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JOINT OPERATIONAL LOGISTICS: STEPS TOWARD UNITY OF EFFORT

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Maritime Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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ABSTRACT

Joint operational logistics must emphasize unity of effort to maximize combat power. Although each Service is responsible for its own contingency logistics support, the Joint Force Commander (JFC) manages and prioritizes theater logistics support of joint operations. Unity of effort is difficult to achieve within the current Service-oriented logistics framework.

Future theater-level logistics organizations must incorporate the functions of each Service. Joint doctrine already provides for a single command authority for logistics, but JFCs lack a modular, flexible organization for operational logistics. Recent operations have established ad hoc logistics command and control organizations that do not support *Joint Vision 2010* or emphasize unity of effort.

Unity of effort is best attained through unity of command. One solution is to integrate Service logistics modules and personnel into the Army's existing Theater Support Command (TSC) structure. The resulting Joint TSC (JTSC) will provide the JFC a single commander for oversight of theater logistics. The JTSC will more effectively manage theater logistics through all phases of a contingency and focus the entire logistics effort toward the highest mission priority.

Logistics is the foundation of combat power. We must, therefore, continue to develop and refine joint doctrine that promotes the most efficient use of all available assets. Adherence to that doctrine is the key to our success. General Shalikashvili, Chairman, Joint Chiefs of Staff (1995)

Introduction

Joint operational logistics must emphasize unity of effort to make the best use of increasingly limited resources and maximize combat power. Although the military Services are responsible to provide their own logistics during a contingency,¹ the Joint Force Commander (JFC) manages and prioritizes theater logistics in support of joint operations. Unity of effort, regarded as “coordination through cooperation and common interests”² by joint doctrine, is difficult to achieve in joint operational logistics within the current Service-oriented logistics framework.

Nearly every major U.S. military operation during the past century involved joint forces, and certainly future operations will follow suit. To date, theater-level logistics supporting joint operations have been managed by an ad hoc organization, sometimes hastily assembled to coordinate the diverse requirements of the participating military Services. The ad hoc organization rarely resembles anything practiced in peacetime, and is often built without regard to existing doctrine. It is true that additional resources and effort may overcome the challenges associated with an ad hoc joint logistics organization, but its preparedness and usefulness to the JFC may be suspect.³

This existing approach does not emphasize unity of effort nor support the *Joint Vision 2010 (JV 2010)* operational logistics vision. The absence of an established, modular (or “building-block”) theater-level logistics command and control structure has resulted in ineffective management and distribution of resources.⁴ Unity of effort helps ensure theater resources are allocated to the theater’s highest priority (as determined by the JFC) rather than through Service stovepipes.

Designating a single command authority for operational level logistics is vital to unity of effort. JFCs should have a single organization to provide the logistics support necessary to accomplish the mission. This is essential to meeting the doctrinal goal of integrating “strategic, operational, and tactical sustainment efforts within the theater”⁵ through coordination of logistics units, personnel, and supplies in support of the employment concept of the JFC. Additionally, any organization purporting to control joint theater logistics must possess technological tools that have visibility across Service organizational boundaries in order to be effective.

Several positive steps have already been taken toward unity of command in joint operational logistics. Without a doubt, technology plays a vital role. Improvements to in-transit visibility (ITV) and systems like the Global Combat Support System⁶ (GCSS) assist logisticians in the tracking and management of assets. Organizationally, the Army’s Combined Arms and Support Command (CASCOM) recently transformed its Theater Army Area Commands (TAACOM) into Army-specific Theater Support Commands (TSC) to provide modular, theater-level support to its forces.

This paper will argue that while efforts by CASCOM and other Department of Defense (DOD) logistics organizations are solid steps toward improved support,⁷ the future theater-level support framework envisioned by *JV 2010* must incorporate each Service’s logistics functions. After examining *JV 2010*, current logistics doctrine, and operational logistics lessons learned, the paper will discuss characteristics of future logistics command and control. It will conclude with an examination of proposed modifications to the Army’s TSC structure designed to maximize logistics unity of effort in support of the JFC.

