

AD-A274 543



REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">2</span>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 10 May 1993	3. REPORT TYPE AND DATES COVERED Final 2D Term AY 92-93		
4. TITLE AND SUBTITLE Combat Service Support At Echelons Above Corps: The Doctrinal Challenge			5. FUNDING NUMBERS	
6. AUTHOR(S) Thomas J. Newman, MAJ, QM, USA			7. PERFORMING ORGANIZATION REPORT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. ARMY School of Advanced Military Studies (SAMS) Fort Leavenworth, Kansas 66027			8. PERFORMING ORGANIZATION AGENCY REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. ARMY School of Advanced Military Studies (SAMS) Fort Leavenworth, Kansas 66027			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Unlimited			12b. DISTRIBUTION CODE	
			<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>DISTRIBUTION STATEMENT A</b>            Approved for public release;            Distribution Unlimited         </div>	
13. ABSTRACT (Maximum 200 words) This monograph analyzes U.S. ARMY DOCTRINE for combat service support at echelons above corps. Army concepts for supporting operations involving multiple corps were called into question by actions taken during Operations Desert Shield and Desert Storm. Non-doctrinal organizations provided support to U.S. forces deployed on these operations, despite the fact that doctrinally correct organizations existed. The monograph examines existing doctrine for support of multi-corps operations, and also doctrine for Army theater command and control architecture. It then summarizes support operations during the Gulf War. Emerging logistics doctrine is then compared with both previous doctrine and with lessons learned in the Gulf. The monograph concludes that existing doctrine for support at echelons above corps requires revision, that emerging doctrine is on the right track, and that a key requirement will be for the Army to identify a way to test new doctrine in a realistic manner.				
14. SUBJECT TERMS Combat Service Support, Echelons Above Corps			15. NUMBER OF PAGES 60	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

**DTIC**  
**SELECT**  
**S** JAN 03 1994 **B**

**Combat Service Support At  
Echelons Above Corps:  
The Doctrinal Challenge**

**A Monograph  
by  
Major Thomas J. Newman  
Quartermaster**



**93-31513**



**School of Advanced Military Studies  
United States Army Command and General Staff College  
Fort Leavenworth, Kansas**

**Second Term AY 92-93**

**Approved for Public Release; Distribution is Unlimited**

93 1 2 2 0 0 0 4

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major Thomas J. Newman

Title of Monograph: Combat Service Support At  
Echelons Above Corps:  
The Doctrinal Challenge

Approved by:

Donald C. Olson  
LTC Donald C. Olson, MPA

Monograph Director

James R. McDonough  
COL James R. McDonough, MS

Director, School of  
Advanced Military  
Studies

Philip J. Brookes  
Philip J. Brookes, Ph.D.

Director, Graduate  
Degree Program

Accepted this 13<sup>th</sup> day of May 1993

ABSTRACT

COMBAT SERVICE SUPPORT AT ECHELONS ABOVE CORPS: THE DOCTRINAL CHALLENGE, by MAJ Thomas J. Newman, USA, 60 pages.

This monograph analyzes U.S. Army doctrine for combat service support at echelons above corps. Army concepts for supporting operations involving multiple corps were called into question by actions taken during Operations Desert Shield and Desert Storm. During these operations, an ad hoc, non-doctrinal organization provided support to the U.S. forces deployed to the theater. This occurred despite the fact that organizations existed to provide the support in accordance with published doctrine.

Current doctrine is first summarized to illustrate how the Army envisioned supporting a multi-corps contingency operation. Doctrine examined includes that of Army theater command and control architecture, as decisions on the role of the Field Army and Theater Army are key to the design of the theater support structure. Support operations during Desert Shield and Desert Storm are then detailed, and the contrasts with the doctrine are illustrated. Emerging concepts for support at echelons above corps are then discussed, with an emphasis on the lessons learned from the experience in the desert. Key among these are closer integration of wholesale support activities into contingency operations, and ways to improve the integration of reserve component logistics units into contingency plans.

The monograph concludes that existing doctrine for Army operations at echelons above corps requires revision for both command and control at theater level, and also for theater support operations. Emerging doctrine, currently still in draft, appears to be on the right track, as it supports concepts for force projection identified in the Army's emerging operational doctrine, FM 100-5. The key challenge for the Army in the near future will be for it to find a way to exercise its force projection doctrine, as both locations and dollars for large deployment exercises may well be lacking.

DTIC QUALITY INSPECTED 5

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Special
A-1	

## Table of Contents

	Page
I. Introduction . . . . .	1
II. Current Doctrine . . . . .	5
III. Support In The Desert . . . . .	14
IV. Emerging Theater Logistics Doctrine . . . . .	31
V. Conclusion . . . . .	40
Endnotes . . . . .	47
Bibliography . . . . .	56

## I. INTRODUCTION

Operations Desert Shield, Desert Storm, and Desert Farewell were three of the most successful logistical support operations ever carried out by U.S. forces. In six short months, the United States deployed over half a million soldiers, sailors, airmen, and marines to the other side of the globe.<sup>1</sup> Once there, we sustained these forces with an abundance of supplies, equipment, and ammunition, sufficient for these forces to defeat the world's fourth-largest army in only six weeks. Within a year of the war's conclusion, not only were almost all the soldiers withdrawn, but so were the mountains of supplies and acres of equipment.<sup>2</sup> Hardly a trace of the massive U.S. presence remained to mark the enormous efforts of America's logisticians.

An interesting fact about this operation was that the Theater Army commander, Lieutenant General (LTG) John J. Yeosock, did not follow Army doctrine in organizing the theater logistics command. Faced with a situation that pre-war Army doctrine had not anticipated, i.e., deployment of major forces to an undeveloped theater for an indefinite period, Yeosock improvised a solution. With the theater commander, General (GEN) Norman H. Schwarzkopf, Yeosock organized a unique logistics organization to meet the challenges

of the desert.

The doctrinal organization that should have been employed in Saudi Arabia is the Theater Army Area Command (TAACOM). Doctrine calls for one or more TAACOMs, as well as a variety of functional commands and management agencies, to perform the logistics mission for the theater army commander.<sup>3</sup> Pre-war plans earmarked the 377th TAACOM, an Army Reserve unit, to serve in Southwest Asia under the U.S. Central Command (CENTCOM), if hostilities required a theater logistics support capability.

Instead of using this or another TAACOM, the theater improvised an organization that resembled a Theater Army Support Command (TASCOM), an organization that disappeared from Army force structure in 1971.<sup>4</sup> The architect of this organization was LTG William G. Pagonis, then a Major General. LTG Pagonis, initially sent to Saudi Arabia to arrange for Saudi contract support to deploying U.S. forces,<sup>5</sup> was soon tasked by LTG Yeosock to take charge of coordinating all support required by the arriving forces. To accomplish this mission MG Pagonis gradually stitched together an organization that provided, at various times, most or all of the logistics support required in theater. Pagonis' organization eventually evolved into the 22D Support Command (SUPCOM), the unit responsible for echelons above corps (EAC) logistic support in the

## Kuwait Theater of Operations (KTO).<sup>6</sup>

The solution developed in Saudi Arabia to the challenge of theater logistical support poses as many questions as it answers. First, why was existing doctrine not followed? Was the doctrine so flawed as to be useless, or was the situation in Saudi Arabia so unique that improvized solutions were essential? How much did current doctrine contribute to the implemented solutions? Can the Gulf War serve as a model for support to contingency operations, or was it an anomaly that the U.S. Army cannot expect to see again in the future? How is emerging U.S. Army logistics doctrine affected by the experience in the Gulf? Will existing support organizations, such as the TAACOM, be discarded or modified based on the Desert Storm experience?

To answer these questions, current doctrine on both theater logistics support and theater command and control must be examined. The actions of the commanders in Southwest Asia have called into question theater logistics support doctrine. It must be explained and analyzed before an understanding of the actions of the commanders can be reached. Theater command and control doctrine, specifically the doctrine that governs the role of the Theater Army, must also be scrutinized. Decisions on the role of the theater army have an immediate impact on the support structure employed in the theater. In Southwest Asia, for

example, the 22D SUPCOM owed its existence to decisions made by LTG Yeosock on what roles his theater army (3D U.S. Army) would perform.

Current logistics doctrine must be analyzed against the standards of emerging Army doctrine, as specified in Field Manual (FM) 100-5, Operations, and FM 100-7, The Army In Theater Operations. This must be done to determine if current logistics doctrine meets the needs of a changing Army. If logistics doctrine is changing, the new doctrine must be analyzed against the same standards. This paper will attempt to find if current or future logistics doctrine adequately supports the needs of the Army.

Alternate solutions, such as the model used in Desert Storm, also must be scrutinized against the same standards. Because logistical operations in the desert were so successful, they will naturally be used either as a yardstick to measure other solutions, or as the model for the ideal solution for the future. While successful mission accomplishment is clearly an important criterion for determining a concept's viability, it must be tempered with an examination of a concept's universal applicability. The example of the 22D SUPCOM will be analyzed as a possible model for future EAC logistic support operations.

The purpose of this paper is to examine the Army's EAC support doctrine, for both present and

future utility. This will be done by analyzing current doctrine for both logistics and theater command and control (C2). The application of this doctrine in the Gulf War will then be discussed. The influence of this war on emerging doctrine for both C2 and logistic support will follow. The paper will attempt to decide what solutions best serve the Army of the future, the evolving force projection army.

