

Army's own water-hauling capability.²² Packaging in general was a problem. Most supplies were packaged in cardboard cartons, which proved not to be durable in the humid climate of coastal Saudi Arabia. Shipping supplies in wooden crates would solve this problem.²³

Medical supplies showed similar deterioration problems when stored outside in containers. The climate had deleterious effects on products designed for the temperate zones of North America and Europe.²⁴

Items related to life support received little attention in pre-deployment planning, but proved vital in the desert climate. While tents and cots were prepositioned on the ships at Diego Garcia, the size of the deployment quickly dwarfed the quantity on hand. While units have tents and cots in their own equipment authorizations, provisions had to be improvised for the period when the troops were in the theater and their equipment was not. Cots were shipped in on a priority basis, and tents, like so much else, were procured from host nation sources. A larger stockpile of such equipment in prepositioned stocks is essential for future deployments.²⁵

Field services, such as sanitation, bath, and laundry, are not needed in a peacetime scenario and are accordingly neglected. A shortage in the force structure of units providing such services was clearly evident throughout the deployment. Showers and wash basins had to be fabricated locally. Life support considerations need to be planned for in advance.²⁶

Tents themselves proved to be made of a fabric that was not suitable for the desert. It rapidly deteriorated and was difficult to clean. The fabric is obsolete by commercial standards and needs to be replaced by a lighter, state-of-the-art product. The need for large, temporary, covered storage sites dictated the extensive use of German commercial "fest" tents. Such tents could easily be placed into the Army's inventory.²⁷

Extensive use was made of temporary building structures, such as the "Clamshell" tents and the K-Span, which is a modern-day version of the Quonset hut. These edifices proved to be cost efficient, versatile, and suitable for the climate. Their use should be planned for in the future.²⁸

²²After Action Review, Lessons Learned Number 15350-39900 (00005).

²³After Action Review, Lessons Learned Number 15932-46000 (00017).

²⁴Closeout After Action Review, Lessons Learned Number MED.002.

²⁵After Action Review, Lessons Learned Number 15350-64000 (00006).

²⁶After Action Review, Lessons Learned Number 15436-97800 (00001).

²⁷After Action Review, Lessons Learned Numbers 15942-21000 (00019) and 15942-71400 (00020).

²⁸Closeout After Action Review, Lessons Learned Number ENGDEH.OOS.

Repair parts supply was impacted greatly by the patchwork nature of the deployment. Often repair parts units deployed with authorized stockage lists that did not match the equipment in the units they were earmarked to support. This was particularly true of reserve component units. But even active component units often arrived in theater without their full authorized stockage list or prescribed load list. Units in Europe often had low fills, which are based on maintenance demand histories, due to the extensive use of civilian contractors there. As with other things, prepositioning a contingency stockage of repair parts is the ideal solution.²⁹

Army materiel management is dependent on the use of ADP communications networks. Overall automation control of materiel did not work in the theater. There was no dependable, dedicated means of doing this available in the theater. Commercial lines back to the United States had to be pressed into service. This was a major drawback made up for only by the availability of the fine Saudi commercial telephone system. However, the data link worked well during the redeployment phase, causing few glitches when Task Force Victory II and the 94th ADA Brigade needed to be supported.³⁰

Communications has always been a problem in logistical units, which have few radios and telephones compared to combat units. It is just not practical to put a radio in every cargo truck. The dispersed nature of the SWA theater, the splitting up of units to provide tailored support, and the offensive operation only exacerbated this natural weakness. Every available means was used to ensure adequate communications. Host nation assets, such as cordless phones and car phones, as well as the modern commercial phone network, were used. The portable INMARSAT satellite phone system proved a vital link between far-apart, remote areas, which were often the focus of logistics activity. In planning for future such contingencies, however, dependable communications is needed.³¹

Theater materiel management was greatly affected by the early lack of logistical units in the theater. The theater MMC, the 321st, deployed late and ended up in the dual role of theater and EAC materiel management center. Earlier-arriving corps MMCs often usurped the 321st's functions, collocating the two MMCs supporting the XVIII Corps. It was not until the corps departed that the 321st was able to assume its management role fully.³²

Transportation provided many lessons to theater logisticians. The overall shortage of vehicles and lack of off-road capability already has been mentioned. Transportation considerations need to be of primary concern to planners of any future contingency deployment. Saudi Arabia had great airports and

²⁹After Action Review, Lessons Learned Numbers 15352-36800 (00011) and 15735-14500 (00013).

³⁰After Action Review, Lessons Learned Number 15454-97500 (00002); Closeout After Action Review, Lessons Learned Number MMC.004.

³¹After Action Review, Lessons Learned Number 15457-73600 (00001); Closeout After Action Review, Lessons Learned Numbers SIG.001, G-6.004, and G-6.005.

³²After Action Review, Lessons Learned Numbers 15454-74600 (00001) and 51149-18000 (00012).

seaports, with facilities to store and load/unload equipment that are unparalleled elsewhere in the Third World. Due to the oil industry, a large number of commercial trucks was readily available for lease by the U.S. forces. This may not be the case in less-industrialized areas of the globe. Assessment of the ability of host nations to support operations needs to become an integral part of the planning process, with contracts already prepared in advance. In areas where host nation assets are unavailable, limitations of the present U.S. force structure will become readily apparent unless more transportation assets are acquired.³³

The extensive use of contracted transportation assets presented unique problems for Army transporters. It was difficult at best to track and program the civilian drivers. Special inducements had to be offered to the drivers to get them to operate in a potential war zone. Provisional truck companies were organized to control, escort, assign missions, and provide communications for the fleet of contracted trucks.³⁴

Movement control had deficiencies, as should be expected, considering the volume of traffic. The airflow did not always provide timely information on passengers and materiel. Sometimes units arrived in theater unexpectedly or early. Ground movement control showed a glaring lack of coordination, both with Saudi military and civil authorities, and with other coalition forces.³⁵

Bulk petroleum transport was heavily dependent upon host nation tankers. This could be a problem for a mechanized force if those assets are not available in the host nation. The problem can be fixed by repositioning stocks of pipeline-laying equipment, TPTs, and engineer equipment, and early deployment of engineers to set up the pipelines.³⁶

Many of the difficulties with shiploads have been discussed. Despite their utility, containers had their own share of problems. Lost containers or those containing mystery items were a common problem. These "frustrated" containers defied attempts to track their contents properly and were a reflection of the flotsam generated by the massive amount of materiel shipped to the theater.³⁷

Materiel-handling equipment is essential to supply operations. This is particularly true in a world where most items are shipped in standardized containers. Available assets were not plentiful enough to handle the load. Host nation sources picked up the slack. As with trucks, more MHE is needed. As currently organized, MHE assets are distributed among the using units. With its shortage in SWA,

³³After Action Review, Lessons Learned Number 15455-58600 (00001); Closeout After Action Review, Lessons Learned Numbers ASG593.001 and CON.002.

³⁴After Action Review, Lessons Learned Number 15455-98700 (00002).

³⁵After Action Review, Lessons Learned Numbers 15732-59100 (00006) and 15739-38000 (00009).

³⁶After Action Review, Lessons Learned Number 51148-62500 (00010).

³⁷After Action Review, Lessons Learned Numbers 15939-94000 (00008) and 15457-53300 (00005); Closeout After Action Review, Lessons Learned Numbers TRANS.006 and MMC.001.

maximum use of the available equipment was made by the pooling of MHE into companies, where its use could be controlled and managed to ensure that the highest-priority tasks got the available resources first. MHE companies are an organizational improvement that the Army could well afford to adopt.³⁸

Logistical planning was a lesson in itself. By divorcing the "plans shop" from transportation and operations, and having plans work directly for the commander, a larger planning horizon was provided. The planning personnel could focus on the logistical commander's intent—retaining operating tempo by close association with the G-3 operator—but able to see and thereby plan for the entire campaign. Thus, with three concept plans for the buildup of the theater, the sustainment of the ground campaign, and the redeployment of personnel and materiel, the close-out of the theater was accomplished. This separation of plans from operations may work in other situations.³⁹

Communications at every level of the command proved to be a key to success. The daily support command "stand-up" meeting, where every element of the command was represented, followed by the "top-six" meeting of key decision makers and concluding with an evening "sit-down," involved every element of the command. As noted, these meetings, with attendant information display charts, were mirrored at the northern headquarters and major subordinate units. The flow of information was enhanced by the use of simple, expedient 3x5 cards, which could go directly to the commanding general. These highly effective information-flow tools ensured timely, accurate, and full dissemination of operationally significant information. The daily situation report, back through command channels—most importantly to the Department of Army Staff—kept higher and lateral headquarters intimately involved in everyday logistical status. Daily phone calls to higher-level headquarters—some at critical times, considering the seven- to eight-hour time difference—ensured full understanding of decisions being made.

These lessons need to be examined so that the successes can be duplicated, the failures corrected, and the difficulties overcome.

³⁸After Action Review, Lessons Learned Number 15456-40300 (00003); Closeout After Action Review, Lessons Learned Number CG.004.

³⁹For more observations and lessons learned, see Lieutenant General William G. Pagonis and Colonel Michael D. Krause, "Observations on Gulf War Logistics," *Army Logistician*, September 1992.

Appendix A

Building a Logbase

U.S. Army Combat Service Support Doctrine

Units in the United States Army are organized to provide for their own basic support needs, with the next higher level of command providing additional assets and assistance. At the lowest level, each company has a small supply and maintenance section that brings up food and basic supplies and provides low-level maintenance services. At the battalion level are a larger maintenance organization, a support platoon that provides trucks to move supplies, and a food service section, as well as limited medical support. At the brigade level is found a forward support battalion, a multi-functional unit that provides higher-level services. Above the brigade are the division and corps support commands and the theater-level assets. Brigades and divisions form support areas in which their combat service support assets, called trains at these levels, are located. These support areas normally are centered upon a main supply route, but are located in a cluster of small bases, taking maximum advantage of the terrain and generally providing for their own self-defense.

Supplies are normally pushed as far forward as possible by higher-level organizations to established supply points where the using units pick them up. In the offensive this is especially true, where the logistician's top priority is to ensure that the momentum of the offensive is continued.

Genesis of the Logbase Concept

Several problems with the traditional pattern were evident in the SWA theater. First of all, the theater was large. Roads were few in the forward areas, and cross-country capability for most vehicles in the truck fleets at the theater level was very poor. The harsh desert climate and lack of covering terrain made a less-dispersed approach seem attractive. General Pagonis had read up on the desert campaigns of Alexander the Great and those of the British, Germans, and Americans in World War II. He drew the conclusion that supplies had to be massed as far forward to support the troops as possible. When he approached the theater commander, General Schwarzkopf, with the concept, it was readily approved. The first logbases were established forward of the troops they were designed to support. Between the bases and the Iraqi army was a screen of Arab coalition forces. When Logbases Alpha and Bravo were established, the 2nd ACR and 1st Cavalry Division were moved up specifically to provide security for the bases.

All logbases were built adjacent to MSRs. While the tactical commanders preferred to build them away from the MSRs, the lack of cross-country mobility of most of the supply vehicles, both military and civilian, precluded placing them elsewhere.¹

Building Logbase Bastogne

Logbase Bastogne was the first logbase; its establishment can serve as an example of the logbase process. The logbase was originally conceived to receive, store, and manage theater reserve stocks in support of the forward operations of the XVIII Airborne Corps.² Bath and laundry, direct support maintenance, and repair parts supply functions would also be furnished from the site to EAC units in the area.

A site was selected for the base several miles south of the Saudi town of Nu'ayriyah, near where the TAPLINE road (MSR Dodge) met the coastal road (MSR Audi), in what was then the sector of the 101st Airborne Division (Air Assault). The site was typical desert terrain, located adjacent to an unimproved north-south road (MSR Mercedes) that eventually intersected the main Dammam-Riyadh expressway. On part of the proposed site were some bedouin shepherds.

Preparations for building the logbase included determining construction requirements, assembling the materials, and establishing a structure to command and control the base. One of the crucial requirements was fuel. This was to be conducted through the TPTs.

The 176th Maintenance Battalion was designated to run the logbase. Originally providing command and control over various maintenance units in the Dhahran area, the battalion headquarters was reorganized into a multi-functional headquarters to run the logbase. It used the FASCO concept of command and control and providing support. Quartermaster and transportation personnel were attached to the headquarters to provide assistance and liaison with their respective parent units. The battalion was reorganized to include two maintenance companies, a light equipment maintenance company, part of a supply and services company, and a quartermaster company, which included a water purification section and a TPT.

Establishment of the base required its own stockpile of resources. Construction and barrier materials included 740 rolls of barbed wire, with 12,000 fence posts or pickets, 1,200 sheets of plywood, 3,450 pieces of lumber of various sizes, crushed stone, and 60,000 sandbags. Other needed materials included 4 large tents, 45 medium tents, and 1 civilian-style fest tent; 10 latrines, sinks, and showers, and 3 refrigerator vans.