Joint Vision 2010: Focused Logistics

Devised as a conceptual template for achieving new levels of effectiveness in joint warfighting, *JV 2010* endorses four operational concepts: dominant maneuver, precision engagement, full spectrum dominance, and focused logistics.⁸ As one of *JV 2010*'s "pillars," focused logistics is key to realizing the overall vision. As the "fusion of information, logistics, and transportation technologies,"⁹ focused logistics will provide quick response and ITV of theater sustainment. The Joint Chiefs of Staff envision year 2010 logistics structures as integrated among the Services, modular in construct, and tailored to the JFC's mission.¹⁰ Focused logistics is consistent with the oncoming "Third Wave"¹¹ style of war based on information fusion, specialized technology, and quickened pace of operations. When realized, *JV 2010* focused logistics will strengthen unity of effort.

Downsizing, changing threats, and technology are among the common reasons given for developing focused logistics, but just as important is evidence that logisticians in all Services are dissatisfied with the level of support provided to warfighters and suspect they can be more effective and efficient.¹² Above all else, *JV 2010* emphasizes an "imperative of jointness" whereby mission success is accomplished through a "more seamless integration of Service capabilities."¹³

A smart military planner would agree that logistics is a critical element of combat power. This principle assumes even greater importance at the operational level.¹⁴ Enhanced logistics organizational capabilities will be essential to fight in the operational battlefield predicted by *JV 2010*. Quicker mobilization and deployment, a greater reliance on maneuver than mass, simultaneous rather than sequential attacks, and network centric battlespace management—all with smaller forces that are always joint—will require integrated, modular

logistics organizations to succeed.¹⁵ Unity of effort will be critical to manage operational logistics challenges in this environment. For example, as the speed of operations increases, the focus of theater logistics support could rapidly progress through deployment, reception, sustainment, and redeployment—possibly within just days. This increased tempo will demand a greater interdependency among Service logistics functions to fully support the JFC, particularly if theater assets are limited.

As a road map, *JV 2010* allows the Services a wide range of latitude in translating these concepts into capabilities, although Service capabilities should complement one another and be interoperable.¹⁶ Each Service has developed its own programs to comply with *JV 2010*. The Army has *Force XXI*; the Air Force, *Global Engagement*; the Navy, *Forward . . . from the Sea*; and the Marine Corps, *Operational Maneuver from the Sea*.

Current Logistics Doctrine

Unity of command is essential to effective theater logistics operations. Joint doctrine recommends a single command authority be responsible for logistics for a given area or mission.¹⁷ Likewise, Joint Pub 3-0 relates the purpose of unity of command as ensuring “unity of effort under one responsible commander for every objective.”¹⁸ “Unity of effort . . . requires coordination and cooperation among all forces toward a commonly recognized objective, although they are not necessarily part of the same command structure.”¹⁹ Because logistics is a function of command,²⁰ it is useful to examine unity of command as it relates to unity of effort among the Services in joint operational logistics command and control.

Title 10, United States Code, assigns the Services responsibility to train, equip, and sustain their forces. As such, each Service typically establishes its own logistics organization to provide support to the JFC. The combatant commander, according to Joint Pub 3-0, may

exercise directive authority for logistics or delegate it for common-support capability.²¹

Unity of effort is implied in directive authority for logistics, which includes the authority to ensure “prevention or elimination of unnecessary duplication of facilities and overlapping of functions among the Service component commands.”²²

While combatant commands may adequately address logistics duplication and overlap among the Services during the deliberate planning process, there are larger challenges to monitoring and controlling these same functions during crisis planning and execution. The next section examines operational logistics unity of command problems experienced during recent joint operations.

Logistics Lessons from Recent Joint Operations

Joint logistics command and control in the following operations was hampered by inadequate unity of effort. Although each operation was ultimately a success, it revealed theater-level logistics shortcomings that must be corrected to win on the *JV 2010* battlefield.