## II. CURRENT DOCTRINE

The introduction and evolution of AirLand Battle Doctrine throughout the 1980's resulted in sweeping changes to Army doctrine at every level and in every operating system and functional area. Spurred by the perceived errors in the "how to fight" doctrine of the 1976 version of FM 100-5 (Operations), the Army developed the AirLand Battle concept and rewrote its keystone doctrine twice in the eighties.<sup>7</sup> The purpose was to provide the Army with a credible, overarching idea of how to wage war. AirLand Battle's emphasis on offensive, mobile armored warfare forced subordinate doctrine writers to adjust their warfighting concepts accordingly.

The emergence of AirLand Battle did not, however, have an immediate impact on most logistics doctrine. Changes in logistical doctrine have tended

to be evolutionary, rather than revolutionary. Since the end of the Korean War, the Army has gradually pushed support down from echelons above corps, into the corps and divisions. The development of the Division Support Command (DISCOM) in the early 1960s, and the later development of the Corps Support Command (COSCOM) in the 1970s, showed this trend.<sup>8</sup> Concurrently, the Army eliminated organizations that had centralized logistics support at field and theater army level, such as the Field Army Support Command (FASCOM) and the Theater Army Support Command (TASCOM).<sup>9</sup> The Army's doctrinal decision to consider the corps to be "the Army's principal force in a theater" drove these changes.<sup>10</sup> The arrival of AirLand Battle did not break this trend, as many of today's logistical organizations were in place when the 1976 version of FM 100-5 appeared.

A notable exception to the rule of evolutionary change occurred in the 1980's as the Army implemented the Logistics Command and Control Concept. This idea, part of the Army of Excellence program, radically changed the logistic command structure within Army divisions. Multi-functional battalions replaced the previous organization of support battalions set up on functional lines. These units combined supply, maintenance, transportation, and medical support under one flag. This organization gave the supported

maneuver force a single command to deal with for all required support. It also eliminated the Forward Area Support Coordinators (FASCO), a staff position within the DISCOM. The FASCO's, in pre-Army of Excellence organization, organized what amounted to ad hoc logistics task forces to support maneuver brigades in the field. FASCOs did not command anything, nor could they guarantee that the logistic task forces would look the same from brigade to brigade, or even from one field exercise to the next. Although the FASCO disappeared from doctrine in the early 1980s, the use of a logistics staff officer to lead ad hoc support organizations would occur frequently in Southwest Asia.

The establishment of multi-functional logistics organizations at division level led to consideration of implementing this idea at the Corps support echelon. The Army delayed carrying out this change pending analysis of the success of the concept at division level.<sup>11</sup> In fact, a recent revision of the doctrinal manual for the COSCOM, FM 63-3 (Corps Support Command), did not even mention multi-functional support battalions.<sup>12</sup> Despite this, both the XVIII Airborne Corps and the 22D SUPCOM employed multi-functional support battalions in the Gulf. The advantage of having a single commander responsible for providing all required logistical support to a designated unit demanded the implementation of this

strategy.

The principle of unity of command, i.e., one logistics commander responsible for all logistics support to the maneuver force, is the driving factor for evolving doctrine at corps-level and lower. But it has not yet taken hold at echelons above corps. The demise of the TASCOM in 1971 removed the single logistics commander, responsible for all logistics support, from the theater structure. Instead, the theater army commander is responsible for providing all combat support and combat service support (CSS) to U.S. Army units in theater.<sup>13</sup>

To provide the theater with the required combat service support, the theater army commander has several theater logistics organizations available. The TAACOM is the largest, and it has the mission of providing direct CSS to units located in or passing through its assigned area. The direct CSS it provides include supply, maintenance, personnel and administrative support, field services, aviation maintenance, and Explosive Ordnance Disposal (EOD). It also performs specified logistics support for corps; provides maintenance support to the theater supply system; and is responsible for rear area protection within its assigned area.<sup>14</sup>

Other support organizations under the theater army commander include a Theater Army Materiel

Management Center (TAMMC), a Theater Army Movement Control Agency (TAMCA), and several commands organized along functional lines. These include a Transportation Command (TRANSCOM), an Engineer Command (ENCOM), a Personnel Support Command (PERSCOM), and a Medical Command (MEDCOM).<sup>15</sup> Besides Theater Army elements, there are other agencies that provide logistics support to the theater. Wholesale supply agencies, based in the continental United States (CONUS), provide support based on memorandums of understanding (MOUs) worked out between the theater and each agency.<sup>16</sup>

The idea of unity of logistics command is thus absent at the theater level under current doctrine. Instead of a single commander responsible for providing all theater logistics support, the theater army commander may have anywhere from three (TAMMC, TAMCA, one TAACOM) to seven or more support organizations (TAMMC, TAMCA, TAACOMs, TRANSCOM, ENCOM, PERSCOM, MEDCOM) to command and control. This does not count any wholesale logistics agencies that operate in the theater as well.

A major reason for the doctrinal logistic solution for theater support lies in the general Army concept for command and control at theater level. Army doctrine considers the Theater Army to be an administrative and logistics headquarters, not an operational (warfighting) headquarters.<sup>17</sup> The

Theater Army commander is seen by army doctrine as the single logistics point of contact in theater. The Theater Army commander performs this role because only a senior theater level commander could serve as an honest broker between the competing demands of two or more corps, besides the many other units deployed in theater. Warfighting - operational control of corps in combat - is the purview of separate operational chains of command. This system works well in developed theaters. For example, in Europe and Korea, the Seventh and Eighth U.S. Armies serve as Theater Armies, but warfighting is the responsibility of operational commands under NATO and the Combined Field Army, respectively.<sup>18</sup>

Southwest Asia was not then, nor is it now, a developed theater. The only U.S. military personnel stationed in Saudi Arabia were several advisors assigned to the U.S. Military Training Mission (USMTM).<sup>19</sup> Also, despite its modern military infrastructure, extensive transportation network, and enormous good will, Saudi Arabia was unprepared for a massive influx of soldiers and equipment.<sup>20</sup> No mechanisms existed for the reception, onward movement, and sustainment of thousands of soldiers. In both Germany and Korea, the existing theater armies and the host nations are physically and psychologically prepared to execute these missions. The requirement to

improvise a reception and sustainment capability in the midst of a massive deployment exposed a void in U.S. logistics doctrine.

U.S. doctrine for contingency operations focuses on the initial rapid deployment of a contingency corps. Support of this contingency corps is the responsibility of its assigned COSCOM:

The COSCOM may support a contingency force in an undeveloped area where a U.S. military infrastructure does not exist. The Corps would tailor a contingency force to conduct short duration combat operations to defeat threat forces or expel them from occupied territory.<sup>21</sup>

Also, doctrine implies that the COSCOM can handle support for one on-going contingency. FM 100-16 states that "in a low-intensity conflict involving a corps or less, there may be no requirement for echelon above corps logistics elements, i.e., the COSCOM of the corps involved may be able to satisfy all logistic requirements with its own resources."<sup>22</sup> Current doctrine as embodied in Field Manual 100-10, Combat Service Support, ignores the possibility that in any contingency operation, regardless of size, there may be an operational sustainment need above that of the Corps' capability.<sup>23</sup> Field Manual 63-3, Combat Service Support Operations - Corps, baldly states that "the contingency-oriented COSCOM is characterized by its self-sufficiency . . . this COSCOM is responsible

for the conduct of support operations for the entire area to the rear of division rear boundaries. It is authorized to deal directly with pertinent commands, centers, and agencies in CONUS without going through intervening headquarters . . .<sup>24</sup> The revised FM 63-3 repeats these words, almost verbatim.<sup>25</sup> Only FM 100-15 sounds mild disagreement, by saying that the COSCOM may require augmentation from theater forces to avoid becoming "overstressed."<sup>26</sup>

If the theater needs more than one corps, then doctrine dictates that "the support echelon will normally be the TAACOM, tailored to contingency requirements."<sup>27</sup> Still, deployment of the TAACOM is contingent on the expansion of the theater beyond the capability of a corps to command it. FM 100-16 states that echelon above corps organizations will deploy later, rather than sooner:

As the buildup continues, the contingency corps reaches the point where it may be necessary and desirable to create an Echelon Above Corps (EAC) organization.<sup>28</sup>

Army doctrine, then, saw contingency operations as developing along a smaller to larger unit continuum. Initial deployers would be the rapidly deployable combat units of the contingency corps; these would be supported by elements of the contingency COSCOM. As the corps deployed additional combat and

combat support elements, the rest of the COSCOM would flow in to expand the sustainment base. Only after it became apparent that forces above the capability of a single corps to control would be needed would an EAC command and control organization deploy. At this time, the EAC support organization - the TAACOM - would deploy. Before this, all support within theater would be handled by the COSCOM.

Confusing the issue for contingency operations in Southwest Asia was the existence of theater army, stationed in CONUS, whose mission called for it to serve as the Army component command of CENTCOM. Third U.S. Army was activated in 1983 to be not only CENTCOM's army component headquarters, but also to serve as both a theater army and a field army.<sup>29</sup> As such, it was scheduled for early deployment. Doctrine did not address whether its early arrival could or should lead to the early establishment of EAC logistics organizations. Nor, apparently, was this issue addressed by Third Army planners.

