2004-12

Logistics support of naval expeditionary units

Perez, Robert; Nilsen, Jan; Tessier, Joel; Lugo, John

Monterey, California. Naval Postgraduate School

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

MBA PROFESSIONAL REPORT

Logistics Support of Naval Expeditionary Units

By: **CAPT Jan Nilsen, RNoAF**
LCDR Joel Tessier, USN
LCDR John Lugo, SC USN, and
LCDR Robert Perez, SC USN

December 2004

Advisors: **Nancy Roberts,**
Keebom Kang, and
Cory Yoder

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, 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** December 2004	**3. REPORT TYPE AND DATES COVERED** MBA Professional Report	
4. TITLE AND SUBTITLE: Logistics Support of Naval Expeditionary Units			**5. FUNDING NUMBERS**
6. AUTHORS: Jan Nilsen, Joel Tessier, John Lugo and Robert Perez			
7. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, CA 93943-5000			**8. PERFORMING ORGANIZATION REPORT NUMBER**
9. SPONSORING / MONITORING AGENCY NAME AND ADDRESS Naval Operational Logistics Support Center (NOLSC) Norfolk, Virginia			**10. SPONSORING / MONITORING AGENCY REPORT NUMBER**
11. SUPPLEMENTARY NOTES The views expressed in this report are those of the author(s) and do not reflect the official policy or position of the Department of Defense or the U.S. Government.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			**12b. DISTRIBUTION CODE**

13. ABSTRACT

This project is an assessment of the NAVCENT logistics system as it relates to support of naval expeditionary units such as Naval Construction Forces (NCF), Naval Special Warfare (NSW) forces, Explosive Ordnance Disposal (EOD) units, and Fleet Hospitals. Based on literature from strategic management, logistics, and supply chain management, the research evaluates the existing theater logistics capabilities and the requirements of the supported expeditionary units. Due to the current world situation and availability of information, the focus is on the U.S. Naval Forces Central Command (NAVCENT) Area o Responsibility (AOR). A key finding is that the NAVCENT logistics system is adequate, but inefficient. Adequacy points to the fact that the resources and capabilities are in place in theater, while the inefficiencies are explained by lack of execution. The report recommends increased integration, awareness and doctrinal understanding in order to improve the NAVCENT logistics system. Sponsorship is provided by the Naval Operational Logistics Support Center, a newly created organization that serves as the focal point for operational logistics in the Navy and Marine Corps.

14. SUBJECT TERMS Naval Expeditionary Logistics Support, NAVCENT Logistics, Naval Logistics for Shore Based Units, Organizational Systems Framework, Naval Special Warfare, Naval Construction Force, Explosive Ordnance Disposal, Fleet Hospital.	**15. NUMBER OF PAGES** 121
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	**18. SECURITY CLASSIFICATION OF THIS PAGE**	**19. SECURITY CLASSIFICATION OF ABSTRACT**	**20. LIMITATION OF ABSTRACT**
Unclassified	Unclassified	Unclassified	UL

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

LOGISTICS SUPPORT OF NAVAL EXPEDITIONARY UNITS

Captain Jan Nilsen, Royal Norwegian Air Force
Lieutenant Commander Joel Tessier, United States Navy
Lieutenant Commander John Lugo, Supply Corps, United States Navy
Lieutenant Commander Robert Perez, Supply Corps, United States Navy

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

NAVAL POSTGRADUATE SCHOOL
December 2004

Authors:

_____
Jan Nilsen, CAPT RNoAF

_____
Joel Tessier, LCDR USN

_____
John Lugo, LCDR SC USN

_____
Robert Perez, LCDR SC USN

Approved by:

_____
Professor Nancy Roberts

_____
Professor Keebom Kang

_____
Professor Cory Yoder

_____
Douglas A. Brook, Dean
Graduate School of Business and Public Policy

THIS PAGE INTENTIONALLY LEFT BLANK

LOGISTICS SUPPORT OF NAVAL EXPEDITIONARY UNITS

ABSTRACT

This project is an assessment of the NAVCENT logistics system as it relates to support of naval expeditionary units such as Naval Construction Forces (NCF), Naval Special Warfare (NSW) forces, Explosive Ordnance Disposal (EOD) units, and Fleet Hospitals. Based on literature from strategic management, logistics, and supply chain management, the research evaluates the existing theater logistics capabilities and the requirements of the supported expeditionary units. Due to the current world situation and availability of information, the focus is on the U.S. Naval Forces Central Command (NAVCENT) Area of Responsibility (AOR). A key finding is that the NAVCENT logistics system is adequate, but inefficient. Adequacy points to the fact that the resources and capabilities are in place in theater, while the inefficiencies are explained by lack of execution. The report recommends increased integration, awareness and doctrinal understanding in order to improve the NAVCENT logistics system. Sponsorship is provided by the Naval Operational Logistics Support Center, a newly created organization that serves as the focal point for operational logistics in the Navy and Marine Corps.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

The authors would like to thank several individuals and organizations for their assistance in completing this project. Specifically:

CAPT Bob Snyder, SC USN	ACOS for Logistics, Commander, US Third Fleet
CAPT Kurt Kunkle, SC USN	ACOS for Logistics, Commander, US Naval Forces Central Command
CAPT (Sel) Joe Hennessy, SC, USN	Director for Logistics Ops, NOLSC, Norfolk, VA
CDR Pierre Coulombe, SC USN	CO, Logistics Support Unit, NSW Group 1
CDR James Valovcin, SC, USN	N4, NFELC, Port Hueneme, CA
CDR Patricia Diggs, MSC USN (Ret)	Former Logistics Officer, Balboa Naval Hospital
LCDR Dave March, SC USN	LOC Chief, NOLSC, Norfolk, VA
LCDR Bob Winters, SC USN	US Naval Special Warfare Command
LCDR Ernest Fagan, SC USN	US Naval Special Warfare Command
LCDR Joel Baldwin, CEC, USN	N3, NFELC, Port Hueneme, CA
LCDR Mark Friermood, SC, USN	1ST Naval Construction Division, Norfolk, VA
LCDR Bill Hartmann, SC USN	Deputy, Fleet Hospital Program for Logistics, NMLC, FT Dietrick, MD
LCDR Mike Zanoli, MSC USN	Design Director, FHSO, Williamsburg, VA
LCDR (Sel) Corey Cook, SC USN	Director of Operations, FHSO, Williamsburg, VA
LCDR (Sel) Ron Kish, SC USN	Coalition Logistics Officer, COMUSNAVCENT
LT Carlos Gomez, SC USN	Supply Officer, Balboa Naval Hospital
LT Josh Malkin, CEC, USN	N3B, NFELC, Port Hueneme, CA
LTJG Parrish Guerrero, SC, USN	Supply Officer, 30 NCR, Pearl Harbor, Hawaii
BUC (SCW) Dan Jolin, USN	Deployed Projects Material Manager, 30 NCR Det., Port Hueneme, California

We would also like to thank our project advisors, Professors Keebom Kang, Nancy Roberts and Cory Yoder for the direction and guidance they provided.

THIS PAGE INTENTIONALLY LEFT BLANK

ABOUT THE AUTHORS

Jan E. Nilsen, Captain, Ground Based Air Defense Artillery, Royal Norwegian Air Force, received his Master of Business Administration degree (focus in Defense Systems Management) at the Naval Postgraduate School, Monterey, CA in December 2004. CAPT Nilsen completed his undergraduate studies at the Royal Norwegian Air Force Academy. Prior to his current assignment, CAPT Nilsen served in the Personnel Department of the Royal Norwegian Air Staff; as a Platoon Commander on Oerland Main Air Station; completed the advanced education program at the Norwegian Air Force Academy; and served as a Platoon Commander on Bardufoss Air Station. His next assignment is in the Strategic Planning Department of the Royal Norwegian Air Staff.

John S. Lugo, Lieutenant Commander, Supply Corps, United States Navy, received his Master of Business Administration degree (focus in Transportation Management) at the Naval Postgraduate School, Monterey, CA in December 2004. LCDR Lugo completed his undergraduate studies at Old Dominion University in Norfolk, VA. Prior to his current assignment, LCDR Lugo served as Supply Officer, USS O'KANE (DDG-77); Supply Officer, Naval Security Group Activity, Kunia and Kunia Regional Security Operations Center in Hawaii; and as Division Officer, USS KEARSARGE (LHD-3). His next assignment is at the Naval Operational Logistics Support Center (NOLSC) in Norfolk, VA.

Joel R. Tessier, Lieutenant Commander, United States Navy, an Aerospace Engineering Duty Officer (Maintenance), received his Master of Business Administration degree (focus in Material Logistics) at the Naval Postgraduate School, Monterey, CA in December 2004. LCDR Tessier completed his undergraduate studies at Rensselaer Polytechnic Institute in Troy, New York. Prior to his current assignment, LCDR Tessier served as Maintenance Officer for the *Eagles* of Strike Fighter Squadron ONE ONE FIVE (VFA-115); Maintenance Officer of the F/A-18E/F Fleet Introduction Team; Power Plants Division Officer of the Aircraft Intermediate Maintenance Department at NAS Lemoore; and as Asstistant Maintenance Officer for the *Royal Maces* of Strike Fighter Squadron TWO SEVEN (VFA-27) at NAF Atsugi, Japan. His next assignment is as the Air Wing Maintenance Officer of Carrier Air Wing FOURTEEN (CVW-14) embarked onboard the USS RONALD REAGAN (CVN-76).

Robert D. Perez, Lieutenant Commander, Supply Corps, United States Navy received his Master of Business degree (focus in Contract Management) at the Naval Postgraduate School, Monterey, CA in December 2004. LCDR Perez completed his undergraduate studies at the University of California in Los Angeles. Prior to his current assignment, LCDR Perez served as Supply Officer, USS REUBEN JAMES (FFG 57); and, prior to his lateral conversion to the supply community, as Staff Plans Officer, Naval Training Center, Great Lakes; Training Officer, USS PORTLAND (LSD-37); and Fire Control Officer, USS SACRAMENTO (AOE-1). His next assignment is an Administrative Contracting Officer position at the Defense Contract Management Agency (DCMA) office located at the Raytheon plant in Tucson, Arizona.