Operation DESERT STORM/DESERT SHIELD.

“The Gulf War was a remarkable distillation of the factors that argue for a single point of contact in logistics—in fact, it was an extreme case.”²³ From the onset, the Army violated its own doctrine by not establishing a logistics command and control organization to handle theater support for more than one corps. Typically, a TAACOM would manage logistics issues for the echelon above corps,²⁴ but in Southwest Asia the U.S. Army Forces Central Command (USARCENT) stood up the 22^d Support Command (SUPCOM). This ad hoc organization was commanded by a major general and initially staffed by just three field grade officers, who, for a time, represented the entire logistics organization in the theater.²⁵

Although the 22^d SUPCOM officially reported USARCENT, the unit in reality served as the logistics command and control organization for the JFC (in this case, U.S. Central Command (USCENTCOM)). As such, 22^d SUPCOM situation reports (SITREP) constituted the JFC's primary logistics picture throughout the campaign.²⁶ That the 22^d SUPCOM was subordinate to USARCENT invariably resulted in SITREPs centered on Army logistics and Army common-item support (rations, water, and fuel) to only the Air Force and Marine units ashore.²⁷ The picture painted by the 22^d SUPCOM was incomplete; it had zero Navy and only partial Air Force and Marine data.

During the Gulf War, development of the logistical infrastructure and plan was done within Army channels and was not coordinated with other Services.²⁸ With little to no ITV, 22^d SUPCOM was only able to track, not predict, the logistics situation.²⁹ Worse, over half of the 40,000 containers arriving in theater had to be opened to determine contents and destination.³⁰ This caused units waiting for supplies to make redundant requisitions for supplies likely already in theater. At the operational level, there was no command logistics review of requests for duplication or to establish sustainment priority.³¹

With no centralized joint logistics command and control, tactical units were frustrated in obtaining supplies across Service lines. Logisticians from the 1st Battalion, 8th Marines were unable to coordinate transfer of critical M1A1 tank parts from the Army.³² Likewise, they were forced to improvise local procedures to obtain Class V (ordnance) and vehicle repair parts from Army units during the conflict.³³

Operation RESTORE HOPE

Logistics operations in Somalia were the responsibility of the Marine Corps Force Service Support Group (FSSG) after initial forces were landed in December 1992.³⁴ The

FSSG was organized and trained for its mission to provide logistics to the 1st Marine Expeditionary Force (I MEF) ashore. Within a month, however, its mission expanded and the FSSG was providing supplies, transportation, engineering, and medical services to not only I MEF but also to considerable foreign military forces, United Nations civilian and military commands, and non-governmental organizations.³⁵

As the logistics mission swamped the FSSG's organic capabilities, the JFC decided to transition responsibilities to a Joint Task Force Support Command (JTF SUPCOM), beginning at D+50³⁶ (late January 1993). Not unlike previous operations, JTF SUPCOM was an ad hoc organization not in keeping with current doctrine. Major General Arnold, Commander, 10th Mountain Division and Army Forces Somalia, identified several theater logistics command and control problems. After the initial decision in early December 1992 to establish JTF SUPCOM, it was unclear who had authority for managing time-phased force and deployment data (TPFDD) for forces into the theater.³⁷ The TPFDD problems resulted in the 10th Mountain Division receiving only 17 percent of its combat service support forces needed to support a 10,000-person division.³⁸

Other problems identified by the Army commander that hindered joint force support were the improper sequencing of transportation specialists into theater and the mismatch of prepositioned cargo ships to theater port capabilities.³⁹ Of three prepo ships sent to Somalia, only one was offloaded due to lack of trained personnel and shallow drafts at selected ports.⁴⁰ One published report of the Somalia operations concluded that the poor coordination was caused by a lack of "clear delineation of authority within the [JTF] to clarify who is in charge of making these things happen—and in time to make a difference."⁴¹

While the decision to establish a joint organization to control logistics in Somalia did not mesh with current doctrine to assign theater sustainment responsibility to the Army component, it was consistent with the increasing use of joint task forces for contingency response. Although no formal model for a joint theater logistics organization emerged, the need for centralized command and control was again evidenced.