With relatively well-defined concepts for logistical support at division and corps levels in place, but with an uncertain theater Army command and logistics structure, the stage was set for a series of improvised solutions to the challenges of Desert Shield and its aftermath. Fortunately, existing doctrine recognizes improvisation as an imperative of

sustainment.<sup>30</sup> Concepts of support at echelons above corps also emphasize flexibility, austerity, and efficiency, and the use of resources indigenous to the area of operation to reduce the amount of support that must be provided from the U.S.<sup>31</sup> Support operations in the desert would demand that these ideas be implemented to an exceptional degree.

### III. SUPPORT IN THE DESERT

Iraq's invasion of Kuwait served as a catalyst for the largest overseas deployment of United States military power since the beginning of the Vietnam War. Over half a million service members from the active component, National Guard, and Reserves would eventually serve in the KTO. Due to the threat of Iraqi invasion of Saudi Arabia, this deployment also occurred with unprecedented speed. During the first thirty days, for example, over 38,000 soldiers and 163,000 tons of equipment moved to the theater. This was a significantly larger amount than the deployments that accompanied World War II, Korea, and Vietnam.<sup>32</sup>

The threat of imminent invasion of Saudi Arabia by Iraq forced U.S. planners to adjust to a deployment scenario that fit none of doctrine's preconceived notions. The theater needed combat soldiers in large quantities to deter an Iraqi attack.

Logisticians would not deploy until a sufficient amount of combat power had arrived. This decision pushed the contingency corps' COSCOM far back in the deployment schedule.<sup>33</sup>

It was immediately evident that some type of theater logistical support structure would be needed. Some organization had to take charge of reception at the ports and airfields. Arriving soldiers needed basic sustainment: food, water, and shelter. Arriving units required transportation from the ports and airfields to defensive locations. The COSCOM could have supported these requirements, to some degree, had it been there. But, the COSCOM's capability to support its corps in the field would have been adversely affected if it had simultaneously operated communications zone (COMMZ) functions. Reception, onward movement, and sustainment around the ports and airfields fall into this category.<sup>34</sup> The early arrival of a COSCOM would not have eliminated the need for COMMZ logistical units and activities. The COSCOM's delayed deployment exacerbated the requirement.

The first improvisation was the selection of MG William G. Pagonis to lead a small element of logisticians to Saudi Arabia to arrange for host nation support. At that time, MG Pagonis was not even assigned to CENTCOM or Third Army. He was the

Assistant Chief of Staff, J4 (Logistics), at U.S. Forces Command (FORSCOM).<sup>35</sup> But, because of FORSCOM and Third Army's co-location at Fort McPherson, Georgia, Pagonis was the senior logistician available to LTG Yeosock. When the crisis first erupted, LTG Yeosock summoned several advisors to his home to analyze the situation and make recommendations.<sup>36</sup> Pagonis was among these. His advice was so well received that the Army Chief of Staff, GEN Carl Vuono, made MG Pagonis available to assist Yeosock in setting up a host-nation reception and sustainment capability.<sup>37</sup> At that time, Pagonis regarded the job of "host nation consultant" as temporary.<sup>38</sup>

MG Pagonis' "temporary" mission was complicated immensely because the urgency of the threat forced CENTCOM planners to defer the deployment of logisticians in favor of combat soldiers. For the first three days of the deployment, the only logisticians on hand to receive and support over 4,000 XVIII Airborne Corps soldiers were MG Pagonis, four of his assistants, and three members of the USMTM.<sup>39</sup> The speed and scale of the deployment overwhelmed the scant resources of the Saudis. The situation was so bad that one senior officer observed that "the 82D was going to die in place either from the Iraqis coming across the border or for the lack of food and water."<sup>40</sup> No help from the COSCOM was due soon; it

would not deploy until September, almost another full month.<sup>41</sup> Pagonis and his miniscule staff quickly realized that, as the only logisticians in theater, they had to do much more than just arrange for host nation support. Exactly what they had to do was not clear, but it was big and growing larger by the day.<sup>42</sup>

MG Pagonis attacked the problem by breaking it down into its essential components: reception, onward movement, and sustainment. He then devised solutions to each of these three challenges. Inevitably, the Saudis provided most of the solutions. Soldiers borrowed from the 82D Airborne formed an Arrival-Departure Airfield Control Group (ADACG) to handle reception. Saudi-provided buses and drivers became a provisional transportation (bus) company. Pagonis' staff purchased 10,000 Bedouin tents, hired labor to build them, and located facilities to which soldiers could be moved. With the assistance of Saudi military officers, contracting officers purchased food and water as well. Within a couple of days of their arrival, Pagonis' skeleton logistical staff had developed solutions, albeit austere ones, to the three major challenges facing them.<sup>43</sup>

A larger challenge loomed ahead, however, and in the early days of August Pagonis did not have a solution for it. Six pre-positioned cargo vessels

loaded with thousands of tons of critically needed supplies and equipment were steaming toward Saudi Arabia. The theater had nothing with which to unload, store, and issue this cargo. Fortunately, two days before the first ship docked, 300 soldiers from the 7th Transportation Group (Terminal) flew in to Saudi Arabia.<sup>44</sup> This unit, a port operation/stevedore unit, is normally a theater asset, not a COSCOM unit, but doctrine stated that it was an early deployer due to its unique capabilities.<sup>45</sup> This was the lone logistical unit not moved back in the deployment sequence, and it gave Pagonis capabilities above and beyond that of merely unloading ships. The group commander went to the port with 100 of his soldiers to take charge of the port and unload the ships. Pagonis used the other 200 to augment his operation around the airfield. These soldiers formed the genesis of a theater support command. Provisional support organizations were formed that performed transportation, ADACG, provost marshal, contracting, and engineering functions.<sup>46</sup> These soldiers held these jobs until replaced by later arriving units and soldiers.

The support organized by MG Pagonis and his staff was a triumph of improvisation and flexibility. The temporary borrowing of soldiers from arriving units to perform critical theater support functions became a

hallmark of the early days of Desert Shield.<sup>47</sup>

Another hallmark of support throughout the Gulf War was the formation of provisional units. With no TOE, and no formal authorization to form a logistics command, Pagonis used his staff and borrowed manpower to form provisional support battalions and groups. Subordinate commanders took on additional responsibilities; the commander of the 7th Transportation Group, for example, became the commander of a provisional area support group with responsibility for the entire port. He also became the Assistant Chief of Staff, Transportation, for the developing Theater Support Command.<sup>48</sup> The deploying combat forces displayed ingenuity and flexibility as well, by providing manpower to Pagonis' operation when requested to assist in getting critical tasks accomplished. By the time LTG Yeosock appointed MG Pagonis the Third Army Deputy Commanding General for Logistics, Pagonis had fashioned a working support structure out of an austere and chaotic environment.

Pagonis' skill and drive, coupled with the lack of doctrinal alternatives, soon made him and his small cell an indispensable asset to the theater. His appointment as the Third Army (ARCENT) Deputy Commanding General for Logistics recognized the extent of his contributions. Pagonis' presence at the arrival port and airfield gave LTG Yeosock an energetic and capable subordinate on the scene of the most important

events of the early stages of Desert Shield. This freed Yeosock, who was functioning as both a theater army and a field army commander, from immersion in the minutia of the reception operation. Pagonis' Deputy Commander title gave him needed clout in organizing the ever-expanding support requirements of the theater.<sup>49</sup>

Pagonis' indispensability became an issue in late August when President Bush authorized the mobilization of 200,000 reserve component soldiers to support Desert Shield.<sup>50</sup> Both Third Army, whose staff was 60% reservist, and the U.S. Army as a whole, depended heavily on reservists. This dependence is especially pronounced in logistics. Approximately 60% of army combat service support units deployed to Saudi Arabia came from the reserve components.<sup>51</sup> Third Army's assigned logisticians: the 377th TAACOM, the 321st Materiel Management Center (TAMMC), the 318th Movement Control Agency (TAMCA), the 143 Transportation Command, and the 475th Quartermaster Group (POL) - were all Army Reserve units.<sup>52</sup> Doctrinally, the 377th TAACOM should have been performing the tasks Pagonis and his staff were performing. The 377th's commander, a three-star general, could have assumed the role of ARCENT Deputy Commander for Logistics. The two week gap between the decision to deploy forces and the decision to mobilize the reserves forced LTG Yeosock to form an embryonic logistics command around MG Pagonis'

host nation support team. Deploying the 377th would have meant supplanting Pagonis' functioning team with a unit unfamiliar with conditions in Saudi. Despite this, MG Pagonis requested that the 377th be deployed, and offered to become its deputy commander to ensure continuity of support.<sup>53</sup> He was overruled; both GEN Schwarzkopf and LTG Yeosock felt that introducing a new logistics command into theater at a late date would be counterproductive.<sup>54</sup>

The subsequent deployment of logistics assets in the wake of the initial combat unit deployments did not eliminate the need for theater-level logistics support. The 1st COSCOM, supporting the XVIII Airborne Corps, arrived in theater in September. Supporting the Corps as it moved into the desert and occupied defensive positions was a significant challenge. The COSCOM itself depended on MG Pagonis' support command for support as it deployed and set up its operations.<sup>55</sup> Although COSCOM units relieved Pagonis' provisional organizations of some of their responsibilities, the COSCOM itself focused, properly, on support to its Corps. Pagonis' provisional support command, designated as such on 5 September 1990,<sup>56</sup> concentrated on supporting the theater in its entirety.