¹22nd Support Command, Briefing to the Secretary of the Army, 17 March 1991, videotape.

²Data in this section is taken from a document in the files of the 22nd Support Command Logistics Planning Cell called "Log Base Bastogne Mission Support Plan." This file has been retired to the U.S. Army Center of Military History, Washington, D.C.

The logbase also required various services: trash removal, latrine pumping, commercial electrical power, and telephone service. Military services, such as medical, chaplain, and PX facilities also needed to be provided.

Originally envisioned in mid-September 1990, work on the Logbase Bastogne did not actually begin until mid-November, when the logistical structure had matured enough that the construction of the base would not hinder logistical support elsewhere.

Establishment of the logbase proceeded in three phases. The initial phase lasted from 18 to 25 November and entailed planning a detailed layout of the base and initial construction. The shepherds were persuaded to graze elsewhere. The second phase, which overlapped with the first, took from 20 November to 5 December and consisted of the major construction effort, including the building of internal and access roads. A large berm was built around the perimeter of the base, which was also marked by a barbed wired fence. By 5 December, units operating out of the logbase were in occupation. The final phase, which ran from 30 November through 15 December, consisted of the receiving and storing theater supply stocks. From 20 through 30 November, containers were brought to the site. From 30 November through 15 December, the stocks were unloaded, organized, and stored. Throughout all phases, the logbase had INMARSAT communications. It also used TCPs to ensure continued control of the delivery of supplies. Supplies were stored to support a corps population of 150,000 soldiers. By then, Logbases Alpha and Bravo were in turn being established.

Logbase Bastogne, due to its key location, proved essential during all phases of the deployment. After supporting the XVIII Airborne Corps throughout Desert Shield, it was a key jumping off point when that corps moved to the northwest. During the ground campaign, support for MARCENT and the Tiger Brigade was handled through the logbase. During the redeployment, it was used to support troops in Kuwait, finally drawing down and closing in September 1991. As it was closed, the site was restored to its condition prior to occupation, with berms removed and the area thoroughly policed and cleaned.

An outline of the layout of Logbase Bastogne is shown in Figure A-1.

Additional Logbase Considerations

The other logbases were organized and laid out based on the experience of Logbase Bastogne. Combat service support units were given specific areas within each logbase, and roads to facilitate traffic flow were improved. Ammunition was kept away from the main part of each logbase. Layouts of Logbases Alpha and Bravo are illustrated in Figures A-2 and A-3.

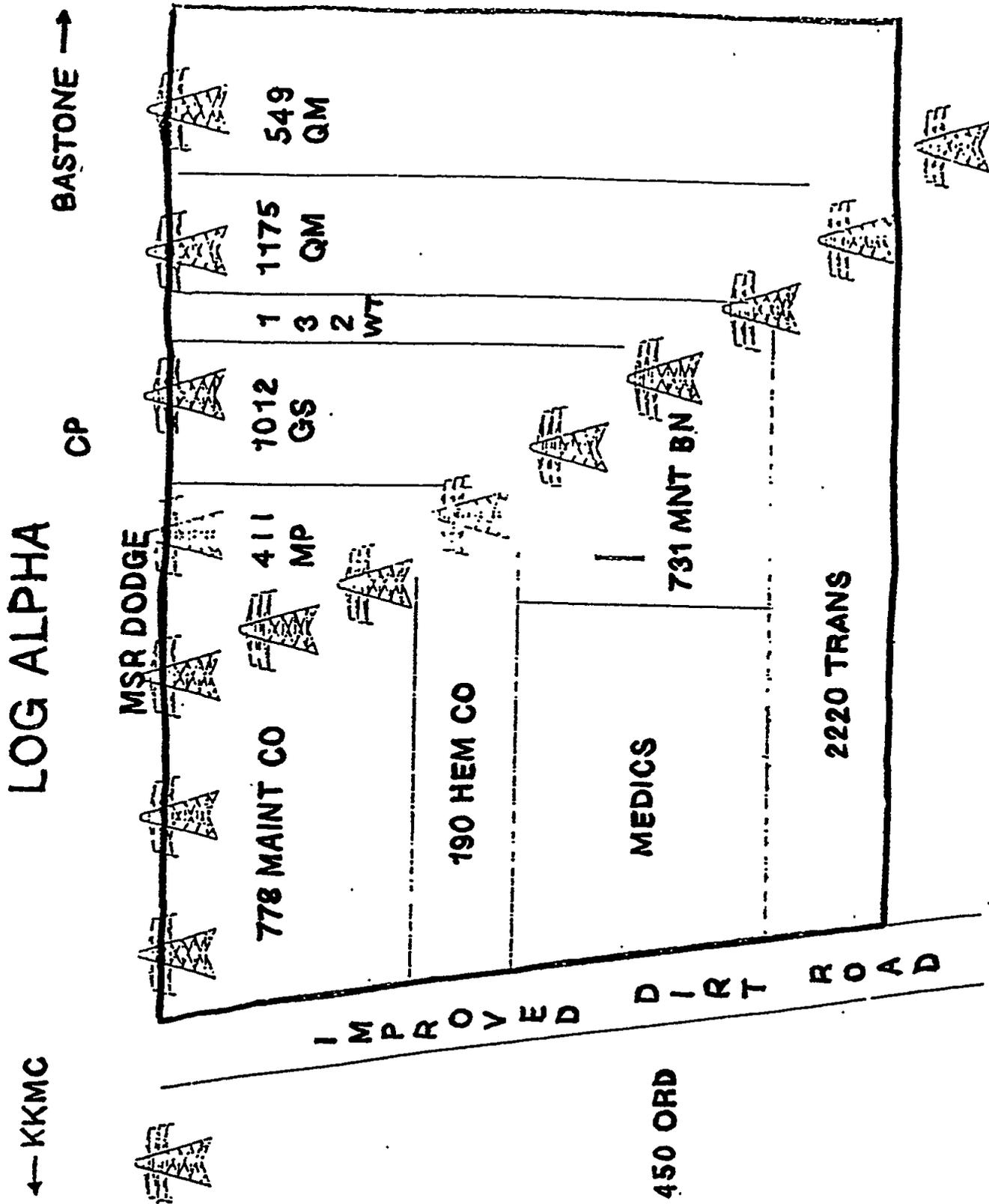


Figure A1. Layout of Logbase Bastogne

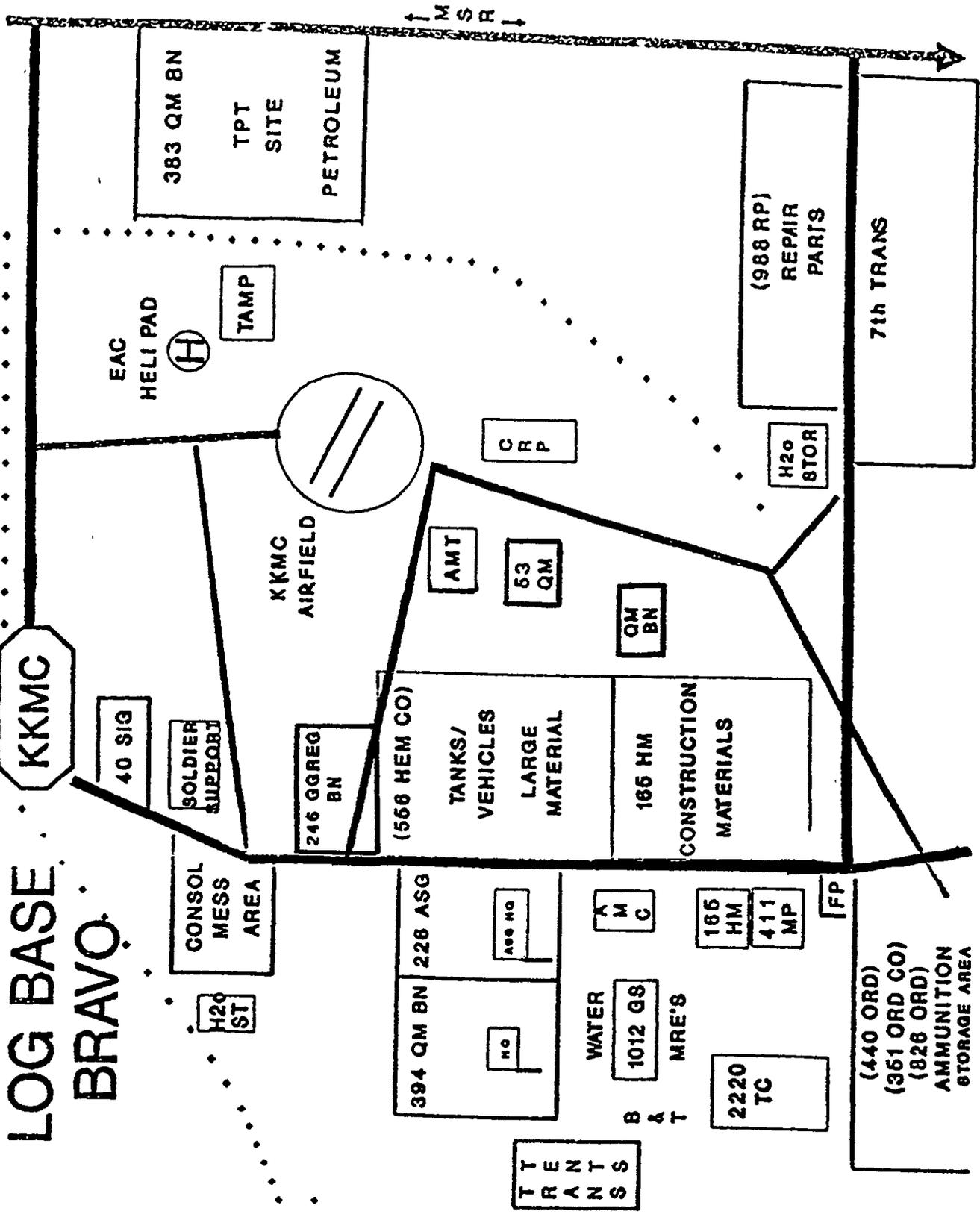


Figure A2. Layout of Logbase Alpha

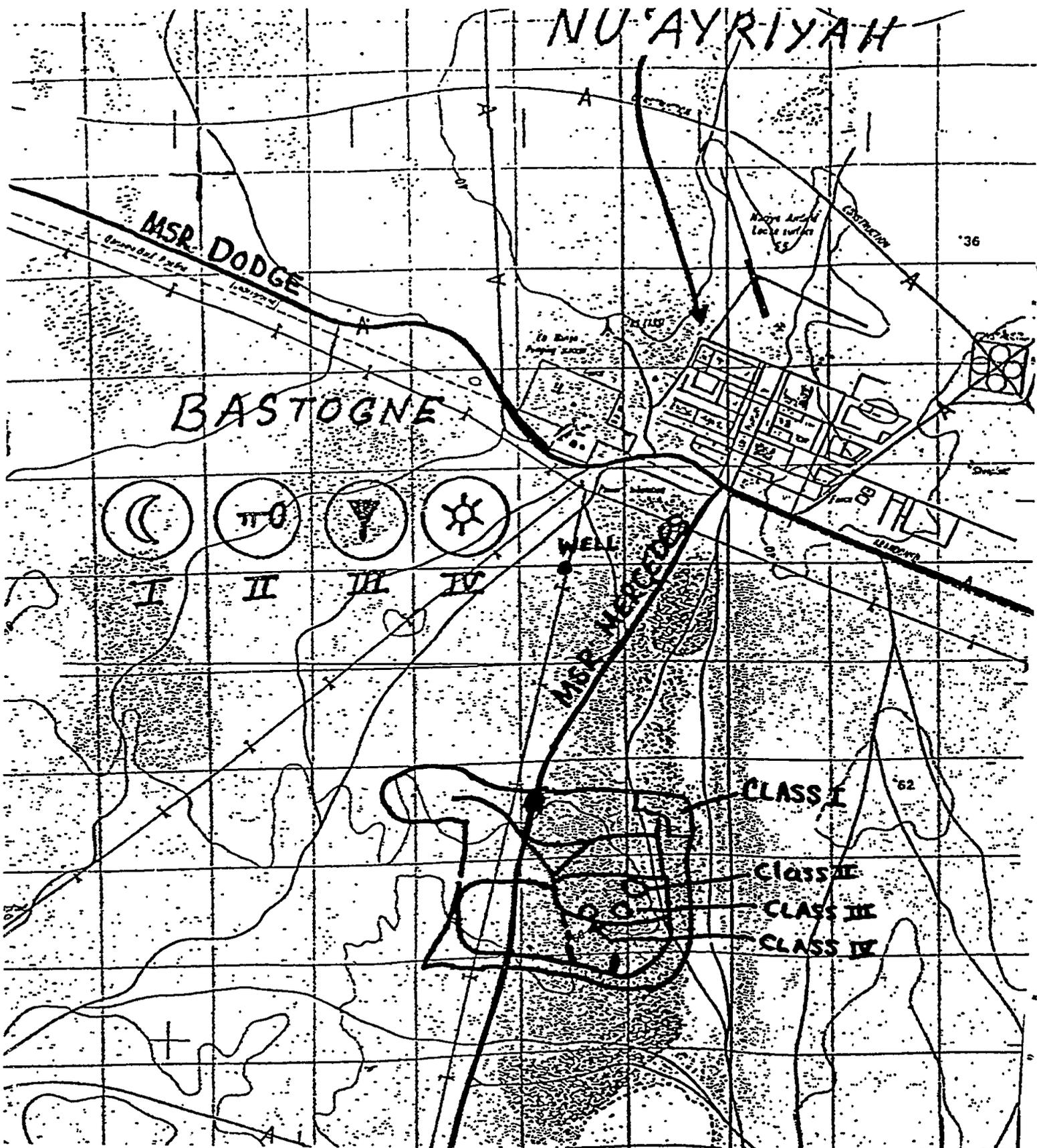


Figure A3. Layout of Logbase Bravo

Appendix B: Chronology and Statistics

Chronology

1990

July

Throughout the month Central Command conducts Internal Look series of exercises that mark a refocusing of planning towards a defense of the Arabian Peninsula against Iraqi aggression. Although the importance of logistics is noted, little practical planning is conducted on the logistical aspects of a deployment.