Operation UPHOLD DEMOCRACY

For this operation in Haiti, the Army was again the lead planner and supplier for logistics. Having studied lessons learned from Operations DESERT SHIELD/DESERT STORM and RESTORE HOPE, the Corps Support Command (COSCOM) at Fort Bragg was able to develop detailed logistics plans and rehearse them during several exercises leading up to the crisis.⁴² During the operation, the COSCOM developed a Joint Logistics Support Command (JLSC) for oversight of supplies entering the theater.⁴³ JLSC logistics command and control was improved by the establishment of a primitive ITV system and deployment of Defense Logistics Agency personnel.⁴⁴ The JLSC was a “joint” success; it was prepared and able to centralize joint logistics planning and monitor supplies, eliminating Service stovepipes and redundant support requests.⁴⁵ It was, however, still an ad hoc organization.

Operational Logistics Command and Control Factors

Future theater logistics command and control organizations must be joint in more than title only. Joint logistics command and control in the JV 2010 environment must have learned, and acted upon, the lessons of previous operations. What are the important challenges for this organization? Management of two key factors will maximize joint logistics unity of effort in support of the operational commander.

Joint Reception, Staging, Onward Movement, and Integration (JRSOI)

The elements of JRSOI have not yet been finalized.⁴⁶ The coordination of draft Joint Pub 4-01.8 (*Joint Tactics, Techniques, and Procedures for Reception, Staging, Onward Movement, and Integration*) between the Services represents the Joint Staff's struggle to define JRSOI doctrine. Still, the importance of JRSOI to a joint force warfighting capability cannot be overstated. Properly executed, JRSOI will eliminate much of the confusion associated with unit personnel and equipment arriving in theater in stages, as well as reduce bottlenecks common to large, operational level distribution networks.⁴⁷

One important JRSOI issue is the current tasking for movement control within the theater. Doctrine assigns the Army's Theater Movement Control Agency (TMCA) the responsibility to manage theater transportation networks.⁴⁸ This mission may exceed the TMCA's capabilities, especially in an overseas environment. While the TMCA coordinates use of roadways and railways with the host nation, other Services may attempt to use the same networks.⁴⁹ To resolve the conflict, a joint theater movement control function could deconflict movement access, allocate transportation resources, or prioritize requirements.⁵⁰

Priority of Mission Support

A basic question for any logistician is where the priority of support should be given. Under current practices, priority of support may be clear within Service channels, but is foggy at the joint level. Joint logistics command and control organizations must be aware of the JFC's mission priority and then act to focus the entire logistics effort in the same direction. The designated senior theater logistician already possesses the authority to shift resources within theater;⁵¹ unity of effort considerations compel him to redirect scarce supplies to the highest priority, regardless of Service. Otherwise, component stovepipes will

compete for the same limited resources as in the earlier example of M1A1 tank parts in the Gulf War. This competition eliminates unity of effort toward the immediate mission. Every element under control of the joint logistics organization must work under the “umbrella of the [JFC’s] intent.”⁵²

Operational Logistics Command and Control Organization

The Joint Chiefs of Staff *Concept for Future Joint Operations* predicts that logistics functions will transition from “rigid, vertical organizations of the past to integrated, modular, and specifically tailored combat service support packages.”⁵³ Because unity of effort is best attained under a single command authority,⁵⁴ the commander of this future organization should be the senior logistician in the theater. The best approach to make this transformation is to develop a joint, theater-level operational logistics command and control organization.