The early stages of Desert Shield showed flaws in Army doctrine for logistics support to an undeveloped theater. Doctrine envisioned the COSCOM as

the first support organization to deploy into a theater. Its missions included supporting the contingency corps, and providing theater level support to other army units. This is clearly a tall order. Other theater-level support tasks, particularly those that support the other services, exist but are probably too much for a contingency COSCOM to handle. Tasks that MG Pagonis' SUPCOM handled, that probably exceed the capabilities of a COSCOM, included extensive contracting for facilities, food, water, transportation, labor, and sanitation equipment; port and airfield reception operations; the operation of morale, welfare, and recreation (MWR) facilities; and the operation of a theater ammunition storage area (dedicated primarily to U.S. Air Force ammunition).<sup>57</sup> What the doctrine does not consider, either, is the situation that the theater faced in August 1990 - a threat severe enough to push the COSCOM to the rear of the deployment list. All the requirements above and beyond those involved in supporting an army corps, plus the predictable situation of the logisticians deploying later rather than sooner, call some basic doctrine into question.

The lack of a coherent Theater Army structure or concept also contributed to the need to improvise solutions to real-world support problems "on the fly." LTG Yeosock's Third Army served as the Army Component

of Central Command (ARCENT), and as both an operational and administrative/logistics command. In the eyes of at least one distinguished observer, this organization was an unnecessary layer between the CENTCOM commander and the warfighting Corps. A better option would have been for Third Army to serve CENTCOM as an all service, theater logistician only.<sup>58</sup> This is not only doctrine as specified in FM 100-16, it is also a necessity. The early establishment of a joint theater logistics structure is essential to operational and tactical planning. Determining a theater distribution plan helps define theater stockage levels and prioritize scarce strategic lift assets.<sup>59</sup> To his credit, LTG Yeosock realized that he needed help in executing the theater logistics mission. His solution was not only to grant MG Pagonis the title of Deputy Commander, but also to turn over some of his theater army assets: the Transportation Group, a Military Police Brigade, and a Quartermaster Group - to Pagonis' fledgling SUPCOM.<sup>60</sup> His intent in doing this was to make MG Pagonis the single point of contact for theater logistical support.<sup>61</sup>

The placement of the theater's senior logistics command in the Reserve component also had a role to play in the creation of the SUPCOM. The previously discussed delay in mobilizing the reserves clearly hurt the TAACOM's chances of performing its

assigned mission. Any commander would be reluctant to replace a functioning, effective organization, here Pagonis' SUPCOM, with a new, inexperienced organization, in the middle of an operation. It is also possible that problems common to many reserve units: lack of personnel, equipment shortages, and insufficient training time - affected the 377th's ability to rapidly deploy. It is also possible that GEN Schwarzkopf saw the three-star commander of the TAACOM as a rank too high to serve under the three-star commander of the Theater Army, LTG Yeosock. It is probable that these factors combined to prevent the Army from employing the TAACOM to support Desert Shield.

As events unfolded in the desert, the Theater Army Logistics Command continued to improvise solutions to the challenges posed by the situation. The food service officer of the SUPCOM not only arranged for an extensive amount of fresh food to be served to the soldiers in theater, but also arranged for hot "meals on wheels" to serve soldiers in remote locations.<sup>62</sup> The fresh food obtained in country not only boosted morale, but also saved MREs and other combat rations for use during coming combat operations.<sup>63</sup>

The SUPCOM worked closely with the Army Materiel Command (AMC) to solve some logistical challenges beyond its capabilities. Doctrine

recognized that CONUS wholesale logistics activities might have to operate in a theater to provide essential support. CENTCOM needed depot-level maintenance support almost immediately, as the harsh desert climate severely tested equipment capabilities. Establishing a depot in Saudi Arabia, however, was not feasible for political and cultural reasons.<sup>64</sup> AMC formed and deployed a Support Group, dubbed the U.S. Army Support Group (USASG), to perform AMC functions with the SUPCOM. USASG eventually grew to a strength of over 1,100 army soldiers and civilians, and it performed a myriad of essential support tasks. It painted over 8,000 vehicles desert-sand in the port. It also issued 1,100 brand new M1A1 tanks to units in exchange for older, less capable M1s.<sup>65</sup> And, it continued to operate well into the theater evacuation phase. During Desert Farewell, USASG operated the Saudi Arabian Redistribution Facility (SARF), a theater supply identification and redistribution facility.<sup>66</sup> This operation alone saved the U.S. taxpayer millions by identifying and reclaiming into the inventory thousands of items of supply. The many contributions of USASG would have important ramifications for the future.

The Forward Area Support Coordinator (FASCO), a discarded concept at division level, was used extensively by the SUPCOM. One instance of this occurred when the U.S. Army attached its Tiger Brigade

to the 2D Marine Division. The Marines were not prepared to support an army brigade equipped with M1A1 tanks and M2 Bradley Fighting Vehicles. This inter-service cross-attachment exposed another logistics doctrinal void - how to support the brigade when it moves across component boundaries. Instead of the COSCOM, the SUPCOM received the mission. Its response was to organize a package of logistics units to support the brigade, and to put them all under the temporary control of a SUPCOM staff officer.<sup>67</sup> This solution would be used again, particularly when a geographically remote unit needed support. For example, after the war ended, the SUPCOM supported the 11th Armored Cavalry Regiment (ACR) in Kuwait with a FASCO, due to the lack of other logistics units available to provide necessary support.<sup>68</sup>

The SUPCOM, itself a provisional command, used provisional units extensively to do missions of a temporary nature. Doctrine does not address the formation of provisional units, but it does stress flexibility and improvisation. Provisional units, formed when authorized units are either unavailable or unsuitable, are a useful tool when solutions must be improvised. The SUPCOM formed provisional support groups, battalions, and companies. Provisional transportation units, for example, included bus companies, Heavy Equipment Transport (HET) battalions,

a transportation group (including an Egyptian Army HET battalion), and civilian flatbed truck companies.<sup>69</sup> Later, during redeployment, the SUPCOM formed sixty-one provisional companies to execute the tasks required by the theater evacuation.<sup>70</sup> This was necessary due to the requirement to replace redeploying reserve CSS units with individual volunteers.<sup>71</sup> Clearly, this was another example of improvisation succeeding where doctrine fell short.

The command also found it advantageous to redesign the standard logistical command headquarters, to respond better to the pace of support demanded by the operational plan. MG Pagonis created a logistical planning cell very early in the deployment. This cell's mission was to look ahead and plan for upcoming missions. Such planning cells are a normal part of any large headquarters, and are a subordinate element of the operations staff. MG Pagonis located this cell away from the operations staff and made it directly subordinate to the commander.<sup>72</sup> He did this to protect the planners from becoming involved in the minutia of day-to-day operations. This separation, coupled with their direct access to the commander, allowed the cell to respond more rapidly to changing requirements than would have otherwise been the case.<sup>73</sup>

Another feature of the SUPCOM's support to the

theater was the "Logbase." This was a location selected to support soldiers in forward defensive positions, and in projected offensive operations. Logbases held stockpiles of all classes of supplies, and were manned by a variety of logistical units necessary to operate them.<sup>74</sup> Although the SUPCOM considered the logbase idea to be both non-doctrinal and an outstanding innovation,<sup>75</sup> it is difficult for this observer to detect anything non-doctrinal about them. They appear to be a base cluster, perhaps better planned and constructed, and more permanent, than most base clusters, but still following the doctrinal base cluster concept.<sup>76</sup> The SUPCOM positioned these bases throughout the theater to support current and future operations, including the theater closeout.<sup>77</sup>

The SUPCOM established its basic concepts of support early in the deployment, and stuck to these throughout the operation. These included swift onward movement of units from the arrival ports and airfields to their field locations; forward pre-positioning of supplies; and heavy reliance on host nation support. The arrival of additional units did not reduce the dependence on the host nation. It is interesting to note, at this point, the contrast between the deployments of the XVIII Airborne Corps and the VII Corps. The XVIII deployed into theater ahead of not only its COSCOM, but also ahead of any theater support

structure. As a result, it had to endure extremely austere support and many delays in movement during its first sixty days in theater. The VII Corps deployed its COSCOM first, and of course the SUPCOM was already in place with a theater reception and sustainment capability. The Corps thus received much better support. In this case, the use of the doctrinal solution paid dividends. Commented MG Pagonis: "Integrating VII Corps into the theater . . . was a much more organized and orderly operation than receiving the XVIII had been . . . of great importance was the fact that . . . the corps brought their own support unit, the 2D COSCOM, into theater right along with them . . . this was the way doctrine was supposed to work, and work it did."<sup>9</sup>

The height of improvisation was reached, perhaps, when CENTCOM was challenged to close out the theater. The requirement to return all soldiers, supplies, and equipment to the bases from which they had come was unprecedented.<sup>9</sup> The order for the retrograde called for redeploying most of the soldiers out of the theater within 90 days of the cease-fire. Following that, the bulk of the supplies and equipment would be shipped out. The magnitude of the task, coupled with uncertainties resulting from lack of experience in such an operation, led to some pessimistic forecasts. Initial planning estimates

concluded that closing out the theater in this manner would take anywhere from one and a half to four years.<sup>80</sup>