EXECUTIVE SUMMARY

This project establishes an analytical framework for identifying and discussing elements of logistics support of naval expeditionary forces. Although the findings have a broad application, focus is within the CENTCOM AOR. The research question is whether the existing logistics system is adequate for support of Naval Construction Forces (NCF), Naval Special Warfare (NSW) forces, Explosive Ordnance Disposal (EOD) units, and Fleet Hospitals.

Central to the study is the logistics system's contextual factors, the system design and its output variables. Contextual factors such as economic and social trends and key success factors make demands and place constraints on the logistics system, whereas doctrine provides critical guidance and direction to the system. The logistics system's design factors are its interdependent parts, meaning the tasks, technology, structures, people and processes that produce the goods and services. Finally, the output variables are the system's products, how it performs and how effective it is.

The project's goal is to identify potential areas within the NAVCENT logistics chain for improvement, restructuring, or realignment to better support the expeditionary units in the region. The project is sponsored by the Naval Operational Logistics Support Center, a newly created organization that serves as the focal point for operational logistics in the Navy and Marine Corps.

A key finding is that the NAVCENT logistics system is adequate, but inefficient. Adequacy points to the fact that the resources and capabilities are in place in theater, while the inefficiencies are explained by lack of execution. The report recommends increased integration, awareness and doctrinal understanding in order to improve the NAVCENT logistics system.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

A. OVERVIEW

This report is an assessment of the logistics infrastructure supporting expeditionary units such as Naval Construction Force (NCF), Naval Special Warfare (NSW) Forces, Explosive Ordnance Disposal (EOD) Units and Fleet Hospitals Elements. This research combines strategic, logistics, and supply chain management theory and practices to evaluate existing theater logistics capabilities and the requirements of the supported expeditionary units. Due to the current world situation and availability of information, this research is focused on the NAVCENT AOR. Naval Operational Logistics Support Center (NOLSC), a newly created organization that serves as the focal point for operational logistics in the Navy and Marine Corps, is the sponsor for the project.

The topic is important for several reasons. First, lessons learned from recent operations demonstrate that there is room for improvement in the existing logistic system. Second, the new threats and corresponding refinement of doctrine and concepts of operations lead to new requirements for logistics support, configuration of customers and service providers. Finally, these elements make command and control of logistics support, inter- and intra-theater, more complex. This research considers whether there is a need for a new, coordinating mechanism in the intra-theater logistics system to improve existing practices.

Consequently, the research question asks whether there are potential areas within the NAVCENT logistics system to target for improvement, restructuring or realignment to better support the expeditionary units in the region. The report is structured in four chapters. This chapter provides an overview of the research. Chapter II provides background information. Chapter III is the analysis section and Chapter IV is the findings and recommendations.

B. PROBLEM DEFINITION

Logistics support is critical for combat readiness and effectiveness. As a force multiplier in military operations, the structure and quality of this logistics support system influences the War-fighter's ability to execute their mission and achieve their military objective. Military logisticians are faced with delivering the right support in the right quantity at the right place and time with a reduced logistics footprint, operating in austere environments with limited infrastructure, and through a very complex logistics supply chain with a high degree of uncertainty/variability in demand and lead times, as the speed of advance of the operational forces increases with today's technological advances.

This research assesses the logistics system supporting naval expeditionary units in the NAVCENT AOR. Our research method included site visits, discussions, lessons learned collection and an extensive literature review. This report addresses significant elements of the existing logistics system, including the roles and relationships of its service providers and customers, as described in existing Navy and joint doctrine.

The existing research and knowledge base on Navy logistics systems covers a variety of relevant aspects of logistics support. However, a comprehensive approach to the structures and players within the system seems to be missing. Thus, this report combines strategic management, logistics, and supply chain management theories to provide relevant knowledge and recommendations for future improvements to the naval logistics support system for expeditionary forces.

NOLSC identified a potential requirement to establish a logistics support mechanism to support integrated expeditionary units operating independently from the established theater logistics system. In support of this, the research question is as follows:

Is the existing Navy logistics system adequate to support naval expeditionary forces such as NCF, NSW, EOD and Fleet Hospitals?

Based on an organizational system framework analysis, the report concludes with recommendations to better leverage existing resources and capabilities to improve and streamline an already professional system.

II. BACKGROUND

A. LOGISTICS OVERVIEW

The overall logistics system ensures that joint theater logistics is functioning efficiently. A crucial element of the logistics system is the timely integration of the inter-theater and intra-theater transportation of personnel, equipment and material to and within the theater. Rapid movement of these elements is essential to the success of operations in the field. The process begins in CONUS at the Point of Embarkation (POE) and ends in the operational areas within individual theaters. Before commencing operations, the combatant commander and logistics planners need to balance objectives, scheme of maneuver and operational timing with logistics capabilities in an effort to bridge any operational-logistic gap. The functions of logistics, extending operational reach, and applied operational logistics, shape and influence the effectiveness of the theater logistics system. As a note, specific considerations in developing a logistics system such as geography, transportation, logistics capability, logistics enhancement, logistics infrastructure protection, echelon of support, assignment of responsibility, and the availability of host-nation and allied support are not included in this discussion, although their overall importance in joint theater logistics should not be ignored.