In contrast to ad hoc organizations born of previous operations, this new organization type must be formed, trained, and exercised in accordance with Joint Pub 4-0 guidance that “. . . peacetime chains of command and staffs should be organized during peacetime to avoid reorganization during war.”⁵⁵ Further, it should have modular components to allow selective, phased deployment of logistics personnel into theater as they are required. At the beginning of a crisis, a command module containing core logistics staff would deploy to initiate JRSOI and prepare to receive follow-on forces. Additional modules, organized by function or Service capability, would follow as required.

Army Theater Support Command (TSC)

The nucleus of such a modular organization is already present in the Army’s TSCs, which are being reorganized from the existing active and reserve component TAACOMs. The transition was spurred by lessons from the Gulf War as well as a critical assessment that

Army engagements since World War II have generated ad hoc theater-level organizations out of necessity, but that were inefficient and wasteful.⁵⁶ Also, *JV 2010* indicated that TAACOMs could be modified to fill the role of joint support commands.⁵⁷

The Army began considering the TSC concept in 1994.⁵⁸ TSC organization and doctrine were evaluated during Exercises ROVING SANDS 99 in Texas and BRIGHT STAR 00 in Egypt, both with positive results.⁵⁹ The Army will activate six TSCs worldwide by October 2000.⁶⁰ In contrast to the TAACOM, the TSC identifies specific, "battle-rostered," personnel positions to build a theater force opening element with an early entry module (EEM).⁶¹ Additional modules for transportation, medical, engineering, supply, contracting, and medical can be added to the EEM to provide logistics command and control during the initial phase of an operation.⁶²

Joint Theater Support Command (JTSC)?

Army leadership made a deliberate decision to keep the TSC as an Army service organization rather than a joint support command.⁶³ The draft TSC field manual provides its mission focus as "throughput and follow-on sustainment, including all CSS functions, of *Army* forces and other designated supported elements."⁶⁴ The Army TSC will certainly provide more efficient common-item support within the theater, but without visibility and control of the other Services' logistics functions, cannot provide the JFC an across-the-board logistics command and control capability. Still, compared to the previous ad hoc organizations, the TSC represents a positive step and should be the foundation for a JTSC that would better emphasize theater logistics unity of effort.

For future operations, JFCs should modify the Army's TSC by adding modules from the other Services and integrating non-Army logisticians into the TSC's various controlling

boards. The Army would continue to manage its traditionally large share of theater support (see Appendix A for specific wartime responsibilities), but as a joint organization, the JTSC would provide the JFC tools to more effectively exercise his logistics command authority.

Figure 1 illustrates a proposal USCENTCOM is considering to modify TSC and Service relationships during contingencies. Proposed additions (shaded) are specific to the 377th TSC, which provides support to the USCENTCOM area of responsibility (AOR).