The task of evacuating almost every trace of American presence in the theater, a challenge that doctrine barely addressed, fell to the SUPCOM. With the USASG, the SUPCOM attacked this task with the same energy, creativity, and approach that had been so successful to this point. The Log Planning Cell conducted detailed planning for this operation before the war even began.<sup>81</sup> Immediately upon announcement of the cease-fire, the theater logisticians began to execute both personnel and equipment retrograde operations.<sup>82</sup> SUPCOM area support groups set up and operated equipment and personnel reception and processing facilities, billeting areas, washracks, and storage areas in the vicinities of the ports, airfields, and Logbases.<sup>83</sup> During this phase, provisional support units, previously used as needed, became the norm by which the SUPCOM attacked the challenge of staffing theater close-out activities. CENTCOM simplified the close-out by naming a logistician, LTG Pagonis, as on-site theater commander upon GEN Schwarzkopf's departure, an action unique in U.S. history.<sup>84</sup> Despite all the difficulties involved in performing this, "the toughest part", of the Southwest Asia mission, the SUPCOM accomplished the

theater close-out successfully, six months ahead of schedule.<sup>85</sup>

The story of theater logistics support in Saudi Arabia, then, is one of continued improvisation to challenges addressed either inadequately or not at all by existing logistics doctrine. The testimony of the official historians: "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, non-existent, or in need of modification" - seems to understate the case.

#### IV. EMERGING THEATER LOGISTICS DOCTRINE

In the wake of the Persian Gulf War, Army doctrine is grappling with the lessons of that war, the disappearance of the Soviet threat, and with the requirement to defend American interests with a greatly reduced force structure. The Army's answer is force projection - a CONUS-based force with the capability to rapidly deploy to any location, and once there, to successfully conduct operations.<sup>86</sup> Deployability is the key, and deployability is a product of strategic lift, coupled with the pre-positioning of essential equipment near where it is most likely to be used.<sup>87</sup>

The change in Army orientation, from forward

deployed, (i.e., forces set in likely theaters of combat, such as Korea and Germany), to force projection, poses an immense challenge to the Army logistics community. FM 100-5 states that "a force projection army depends on the right logistical decisions prior to the onset of operations."<sup>22</sup> What to preposition, and where to preposition, are clearly critical logistical decisions. FM 100-5 goes on to say that the logistical system must be anticipatory, must make use of non-traditional resources, must emphasize use of locally available resources, and must limit support to essentials, so that strategic airlift can be dedicated to rapid resupply.<sup>23</sup> Logistics units must train not only for mission support and rapid deployability, but also to provide support in theaters lacking a U.S. presence.

The War in the Gulf showed that Army doctrine for support of contingency operations in undeveloped theaters has some weaknesses. The question of what the weaknesses are, and how severe they are, must be given careful consideration. The axiom, "If it's not broken, don't fix it," applies. For all his talk of improvisation and innovation in the Gulf War, LTG Pagonis had this to say about doctrine:

Army doctrine strikes a good balance between structure and non-structure, i.e., the need to adapt or be flexible. We were able to invent

and reinvent our logistical systems as time passed, as the mission evolved, and as we got better at what we were doing.<sup>90</sup>

Doctrine writers, then, must proceed with caution. A too prescriptive doctrine is probably worse than descriptive doctrine with weaknesses. The latter can be used by intelligent soldiers with a clear sense of mission, while the former may stifle initiative and flexibility of mind. As one senior leader put it, "There must be an enabling doctrine that trains and prepares the force for short notice strategic deployment."<sup>91</sup>

One doctrinal weakness, which at this time is far from being corrected, is the doctrine for the Corps Support Command. Current doctrine envisions the COSCOM as the first, and sometimes the only, logistical unit to support a contingency. The Gulf War demonstrated that this will seldom, if ever, be the case. There are simply too many support requirements in a theater, above and beyond those involved in supporting a corps, for a COSCOM to perform adequately. Support from theater-level assets will be required in all but the briefest contingency operations. The COSCOM field manual should be revised to reflect this reality. A coordinating draft was released in March 1990, but criticisms of it,<sup>92</sup> plus the impact of the Gulf War, delayed its release. New support doctrine for the

corps is scheduled to be published in September 1993.<sup>93</sup>

Emerging Army doctrine, in the forms of FM 100-7 (The Army In Theater Operations) and FM 100-16 (Support Operations: Echelons Above Corps), addresses the challenges of future theater logistics support directly. FM 100-7 strikes a markedly different tone from preceding doctrine in its discussion of theater organization: "Each theater is unique and the theater environment is dynamic. There is no typical Army theater organization."<sup>94</sup> FM 100-16 takes its cue from both FM 100-7 and FM 100-5 in focusing on support to contingency operations rather than on developed theaters.<sup>95</sup> This is the exact opposite approach of the previous version.

FM 100-7 addresses the mission and organization of army forces in a theater of operations. It radically changes theater architecture by providing the Army operational commander with two deputies: one for operations, and one for support.<sup>96</sup> It further stipulates that the theater Commander may designate the theater army as a logistical support headquarters only, with no operational responsibilities.<sup>97</sup> It delineates specific support responsibilities that the army theater army commander or equivalent will do, which include: base development; replacement training; reception, staging, and onward

movement of arriving forces; support to forces in theater; and reconstitution.<sup>98</sup> Clearly this manual intends to focus the theater army on logistics, instead of dividing its attention between operations and support.

FM 100-16 addresses logistics support in theater comprehensively. Its chapters discuss, for example, support of operations other than war, and split-based support operations.<sup>99</sup> Pre-positioning of equipment and supplies, and logistic preparation of the theater, are addressed in relation to support of force projection. The former category, which has already proved its utility in the Gulf, will continue to be a pillar of the force projection strategy.<sup>100</sup> FM 100-5 highlights the latter category as a critical logistics planning function.<sup>101</sup> The emerging doctrine in FM 100-16 appears to properly address both the lessons learned in the KTO, and the force projection requirements outlined in FM 100-5.

FM 100-16 also attempts to rectify another improvised solution to Persian Gulf logistics shortfalls by including wholesale logistics activities in its discussion of deployable support forces. The success of the USASG in Saudi Arabia has led CASCOM and the Army Materiel Command (AMC) to refine the idea and translate it into doctrine for future contingencies. AMC's Depot Systems Command (DESCOM) has already

developed mobilization planning documents that identify personnel and equipment for wartime deployment.<sup>102</sup> Instead of these wholesale support teams operating in theater from memorandums of understanding, new doctrine will integrate them into the theater logistics structure.<sup>103</sup> These activities will not only deploy in wartime, but also will participate in readiness exercises. The concept has already been tested: 1,051 AMC personnel deployed to Florida to support the Hurricane Andrew relief effort.<sup>104</sup>

New doctrine tackles another major Desert Shield/Storm problem area, that of in-transit visibility of assets and its incorporation into an idea called the Total Distribution System. FM 100-5 articulates the requirement: "Full integration of supply and transportation functions into a vertically and horizontally integrated distribution system is critical . . . this provides total asset in-transit visibility . . . unit-configured pre-packaging of supplies in CONUS for throughput prevents the need for breakbulk operations and in-theater repackaging."<sup>105</sup> The goal here, of course, is efficiency in logistics: better support to the units with less wasted effort throughout the distribution chain. The Army's Strategic Logistics Agency (SLA) is tasked with integrating the functions of supply, maintenance, and transportation to produce a viable Total Distribution

System.<sup>106</sup> Successful accomplishment of this formidable task will vastly improve support to forces projected overseas from CONUS.

While all this doctrine is forward-looking and potentially viable, it is still in draft. There is no certainty that it will be published as it is currently written. Many interested parties review and recommend changes to new doctrine. The attention drawn to the subject of EAC logistics by the Gulf War ensures that emerging doctrine will be carefully examined.

One potential change is the desire of some within the Army community to resurrect the TASCOM to command and control theater logistics support. Justification for this is the belief that LTG Pagonis' 22D SUPCOM functioned as a TASCOM, not a TAACOM, in the desert. The official history, for example, repeatedly refers to the SUPCOM as the single agency for theater logistics, and explicitly refers to the TASCOM model as an example of the SUPCOM's structure.<sup>107</sup> LTG Pagonis himself admits, however, that his command was not the sole theater logistics agency: "A single point of contact for materiel management, the TAMMC, should have had exclusive responsibility for requisitioning materiel from CONUS . . . the 22D SUPCOM never had this . . ."<sup>108</sup> Additionally, LTG Yeosock used his authority as theater army commander to create, on at least one occasion, three separate theater logistics

commands. The 22D SUPCOM supported in Saudi Arabia; Task Force FREEDOM, which included detached SUPCOM CSS units, supported in Kuwait; and the 416th Engineer Command performed missions assigned directly by Third Army.<sup>109</sup> These examples do not defeat the argument for a TASCOM over another structure, but they do illustrate that a flexible approach to such a complicated issue may be best.