August

- 1 Department of the Army meeting, chaired by the Vice Chief of Staff, discusses the situation in SWA, where the Iraqi army is poised to strike at Kuwait. Logistics issues are discussed in great detail.
- 2 Iraq invades Kuwait.
- 4 ARCENT Commander, Lieutenant General John Yeosock, meets with Major General William Pagonis, FORSCOM J-4, and General Edwin Burba, FORSCOM CG, to discuss logistical aspects of a possible deployment. Yeosock will brief the results of this meeting to King Fahd of Saudi Arabia.
- 5 Pagonis and a small staff prepare a basic logistics plan for Yeosock to take with him to Saudi Arabia.
- 6 After much diplomatic overture, King Fahd invites U.S. forces into the Kingdom of Saudi Arabia. Host Nation Coordination Cell is established under Pagonis to organize logistical support from civil and military sources in Saudi Arabia.
- 7 President George Bush authorizes the deployment of U.S. forces to Saudi Arabia, making this C-Day. The lead elements of the XVIII Airborne Corps, the division ready brigade of the 82nd Airborne Division, depart Fort Bragg, North Carolina, for Dhahran, Saudi Arabia. The 7th Transportation Group, Fort Eustis, Virginia, becomes the first logistical unit to be alerted for deployment to Southwest Asia. The Pagonis cell, with the 5 available of 22 selected members, departs for Saudi Arabia with the

CENTCOM Forward headquarters. On the flight over, members of the cell draw up a detailed theater logistics plan that is put into implementation upon landing.

8 Upon arrival in Riyadh, Yeosock also appoints Pagonis as ARCENT DCG for Logistics.

9 Lead elements of XVIII Airborne Corps land at Dhahran. Reception is organized by the USMTM. Over the next three days, more than 4,000 troops are quartered at the small facility near the airbase called Dragon Base.

10 Pagonis arrives in Dhahran and immediately takes over the reception mission.

11 The Host Nation Cell, now established in two rooms at the USMTM compound in Dhahran, takes on the role of controlling and organizing logistical support for the deploying troops, who have arrived without any of their own support assets. The lead elements of the 7th Transportation Group begin to arrive and are immediately consolidated with the Pagonis cell to form an ad hoc logistical organization. The organization is focused on a logistical operation center, which acts as a central clearinghouse for all logistical activities. The Saudi government turns the port facilities of Dammam over to the U.S. forces.

12 The logistical organization moves to a larger facility, Hotel California, a USMTM recreation center on the Dhahran airbase.

14 The logisticians report that the logistics capacity was improving rapidly and that all problems could be managed.

15 The remaining 18 members of Pagonis's original group of 22 selectees arrive and are immediately pressed into service in major functional areas, such as food service, host nation support, and contracting. The logistical organization has become informally called the ARCENT Support Command.

16 Yeosock appoints Pagonis as CG, ARCENT (Forward). The first of many provisional units, ASG Dhahran, is established. The ASG is responsible for reception activities at the Dhahran airport.

17 The 7th Transportation Group assumes responsibility for the port of Dammam as the six ships with prepo equipment arrive to be off-loaded.

19 Two sleeping barges are leased from ARAMCO for use at Dammam.

22 President Bush authorizes the mobilization of the reserve components.

23 First reserve units alerted. The SUPCOM is granted the authority to lease up to \$2 million worth of real estate.

26 Host nation support is providing 25,000 meals a day.

29 The SUPCOM moves to the former USMTM headquarters building on the Dhahran airbase, where it will remain until 31 December 1991. Camp Jack is established as the first tent city for transient personnel on the Dhahran airbase.

September

1 The first reserve units arrive in theater.

5 ARCENT Support Command (Provisional) is officially established as a separate entity under ARCENT.

30 A recreational facility at Half Moon Bay, near Dhahran, is established as the first of many such MWR activities in the theater.

October

3 The SUPCOM assumes responsibility for providing fuel distribution to the other U.S. services in the theater.

5 The DISCOM of the 24th Infantry Division (Mechanized) becomes operational. Before this date, the SUPCOM supported the division directly.

10 The 48 IRR specialists requested by the SUPCOM arrive in the theater.

23 The SUPCOM becomes responsible for providing ration support to the other U.S. services in the theater.

November

4 Deployment of XVIII Airborne Corps is completed. 112,484 soldiers have been deployed. Fifty-nine reserve units, with 2,973 soldiers, are now part of the SUPCOM.

8 President Bush announces the deployment of an additional 200,000 troops to the theater—the VII Corps from Europe and the 1st Infantry Division (Mechanized) from Kansas.

12 General Norman Schwarzkopf, CINC CENTCOM, briefs general offensive concept to his subordinate commanders. SUPCOM issues OPLAN 91-1 outlining its plan for the reception of the VII Corps and the prepositioning of supplies at Logbases Bastogne, Alpha, and Bravo. The SUPCOM establishes a northern LOC at KKMC as the SUPCOM forward headquarters.

17 Army Materiel Command establishes U.S. Army Support Group in Dammam to provide supply and maintenance assistance.

- 18 Logbase Bastogne is established as the first logbase in the theater. The base would not be fully operational until 15 December.
- 23 Logbase Alpha established near VII Corps TAA. Initially under SUPCOM control, it eventually became the VII Corps logbase.
- 29 United Nations Resolution 678 is issued, authorizing member nations to take all necessary means to force Iraq to withdraw from Kuwait after 15 January 1991.

December

- 4 SUPCOM five-phase plan for reception of the VII Corps, conduct of the ground campaign, and redeployment is briefed to the officers and noncommissioned officers of the command.
- 9 KFIA becomes a second APOD for the deployment of the VII Corps.
- 14 Port staging areas already begin to exceed projected personnel capacities due to a lack of coordination between the sea- and airflows and delays in unloading ships.
- 16 The ARCENT Support Command is redesignated as the 22nd Support Command.
- 19 The 21st TAACOM CONUS Augmentation Unit arrives to flesh out the SUPCOM and SUPCOM (Forward) headquarters. Khobar Towers housing complex opens for occupancy by VII Corps troops.
- 27 Pagonis briefs the theater logistics concept to Secretary of Defense Dick Cheney and CJCS General Colin Powell.
- 29 In a meeting at Riyadh, Pagonis pledges the success of the theater logisticians' ability to move the two corps and to build up the logbases within 21 days.

1991

January

- 4 The 32nd Transportation Group arrives in theater and assumes responsibility for transportation support in the northern portion of the theater.
- 5 ARCENT issues its OPLAN Operation Desert Storm 001, which provides detailed guidance for the upcoming ground offensive.
- 7 A ground transportation backlog, due to a theater-wide shortage of assets, particularly HETs, begins at Dammam and Jubayl for the VII Corps. The average unit has to wait 22 days.

- 7-15 The 1st Cavalry Division is moved from its TAA to the KKMC area as theater reserve.
- 10 A TPT is established south of MSR Dodge in preparation for the establishment of Logbase Echo.
- 15 United Nations deadline for Iraqi withdrawal from Kuwait passes with no actions by the Iraqis. Fully 91 percent of the VII Corps personnel are deployed, but only 61 percent of the tracked vehicles are deployed.
- 17 D-Day. The commencement of the air campaign, which also marks the beginning of the busiest period for the theater logisticians. The logisticians had four basic missions—to complete the reception of the VII Corps, establish Logbases Charlie and Echo, move both corps to their FAAs, and continue the sustainment of the whole force. Trucks uploaded with supplies for Logbases Charlie and Echo depart Logbase Bravo upon the commencement of hostilities, beginning these missions.
- 17-25 The XVIII Corps moves to its FAA by air and ground, using assets provided by the SUPCOM.
- 23 The 2nd ACR becomes the first VII Corps unit to deploy to the corps TAA.
- 25 1,789 military drivers are on hand, if necessary, to replace host nation drivers who may prefer not to drive in harm's way.
- 28 The 1st Armored Division and 1st Infantry Division (Mechanized) are in their TAAs.
- 31 The 1st (Tiger) Brigade, 2nd Armored Division, is attached to MARCENT, necessitating the activation of a FASCO, based out of Logbase Bastogne, to provide support.
- February**
- 5 Most of the 3rd Armored Division is deployed to its TAA.
- 7 All major elements of the VII Corps are in place in the corps TAA.
- 10 The XVIII Corps is in place and ready for offensive operations.
- 12 Pagonis is promoted to lieutenant general, putting him on a par rank-wise with the commanders of the two corps.
- 13 Task Force Freedom established to follow the ground combat troops into Kuwait and to provide relief and restoration services.
- 14-17 The VII Corps moves to its FAA on its own tracks from its TAA.

- 15 The SUPCOM issues OPLAN 91-3, outlining the procedures for the defense and restoration of Kuwait.
- 20 The 800th MP Brigade begins the construction of four EPW camps.
- 21 The 22nd Support Command issues OPOD 91-2, outlining support procedures for the upcoming ground campaign.
- 24 G-Day. The commencement of the ground campaign.
- 25 The success of the early phase of the ground offensive causes the advancement of timetables up to 12 hours. Supply expenditures are less than anticipated. A Scud missile explodes into the Al Jan warehouse near Dhahran airbase, killing 28 soldiers, including 3 women, and wounding 97. All the soldiers were from the SUPCOM's 475th Quartermaster Group.
- 28 President Bush announces a general cease-fire, ending the ground campaign.

SUPCOM strength has reached a height of 38,925.

March

- 7 The first troops redeploy out of the theater as "ceremonial" redeployments.
- 10 R-Day. The official commencement of redeployment.
- 11 Lead elements of the XVIII Corps' 3rd ACR and 24th Division are at the port preparing vehicles for shipment.

April

- 11 Iraq signs formal cease-fire agreement, allowing VII Corps to cease security and occupation duties in southern Iraq.
- 12-21 VII Corps elements move to their RAAs.
- 15 EPW responsibility has formally passed to the Saudi MODA.
- 20-30 Deactivating VII Corps units turn in their equipment to CEGSWA at Logbase Bravo to establish a pool of equipment for use as prepo stocks.
- 30 Task Force Freedom is formally disestablished in Kuwait.

May

- 4 Hotel California Recreation Center opens on the Dhahran airbase.
- 5 The 1st Armored Division (VII Corps) clears out of its RAA near KKMC.
- 8 The 3rd Armored Division (VII Corps) starts a three-phase redeployment back to Germany. The division's 1st Brigade is to be retained in Kuwait for several months. The division's DCG, Brigadier General Arnold, is made DCG, ARCENT (FWD) in Kuwait. ARCENT transfers command and control authority in the theater over to the 22nd Support Command. The following units are assigned or attached to the SUPCOM on this day: Medical Group, 2nd Aviation BDE, 1st EOD Group, 89th MP BDE, 513th MI BDE, 10th PERSCOM, 11th ADA BDE, 219th Engineer Detachment, 416th Engineer Command, 352nd Civil Affairs Command. Most of these units would leave the theater within 30 days.
- 9 Secretary of the Army visits Saudi Arabia and is briefed on the 22nd Support Command's Redeployment Plan.
- 10 An RAA is set up for the 3rd Armored Division in Kuwait.
- 11 Lieutenant General Pagonis, SUPCOM Commander, becomes CG, CENTCOM (FWD). Ninety-nine percent of the XVIII Corps' personnel have departed the theater.
- 30 Murray Report is published. It provides guidance and disposition instruction for a SWA POMCUS set of 51 units, complementary war reserve stocks, and six operational projects.