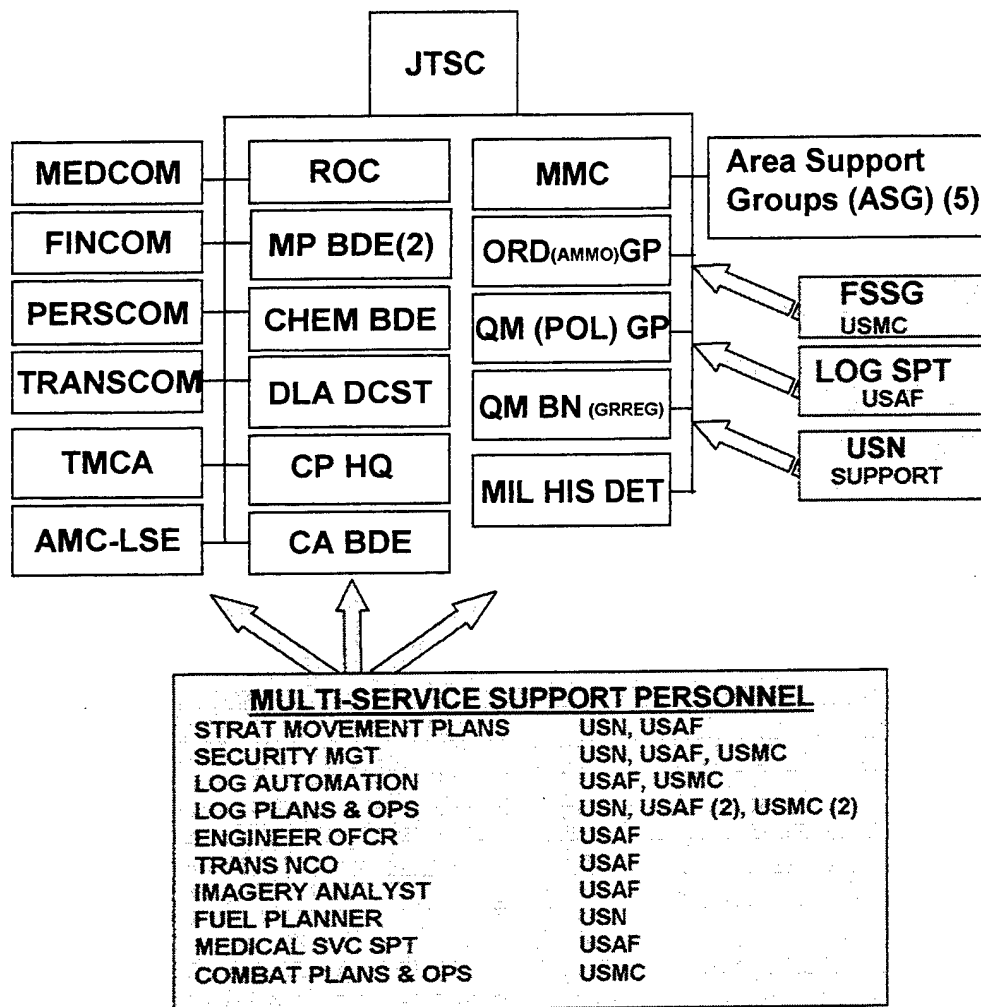


Figure 1. Proposed 377th TSC Task Organization⁶⁵
 (For explanation of acronyms, see Appendix B)

By attaching Marine Corps, Air Force, and Navy logistics coordination elements to the Army TSC's five existing Area Support Groups, the JTSC will be capable of truly joint logistics support to a wide-range of contingencies. The USCENTCOM proposal also integrates 17 multi-service logisticians into various TSC modules to add Service expertise to joint logistics boards and planning cells. The availability of critical logistics data from ITV and GCSS make this joint logistics command and control possible.⁶⁶

Importantly, this organizational structure will retain the modularity of the Army's TSC design. It will be flexible and can be tailored for rapid deployment into theater in order to "maximize throughput and follow-on sustainment to all Services..."⁶⁷ Specific benefits of this proposed approach include:

- (1) Integration of multi-service logistics support capabilities that can support operations throughout the spectrum of military operations;
- (2) Enhanced command, control, coordination, and execution of support while eliminating redundant capabilities; and
- (3) Flexibility, which allows the JFC the option to tailor support forces to ensure mission success and reduce the AOR logistics "footprint."⁶⁸

In addition, the proposed task organization will synchronize joint logistics operations, centralize logistics command and control, and provide a single theater manager for combat service support.⁶⁹ With multi-Service representation on theater logistics boards, the JTSC can more effectively deconflict joint use of theater roads, rails, and ports. With a single commander for logistics, it will ensure the operation's TPFDD reflects accurate priority of movement for forces into the theater--regardless of Service. In short, the JTSC will enhance joint operational logistics unity of effort.

Despite the benefits to the JFC, it remains to be seen if the JTSC concept will be supported by the Services involved. The reasons are varied:

(1) The core of the JTSC is an Army organization, so its commander will almost always be the Army major general TSC commander.⁷⁰ Some would argue this will produce inter-Service friction, but the JFC could designate a senior, non-Army logistician as deputy to provide balance and an ear for staff officers from other Services.