1. Functions of Logistics

Six logistic functional areas influence the logistics system. They are: Supply, Transportation, Civil Engineering, Health Services, Maintenance, and Other Services. Theater logistics support planers must consider all of these functions when developing a theater logistics support system. In general, combatant commanders plan and coordinate this system, while service component commanders provide services and execute the system.

Combatant commanders and their planning staffs will determine and designate those categories of supplies and services that should be considered for common-user support. While designation of common-user support does not relieve components of providing Service-peculiar supplies and services, the staff assessment will identify economies resulting from consolidating resources or tasking one or more components to

provide common-user support to the remainder of the joint force.[1] Common-user logistics sources of authority include DoD directives and instructions that assign common-user logistic executive agent responsibilities; Inter-Service support agreements (ISSAs); acquisition and cross-servicing agreements (ACSAs); and combatant commander and subordinate Joint Force Commander (JFC) operational plans (OPLANS) and /or operation orders (OPORDs) and directives.[2]

Commander, U.S. Transportation Command's (USTRANSCOM) mission is to provide strategic common-user air, land and sea transportation to deploy, employ, sustain and redeploy military forces to meet national security objective across the range of military operations.[3] It is comprised of the Air Mobility Command (AMC), Military Sealift Command (MSC), and Surface Deployment and Distribution Command (SDDC). USTRANSCOM normally functions as the supporting command to the geographic commander and serves as the single manager for common-user ports.[4] Each Service-specific theater distribution network will use organic transportation resources that are under the operational control of the theater Service component. Combatant commanders may request USTRANSCOM to operate dedicated express transportation to in-theater destinations different from usual aerial and surface points of debarkation.

For brevity, this research paper limits the engineering planning discussion to the following areas only: Base Development, Facilities Construction and Base Maintenance and Assignment of Facilities. Combatant commanders are responsible for any base development necessary to accomplish the mission.[5] Staff planners will assist the combatant commander with prioritizing, planning and coordinating the construction and maintenance of the logistics infrastructure necessary to support the mission. The assignment of facilities including facility acquisition and funding rests with the

---

1 US DoD, (2000), Joint Doctrine Publication 4-0, Logistics Support of Joint Operation.

2 US DoD, (2001), Joint Doctrine Publication 4-07, Joint Tactics, Techniques, and Procedures for Common-User Logistics During Joint Operations.

3 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

4 Ibid.

5 Ibid.

designated Service. Geographic combatant commanders should ensure that minimum essential engineering capabilities and facilities required to support theater operational and tactical requirements are assigned to the Service components.[6]

Combatant commanders are responsible for coordinating and integrating health service support (HSS) within their respective theaters. Where practical, joint use of available medical assets will be accomplished to support the war-fighting strategy and concept of operations.[7] They are also responsible for maintenance and salvage efforts in their theater of operations. Where practical, maintenance facilities for joint or cross-Service use should be established and inter-Service use of salvage assets should be emphasized.[8] However, Service component commanders should retain responsibility for Service specific item maintenance support.

Other Logistic services include food service, exchange, billeting, textile, laundry and shower, religious, postal and finance. Each Service component commander will provide these services to personnel that fall under their command.

2. Extending Operational Reach

When the theater logistics system is developed and is operating efficiently, the planner may be faced with the need to extend capabilities. This scenario occurs when the operational forces actually extend their areas of operation, and is referred to as "operational reach." Operational reach is the distance over which the military forces are concentrated. It is vital that the operational and logistical elements understand "operational reach" and be in continuous communication. If the combat forces extended their reach and lines of communication (LOC) without the proper logistical support, the military advancement can fail. The logistical elements must be prepared to utilize all assets available to provide an adequate level of sustainment to combat forces. The operational reach of a force can be improved by establishing advanced bases and depots for material or by increasing the security and efficiency of the logistics process and LOCs.

---

6 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

7 Ibid.

8 Ibid

3. Joint Theater Logistics

Joint warfare requires unity of effort to maximize combat capability to achieve national objectives in the shortest time possible. The relative combat power that military forces can bring to bear against an enemy is constrained by a nation's capability to plan for, gain access to, and deliver forces and materiel to the required points of application across the range of military operations.[9] Logistics planning is critical in support of military operations and must be considered at the strategic, operational and tactical levels. Combatant commanders, joint force and theater level service component commanders and support commands need to link strategic, operational and tactical level logistics to meet mission and operational tasking.

Joint theater logistics is the concept of utilizing logistics resources to generate and support theater combat forces. It is the responsibility of the combatant commander to ensure that the plan for using available resources is in balance with his operational plan. In doing so, the combatant commander can manage the gap between operations and logistics. He does so by maintaining close cooperation between the two, as well as by fostering an understanding of the mission assigned.