June

- 1 The 2nd Area Support Group assumes responsibility for the Logbase Bravo/KKMC area as the 226th ASG (Alabama ARNG) prepares for redeployment.
- 2 As SUPCOM elements are redeploying, the flow of replacements has not yet kept pace. For example, the command group is down to four people.
- 3 The 11th Armored Cavalry Regiment starts deploying from Germany to replace the 1st BDE, 3rd Armored Division, in Doha, Kuwait. Colonel Whaley, 7th Transportation Group commander, is frocked as Brigadier General and made DCG for Transportation and Operations.
- 4 Concept to conduct the retrograde with 70 replacement units is formally drawn up and briefed to Pagonis. The expected replacement rate is about 350 soldiers a week.

- 5 The 11th ACR commander arrives in Saudi Arabia. The ACR begins drawing equipment from CEGSWA at KKMC staging area, a process that would last for the next week and a half.
- 6 OPORD 91-7 (Residual Force) is issued. USAF elements begin to occupy portions of Khobar Towers vacated by departing VII Corps soldiers.
- 7 The 593rd Area Support Group retains the mission of providing a FASCO to Kuwait in support of the deployment of the 11th ACR.
- 8 Desert Storm victory parade held in Washington, D.C. In Saudi Arabia, the headquarters sections of the SUPCOM begin concentrating on the transition to replacement personnel, which has now begun.
- 12 Final XVIII Corps equipment has been loaded on ships and departs the theater.
- 14 Eight hundred fifty-eight personnel from XVIII Corps leave the theater, completing redeployment. The 11th ACR completes deployment to Kuwait and drawing of equipment. Unit is ready to continue the mission of defending and rebuilding Kuwait.
- 16 Last fighting unit in ground war leaves the theater as personnel from 1st BDE, 3 AD, leave Kuwait to return to Europe.
- 17 The 593rd Area Support Group relocates from the Dhahran Expo to Dragon Base in preparation for overseeing the retrograde of Class VII materiel.
- 17-24 Period of the Moslem *Hajj* (pilgrimage to Mecca). The *Hajj* proves to have a minimal effect on SUPCOM operations.
- 19 Last elements of the 3rd Armored Division leave the Dhahran area for Germany.
- 28 All IRR soldiers who did not voluntarily extend their tours of duty in SWA are sent home. DA had directed that they be out of theater by 1 July.

July

- 1 CENTCOM (MAIN) moves out of the theater. The 22nd Support Command is now the highest-level organization in the theater. A CENTCOM (FWD) staff, under Lieutenant General Pagonis as CENTCOM (FWD) CG, is retained in Riyadh to oversee joint operations, etc. Provisional 365th Supply and Services Battalion headquarters stood up.

- 4 Official commencement date for SWARF, the umbrella title for the units, both active component and provisional, making up the organizations conducting the materiel retrograde.
- 8 The influx of provisional units and replacement units begins. The Provisional 165th Heavy Materiel Supply Company replaces the original 165th, a pattern that would continue over and over for the following three months as 61 provisional units are stood up in the theater.
- 11 Fire and explosions at Doha leave 53 soldiers injured—1 seriously, but not critical.
- 18 Memorandum from General Colin Powell, CJCS, on SWA prepositioning is published. It provides guidance on prepositioning in Saudi Arabia, pending a negotiated agreement between the United States and the Saudis.
- 23 During clean-up operations from the explosion and fire at Doha on 11 July, ordnance accidentally detonates and three soldiers are killed.
- 24 The 593rd ASG HHC finishes a complete turnover of personnel.
- 31 The 593rd ASG begins its retrograde operations for Class VII (14,000 vehicles) and M1 tanks (2,000 tanks).

August

- 10 The 398th Heavy Materiel Supply Company stands up.
- 14 Remaining personnel from VII Corps leave theater.
- 15 FASCO Doha is established to coordinate life support activities in Kuwait. VII Corps equipment is completely loaded and departs theater.
- 16 The 711st Transportation Group (Truck) (Provisional) is established to control the transportation aspects of the retrograde.
- 18 In a meeting with U.S. and Saudi officials, Major General Madani tells the U.S. group that there will be no U.S. Army prepositioning in Saudi Arabia. Other alternatives, including leaving reserve stocks in Kuwait, are now being reconsidered.
- 19 Message to DA LOC identifies follow-on task force for Kuwait from 8th Infantry Division in Europe. CS/CSS slice for this force is to be identified.
- 24 Materiel is identified for prepositioning in Kuwait.

25 Provisional 210th MP Battalion replaces the original National Guard unit as the MP headquarters for the SUPCOM. The new unit is filled with individual volunteers, mostly from the Michigan National Guard, where the original battalion came from.

September

1 The 11th ACR begins redeployment to Europe and turn-in of equipment. The 8th ID task force begins deployment in Kuwait and receives equipment.

6 Concepts on closeout plans, including transfer of command responsibilities to CEGSWA and the 22nd SUPCOM shifting to ARCENT, are developed.

9 22nd SUPCOM conducts its LOGEX. Command focus is now on closeout tasks.

13 Provisional MP companies replace RC companies.

14 The 11th ACR redeployment is complete. The 8th ID deployment (Task Force Victory II) is also complete.

25 Secretary of Defense approves deployment of a Patriot battalion to Saudi Arabia. A plan to provide armed aviation assets for the U.N. inspection team in Iraq is also part of the overall operation, dubbed Determined Resolve. This is in response to Iraq's refusal to comply with the terms of the negotiated cease-fire following Desert Storm.

26 The 94th ADA Brigade begins deployment in Saudi Arabia. Initial elements arrive in Riyadh. There is no compromise in the pace of the command's closeout plans.

30 During September, 15 billeting locations, 20 warehouses, and 68 miscellaneous properties are turned in.

October

1 Patriot deployment completed. The 94th ADA Brigade consists of two Patriot battalions, each with three firing batteries. Batteries are located in KKMC, Riyadh, Dhahran, and Dammam. Also on this day, the Egyptian HET Battalion stands down. The battalion had been assigned to support U.S. operations in January and had worked under the 711th Transportation Group since August, providing yeoman service in moving armored vehicles to the port. ARCENT theater strength is 11,942, including 3,000 troops in the 94th ADA and Task Force Victory II. SWARF strength is 6,200. 94th ADA Brigade now 100 percent deployed in KKMC, Riyadh, and Dhahran. CINC CENTCOM, General Hoar, is briefed on the complete "Transition to Closeout" plans, which include transition of CEGSWA to Doha and its relationship with the 21st TAACOM, the structure and missions of the closeout force in Saudi Arabia, and the transition of the 22nd SUPCOM to ARCENT. All Class IX materiel is gone from the Logbase Bravo/KKMC area.

8 ARCENT recommends to CENTCOM that the prepo equipment in Kuwait follow a 3x3 configuration.

10 The 593rd ASG's M1 tank retrograde is completed.

13 Life support improvements continue in Doha, Kuwait. The first trailer latrine is now operational.

14 Combat Equipment Company-A, one of the organic components of CEGSWA, stood up in Doha.

15 In the north, the 2nd Area Support Battalion moves from KKMC to Doha, as the focus of operations moves to Kuwait. The captured enemy equipment retrograde begins. This consists of 180 major end items of formerly Iraqi Army property that is either to be sent back to CONUS for use at museums/National Training Center or handed over to the Saudis. The T-72 tank decorating the ARCENT (FWD) headquarters building's entrance since 30 May remains. In the 593rd ASG's area of responsibility, the retrograde of GOGs (government of Germany vehicles, mostly trucks and ambulances from the stocks of the former East German Army) and Class VII materiel retrograde is completed.

17 An explosion at Doha wounds three soldiers.

18 All Class IV materiel is out of KKMC.

25 The 88th Supply and Services Battalion stands down, becoming the first major provisional unit of the SWARF to do so. The captured enemy equipment retrograde is completed. The first member of the 22nd SUPCOM's five- to eight-man liaison cell at ARCENT arrives at Fort McPherson. This cell is established to maintain an institutional memory of the experiences in the SWA theater, maintain coordination with ARCENT (FWD) in SWA, and be prepared for contingency mission support.

28 Due to the Middle East Peace Conference in Spain, a temporary off-limits restriction is placed on U.S. personnel going to cities in Saudi Arabia. (The ban is lifted in November.) Pagonis and most of his primary staff go to Europe to work out the details of the technical relationship between CEGSWA and the 21st TAACOM.

31 Twelve billeting locations, 12 warehouses, and 65 miscellaneous properties are turned in during October. The GOG retrograde is completed, and FASCO Doha is deactivated, with its duties and responsibilities taken over by the 2nd ASB.

November

1 DCG-LOG, Brigadier General Harvey Brown, becomes DCG, ARCENT (FWD) to provide command and control over the closeout missions remaining after the departure of the Headquarters, 22nd SUPCOM.

- 2 The Class I retrograde is completed. All Class I supplies have been shipped to Kuwait as theater stockage or returned to CONUS or Europe. An ARCENT Coordination Team arrives in theater.
- 4 The last oil fire is extinguished in Kuwait.
- 7 The Class VII retrograde is completed.
- 11 The retrograde of Class III (P) is completed. Closeout After Action Review for the command is conducted.
- 13 The 593rd ASG cases its colors at Dragon Base for return to Fort Lewis, Washington. The 1st ASG assumes responsibility for the 593rd's remaining missions.
- 14 Class II retrograde is completed.
- 15 HHC, 593rd ASG, 365th Supply and Services Company, and the 1355th Supply and Services Company redeploy. The 207th Signal Company and 711th Transportation Group are deactivated. SUPCOM staff sections are relocated from the former USMTM building (ARCENT [FWD] Headquarters) to tents adjacent to the building.
- 18 HHC, 22nd SUPCOM (FWD) in KKMC deactivates as most of the personnel of the 21st TAACOM (CONUS Augmentation) unit, including its commander, Brigadier General Jones, redeploy. The 1103rd Transportation Company also redeploys.
- 19 Class IV retrograde is completed.
- December**
- 1 The 8th ID Task Force (Task Force Victory II) begins redeploying to Europe.
- 1-14 Exercise Iris Gold, sponsored by SOCCENT, becomes the first U.S. Army exercise conducted in Kuwait. The exercise includes an airborne assault by a ranger battalion, special forces, aviation, and amphibious operations. It is the first use of Camp Monterey and Gibbs Range, the U.S. training areas in Kuwait, by troops not stationed in Kuwait.
- 5 Final staff LOGEX conducted at the Oasis recreation center on the Dhahran airbase to provide staff guidance for the closeout and transfer of functions from the 22nd Support Command to ARCENT (FWD) and the 1st ASG.
- 15 All remaining materiel, less Class V, is retrograded out of theater.

1992

January

2

Lieutenant General Pagonis departs theater. The 22nd SUPCOM is officially replaced by Headquarters, ARCENT (FWD), under Brigadier General Brown.

Statistics

1. Dates

a. Desert Shield	8 Aug 90 - 16 Jan 91
b. Desert Storm	17 Jan 91 - 15 Dec 91
c. C-Day	7 Aug 90 (deployment)
d. D-Day	17 Jan 91 (air offensive)
e. G-Day	24 Feb 91 (ground offensive—100 hours)
f. Cease-fire	1 Mar 91 (initial cease-fire)
g. R-Day	10 Mar 91 (official redeployment)
h. Cease-fire	12 Apr 91 (permanent cease-fire)

2. Reception

a. 519 ships (discharged)

Primary SPODs

Dammam
Al Jubayl
Bahrain

b. 10,315 aircraft received

Primary APODs

Dhahran
KFIA
Riyadh
KKMC

c. Equipment received and moved forward

1) Tracked vehicles	12,400
2) Wheeled vehicles	117,100
3) Helicopters	1,830
4) Containers	33,000

d. Cargo received - 1,800,000 STONs

e. Ammunition received - 350,000 STONs

f. Personnel processed through APODs - 374,000

g. Engineer workload

- 1) Completed 21 major Army projects, consisting of water wells, heliport aprons, heliports, parking aprons, and various road construction projects.

- 2) Completed six major Marine Corps projects, consisting of ASP construction, aircraft hangars, electrical power projects, and helicopter ramps.
- 3) Completed three Air Force projects, consisting of an MAC operations storage facility, ramp repair, and a cantonment area expansion.