Another potential change lies in the role of the army component commander in a theater. Will this command be both an operational and a logistics command, or will it focus on one function only? The draft FM 100-7 states that the numbered army commander will be primarily an operational commander,<sup>110</sup> and that the numbered army will rarely execute support operations.<sup>111</sup> On the other hand, as noted previously, it states that the theater commander may designate the theater army as a logistical headquarters only. Some clarification of terms and titles will be needed in this area to prevent confusion over theater command and control architecture.

Another question doctrine must address is the role and composition of the reserve component logistics headquarters. Delay in mobilizing the nation's reserves contributed heavily to the decision to not deploy the 377th TAACOM to Southwest Asia. Moving these organizations to the active component, however,

is not a good solution for a variety of reasons. The most important is the declining number of spaces in the active force. Both LTG Pagonis and GEN Ross, the AMC commander, favor creating small cells of active duty soldiers that will be part of the reserve commands. These soldiers will provide immediate deployment capability, and will represent such critical staff sections as contracting, civil affairs, resource management, and planning.<sup>112</sup> The later deploying reservists could fill around this active duty core, thus obviating the need to replace a functioning organization with a new unit. This is a workable concept, if spaces in the active force can be found for theater logisticians.

A potential achilles heel of Army logistics doctrine, however, is the dependence on reserve component units to provide most of the available logistic support. At the height of support operations in the Gulf, fully 70% of the 22D SUPCOM were reservists.<sup>113</sup> Although the reserve component units performed magnificently in the Gulf, there is no guarantee that they will be activated. Mobilization is a highly charged political issue, and it is a decision that the National Command Authority (NCA) will not take lightly. As recently as 1965, the NCA decided not to mobilize the reserves for the large deployment into Vietnam.<sup>114</sup> Similarly, mobilization of key

reservists was not authorized for support of Operation Just Cause in 1989.<sup>115</sup> Due to the Army's Total Force policy, today's army is much more dependent on reserve units than the army of 1965. Analysis of current army force structure against possible regional scenarios reveals that, in any regional contingency, the Army will require reserve forces.<sup>116</sup> Lacking absolute certainty that reserve CSS units will be mobilized when needed, the Army must structure its force carefully to ensure that minimum essential support can be provided by active units.

#### V. CONCLUSION

The logistical success in the Saudi Arabian desert owed more to the ability of American soldiers to improvise and adapt than to the predictive guidance of Army doctrine. Support for contingency operations stands out as outstanding example of doctrine not being very descriptive of actual events. The role of the contingency COSCOM, and the support provided by EAC logistics assets, needs much better definition, based on the Gulf War experience. The theater support organization, be it a TAACOM, TASCOM, or something else, must be decided upon as well. The Desert Storm experience provides invaluable lessons on contingency support to guide doctrinal development.<sup>117</sup>

While it was not applicable in toto, pre-war logistics doctrine was accurate enough and flexible enough to give leaders and soldiers a strong basis for attacking and solving the challenges they faced. Its emphasis on host nation support for contingency operations stood CENTCOM in good stead as the deployment took shape. The basic theater support missions of reception, onward movement, and sustainment gave LTG Pagonis and his experienced assistants enough doctrinal guidance to fabricate a theater support structure. The sustainment imperatives, particularly that of improvisation, were also useful in guiding logisticians at all levels as they confronted and mastered the theater support challenges.

Somewhat surprisingly, the Return Forces To Germany (REFORGER) exercises proved to be key to the success of the theater logistics effort in Saudi Arabia.<sup>118</sup> Soldiers at all levels applied lessons learned during these massive deployment exercises to the tasks facing them during the Gulf War. LTGs Yeosock and Pagonis first worked together during a REFORGER, and many of Pagonis' staff served on these exercises as well.<sup>119</sup> REFORGERs provided the Army as a whole with a wealth of experience in conducting large-scale overseas deployments, and this experience served it well in the Gulf.

A lesson that can be drawn from this is the

value of conducting deployment exercises of some type. The actual movement of masses of soldiers and equipment forces leaders at all levels to test plans, exercise doctrine, and come up with solutions to shortfalls in planning. This hands-on experience is the best way to find if doctrine, in Michael Howard's words, is almost right, which, according to Howard, is the best an army can expect in peacetime.<sup>120</sup> The challenge for the force-projection army will be to find a substitute for REFORGER.

Emerging doctrine addresses another lesson from the Desert War, and that is to include the Total Force in the package - here both wholesale logistics activities and the Reserve Components. The integration of CONUS wholesale logistics activities, e.g., the AMC's DESCOM deployment packages - into deployment plans, shows a positive application of a lesson learned. Reserve components, of course, were an integral part of large-scale deployment planning before the Gulf War. Although the 377th TAACOM did not deploy, the reserves played an essential role in support in Southwest Asia. Emerging doctrine recognizes this and continues to count on the reserves for reinforcement of the small CSS structure maintained on active duty.<sup>121</sup>

This reliance on the reserves, necessary due to the realities of budget and force structure, must be

tempered with realistic appraisals of their capabilities. The immediate future will see an almost inevitable decline in reserve readiness, as the Army is planning to reduce or inactivate 830 reserve formations.<sup>122</sup> The subsequent redistribution of equipment, personnel, and missions will throw many reserve units into turmoil for some time to come. U.S. reserve forces already face what may be unrealistically stringent demands regarding readiness for domestic missions, mobile warfare, and immediate deployment.<sup>123</sup> The Gulf War demonstrated that effective use of reserve CSS formations depends directly on a timely mobilization decision. This decision is also a critical reconstitution consideration in the current National Military Strategy.<sup>124</sup> The War in the Gulf showed that the decision to mobilize may not come immediately, and Vietnam showed that it may not come at all.<sup>125</sup> While our doctrine must include use of the reserves, it also must provide the flexibility to work around the weakness or absence of them.

A possible doctrinal weakness may arise if active component logisticians are not integrated into reserve component logistics units, as recommended by LTGs Ross and Pagonis. Adoption of this recommendation will give the Army the capability to rapidly deploy organized EAC logistics units. The alternative, of

course, is to attempt to assemble a structure under severe operational pressure, as Pagonis did in the early stages of Desert Shield. Despite Pagonis' successful improvisation, it is obvious that a better, more coherent solution can be developed by integrating active and reserve capabilities. The Army must make some force structure decisions to ensure that this happens.

On the other hand, the requirement to incorporate tight control of transportation and cargo reflects an awareness of weaknesses in present doctrine. Currently, the shippers, rather than the eventual users, drive doctrine on movement and distribution. The initiatives on establishment of the Total Distribution System (TDS) reflect an awareness of, and a determination to change, the flaws in this system. Here necessary doctrinal change appears to have the support it needs to take effect.

Clearly logistics doctrine writers are tailoring their product to meet the requirements for force projection as specified in the Army's keystone doctrine, FM 100-5. The initiatives on establishment of a TDS, the integration of wholesale activities into deployment structures and plans, and the ideas to integrate active soldiers into reserve logistics headquarters all reflect an awareness of the challenge. They also reflect a healthy respect for the

lessons learned in the recent past.

The challenge for the immediate future is to get a workable, useful doctrine published and exercised. The publishing part should be relatively easy, though some disagreements on specific solutions exist. The real challenge lies in testing new doctrinal deployment support concepts. REFORGER is a thing of the past; the opportunity to conduct large-scale training deployments seems to be vanishing. The Army must find a substitute method to train its soldiers in deployment, and to validate its doctrine.

The international landscape, with its many tensions, demands that the Army quickly implement a workable doctrine and force structure that will allow it to project creditable forces rapidly. The doctrinal requirement is key, because the deployment requirement has created a dilemma. That is, how does a combat brigade meet its normal training goals, such as rotation through the National Training Center, and remain ready to deploy on short notice?<sup>126</sup> Related to that is the question of how CSS units can remain ready to deploy and provide effective support under contingency conditions, while attempting to meet their ongoing training and support requirements. Doctrine, as "the authoritative guide to how forces of the Army fight and conduct operations other than war,"<sup>127</sup> must

provide the answers to these questions.

END NOTES

- 1 Pagonis, William G., with Cruikshank, Jeffrey L., Moving Mountains, (Boston, 1992), p. 11.
- 2 McGrath, John J., and Krause, Michael D., Theater Logistics and the Gulf War (Final Draft), (Washington, 1992), p. 94.
- 3 U.S. Army, Field Manual 100-16, Support Operations: Echelons Above Corps, (Washington, D.C., 1985), p. 2-5.
- 4 Lichtenberger, Peter W., Theater Army Support Command: Support for the Non-Forward Deployed Force, (Carlisle Barracks, 1992), p.2.
- 5 McGrath, John J., and Krause, Michael D., Theater Logistics and the Gulf War, p. 15.
- 6 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 133.
- 7 Herbert, Paul H., Deciding What Has to Be Done: General William E. DePuy and the 1976 Version of FM 100-5, Operations, (Ft Leavenworth, 1988), p. 106.
- 8 Lichtenberger, Peter W., Theater Army Support Command: Support for the Non-Forward Deployed Force, pps. 13, 24.
- 9 Ibid., pps. 24 & 25.
- 10 Ibid., p. 23.
- 11 Ross, Jimmy D., "Focusing Logistics For The Future", Military Review, (September 1992), p. 53.
- 12 U.S. Army, Field Manual 63-3, Corps Support Command (Coordinating Draft), (Ft Lee, 1990).
- 13 U.S. Army, Field Manual 100-16, Support Operations: Echelons Above Corps, (Washington, D.C., 1985), p. 2-1.
- 14 U.S. Army, Field Manual 63-4, Theater Army Area Command, (Washington, D.C., 1984), p. 2-3.
- 15 U.S. Army, FM 100-16, pps. 2-5, 2-6; 6-15 to 6-22.