Although the Service component commanders provide logistics resources, the combatant commanders are responsible for ensuring that the overall plan for using these resources supports their theater concept of operations.[10]

4. Naval Expeditionary Logistics

Naval expeditionary logistics is about moving naval forces and sustaining their operations in a broad array of environments, including political and military, from benign environments with relatively well developed infrastructures to more stressful situations involving forcible entry and limited infrastructures.[11] For the purpose of this report, the

---

9 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

10 Ibid.

11 Naval Studies Board (1999), *Naval Expeditionary Logistics, Enabling Operational Maneuver From the Sea,* http://www.books.nap.edu/html/naval. Retrieved on September 22, 2004.

research examines the following expeditionary forces: NSW, NCF, EOD and Fleet Hospitals with the intent of evaluating the theater logistics system supporting these specific forces.

5. Operational Logistics

Operational logistics affects the sustainability of expeditionary forces operating at the tactical level of war. It involves coordinating and providing intra-theater logistic resources to operating forces, and primarily concerns the Unified combatant commanders and the Service component commanders.[12] At the operational level of logistic support, planners coordinate and execute the movement of material, equipment and personnel to provide indirect or direct war-fighter support to expeditionary forces so that that they can accomplish assigned tasks. In other words, operational logistics is delivering the right amount of supplies at the right time to support operations. It is accomplished by intra-theater strategic movement to points of debarkation such as a naval logistics support hubs or nodes, intra-theater movement to distribution centers, and tactical movement and distribution to expeditionary force end users by air, land and/or sea modes of transportation. Effective operational logistics enables the logistics system to be responsive and adaptive and extends the operational reach of expeditionary forces at-sea or ashore.

Applied Operational Logistics encompasses logistics as a force multiplier, a deterrent, and a contributor to flexibility. Any small advantage gained over the enemy can prove to be extremely beneficial as a force multiplier. Logistics plays an important role in obtaining that advantage by reducing support and response times and increasing force sustainment. For example, logistics elements that are deployed with the initial combat forces will enable those forces to quickly become operationally ready-for-combat and will enhance the sustainment of those forces to project power in the early stages of an operation. U.S. military presence in itself can be used as a sign of deterrence. The use of Ready Reserve Force (RRF) and the pre-positioning of ships near the AOR can deter opposing forces from entering the conflict. These logistical forces symbolize how quickly logistics can be on the scene to support the combat forces. Lastly, logistics can contribute

12 US DoN, (1995), Naval Doctrine Publication 4 *Naval Logistics.*

considerably to a Commander's flexibility. If the logistics planner has infrastructures, contracts and host nation agreements in place before a conflict begins, the combatant commander's operational flexibility will be enhanced, allowing him to have the maximum forces available for combat operations. More importantly, the logistics planner must remain flexible throughout the conflict, by anticipating and providing support for the next phase in the operational plan. It is imperative for the logistics planner to consider the effects that failure, success, and change have on the logistics system. Developing this flexibility is crucial because the management of change is the key to timely support and response.[13]

B. NAVAL FORCES, CENTRAL COMMAND, LOGISTICS SYSTEM

Theater transportation and distribution is a critical link in getting material from major supply depots, bases, and manufacturers in the United States to the front-line war-fighter. The Navy faces the challenge of providing a robust transportation network capable of supplying naval forces at sea or deployed on shore. Post September 11th, Navy forces have taken on the expanded role of shore basing expeditionary forces in support of all operational levels in the combined, joint and Service related environments.[14] To do this, NAVCENT has developed a complex theater transportation network with elements of strategic and operational transportation on the sea, in the air, and on land. Within the naval component, NAVCENT exercises control over naval logistics through its subordinate command, Commander, Logistics Forces, U.S. Naval Forces Central Command (COMLOGFORNAVCENT) and Commander, Task Force FIVE THREE (CTF-53). CTF-53 Operations established priorities[15] for all material movement within NAVCENT, including that moved by air.

COMLOGFORNAVCENT is an Echelon III command reporting directly to NAVCENT and is assigned duties as Commander, Task Force FIVE THREE (CTF-53)

---

13 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations*.

14 US DoN, (1999), Naval Warfare Publication 4-01.1, Naval Expeditionary Shore Based Logistic Support And Reception, Staging, Onward Movement, And Integration Operations.