3. Logbase Buildup for G-Day

- a. Total logbases - 9
- b. Primary logbases for buildup - Alpha, Bravo, Charlie, Echo, and Bastogne
- c. Primary classes of supply pushed to logbases
 - 1) I 70 million packaged meals
 - 2) I (bottled water) - 1.1 million cases
 - 3) III (bulk fuel) - 33 million gallons on hand/120 million gallons pushed
 - 4) III (package) - 6,375 STONs
 - 5) V 300,000 STONs

4. Movement of Materiel and Personnel for G-Day

- a. Miles of MSR - 2,746
- b. Number of convoys - 3,568
- c. Number of U.S. Army trucks - 1,400
- d. Number of host nation trucks - 2,100
- e. Miles of MSR driven - 35 million
- f. HET moves - 1,739
- g. Lowboy moves - 5,828
- h. Flatbed moves - 10,149
- i. Accomplishments
 - 1) Movement of two full corps.
 - 2) Movement of materiel for logbase buildup.
 - 3) Above both accomplished in 21 days despite the crossing of the routes of the two corps.
 - 4) Seven convoy support centers provided fuel, food, maintenance, rest, and recreation.
 - 5) During this 21 days, 18 vehicles would pass any given point each minute, 24 hours/day, 7 days/week.

5. **Force Modernization/New Equipment Training**
 - a. M1A1 tank modernization - 17 BN sets (948 tanks)
New equipment training conducted - 11 BN sets
 - b. Counter mine equipment modernization - 13 BN sets
 - c. M2A2/M3A2 modernization - 11 BN sets (836 Bradleys)
New equipment training conducted - 10 BN sets
 - d. M 9 ACE (Armored Cbt Earthmover) modernization - 99
 - e. AH-1F modernization - 61
 - f. UH-60L modernization - 32
 - g. CEV mine rake modernization - 43
 - h. SLGR/LORAN-C installations - 15,018
 - i. M939A2 fielded - 1,977
 - j. HMMWV fielded - 2,642
 - k. IEW systems fielded
 - 1) J STARS - 4
 - 2) UAV - 1
 - 3) ASPO Imagery - 13
 - 4) TROJAN - 13
6. **VII Corps Painting Program upon Reception**
 - a. 10,000+ vehicles painted
 - b. 30,000 gallons paint used
7. **Weapons System Replacement Operation**
 - a. M-1 - 225
 - b. CME - 67
 - c. M-2 - 104
 - d. M-3 - 102
 - e. M-88 - 14
 - f. M-577 - 6
 - g. Total - 451 tracked vehicles

8. Corps Projected Daily Sustainment

a. Class V

- 1) VII Corps - 450 truckloads/9,000 STONs
- 2) XVIII Corps - 400 truckloads/5,000 STONs

b. Class III (B)

- 1) VII Corps - 400 truckloads/2.4 million gallons
- 2) XVIII Corps - 480 truckloads/2.1 million gallons

9. Peak Personnel Strengths

a. ARCENT	303,500	
SUPCOM		31,679

b. Air Force 54,700

c. Navy 83,600

d. Marines 92,800

e. Joint Commands	6,825	
CENTCOM		1,200
SOCCENT		5,300
JCSE		325

f. Total U.S. 541,425

10. Medical Support at Peak

a. Hospitals

1) Field	3
2) Evac	22
3) Station	1
4) General	1
5) MASH	8
6) CSH	9
7) Total	44

b. Available beds - 7,300

c. Medical personnel - 22,000

d. Medical evac aircraft

- 1) VH-60 50
- 2) VH-IV 175
- 3) Total 225

e. Ground ambulance

- 1) U.S. - 408
- 2) GE - 60
- 3) Saudi bus (converted for litter) - 50
- 4) Saudi bus (for ambulatory) - 50

11. Battle Damage Assessment (Iraqi in KTO)

- a. Divisions - 36 of 43 destroyed
- b. Tanks - 3,847 of 4,550 destroyed
- c. APCs - 1,450 of 2,880 destroyed
- d. Artillery - 2,917 of 3,257 destroyed

12. Completed Ongoing Missions

a. Defense of Kuwait

	<u>11 ACR</u>	<u>8th ID</u>
1) Personnel	9,500	1,399
2) Issue equipment		
Tracks	456	169
Wheels	785	215
Trailers	305	74
Hvy engr	21	7
Forklifts	13	8
3) Transportation		
HETs	121	2
Lowboys	156	4
Flatbeds	<u>95</u>	<u>12</u>
Total	372	18

b. Defense of Saudi Arabia, 94th ADA (Patriot)

- 1) Personnel - 1,273

- 2) Issue equipment
 - Launcher 24
 - Radar 6
 - ECS 6
 - EPP 6

c. Humanitarian support

- 1) Restoration of Kuwait (tentage, food, water, clothing, cots, medical supplies)

- 2) United Nations Iraq Kuwait Observer Mission

- a) Vehicles - 269
- b) Generators - 44
- c) Expendable items - \$5.5 million

- 3) Operation Provide Comfort (aid to Kurds)

- a) G.P. medical tents - 928
- b) Bedouin tents - 28,000
- c) Kitchen tents - 84
- d) 20' x 40' tarps - 278
- e) Water trailers - 98
- f) MREs - 1 ship (510 containers) + 115 pallets
- g) Forklifts (10,000 lb.) - 9
- h) Batteries - 17,000
- i) Boxes OFDA plastic sheeting for shelter - 380
- j) 5-gallon water cans - 1,200
- k) Cold weather shirts - 7,461

- 4) Refugee camp support

- a) Safwan, Iraq Refugee Camp

- 1) Medical supplies, water, A-rations, tents, baby supplies provided by the United States.
- 2) Operated by 1st Brigade, 3rd Armored Division.

- 3) Food and water
 - Meals (each) 979,822
 - Bottled water (cases) 173,906
 - Bulk water (gallons) 1,136,700

4) Transients	
Into sector (people)	55,055
Out of sector (people)	38,600
Vehicles in	11,559
Vehicles out	10,824

5) Medical support
 Patients treated - 23,419

6) EPWs processed - 3,341

7) Registered

Transients	13,005
Requesting asylum	912
For food	11,370

8) Transfer to Rafha, Saudi Arabia

Number of flights	96
Number transferred	8,375

b. Rafha, Saudi Arabia Refugee Camp

- 1) Tents, water equipment, food, medical supplies, lumber, generators provided by the United States.
- 2) Operated by Saudis.

5) Bangladesh typhoon relief
 MREs/medical supplies - 1 ship (510 containers)

6) Panama
 MREs - 1 ship (510 containers)

7) Ethiopia
 MREs - 1.5 million

8) Egypt
 Medical supplies - 1 planeload, 36 pallets

9) Red Crescent (Kuwait)
 Food and medical supplies

10) Central and South America
 B-rations and MREs - 510 containers

d. Enemy prisoners of war (EPW)

- 1) 800th MP BDE built and operated 4 EPW camps.
- 2) 70,000 EPWs processed to Saudi control.
- 3) 1,500 daily flow through camps.

e. Support to other services

- 1) MARCENT (SWA) - Classes I, IW, III, V, VI
- 2) Navy SEALs - Class IX
- 3) Air Force - Class V Transportation

f. Redeployment

- 1) APOEs
 - Dhahran
 - KFIA
 - KKMC
 - Riyadh
- 2) SPOEs
 - Bahrain
 - Dammam
 - Al Jubayl
- 3) Redeployment assembly areas (RAAs)

	<u>Wash Sites</u>	<u>Points</u>
KKMC	2	76
Dhahran	4	384
KFIA	2	168
Al Jubayl	2	154
Doha, Kuwait	1	21
Total		782

4) Sterile staging area for equipment pending loading on ship (sq. ft.)

- a. Dammam 3,841,388
- b. Jubayl 988,229
- c. Total 4,829,617

NOTE: Total is equivalent to 36 miles of two-lane road with vehicles parked bumper to bumper.

5) Primary personnel marshalling areas

KKMC
Riyadh
Khobar
KFIA

6) Redeployment figures versus projections

	<u>As of 3 NOV 91</u>	<u>Projection</u>
Aircraft departed (aircraft projection for soldiers only)	2,855	2,880
Ships sailed	354	390
Tracked vehicles	11,222	12,045
Wheeled vehicles	111,582	120,788
Helicopters	1,807	1,830
Containers	38,431	42,526
Personnel	387,818	395,132
Cargo (STONs)	1,272,583	1,473,533

7) Redeployment transportation requirements (lifts)

a. XVIII Corps	4,786
b. VII Corps	4,423
c. EAC	3,186
d. Prepo materiel	39,241
e. 1st BDE, 3rd AD	628

8) VII Corps CARC painting (prior to return to Germany)

a. Tracked vehicles	3,130
b. Wheeled vehicles	5,014
c. Total	8,144

9) Engineer - Constructed Air Force projects

a. Khobar airbase access road
b. KAAAB runway repair
c. Rapid assembly munitions area

10) Redeployment of SWARF began 1 OCT 91. Approximately 1,000 soldiers remained in Saudi Arabia to close out the theater until April 1992. About 1,200-1,500 soldiers manned U.S. Army, Kuwait (USAK). USAK ramped down to approximately 200 soldiers by June 1992. This force will remain indefinitely in Kuwait to support contingencies and exercises.

14. Miscellaneous Information

a. MEAPO real estate leases

1) U.S. (Saudi Arabia)	91
2) MODA (Saudi Arabia)	33
3) U.S. (Bahrain)	2
4) U.S. (United Arab Emirates)	2
5) U.S. (Kuwait)	3
6) Total	131

b. Contracts

	<u>Number</u>	<u>Cost</u>
1) ARCENT contracts/SWA	292	\$1,785,176,768
2) ARCENT simplified purchases	78,568	128,168,426
3) XVIII contract awards	242	95,177,542
4) XVIII simplified purchases	8,852	46,478,023
5) Total contract action	87,954	\$2,055,000,759

c. OMA funding

1) ARCENT SUPCOM funding

a. VII Corps	\$ 68,109,753
b. XVIII Corps	216,831,592
c. EAC	885,188,856
d. Total	\$1,170,130,201

2) Kuwait funding \$ 22,134,822

d. Mail

1) Received (STONs)	32,308
2) Shipped (STONs)	15,145
3) Total	47,453

e. Mortuary Affairs: Scud impact - Dhahran

1) KIA	28
2) Injured	98
3) Members, 475th POL Group	

f. Subsistence

- 1) Meals served (non-operational) - 98 million
- 2) Wolfmobiles at peak - 105

g. Engineer - sustainment phase

- 1) Completed projects in Kuwait
 - a) Provided and set up 34 trailers and portable buildings, 7 fabric structure tents (FAST structures).
 - b) Erected security facilities consisting of 1,200' of security fence and seven guard towers.
 - c) Accomplished tank firing range improvements.
 - d) Constructed MWR facilities and office facilities.
 - e) Completed many electrical projects.
- 2) Completed 37 K-span buildings in the Dhahran area and 25 in the KKMC area.
- 3) Provided construction improvements to various MWR facilities, such as the SUPCOM Oasis Recreation Area.
- 4) Provided reconstruction support to the LOC.
- 5) Constructed ARCENT fuel point.
- 6) Provided commercial power or leased generator power connections to various sites.
- 7) Constructed firing ranges such as the Jayhawk Faisal Ranges.
- 8) Established hazardous waste collection points at Dhahran.
- 9) Erected 39 K-span structures for storage support, totalling 559,960 square feet.
- 10) Provided air conditioning to the Khobar dining facilities.
- 11) Provided 300 million kilowatt-hours of electrical power to the theater of operations.
- 12) Completed 96 additional minor construction projects.

h. Morale/Welfare/Recreation

1) Recreation centers (usage as of 22 OCT 91)

a. <i>Cunard Princess</i> cruise ship	72,800
b. Half Moon Bay	110,178
c. Hotel California	51,123
d. Oasis	55,951
e. USO Bahrain	4,945
f. Entertainment	67,177

2) PX facilities with local merchant displays

a. Major PXs established

Riyadh
Dhahran
KKMC
Kuwait

b. PX trailers

Outlying unit areas
Redeployment assembly areas

c. Wolfmobiles (105 at peak)

Convoy support centers
Outlying unit areas
Redeployment assembly areas

d. PX sales (as of 1 OCT 91)

1) Retail	\$106.9 million
2) Food	18.0 million
3) Catalog	14.9 million
4) New car sales	1,250 cars*
	(average cost per car - \$13,125)

*Data to 1 JUN 91 (not kept after 1 JUN)

- 3) **MWR equipment and facilities**
 - Basketball courts**
 - Volleyball courts**
 - TVs**
 - Video tape players and movies**
 - Popcorn machines**
 - Stereos**
 - Pool tables**
 - Dart boards**
 - Ping pong tables**
 - Soft drinks**
 - Card tables and cards**
 - MCC telephone centers**
 - Local tours/shopping visits**
 - Swimming pools**

Glossary

This glossary includes definitions of technical terms and acronyms that appear in this work. Definitions taken from the official Army operational lexicon, *FM 101-5-1: Operational Terms and Symbols*, October 1985, are so noted. Terms taken from the Department of Defense's *Report on the Conduct of the Persian Gulf War (Title V)* are also so noted. Citations taken from the official Department of Defense dictionary, JCS Pub 1, are so labeled.