END NOTES

- 16 Ibid., p. 6-30.
- 17 Ibid., p. 2-3.
- 18 Cushman, John H., Command and Control of Theater Forces: The Korea Command and Other Cases, printed in The Contemporary Practice of Operational Art, Part II - Joint Operations, (Ft Leavenworth, 1986), p. 5-18, 5-19.
- 19 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 85.
- 20 Karreagenes, Harry G., and Mostofi, Keith, "Support Group Operations in Southwest Asia", Army Logistician, (January - February 1992), p. 12.
- 21 U.S. Army, Field Manual 63-3, Corps Support Command (Coordinating Draft), p. E-1.
- 22 Ibid., p. 6-6.
- 23 Lichtenberger, Peter W., Theater Army Support Command: Support for the Non-Forward Deployed Force, p. 48.
- 24 U.S. Army, Field Manual 63-3, Combat Service Support Operations - Corps, (Washington, D.C., 1983), p. 14-7.
- 25 U.S. Army, Field Manual 63-3, Corps Support Command (Coordinating Draft), p. E-4.
- 26 Lichtenberger, Peter W., Theater Army Support Command: Support for the Non-Forward Deployed Force, p. 37.
- 27 U.S. Army, Field Manual 100-16, Support Operations: Echelons Above Corps, p. 1-14.
- 28 U.S. Army, Field Manual 100-16, Support Operations: Echelons Above Corps, p. 1-13.
- 29 Cushman, John H., Command and Control of Theater Forces: The Korea Command and Other Cases, p. 313.
- 30 U.S. Army, Field Manual 100-5, Operations, (Washington, D.C., 1986), p. 63.

END NOTES

- 31 Field Manual 100-16, Support Operations: Echelons Above Corps, pps. 6-2, 6-3.
- 32 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, pps. 6 & 7.
- 33 Ibid., p. 90.
- 34 U.S. Army, Field Manual 100-16, Support Operations: Echelons Above Corps, pps. 1-4, G-5.
- 35 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 64.
- 36 Ibid., p. 66.
- 37 Ibid., p. 76.
- 38 Ibid., p. 76.
- 39 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 10.
- 40 Ibid., p. 14.
- 41 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 90.
- 42 Ibid., p. 90.
- 43 Pagonis, William G., with Jeffrey Cruikshank, Moving Mountains, pps. 86 - 89.
- 44 Ibid., p. 91.
- 45 U.S. Army, Field Manual 100-16, Support Operations: Echelons Above Corps, p. 6-99.
- 46 Pagonis, William G., and Cruikshank, Jeffrey, Moving Mountains, p. 91.
- 47 Ibid., p. 100.
- 48 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 16.
- 49 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 98.

END NOTES

- 50 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 21.
- 51 Ibid., p. 21.
- 52 Ibid., p. 21.
- 53 Ibid., p. 22.
- 54 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 131.
- 55 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 26.
- 56 Ibid., p. 172.
- 57 Ibid., p. 20.
- 58 Cushman, John H., Command and Control of Theater Forces: The Korea Command and Other Cases, p. 315.
- 59 Power, Nathan J., Mobilization and Deployment, Army Logistician, (September - October 1992), p. 34.
- 60 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, pps. 98, 99.
- 61 Ibid., p. 97.
- 62 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 24.
- 63 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 114.
- 64 Karegeannes, Harry G., and Mostofi, Keith, Support Group Operations in Southwest Asia, Army Logistician, p. 13.
- 65 Ibid., p. 15.
- 66 Ibid., p. 15.
- 67 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 41.
- 68 Ibid., p. 89.

END NOTES

- 69 Ibid., p. 92.
- 70 Ibid., p. 85.
- 71 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 156.
- 72 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 27.
- 73 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 104.
- 74 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 27.
- 75 Ibid., p. 27; Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 208.
- 76 U.S. Army, Field Manual 90-14, Rear Battle, (Washington, D.C., 1985), p. 3-20.
- 77 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 27, 91.
- 78 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, pps. 126 -127.
- 79 Ibid., p. 151.
- 80 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 74.
- 81 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 150.
- 82 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 75.
- 83 Ibid., p. 75.
- 84 Ibid., p. 84.
- 85 Ibid., p. 84.
- 86 U.S. Army, Field Manual 100-5, Operations (Final Draft), (Washington, D.C., 1993), p. 3-1.

END NOTES

- 87 U.S. Army, Field Manual 100-5, Operations (Preliminary Draft), (Ft Monroe, VA, 1992), p. 1-6.
- 88 Ibid., p. 8-1.
- 89 Ibid., p. 4-53, 8-1.
- 90 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 223.
- 91 Elam, Fred E., and Henderson, Mark, "Army's Strategic Mobility Plan", Army Logistician, (May - June 1992), p. 4.
- 92 I was unable to obtain any official documents criticizing the coordinating draft of FM 63-2. I did, however, see a marked-up copy in the Center for Army Tactics (CTAC) Doctrine Division, and I spoke to one of the CTAC writers (MAJ Bill Kenney) who reviewed the draft. He said that most of the criticism focused on the addition of more command and control elements to the COSCOM structure - "empire building", as he called it.
- 93 Interview with MAJ Harold Dotson, Logistics Instructor, Department of Sustainment and Resourcing Operations, Command and General Staff College, 19 April 1993.
- 94 U.S. Army, Field Manual 100-7, The Army In Theater Operations (Final Draft), (Washington, D.C., 1992), p. 1-65, 1-66.
- 95 Information on the new FM 100-16 comes from an interview with COL Edward Nuttall, Department of Sustainment and Resourcing Operations (DSRO), Ft Leavenworth, and from a phone conversation with the manual's principal author, MAJ Garvin, Army Doctrine Directorate, Training and Doctrine Command (TRADOC). The manual itself was supposed to be published in coordinating draft format on 31 January 1993, but for reasons unknown to me it was not.
- 96 Interview with COL Edward Nuttall, DSRO Deputy Chief, reference concepts briefed at Combined Arms Support Command (CASCOM) Support to Theater Level Operations Brief, Dec 1992.
- 97 U.S. Army, Field Manual 100-7, The Army In

END NOTES

Theater Operations (Final Draft), p. 7-5.

98 Ibid., p. 7-32.

99 Telephonic interview with MAJ Garvin, principal author, FM 100-16, Support Operations: Echelons Above Corps, 25 January 1993.

100 Ross, Jimmy D., "Focusing Logistics For The Future", Military Review #9, (September 1992), p. 44.

101 U.S. Army, Field Manual 100-5, Operations (Final Draft), p. 9-7.

102 Karragenes, Harry G., and Martinous, William P., "Depot Support to Contingency Operations", Army Logistician, (July - August 1992), p. 19.

103 Interview, COL Joseph Nuttal, DSRO Deputy Chief, 22 January 1993.

104 Ibid.

105 U.S. Army, Field Manual 100-5, Operations (Preliminary Draft), p. 8-9.

106 Ross, Jimmy D., "Focusing Logistics For The Future", Military Review #9, p. 52.

107 McGrath, John J., and Krause, Michael D., Theater Logistics and The Gulf War, p. 40.

108 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 208.

109 Lichtenberger, Peter W., Theater Army Support Command: Support for the Non-Forward Deployed Force, p. 42; Wilson, Bonnie F., "Forward Area Support In Desert Storm", Army Logistician, (September - October 1992), p. 3.

110 U.S. Army, Field Manual 100-7, The Army in Theater Operations (Final Draft), p. A-33.

111 Ibid., p. A-34.

112 Ross, Jimmy D., "Focusing Logistics For The Future", Military Review #9, p. 53; Pagonis, William G.,

END NOTES

and Krause, Michael D., "Observations on Gulf War Logistics", Army Logistician, (September - October 1992), p. 9.

113 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 101.

114 Donahoe, Joseph F. Jr., The Capability of the U.S. to Fulfill Manpower Requirements of the Armed Forces Without Mobilization, (Carlisle Barracks, PA, 1967), p. 4.

115 Fishel, John T., The Fog Of Peace: Planning And Executing The Restoration Of Panama, (Carlisle Barracks, PA, 1992), p. 32.

116 Department of Defense, "Crisis Response", Defense 92, (November - December 1992), p. 15.

117 "Logistics Posture of the Army", Army Logistician, (July - August 1992), p. 14.

118 Pagonis, William G., with Cruikshank, Jeffrey, Moving Mountains, p. 69.

119 Ibid., pps. 66, 80.

120 Howard, Michael, "Military Science in an Age of Peace", Introduction to Military Theory, (Ft Leavenworth, 1991), p. 237.

121 "Logistics Posture of The Army", Army Logistician, p. 15.

122 "DOD Plans Reserve Cuts - The Army Takes the Brunt", ARMY, (May 1992), p. 61.