15 Pike, J. (n.d.) Commander Logistics Force (COMLOGNAVFORCENT) Commander, Task Force 53 (CTF-53). http://www.globalsecurity.org/military/agency/navy/ctf-53.htm. Retrieved on July 22, 2004.

within the NAVCENT Task Force organization.[16] COMLOGFORNAVCENT/CTF-53 is headquartered in Manama, Bahrain, the logistics hub in the NAVCENT AOR. The organization is responsible for all operational logistics in support of the naval forces operating within the CENTCOM AOR. This AOR includes approximately 7.5 million square miles and encompasses eastern Africa, the Middle East and Southwest Asia. The mission of COMLOGFORNAVCENT/CTF-53 is to integrate and coordinate logistics for theater operations during peacetime and war.[17]

COMLOGFORNAVCENT has developed a robust capability of supporting operational logistics within the CENTCOM AOR by means of a mature distribution network that includes air, land and sea transportation modes. Within this theater distribution network there are permanent and temporary air, land and sea distribution nodes that facilitate the timely movement of passengers, mail and cargo to end user units. Combined Task Force FIVE THREE (CTF-53) provides operational logistics in support of all naval units assigned to the NAVCENT AOR. They are assigned tactical control of maritime logistics support assets and administer the naval intra-theater air and surface logistics distribution network. They act as the service provider for fuel, food provisions, procurement and contracting and ship's maintenance. CTF-53 is also responsible for providing oversight, tracking and expediting of high priority parts for surface and aviation units, ordnance management, hazardous material management and general aviation support. COMLOGFORNAVCENT/CTF-53 is comprised of Combined Task Group (CTG 53.x) organizations, as depicted in Figure 1, which are responsible for accomplishing theater-wide missions.

16 Ibid.

17 Nash, M. (2000), *COMLOGFORNAVCENT/CTF-53…Integrated Logistics for USN/USMC Forces in the NAVCENT AOR*, Supply Corps News Letter, 1, http://www.navsup.navy/npi/lintest/julaug2000/nash.htm. Retrieved on July 29, 2004.

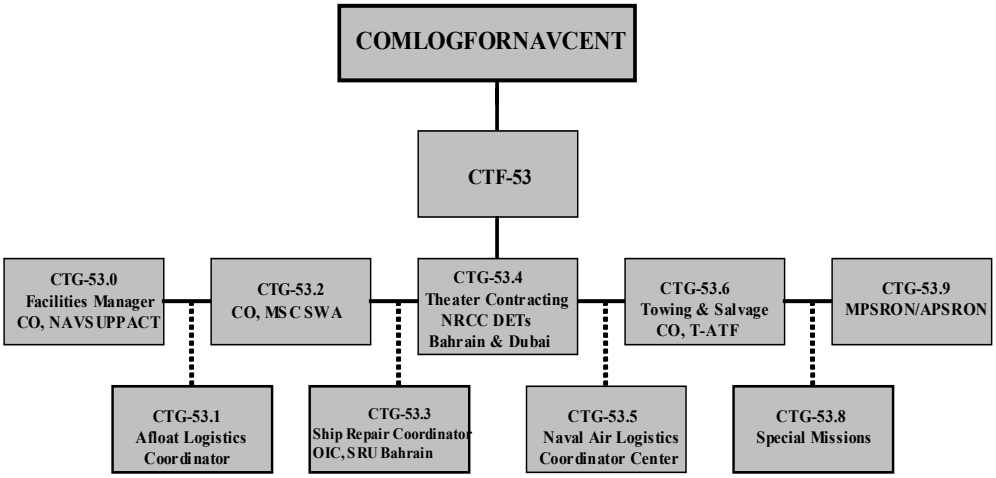


Figure 1. COMLOGFORNAVCENT Organizational Chart

CTG-53.0, the Naval Support Activity facilities manager, is responsible for all operational and administrative functions assigned by the Naval Support Activity, Commanding Officer.

CTG-53.1, the Afloat Force Logistics Coordinator (AFLC), is usually the on station T-AFS. The AFLC employs and monitors Force Logistics Coordinator (FLC) policy and guidance in the coordination with afloat Task Forces or Task Group commanders.

CTG-53.2, the Military Sealift Command (MSC) South West Asia Commanding Officer, provides oversight to USNS Combat Logistics Force ships and various oceanographic survey vessels.

CTG-53.3, the Ship Repair Coordinator Officer-In-Charge of Ship Repair Unit Bahrain, coordinates all in-theater ship repair and technician assist visits.

CTG-53.4, the Naval Regional Contracting Center (NRCC) liaison Officer-In-Charge of the Bahrain detachment, provides contracting and procurement support for naval units deployed in NAVCENT.

CTG-53.5, the Naval Air Logistics Coordination Center Southwest Asia (NALCC SWA), provides and maintains the air logistics system for NAVCENT.

CTG-53.6, the Towing and Salvage Officer, is primarily responsible for all towing and salvaging operations in NAVCENT.

CTG-53.8 is assigned by COMLOGFORNAVCENT to execute special missions.

CTG-53.9, the Afloat Pre-positioning Ship Squadron Commodore, commands a squadron of MSC vessels with a load-out of pre-positioned war material used by the United States forces.