(2) Services may be reluctant to provide personnel and resources to the JTSC at the expense of their organizations. In reality, the advantages outweigh the negatives. Attached to the JTSC, Service logisticians will have an operational voice at a higher echelon than in their equivalent component organization and will no longer coordinate their own resource requirements in a vacuum. Although the JTSC's first priority will, by design, be identical to the JFC's priority, the overall efficiency generated by the JTSC will benefit all Services.

(3) Some will argue the JFC's J4 staff already fulfills a joint operational logistics command and control role and the JTSC is not necessary.⁷¹ In *A Joint Logistics Roadmap*, the Joint Chiefs highlight the distinction between the two staffs by cautioning that a theater-level organization like the JTSC would not assume traditional combatant command J4 functions of plans, policy, or programs.⁷² The reverse is also true. During contingencies, J4 staffs must coordinate theater-strategic level issues with the Joint Staff and supporting commands and cannot focus solely on the details of operational execution.

(4) Finally, some will suggest ad hoc theater logistics organizations served well enough in the past—why change? This is flawed logic. In past wars, logistics problems were largely overcome by sheer mass—a solution that surely wasted resources and

transportation assets.⁷³ Unity of effort achieved through operational logistics unity of command will eliminate this problem.⁷⁴

Conclusion

Experience demonstrates the need for future operational-level logistics organizations to incorporate the functions of each Service. Joint doctrine already provides for command authority for logistics, but at present JFCs lack a modular, flexible organization for command of logistics at the operational level. The existing method of establishing ad hoc logistics command and control organizations will not succeed on the *JV 2010* battlefield.

Within the current force structure, the best solution is to expand the Army's TSC by integrating other Services' logistics functions. The resulting JTSC will provide the JFC with a single commander who has the scope and authority to manage theater logistics through all phases of a contingency and focus the entire logistics effort toward the highest priority. Most important, the JTSC creates a clear delineation of authority within the JFC's operational area to clarify who is charge of "making logistics happen."⁷⁵

Field Manual 100-5, *Operations*, best sums it up: "joint integration of logistics is crucial to unity of effort; . . . the concept of joint operational logistics cannot be fully realized until procedures are completely integrated."⁷⁶ Consolidation of Service logistics command and control will provide the JFC the best organizational structure to exercise directive authority for logistics. The JTSC approach offers the JFC a tremendous opportunity to achieve logistics unity of effort through effective unity of command.

APPENDIX A

ARMY LOGISTICS SUPPORT TO OTHER SERVICES⁷⁷

Tasking Document	Support Responsibility
AR 40-905	Veterinary Support
DSD Memo	Mortuary Affairs
DODD 1315.06	Troop Construction Support to OCONUS USAF
DODD 2310	Executive Agent for DOD Enemy Prisoner of War Detainee Program
DODD 4500.09	Common-User Land Transportation in Overseas Areas
DODD 4500.09	Intermodal Container Management
DODD 4500.09	Overseas Ocean Terminal Operations
DODD 4525.06	Management of Military Postal Services
DODD 4705.01	Executive Agent for Land-Based Water Resources
DODD 5030.49	Executive Agent for the DOD Customs Inspection Program
DODDs 5160.65/5160.68	Management of Conventional Ammunition
DODI 4140.50	Locomotive Management
JP 4-01.5	Single Manager for Military Traffic Management
JP 4-02	Food Safety Service
JP 4-02.1	Single Integrated Medical Logistics Management
JP 4-03	Overland Petroleum Support Management
JP 4-06	Executive Agent for the Joint Mortuary Affairs Program