A

AAFES—See Army and Air Force Exchange System.

ACR—See Armored cavalry regiment.

ACSHNA—Assistant Chief of Staff for Host Nation Activities. In the support command headquarters organization, the primary staff officer (and, by analogy, the whole staff section) responsible for coordinating support and actions relating to the host nation.

ACSIM—Assistant Chief of Staff for Information Management. In the support command headquarters organization, the primary staff officer (and, by analogy, the whole staff section) responsible for information management.

ACSLOG—Assistant Chief of Staff for Logistics. In the support command headquarters organization, the primary staff officer (and, by analogy, the whole staff section) responsible for theater logistical functions, primarily materiel and services.

ACSRM—Assistant Chief of Staff for Resource Management. In the support command headquarters organization, the primary staff officer (and, by analogy, the whole staff section) responsible for budgetary and funding functions.

ACSTRANS—Assistant Chief of Staff for Transportation. In the support command headquarters organization, the primary staff officer (and, by analogy, the whole staff section) responsible for transportation planning and coordination.

Active component—The regular army and non-regular personnel serving on active duty, but not including mobilized reservists and guardsmen.

ADAG—Aerial Departure and Arrival Group.

Adjutant General—The Army branch primarily responsible for personnel and administrative functions, including the publishing of administrative orders.

ADP—Automatic data processing.

Aerial port of debarkation—An airport facility used for landing troops and equipment into a theater.

Aerial port of embarkation—An airport facility from which troops and equipment depart from a theater.

AFRC—Armed Forces Recreation Center. The principal AFRC in SWA was AFRC-Bahrain, which was essentially the *Cunard Princess* luxury cruise ship docked at the naval base in Manama, Bahrain, an offshore island emirate roughly 20 miles from Dhahran. In addition to the usual ocean liner services, the ship offered various historical, shopping, and recreational tours in Bahrain. AFRC-Bahrain was operational from December 1990 through September 1991.

AMC—*See* Army Materiel Command.

Ammunition supply point—A forward location where ammunition is distributed to using units on an area basis, or distributed by a using unit to individuals or subordinate units. (FM 101-5-1)

APO—Army post office.

APOD—*See* Aerial port of debarkation.

APOE—*See* Aerial port of embarkation.

ARAMCO—Arabian-American Oil Company. The Saudi company, supported by several major American oil companies, that runs the major oil fields in the Eastern Province of Saudi Arabia and maintains a large facility in Dhahran.

A-rations—Fresh food rations, which require extensive preparation and cooking prior to serving.

ARCENT—Army Forces, Central Command. The Army component command under Central Command. The field command that is functionally identical to ARCENT is Third Army.

Area of responsibility—A defined land area in which responsibility is specifically assigned to the area commander for development and maintenance of installations, movement control, and tactical operations involving troops under his control, along with parallel authority to exercise these functions. (Title V)

Area support battalion—A multi-functional combat service support headquarters assigned support responsibilities for a specific geographical area or supported unit. Subordinate, company-size units are assigned to the ASB to support its mission.

Area support group—A multi-functional combat service support headquarters assigned support responsibilities for a specific geographical area or supported unit. An ASG works directly under a SUPCOM or TAACOM and has subordinate multi- and single-functional combat service support units assigned to it in order to support its mission.

Armored cavalry regiment—A combined arms organization roughly equivalent to a divisional brigade with its supporting units. An ACR is designed primarily to execute security and reconnaissance missions for a corps.

Army and Air Force Exchange System—The agency that operates the post and base exchanges located on military installations.

Army Materiel Command—The Army agency responsible for technical expertise in maintenance and related fields. AMCSWA was established under the support command to oversee AMC activities in Southwest Asia. Major subordinate organizations of AMC during Desert Shield/Desert Storm included: AMCCOM (Armaments, Munitions, and Chemical Command), AVSCOM (Aviation Systems Command), CECOM (Communications Electronics Command), MICOM (Missile Command), TACOM (Tank Automotive Command), and TROSCOM (Troop Support Command).

ARNG—Army National Guard. The reserve component that in peacetime is under state control, but whose training must meet certain federal standards. Like the troop program units of the Army Reserve, the ARNG is organized into units that drill one weekend a month and conduct an annual training period. Unlike the USAR, the ARNG also conducts training for state missions, such as disaster relief and riot control.

ARPERCEN—Army Reserve Personnel Center. The facility located in St. Louis, Missouri, that manages Army reservists. The various control groups that make up the Individual Ready Reserve are located there.

ASB—*See* Area support battalion.

ASG—*See* Area support group.

ASP—*See* Ammunition supply point.

ATMCT—Air Traffic Movement Control Team.

B

Battalion—An Army or Marine unit generally consisting of 300-800 soldiers organized in companies and commanded by a lieutenant colonel.

BDE—*See* Brigade.

BN—*See* Battalion.

Bradley fighting vehicle—The M2 infantry fighting vehicle or M3 cavalry fighting vehicle. The vehicle enables mechanized infantry to keep up with M1 tanks, contains its own impressive firepower, most notably a 25mm chain gun and TOW missile launcher, and also allows infantrymen to dismount to conduct traditional infantry missions.

B-rations—Dehydrated rations requiring cooks and food service equipment to prepare. Less tasty than A-rations, but easier to prepare in a field environment.

Brigade—An army unit consisting of two to five battalions (roughly 2,000-5,000 soldiers) commanded by a colonel. In an Army division, a brigade is specifically organized for the mission it has been assigned and given battalions to employ accordingly. The Marine (and Army cavalry) equivalent is the regiment.

Bright Star—An annual CENTCOM exercise conducted jointly with Egypt in that country to test the deployment of U.S. forces to the region.

C

C-Day—The unnamed day designated as the beginning of a deployment operation. For Operation Desert Shield, it was 7 August 1990.

CAPSTONE—Army program that aligns units, regardless of component, into a wartime command structure. (Title V)

CAV—*See* Cavalry.

Cavalry—In the Army, the combat branch primarily responsible for battlefield reconnaissance and security functions. Found in three variations—air cavalry, which depends on scout and attack helicopters; light cavalry, which depends on wheeled vehicles and foot patrols; and armored cavalry, which is a combined arms team including tank; scout (actually mechanized infantry); and field artillery elements working as an organizational team. In the cavalry, company-size units are called troops, and battalion-sized units are called squadrons. The largest permanent cavalry organization is called the regiment and is roughly equivalent to a separate maneuver brigade. The 1st Cavalry Division retains the name and titles of a former horse cavalry unit, but it is actually an armored division. Several battalion-sized units also retain cavalry designations, but in fact are armored or mechanized infantry units. These units use the designations battalion and company rather than squadron and troop.

CCATF—*See* Combined Civil Affairs Task Force.

CEGSWA—*See* Combat Equipment Group, Southwest Asia.

CENTCOM—Central Command. The unified command under the Department of Defense responsible for the Middle Eastern area. The headquarters of the command is located at MacDill Air Force Base, Tampa, Florida. The position of commanding general is alternated between the Army and the Marine Corps.

CG—Commanding general.

CINC—Commander-in-chief. While the President is the commander-in-chief of the armed forces, the term CINC is usually used to refer to the commander of a unified command such as Central Command, who is referred to as CINCCENT.

CJCS—Chairman, Joint Chiefs of Staff. During Operation Desert Shield/Desert Storm the CJCS was General Colin Powell. CENTCOM worked directly for the President through the Secretary of Defense and CJCS.

Classes of supply—The grouping of supplies, by type, into ten categories to facilitate supply management and planning. (FM 101-5-1) The classes are:

- I Subsistence items.
 - II Unit equipment, such as tents, tool sets, clothing, individual equipment.
 - III Petroleum, oils, and lubricants (POL).
 - IV Construction and barrier materials, such as barbed wire, lumber, and sandbags.
 - V Ammunition.
 - VI Personal demand items, such as soap and candy, that would normally be sold through the PX system.
 - VII Major end items, such as vehicles and major weapons systems.
 - VIII Medical supplies.
 - IX Repair parts and components.
 - X Material required to support nonmilitary programs.
- MISC Miscellaneous items, such as water, maps, captured enemy equipment, and salvage.

Combat Equipment Group, Southwest Asia—The organization, initially based at KKMC, then at Doha, Kuwait, responsible for the organization, storage, and maintenance of the prepositioned equipment and supplies left in the theater. Re-designated U.S. Army Kuwait (USAK) on 1 January 1992.

Combat service support—The assistance provided to sustain combat forces, primarily in the fields of administration and logistics. It includes administrative services, chaplain services, civil affairs, food services, finance, legal services, maintenance, medical services, supply, transportation, and other logistical services. (FM 101-5-1)

Combined Civil Affairs Task Force—The special civil affairs cell assigned to Task Force Freedom to coordinate and assist in the restoration of Kuwait.

COMMZ—Communications zone. The rear part of the theater of operations (behind, but contiguous to, the combat zone) that contains the lines of communication, establishments for supply and evacuation, and other agencies required for immediate support and maintenance of field forces. (FM 1015-1)

Company—The basic administrative unit in the Army and Marine Corps. Organized around several platoons and sections and commanded by a captain, it normally includes 100-200 soldiers.

COMUSARCENT—Commander, U.S. Army Central Command.

CONUS—Continental United States. The support base for most supply and maintenance activities in the Army, including depots, supply stockpiles, and manufacturing.

Convoy support center—A facility established along a main supply route to provide basic services to convoy drivers and personnel. Services on a 24-hour basis included fuel points, latrines and showers, food, medical evacuation, overnight accommodations, and movies. CSCs were established roughly every 150 miles along the MSRs. A typical CSC was organized so that a driver passed through the following sequence: first a latrine, then a fuel point; fuel lanes led to parking areas located between the latrines and the eating facility. A food tent provided both hot and cold meals, which were served quickly, as well as coffee and soft drinks.

Corps—The largest independently operating tactical headquarters in the U.S. Army organization. A corps, commanded by a lieutenant general, consists of two or more divisions, an armored cavalry regiment, and various corps-level troops. An airborne corps is essentially similar, but organized such that all its elements can be carried by air transports. The airborne corps is also known as a contingency corps, since it is designed to respond to worldwide contingencies.

COSCOM—Corps support command. The major service support headquarters under a corps. Major subordinate organizations include corps support groups, which are usually designed to support specific divisions and separate brigades.

CP—Command post.

Cross-country movement—The movement of military vehicles (usually tactical) across terrain without using roads and bridges. (FM 101-5-1)

Cross-level—The shifting of personnel and/or equipment from one unit to another to make the receiving unit ready for deployment. (Title V)

CSC—*See* Convoy support center.

CSS—*See* Combat service support.

D

D-Day—The unnamed day on which a particular operation commences. Reference to days preceding or following D-Day are referred to by using a plus or minus sign and an Arabic numeral following the letter "D." Example: D-3 is 3 days prior to D-Day; D+7 is 7 days after D-Day. (FM 101-5-1) For Operation Desert Storm, D-Day was 17 January 1991.

DA—Department of the Army.

DCG—Deputy Commanding General. The SUPCOM commander's principal assistant commander.

DCG-LOG—Deputy Commanding General for Logistics.

DCG-MS—Deputy Commanding General for Materiel and Services.

DCG-TRANS—Deputy Commanding General for Transportation. The SUPCOM commander's principal assistant in the area of transportation. DCG-TRANS oversaw the ACSTRANS section and the operations of the major subordinate transportation headquarters.

DCSLOG—Deputy Chief of Staff for Logistics. The chief logistical staff officer at Department of the Army headquarters in Washington, D.C. The office of the DCSLOG is referred to as ODCSLOG.

DECON—Decontamination.

Defense Re-utilization and Marketing Office (DRMO)—The Defense Department agency responsible for disposing of excess or unserviceable military equipment, either through direct disposal or resale.

Desert Express—The air express service established by USTRANSCOM (Transportation Command) for small parcels with high-priority need in SWA. Flights ran daily from the U.S. beginning on 30 October 1990 and from Europe beginning in December 1990. European service ended on 10 March 1991 followed by U.S. service on 10 May 1991.

Direct support—A mission requiring a force to support another specific force and authorizing it to answer directly the supported force's request for assistance. (FM 101-5-1)

DISCOM—Division support command. The CSS headquarters in a division. Subordinate units include multi-functional forward support battalions, assigned to support the maneuver brigades; a main support battalion; and a materiel management center.

Division ready brigade—In the 82nd Airborne Division, the brigade task force currently tasked to be ready for quick deployment anywhere in the world to respond to sudden crises.