C. NAVAL EXPEDITIONARY FORCES

Naval expeditionary forces are those Navy and Marine Corps forces that are self-reliant, self-sustaining and capable of conducting operations in the most austere environments. They are tailored economical force packages that can accomplish the mission without having to wait for additional assets or personnel.[18]

1. Naval Special Warfare (NSW)

NSW Forces serve as the Navy component to U.S. Special Operations Command (SOCOM). As the Naval Component to SOCOM, Naval Special Warfare Command (NAVSPECWARCOM) is composed of approximately 5,400 active and reserve operational and support personnel, which include Naval Special Warfare Groups (NSWG), Sea-Air-Land (SEAL) teams, SEAL Delivery Vehicle (SDV) Teams, and Special Boat Teams (SBT)[19] (See Figure 2). NSW manning levels will increase 6% to 8% in FY 05 and 06. Their mission is to provide vision, leadership, doctrinal guidance, resources and oversight to ensure component maritime special operations forces are ready to meet the operational requirements of combatant commanders.[20] These forces are primarily responsible for the following mission areas which are prioritized by the respective geographical combatant commander in which the missions are executed:

---

18 Secretary of the Navy. (1996). Annual Report to the President and the Congress, http://www.nova.edu/library/dils/lessons/apa/print.htm. Retrieved on July 22, 2004.

19 US Naval War College, (2003), Joint Military Operations Reference Guide, *Forces/Capabilities Handbook.*

20 US DoN, Naval Special Warfare Command Web Site. (n.d.), *Naval Special Warfare Command,* http://www.navsoc.navy.mil/navsoc_missions.asp. Retrieved on July 29, 2004.

special reconnaissance, direction action, unconventional warfare, information warfare, counter-drug operations, personnel recovery, hydrographic reconnaissance, foreign internal defense and counter terrorism.

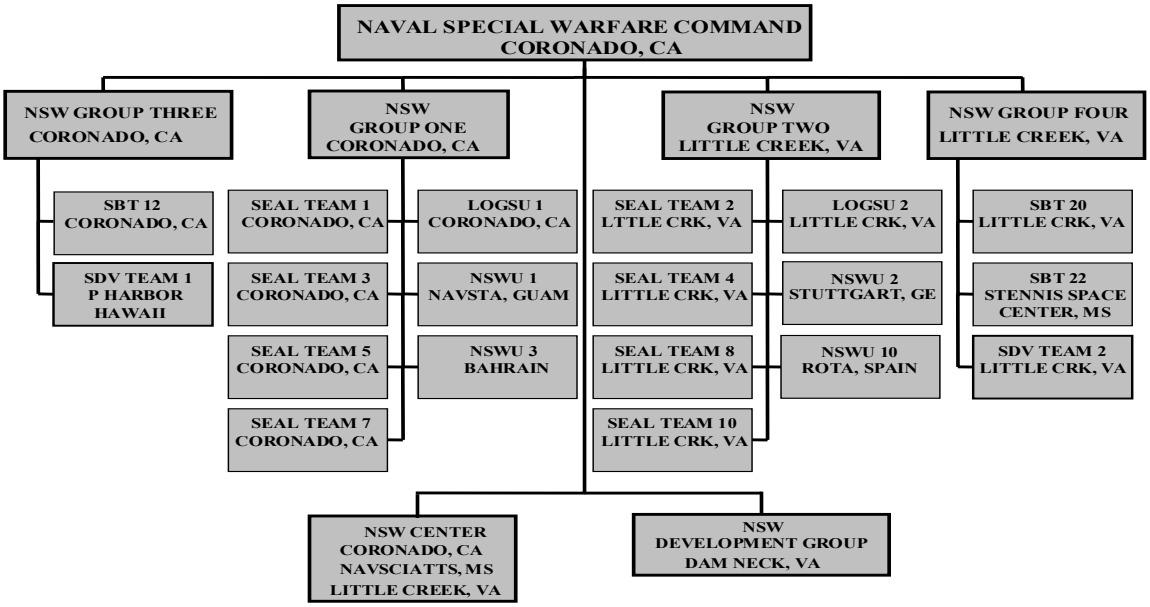


Figure 2. NSW Organizational Chart

a. Community Organization

NSW forces are organized into four operational components better known as NSWGs and are located on both the East and West Coast. Each NSWG must train, equip, deploy and support forces to conduct regular deployments, exercises, and contingency operations for theater Combatant Commanders.[21] They maintain operational control over assigned CONUS-based NSW forces and administrative control over all assigned forces as echelon III commanders within the Navy chain of command.[22]

Each NSWG is comprised of various teams, units and elements with tailored capabilities and support functions that shape the overall NSWG organization**.** SEAL Teams are CONUS-based commands established to train, equip, deploy and support SEAL platoons to conduct NSW in support of joint and fleet commanders. Each

21 US DoN, Naval War College, (2003), Joint Military Operations Reference Guide, *Forces/Capabilities Handbook.*

22 Ibid.

Team is comprised of eight platoons composed of two officers and 14 enlisted special operations personnel and requisite support personnel.[23] SDV Teams are regionally oriented based commands established to operate, deploy, support and maintain submersible systems that deliver and recover special operations forces (SOF) in hostile or denied areas and conduct limited reconnaissance and direct action missions.[24] Normally, each team is comprised of a headquarters and support element and three task units. SB Teams are CONUS based commands established to operate, deploy, support, and maintain special operations craft to provide maritime mobility for SOF.[25] Their missions include SEAL insertion and extraction support, coastal patrol and interdiction, riverine warfare and other support operations.[26] Also, assigned to each of the Groups are Naval Special Warfare Units, which are small command and control elements, located outside CONUS that primarily support those NSW forces that are assigned to theater special operations commands such as SOCCENT or components of naval task forces. Logistics Support Units (LOGSU) are also regionally-oriented on the East and West Coast and provide full logistics support to their respective NSWG and its components in direct support of NSW operations. As service providers, LOGSUs perform integrated logistics support in the following functional areas: supply, combat service support, contracting service, combat systems, facilities management, medical, communications and transportation. For the purposes of this report, the Naval Special Warfare Development Group and Naval Special Warfare Center are not discussed although we do not want to underscore the importance of these organizations and the contributions they make to the NSW community.