123 Walker, Wallace E., "Comparing Army Reserve Forces: A Tale of Multiple Ironies, Conflicting Realities, and More Certain Prospects", Armed Forces and Society, (Spring 1992), p. 307.

124 "Logistics Posture of The Army", ARMY Logistician, p. 14.

125 Summers, Harry G., On Strategy, (Novato, CA, 1982), p. 50.

END NOTES

126 Elam, Fred E., and Henderson, Mark, "Army's Strategic Mobility Plan", Army Logistician, p. 5.

127 U.S. Army, Field Manual 100-5, Operations (Final Draft), p. 1.

## BIBLIOGRAPHY

### BOOKS

- Association of the United States Army. Special Report: Operations Desert Shield and Desert Storm: The Logistics Perspective. Arlington, VA: AUSA Institute of Land Warfare, 1991.
- Crevelde, Martin van. Command In War. Cambridge, MA: Harvard University Press, 1985.
- Fishel, John T. The Fog Of Peace: Planning And Executing The Restoration Of Panama. Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, 1992.
- Herbert, Paul H. Deciding What Has To Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations. Leavenworth Papers No. 16. Fort Leavenworth, KS: 1988.
- Lewy, Guenter. America In Vietnam. New York, NY: Oxford University Press, 1978.
- McGrath, John J., and Krause, Michael D. Theater Logistics and the Gulf War (Final Draft). Washington, D.C.: Center for Military History, 1992.
- Pagonis, William G., with Cruikshank, Jeffrey. Moving Mountains. Boston, MA: Harvard Business School Press, 1992.
- Summers, Harry G. On Strategy. New York, NY: Presidio Press, 1982.
- United States Army. The Army Plan (Army Guidance Vol I), 1985 - 1999. Washington, D.C.: Headquarters, Department on the Army, 1982.

### MANUALS

- Field Manual 63-3, Combat Service Support Operations - Corps. Washington, D.C.: Headquarters, Department of the Army, 24 August 1983.
- Field Manual 63-3, Corps Support Command (Coordinating Draft). Ft Lee, VA: U.S. Army Logistics Center, 30 March 1990.
- Field Manual 63-4, Combat Service Support Operations: Theater Army Area Command. Washington, D.C.: Headquarters, Department of the Army, 24 Sept 1984.

- Field Manual 90-14, Rear Battle. Washington, D.C.:  
Headquarters, Department of the Army, 10 June 1985.
- Field Manual 100-5, Operations. Washington, D.C.:  
Headquarters, Department of the Army, 5 May 1986.
- Field Manual 100-5, Operations (Preliminary Draft).  
Ft Monroe, VA: Headquarters, Training and Doctrine  
Command, 21 August 1992.
- Field Manual 100-5, Operations (Final Draft). Ft Monroe,  
VA: Headquarters, Training and Doctrine Command,  
19 January 1993.
- Field Manual 100-7, The Army in Theater Operations (Final  
Draft). Washington, D.C.: Headquarters, Department  
of the Army, 10 December 1992.
- Field Manual 100-10, Combat Service Support. Washington,  
D.C.: Headquarters, Department of the Army,  
18 Feb 1988.
- Field Manual 100-16, Support Operations: Echelons Above  
Corps. Washington, D.C.: Headquarters, Department of  
the Army, 16 April 1985.
- Field Manual 100-17, Mobilization, Deployment,  
Redeployment, and Demobilization. Washington, D.C.:  
Headquarters, Department of the Army, 28 October 1992.

#### ARTICLES and PAPERS

- Army In Transition: Reserve Components Force Structure.  
Army, May 1992, p. 50.
- Army Logistician. Logistics Posture of The Army.  
Army Logistician, July - August 1992, pps. 14 - 17.
- Block, Bruce A. Avoiding A Logistics Chokepoint. Army  
Logistician, July - August 1992, pps. 21 - 23.
- Brame, William L. Planning Desert Storm Logistics. Army  
Logistician, May - June 1992, pps. 16 - 21.
- Causey, William M., and Boggs, Elizabeth W. Los Angeles  
Support Mission. Army Logistician, September - October  
1992, pps. 14- 17.
- Collins, John W. Jr. Logistics Support for Operation  
Provide Comfort II. Army Logistician, May - June 1992,  
pps. 22 - 24.
- Cushman, John H. Command and Control of Theater Forces: The  
Korea Command and Other Cases. The Contemporary  
Practice of Operational Art (SAMS Text), Part II, Joint  
Operations, pps. 257 - 380.

- Department of Defense. Crisis Response. Defense 92,  
(From the 1992 Joint Military Net Assessment), November  
- December 1992, pps. 14 - 21.
- Dilla, Benjamin L. Logistics Support Limitations In The  
Vietnam War: Lessons For Today's Logisticians. Air  
Force Journal of Logistics, Fall 1990, pps. 35 - 38.
- DOD Plans Reserve Cuts - The Army Takes the Brunt. Army,  
May 1992, p. 61.
- Donahoe, Joseph F. Jr. The Capability of the United States  
to Fulfill Manpower Requirements of the Armed Forces  
Without Mobilization. U.S. Army War College Essay,  
Carlisle Barracks, PA, 3 March 1967.
- Elam, Fred E., and Henderson, Mark. Army's Strategic  
Mobility Plan. Army Logistician, May - June 1992,  
pps. 2 - 6.
- Flannery, Michael F. Jr. Train Up To Multi-Functional  
Logistics. Army Logistician, January - February  
1992, pps. 34 - 37.
- Harper, Gilbert S. Army Logistics In Year 2010. Army  
Logistician, September - October 1991, pps. 18 - 22.
- Howard, Michael. Military Science in an Age of Peace.  
Printed in Introduction to Military Theory, CGSC Text,  
Combat Studies Institute, pps. 233 - 239.
- Johnson, Ervin V. The Capability of the United States to  
Fulfill Manpower Requirements of the Armed Forces  
Without Mobilization. U.S. Army War College Essay,  
Carlisle Barracks, PA, 3 March 1967.
- Karegeannes, Harry G., and Martinous, William P.  
Supporting Power Projection. Army Logistician,  
July - August 1992, pps. 18 - 20.
- Karegeannes, Harry G., and Mostofi, Keith. Support Group  
Operations in Southwest Asia. Army Logistician,  
January - February 1992, pps. 12 - 16.
- Lessons Learned From Desert Storm: The Guard Has Proven It  
is America's Asset. National Guard 46 no 1, January  
1992, pps. 40 -42.
- Lichtenberger, Peter W. Theater Army Support Command:  
Support for the Non-Forward Deployed Force. U.S. Army  
War College Paper, Carlisle Barracks, PA, 23 April 1992
- Mohr, Jerry T. CINC's Theater Army: Should It Control Both  
Operations in the Combat Zone and Logistics in the  
Communications Zone? SAMS Monograph, USACGSC, Ft  
Leavenworth, KS, 8 May 1991.

Pagonis, William G., and Krause, Michael D. Observations on Gulf War Logistics. Army Logistician, September - October 1992, pps. 5 - 11.

Pilgrim, Calvin F.H., and Fehn, Michael J. Combat Service Support For Airland Operations. Army Logistician, March - April 1992, pps. 2 - 7.

Power, Nathan J. Mobilization and Deployment. Army Logistician, September - October 1992, pps. 30 - 34.

Ross, Jimmy D. Focusing Logistics For The Future. Military Review, September 1992, pps. 48 - 55.

Rozman, Thomas R. Perspective on Mobilization: Expanding To A Larger Force. Military Review, May 1992, pps. 52 - 62.

Tuttle, William G.T. Jr. Sustaining Army Combat Forces, Parts I and II. Army Logistician, September - October 1991, pps. 6 - 11; November - December 1991, pps. 20 - 23.

Walker, Wallace E. Comparing Army Reserve Forces: A Tale of Multiple Ironies, Conflicting Realities, and More Certain Prospects. Armed Forces and Society, Spring 1992, pps. 303 - 322.

Wilson, Bonnie F. Forward Area Support In Desert Storm. Army Logistician, September - October 1992, pps. 2 - 4.

#### INTERVIEWS

Dotson, Harold, MAJ, U.S. Army, Logistics Instructor, Department of Sustainment and Resourcing Operations, U.S. Army Command and General Staff College, Ft Leavenworth, KS, 19 April 1993. MAJ Dotson was interviewed on the status of publication of logistics doctrine.

Garvin, MAJ, U.S. Army, (telephonic), Army Doctrine Directorate, U.S. Army Training and Doctrine Command, Ft Monroe, VA, 25 January 1993. MAJ Garvin is the principal author of the new version of FM 100-16, Army Operational Logistics, and was interviewed on the emerging concepts contained in this field manual.

Kenney, William, MAJ, U.S. Army, Doctrine Writer, Department of Tactics, U.S. Army Command and General Staff College, Ft Leavenworth, KS. MAJ Kenney was interviewed on the status of publication of logistics doctrine.

Nuttall, Edward, COL, U.S. Army, Deputy Director,  
Department of Sustainment and Resourcing Operations,  
U.S. Army Command and General Staff College, Ft  
Leavenworth, KS, 22 January 1993. COL Nuttal was  
interviewed on issues discussed at a Combined Arms  
Support Command briefing he attended, entitled: Army  
Operations/Support: Theater Level Operations, December  
1992.