Division support area—An area normally located in the division rear, positioned near air-landing facilities and along the main supply route. Includes the division support command (DISCOM) command post, the headquarters elements of the DISCOM battalions, and those DISCOM elements charged with providing backup support to the CSS elements in the brigade support area and direct

support to units located in the division rear. Selected corps support command (COSCOM) elements may be located in the division support area to provide direct support backup and general support as required. (FM 101-5-1)

DOS—Days of supply. A unit or quantity of supplies adopted as a standard of measurement used in estimating the average daily expenditure under stated conditions. (Title V)

DS—*See* Direct support.

DSA—*See* Division support area.

DS/GS—Direct support/general support.

E

EAC—(1) Echelons above corps—Army headquarters and organizations that provide the interface between the theater commander (joint or combined) and the corps for operational matters, and between CONUS/host nation and the deployed corps for CSS. (FM 101-5-1) (2) Eastern Arab Command—The joint forces under Saudi command responsible for the sector directly along the Persian Gulf coast during the ground offensive. Located directly to the right (east) of MARCENT. Also referred to as Joint Forces Command-East.

EAD—Echelons above division. This term refers primarily to the study conducted in the mid-1970s that resulted in the consolidation of the theater army support command (TASCOM) with the theater army headquarters.

ENG—Engineer.

Engineer command—The principal engineer command in a theater of operations controlling all EAC engineer units. By doctrine it is directly under the theater army.

EPW—Enemy prisoner of war. EPW operations are a military police mission dealing with the collection, education, and internment of EPWs. (FM 101-5-1)

F

FAA—*See* Forward assembly area.

FASCO—Forward area support coordinating officer. A staff officer responsible for supporting a specific mission. His organization is tailored to control and coordinate a package of logistical support units to provide support for the specific unit or mission.

FASCOM—Field Army Support Command.

FAST—Forward area support team. In the light divisions, the tailored multi-functional force that provides direct support to the maneuver brigades, roughly equivalent to the forward support battalions in the heavy divisions. By analogy the term can be used to indicate any support team organized to provide direct or general support to a specific unit or base complex.

Fast sealift ship—A ship specially designed to load and off-load the equipment of a heavy division quickly.

FDRP—First destination reporting point. A control point established at the logbases to direct incoming convoys and vehicles to the correct destination within the logbase. Also used as a point to coordinate the movements and arrivals of convoys.

Field Army Support Command (FASCOM)—A former Army organization that controlled combat service support assets at the field army level. Deleted from the organizational structure in 1976.

Field artillery—The combat branch of the Army responsible for indirect fire support systems, mostly low-velocity cannons, howitzers, surface-to-surface missiles, and the multiple launched rocket system (MLRS). Field artillery units are called batteries at the company level.

FM—Field Manual. The Army's basic doctrinal guidebooks. Published with numerical designations.

FORSCOM—Forces Command. The specified command located at Fort McPherson, Georgia, responsible for control over all operational (as opposed to training) active Army units and installations in the continental United States. Also controls the Army Reserve and oversees the training of the Army National Guard.

Forward assembly area—The locations where combat troops prepare for the commencement of the ground campaign.

FRAGO—Fragmentary order. An abbreviated form of an operation order (OPORD) used to make changes in missions to units and to inform them of changes in the tactical situation. (FM 101-5-1)

FSA—Final staging area. In the redeployment phase of Operation Desert Storm, the place where equipment was prepared and staged prior to being loaded onto ships at the seaport.

FWD—Forward.

G

G-Day—The day designated as the beginning of the ground campaign—24 February 1991 for Operation Desert Storm.

G-6—The staff section in the support command headquarters responsible for information management functions. Activities include radio and telephone communications, and automation support.

General support—Support given to the supported force as a whole and not to any particular subdivision thereof. (FM 101-5-1)

Global positioning system—A device that enables military personnel to know their exact location, as given in grid coordinates, at all times. Most units received issues of the system in theater.

GOG—Government of Germany. Refers to equipment and vehicles donated to the Desert Shield effort by the German government, most of which were vehicles, typically trucks and ambulances, from the former East German armed forces. GOG funds are funds given by the government of Germany for Desert Shield and Desert Storm.

GOJ—Government of Japan. Refers to equipment donated to the Desert Shield effort by Japan. Most commonly these donations were commercially designed vehicles (NTVs). GOJ funds were funds given by the government of Japan for Gulf War support.

Group—An Army headquarters roughly equivalent to (and sometimes subordinate to) a brigade, usually controlling units with similar functions or missions. Most often found in CSS chains of command.

GS—*See* General support.

H

H-Hour—The specific hour on D-Day at which a particular operation commences. (FM 101-5-1) For Desert Storm, it was 0300 local time, 17 January 1991.

Heavy division—U.S. Army armored and mechanized division. Each division is organized with a division base, three maneuver brigade headquarters, an aviation brigade, an artillery brigade-equivalent, a DISCOM and five each armored and mechanized infantry battalions. All the ground combat elements of the division—tanks, infantry, field and air defense artillery, cavalry, and engineers—are mounted in fully tracked armored vehicles. Accordingly the division is very mobile on the battlefield, but requires a large logistics tail to keep it in action. The bulk of vehicles require numerous ships, an average of about 16, to load up all the equipment for deployment overseas. Long-range movements within the theater require the use of HETs and other flatbed vehicles or railroad cars to move the division's vehicles, so that the vehicles are not worn out from use before they get to the battlefield.

Heavy equipment transporter (HET)—Heavy tractor-trailer combinations used to transport tanks and other armored vehicles over great distances. Current U.S. Army organization has only six HETs in a division's support command, which are earmarked for use in evacuation procedures, rather than operational-level moves.

HEMTT—Heavy expanded mobility tactical truck. A heavy-duty Army wheeled vehicle capable of cross-country movement and issued in two basic configurations: fuel tanker and ammunition carrier. Designed for use in the logistical support elements of combat units. To support Desert Storm, 1,481

HEMTTs were pooled from various sources and sent to the theater, of which 756 were tankers and 725 were cargo vehicles (ODCSLOG, *Operation Desert Storm Sustainment*).

HET. *See* Heavy equipment transporter.

HHC—Headquarters and Headquarters Command.

HHD—Headquarters and Headquarters Detachment.

HMMWV—High mobility multi-purpose wheeled vehicle. A small wheeled vehicle used for administrative activities, command and control, and medical evacuation. This vehicle replaced the Jeep.

Host nation support—Civil and military assistance given in peace and war by a host nation to allied forces on or in transit through the host nation's territory. (Title V)

HQDA—Headquarters, Department of the Army.

I

ID—Infantry division. In Desert Storm the Army employed parts of two mechanized infantry divisions, which are officially designated "Infantry Division (Mechanized)."

Individual mobilization augmentee—A reservist not assigned to a troop program unit, but with a specific mobilization mission and assignment, normally at a major headquarters. (Title V)

Individual Ready Reserve—Members of the Ready Reserve not assigned to the Selected Reserve and not on active duty. (Title V) *See also* U.S. Army Reserve.

INMARSAT—International Maritime Satellite. Special telephones hooked up into this system enabled logisticians to have immediate, long-range communications throughout the theater.

IRR—*See* Individual Ready Reserve.

ISA—Intermediate staging area.

J

Jump Command Post—In the support command, the small command post element detached forward of the main headquarters to facilitate communications with the supported units and the identification of problem areas.

K

King Abdul Aziz Airport—The formal name for the airport/military airfield complex at Dhahran.

KFIA—King Fahd International Airport. The large new, partially completed airport complex northwest of Dammam. U.S. forces used it as an APOD and APOE, as well as a basecamp and sterile holding area.

KKMC—King Khalid Military City. The large military base complex built by the Army Corps of Engineers for the Saudis. The complex was designed to support a population of as many as 50,000 to 75,000, and included an airfield and a hospital. The complex became the logistics hub for Operation Desert Storm.

KTF—Kuwaiti Task Force.

KTO—Kuwait Theater of Operations.

L

Light divisions—U.S. Army airborne, air assault, infantry, and light infantry divisions. Such divisions are, for the most part, transportable by aircraft and can therefore be moved over great distances rapidly. The trade-off is that the divisions lack the heavy equipment necessary to fight a mechanized enemy. Extensive use of attack helicopters and small anti-armor weapons partially makes up for the lack of tanks and other armored vehicles. Battlefield mobility also is often limited. The 82nd Airborne Division required extensive augmentation with 5-ton trucks to move its troops during Operation Desert Storm. The 101st Airborne Division (Air Assault), while more mobile due to the large number of transport helicopters in the division's organization, has an accordingly larger logistical tail.

LOC—Logistics Operation Center.

LOG—*See* Logistics.

LOGEX—Logistics exercise.

Logistics—The planning and carrying out of the movement and the maintenance of forces. In its most comprehensive sense, those aspects of military operations that deal with (1) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of material; (2) movement, evacuation, and hospitalization of personnel; (3) acquisition or construction, maintenance, operation, and disposition of facilities; and (4) acquisition or furnishing of services. (FM 101-5-1)

LOGMARS—Logistics Marking System. A system used in cargo handling and ship loading operations where equipment is marked with a special label that can be scanned by a computer, thus simplifying the compilation of cargo lists and ship manifests.

LOGSITREP—Logistics situation report. These reports were sent from the theater to higher headquarters and to the Department of the Army Staff, particularly the DCSLOG. Daily reports started on 8 August 1990 and ended on 2 January 1992.

M

MAC—Military Airlift Command.

Main supply route—The route or routes designated within an area of operations on which the bulk of traffic flows in support of military operations. (FM 101-5-1)

Maintenance—In Army parlance, maintenance is "all action taken to retain materiel in a serviceable condition or to restore it to serviceability." (JCS Pub 1) Maintenance is divided into functional categories based on the extent of work to be done on the equipment—operator, organizational, direct support, general support, and depot. Recovery and evacuation functions are also part of maintenance. Repair parts supply, though a quartermaster function, is also found in most maintenance units.

Maneuver forces—Those combat elements of the Army whose primary function is to maneuver directly against enemy forces—armor (tank), infantry, cavalry, and combat aviation (attack helicopter).

MAPEX—Map exercise.

MARCENT—Marine Forces, Central Command. Marine component command under CENTCOM. The MARCENT commander was also commander of the I Marine Expeditionary Force, a corps-level operational command.

MATCOM—Materiel command.

Materiel—The equipment and supplies used by a military organization.

Materiel handling equipment—Equipment, such as forklifts (4,000 lb., 6,000 lb., or 10,000 lb.) and rough terrain container handlers, designed to move and carry containers and supplies around supply points and warehouses, facilitating supply distribution, organization, and handling. Traditionally the Army has assigned MHE assets to units based on expected missions and equipment. In SWA it was found to be more useful to pool MHE assets together and redistribute them on a mission-by-mission basis by priority.

MCA—Movement control agency.

MCB—Movement control battalion.

MCC—Movement control center.

MEAPO—Middle East/Africa Project Office. The Army Corps of Engineers office that acts as the design and construction agent for the Middle East and Africa.

MHE. *See* Materiel handling equipment.

MMC—Materiel management center.

MODA—Saudi Ministry of Defense and Aviation.

Modified table of organization and equipment—The organizational structure that establishes and authorizes personnel and equipment allowances for an Army unit.

MP—Military police. The branch of the Army responsible for internal law and order functions, traffic control, security for administrative movements, and care of enemy prisoners of war.

MPS—Maritime prepositioning squadron. A squadron of four or five specially configured and loaded Military Sealift Command ships on which are carried the equipment and 30 days of supply for a Marine expeditionary brigade. (Title V)

MRE—Meal ready to eat. A special, individually boxed ration consisting of dry food and freeze-dried entrees that can be eaten hot or cold.

MSB—Main support battalion.

MSR—*See* Main supply route.

MTMC—Military Traffic Management Command. The Army agency responsible for coordinating military traffic activities, including port operations.

MTMC-SWA—The MTMC component that managed port operations after the departure of the 7th Transportation Group. The four TTUs worked directly for MTMC-SWA. The PSA units from the 593rd ASG were under the operational control of MTMC-SWA.

Multi-functional unit—A CSS organization designed to perform multiple logistical functions, either on an area basis or for a specific unit. Area support groups and forward support battalions are examples of such units.

MWR—Morale, welfare, and recreation. Services for soldiers, such as recreation centers, movie theaters, gyms, and recreation sites. Civilian Army personnel were responsible for managing these services.

N

NAC—*See* Northern Arab Command.

National command authority—The President and Secretary of Defense or their deputized alternates or successors. (Title V)

NATO—North Atlantic Treaty Organization.

NLOC—Northern Logistics Operation Center.

Northern Arab Command—The Saudi-commanded pan-Arab force (Saudi, Egyptian, Syrian, Gulf Cooperation Council) positioned between MARCENT and ARCENT near the border between Kuwait, Iraq, and Saudi Arabia. Also known as Joint Forces Command—North.