APPENDIX B

LIST OF ACRONYMS

AMC-LSE	Army Materiel Command Liaison Element
ASG	Area Support Group
CA BDE	Civil Affairs Brigade
CASCOM	Combined Arms Support Command
CHEM BDE	Chemical Brigade
CP HQ	Command Post Headquarters
DLA DCST	Defense Logistics Agency Defense Contracting Support Team
DOD	Department of Defense
EEM	Early Entry Module
FINCOM	Finance Command
FSSG	Force Support Service Group
ITV	In-Transit Visibility
JFC	Joint Force Commander
JLSC	Joint Logistics Support Command
JRSOI	Joint Reception, Staging, Onward Movement, and Integration
JTF	Joint Task Force
JTSC	Joint Theater Support Command
<i>JV 2010</i>	<i>Joint Vision 2010</i>
MEDCOM	Medical Command
MIL HIS DET	Military History Detachment
MMC	Materiel Management Center
MP BDE	Military Police Brigade
ORD GP	Ordnance Group
PERSCOM	Personnel Command
QM (POL) GP	Quartermaster (Petroleum, Oil, and Lubricants) Group
QM BN	Quartermaster Battalion
ROC	Rear Operations Center
SITREP	Situation Report
SUPCOM	Support Command
TAACOM	Theater Army Area Command
TMCA	Theater Movement Control Authority
TPFDD	Time-Phased Force and Deployment Data
TRANSCOM	Transportation Command
TSC	Theater Support Command
USAF	United States Air Force
USARCENT	United States Army Central Forces
USCENTCOM	United States Central Command
USMC	United States Marine Corps
USN	United States Navy

NOTES

- ¹ U.S. Joint Chiefs of Staff, *Doctrine for Joint Operations* (Joint Pub 3-0) (Washington, 1 February 1995), III-6.
- ² *Ibid.*, A-2.
- ³ Michael A. Salvi, "Within the Context of JV 2010, Is There a Requirement for a Theater-Level Joint Forces Logistics Commander and a Joint Theater Logistics Command?" (Unpublished Research Paper, U.S. Naval War College, Newport, RI: U.S. Naval War College, 5 February 1999), 1.
- ⁴ Jeffrey A. Brock, "Joint Theater Logistics Command and Control: A Progress Report for Military Logisticians," (Unpublished Research Paper, U.S. Naval War College, Newport, RI: 5 February 1999), 2.
- ⁵ U.S. Joint Chiefs of Staff, *Doctrine for Logistics Support of Joint Operations* (Joint Pub 4-0), v.
- ⁶ GCSS links Services' logistics command and control systems. At "In Search of Focused Logistics," *Joint Forces Quarterly* (Spring 1997), 126, Cusick and Pipp describe GCSS as "supporting the entire network from the source of supply to the point of need... it is intended to do for logisticians what the Global Command and Control System does for operators." Edward J. Shimko and Thet-Shay Nyunt, "GCSS-Army: Making the RML Happen," *Army Logistician*, January-February 1999, 20-23, also discuss GCSS.
- ⁷ Gary R. Engel, "Joint and Combined Theater Logistics—The Future Reality," *Army Logistician*, May-June 1999, 34.
- ⁸ U.S. Joint Chiefs of Staff, *Joint Vision 2010* (Washington, 1996), 1.
- ⁹ *Ibid.*, 24.
- ¹⁰ U.S. Joint Chiefs of Staff, *Concept for Future Joint Operations: Expanding Joint Vision 2010* (Washington, May 1997), 54-55.
- ¹¹ Refers to Alvin and Heidi Toffler's wave theory on the transformation of war. In contrast to First Wave (centered on agriculture) and Second Wave (powered by mass production and transportation), Third Wave war is powered by information, specialization, constant innovation, and systems integration. Third Wave military structures will have fewer organizational layers and seek increased precision and greater selectivity of targets to be effective. See S. M. Fenstermacher, "Does the Quadrennial Defense Review (QDR) Adequately Address Third Wave Logistics?" In *Chairman of the Joint Chiefs of Staff Strategy Essay Competition: Essays 1998* (Washington: National Defense University Press, 1998), 1, 5-17.
- ¹² John J. Cusick and Donald C. Pipp, "In Search of Focused Logistics," *Joint Forces Quarterly* (Spring 1997), 126.
- ¹³ U.S. Joint Chiefs of Staff, *Joint Vision 2010*, 8-9.
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