NTV—Non-tactical vehicle. The term refers to the commercial vehicles of various designs donated by various foreign nations and leased from the Saudis. The most common types were four-wheel drive Ford Broncos. NTVs provided convenient administrative movements to individuals in the theater, allowing them to move efficiently from their quarters to work places, warehouses, and meetings. NTVs, therefore, played much the role that privately owned vehicles would in the garrison in the United States.

O

ODCSLOG—*See* DCSLOG.

Operating tempo (OPTEMPO)—The pace of operations in a given period. (Title V)

Operation Determined Resolve—The operation involving the deployment of the 94th ADA Brigade with six Patriot missile batteries from Germany to Saudi Arabia in September 1991.

Operation Provide Comfort—The operation to provide humanitarian support and protection to the Kurds in northern Iraq following the Gulf War.

Operational control—The authority delegated to a commander to direct forces assigned so that the commanders may accomplish specific missions or tasks that are usually limited by function, time, or location; to deploy units concerned, and to retain or assign tactical control of those units. It does not, of itself, include administrative or logistic control. (FM 101-5-1)

Operational-level movements—The operational level is the level of war that interfaces between strategy and tactics. In logistical terms, operational-level movements relate to the moving of forces around within a theater of operations so that they can be placed where they are to conduct tactical operations. Usually corps and division-size elements are considered. Operational movements are considered a logistical function and generally do not use assets that the units would use to move tactically. Trucks, HETs, railroads, and short moves by ship are all operational-level movements.

Tactical movements are the movement of tanks and other armored vehicles, troop-lift helicopters, and infantrymen on foot.

OPLAN—Operation plan. A plan for a military operation. It covers a single operation or a series of connected operations to be carried out simultaneously or in succession. It implements operations derived from the campaign plan. When the time and/or conditions under which the plan is to be placed in effect occur, the plan becomes an operation order. (FM 101-5-1)

OPLAN ODS—Operation Plan Operation Desert Storm.

OPNS—Operations.

OPORD—A directive issued by a commander to subordinate commanders for effecting the coordinated execution of an operation. (FM 101-5-1)

Ordnance—The branch of the Army responsible for two major functions: the maintenance of equipment, and the production, storage, and handling of ammunition.

P

Personnel marshalling area—In the redeployment phase of Operation Desert Storm, the place where personnel conduct final preparations for redeployment. Preparations included administrative actions, the issuance of new uniforms, and the availability of MWR activities to ease the strain caused by waiting for air transportation.

PMA—*See* Personnel marshalling area.

POL—Petroleum, oil, and lubricants.

POMCUS—Prepositioned overseas materiel configured to unit sets.

Port support activity—A unit or element designated to support the loading and unloading of ships. Port support traditionally is provided by the unit owning the equipment; during Desert Shield and Desert Storm, a more permanent organization was set up at the ports.

Prepo—Prepositioned [equipment].

Prepo ships—Four prepositioned ships loaded with supplies for use in event of a deployment to SWA and docked at Diego Garcia in the Indian Ocean. Supplies on board included rations, POL, construction materials, port operating equipment, tentage, and ammunition.

Prescribed load list—The stockage of repair parts a unit is authorized to have and carry with it.

Prov—Provisional.

Provisional unit—A unit not officially recognized as organized by the Department of the Army; in essence, a temporary unit with a life span only for a particular mission.

PSA—See Port support activity.

Push/pull—The system by which supplies are distributed doctrinally in the Army. In offensive operations, higher levels are supposed to "push" supplies forward as far as possible to the locations of the using units. When the lower-level units have to go back and get supplies, it is called "pulling."

PX—Post exchange.

Q

Quartermaster—The branch of the Army responsible for supply and services. Supply functions exclude medical supply and ammunition, but include POL and repair parts. Services include bath, laundry, bakery, graves registration, and salvage.

R

RAA—Redeployment assembly area.

RAOC—Rear area operations center.

RC—Reserve component. For the Army, the Army National Guard and Army Reserve. While these are distinct components in peacetime, once mobilized, both ARNG and USAR units are under federal control.

REFORGER—Return of Forces to Germany. The annual exercise held in Europe by the NATO forces to demonstrate the ability of the U.S. to transfer troops from CONUS to Central Europe in event of war.

RM—Resource management. Army budgetary and funding functions.

RORO—Roll on/roll off ship. A ship designed with hatches that enable vehicles to be driven on and off the ship, facilitating loading and off-loading, and minimizing needed port facilities.

RSE—Reception, staging, and employment.

S

SAMOREC—The largest domestic oil company in Saudi Arabia.

Scud—The Iraqi-modified version of an obsolete Soviet surface-to-surface missile employed, due to its inaccuracy, mostly as a terror weapon against civilian populations. The threat of the employment of Scuds with chemical warheads was the biggest threat feared by the logisticians during the Gulf War. Logistical bases and staging areas were the probable military targets of Scuds.

Selected Reserve—*See* U.S. Army Reserve.

SF—Standard Form.

Shamal—Arabic term for a desert sandstorm.

Single-functional unit—A combat service support organization designed to accomplish a single logistical function, such as transportation, maintenance, or supply.

SOCCENT—Special Operations Command, Central Command.

SPOD—Sea port of debarkation.

SPOE—Sea port of embarkation.

S-1/2/3/4—Staff officers and sections at brigade and lower levels responsible for, respectively, personnel/administration (S-1); intelligence (S-2); plans, operations, and training (S-3); and logistics (S-4). In CSS units, the S-2 and S-3 are often combined (S-2/3). In higher-level units, these staff sections are G (general staff) sections G-1/2/3/4.

SSOC—Saudi Services and Operating Company. A Saudi company that manages airports, seaports, urban waste disposal, and many other services.

STAMA—Staging and marshalling area.

Sterile holding area—The quarantined location where troops and equipment are placed after having been inspected by U.S. Agricultural Department and Customs inspectors prior to departure from the theater.

STONs—Short tons. A short ton equals 2,000 pounds.

SUPCOM—Support Command. Specifically, the ARCENT Support Command and its successor, the 22nd Support Command.

SWA—Southwest Asia.

SWARF—Southwest Asia Residual Force. The official designation of the all-volunteer force retained in SWA after the departure of the last nonvoluntary reservists. The official start date of the SWARF was 4 July 1991.

T

TAA—*See* Tactical assembly area.

TAACOM—Theater Army Area Command. A large logistical headquarters with area responsibilities working under a theater army headquarters. No TAACOMs were deployed to SWA, their role being taken by the 22nd Support Command, which had theater logistical responsibilities, rather than area responsibilities.

Tactical assembly area—The initial locations occupied by the deploying combat units from which future operations could be planned and staged.

TAMMC—Theater Army Materiel Management Center.

TAPLINE—Trans-Arabian Pipeline. This pipeline runs above ground from the Persian Gulf coast in Saudi Arabia through Jordan and Syria to Lebanon. For a great part of its course, it runs parallel to the Saudi Arabian-Iraqi border. The two-lane road that runs parallel to the pipeline, therefore, became a vital communications link and was designated MSR Dodge.

TASCOM—Theater Army Support Command. Formerly the largest logistical organization in a theater of operations, it was deleted from the Army organizational structure in 1976. Though not formally so designated, the 22nd Support Command functioned as a de facto TASCOM in the SWA theater of operations.

Task force—A specially tailored force organized to complete a specific mission or function.

Task Force Victory—The task force, designed around most of the 11th ACR and also including personnel, administrative, and finance elements, that deployed to Kuwait in June 1991 and redeployed to Europe in September 1991. A brigadier general and a small headquarters element deployed with the ACR to provide higher-level command and control interface.

Task Force Victory II—The task force, follow-on to Task Force Victory, that deployed to Kuwait in September 1991 and redeployed to Europe in December 1991. The task force included an armored battalion headquarters from the 8th Infantry Division (Mechanized), three tank and three mechanized infantry companies from both the 8th and 3rd Infantry Divisions (Mechanized), and various supporting elements. A brigadier general and a small headquarters deployed with the battalion to provide higher-level command and control.

TCN—*See* Third country national.

Terminal transfer unit—A special unit found in the Army Reserve composed of specialists in ship-loading operations. TTUs are designed to take over loading functions at port by managing the activities of civilian stevedores. The units are not organized with unit equipment such as helmets and administrative vehicles and are not designed for overseas deployment. Upon deployment to SWA, the TTUs were retained in country for less than 120 days.

Theater army—The Army component of a U.S. unified command in a theater of operations. An EAC organization, it provides combat, combat support, and CSS forces in the theater. It must be tailored for each theater. (FM 101-5-1) In Operation Desert Shield/Desert Storm, the theater army was ARCENT/Third Army.

Theater supply activity—A theater-level ammunition storage area. In Southwest Asia, ammunition was stored in large TSAs prior to being brought forward to the combat units and prior to being loaded onto ships for retrograde out of the theater.

Third country national—The numerous non-American expatriates living in Saudi Arabia who provided much of the basic labor force and specialized skills. TCNs were primarily from countries such as Yemen, Pakistan, India, the Philippines, and South Korea.

TMCC—Theater Movement Control Center.

TML—Terminal.

Total Army—The program adopted in the early 1970s under the auspices of the All Volunteer Army, where reserve component units and members were integrated as equal partners with the active component in the missions and functions of the Army.

TPFDL—Time-phased force deployment list. The list, usually an annex to an OPORD or OPLAN, that sequences and times the arrival or departure of units involved in a deployment.

TPT—Tactical petroleum terminal.

TPU. See Troop program unit.

Trailer transfer point—A point where trailers are transferred between tractors. Such points enable drivers to be switched or to drive shorter routes, decreasing fatigue and pushing supplies forward faster.

Trains—The pooling of command service support assets at the brigade and lower level combat units.

TRANSCOM—Transportation Command.

T-rations—A semi-perishable meal designed to serve 36 soldiers, which requires only boiling water to prepare. Also known as tray-packs.

Troop program unit—An Army Reserve unit that drills on a monthly basis and participates in a two-week annual training period.

TSA—*See* Theater supply activity.

TSL—Temporary storage location.

TTAD—Temporary tour of active duty. A reserve individual mobilization order, as opposed to a reservist called up as a member of a unit.

TTP—*See* Trailer transfer point.

TTU—*See* Terminal transfer unit.

U

UK—United Kingdom.

Unit equipment—Smaller unit items such as individual equipment, tentage, and clothing items.

Unit identification code—A six-character, alphanumeric code that uniquely identifies each unit of the Armed Forces. (Title V) A UIC is essential for obtaining personnel replacements and supplies and proved a problem with provisionally organized units, which did not have UICs.

U.S. Army Kuwait—The redesignation of CEGSWA after 1 January 1992, which more closely reflects its multiple duties in Kuwait.

U.S. Army Reserve—The Army's federal reserve force. It consists of various components: the Selected Reserve, which includes members of troop program units and individual mobilization augmentees, and the Ready Reserve, which includes the Selected Reserve and members of the Individual Ready Reserve.

U.S. Army Support Group—The organization set up by the Army Materiel Command to provide theater-level support for repair parts supply, general support maintenance, and limited depot maintenance.

U.S. Military Training Mission—The small military assistance organization established to support the Saudi military in the early 1950s. USMTM has facilities in Riyadh and on the Dhahran airbase complex. Aside from the Army officers involved with the Modernization program for the Saudi Arabian National Guard (SANG), USMTM was the only real U.S. military presence in Saudi Arabia prior to Desert Shield.

USAK—*See* U.S. Army Kuwait.

USAR—*See* U.S. Army Reserve.

USASG—*See* U.S. Army Support Group.

USMTM—*See* U.S. Military Training Mission.

USO—United Service Organizations.

W

Warrant—An official document that authorizes funds to be spent on behalf of the U.S. government.

Weapons Systems Replacement Operations—An army program designed to have trained crews and weapons systems and vehicles available to replace combat casualties.

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842nd Quartermaster Company	34
844th Engineer Battalion	33
946th Heavy Materiel Supply Company (Provisional)	111
988th Supply Company	33
1015th Maintenance Company	33
1058th Transportation Company	33
1098th Transportation Company	15
1103rd Transportation Battalion	117
1103rd Transportation Battalion (Provisional)	111
1103rd Transportation Company	152
1113th Transportation Company	33
1122nd Transportation Company	33
1133rd Transportation Company	33
1148th Transportation Company	33
1175th Quartermaster Company	33
1208th Supply Company (Water)	32
1241st Adjutant General Company (Postal)	32
1244th Transportation Company	33
1355th Supply and Services Company	152
1355th Supply and Services Company (Provisional)	112

1461st Transportation Company	33
2123rd Transportation Company	34
2220th Light/Medium Truck Company (Provisional)	112
2220th Transportation Company	33
9001st Provisional Truck Company	16, 20-21
9002nd Provisional Bus Company	16
9004th Transportation Group	112

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