2. Explosive Ordnance Disposal (EOD)

EOD units are an integral element of the Navy's expeditionary forces. The community consists of approximately 2,000 men and women, who are trained to tackle the global spectrum of threats, from conventional ordnance to nuclear, chemical and biological weapons.

---

23 Ibid.

24 Ibid.

25 Ibid.

26 Ibid.

More specifically, EOD units are trained to execute four general categories of missions throughout the world. That is, to enhance ship war fighting abilities and survivability through integration into Carrier and Expeditionary Strike Groups, conduct Mine Countermeasure operations, support US Secret Service and FBI missions, and operate and maintain the fleet's various Marine Mammal Systems which conduct mine countermeasures, port security and underwater object location operations. Currently, US Navy has ten active units, four reserve units and two training units.

a. Community Organization

The Navy's operational EOD force is organized at three levels; groups (EODGRUs), mobile units (EODMUs) and detachments (EOD DETS). The community is divided into two groups, with EODGRU ONE at San Diego, California (Naval Amphibious Base Coronado) and EODGRU TWO at Norfolk, Virginia (Naval Amphibious Base Little Creek). EOD GRU ONE reports to the Commander, Naval Surface Forces Pacific, whereas EODGRU TWO reports to the Commander, Naval Surface Forces Atlantic.

Each group has several mobile units and detachments located at naval facilities throughout its AOR. Under deployment, individual units and detachments come under operational command of regional commanders-in-chief and supporting command organizations.

Additionally, each EOD Group has a training and evaluation unit (EODTEU) to provide advanced training in render-safe, diving, demolition and mobility techniques and to evaluate new tactics, techniques, tools and procedures.

The active-force EOD detachment is the basic operational unit, comprising Mobile, Shore-Based, Mine Countermeasures and Marine Mammal Systems teams. All are structured for rapid "fly-away" responses to emergencies. There are also three types of Naval Reserve Force (NRF) detachments. That is, Ordnance Clearance, Area Search and Mobile Communications. Figure 3 provides an overview of the current EODGRU organization.

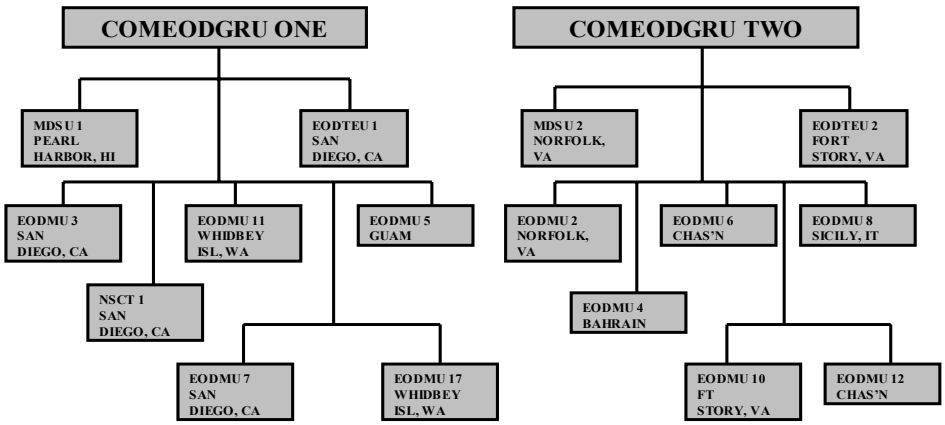


Figure 3. EODGRU Organizational Chart[27]

3. Naval Construction Force (NCF)

The Naval Construction Force (NCF), or SEABEE's, is the combat civil engineering component of the Navy. The SEABEE's provide expeditionary civil engineering and combat construction to Navy and Marine Corps operating forces[28], including horizontal and vertical construction, construction and operation of expeditionary facilities, amphibious and underwater construction, expeditionary logistics over the shore, and defensive combat capability.

NCF units deploy independently or in support of other forces, performing civil engineering and construction projects in support of combat operations, forward basing, civil reconstruction, and humanitarian assistance. Focused on supporting a "customer," much of the NCF's deployed operations are in support of other forces, such as the Marine Corps, Naval Special Warfare, Fleet Hospitals, Navy and Marine Corps expeditionary aviation units, and the Naval Expeditionary Logistics Support Force. In the joint arena, NCF units can support combat forces of other services, at the discretion of a theater combatant commander, or other governmental agencies outside of the Department of Defense, as well as provide humanitarian assistance to local foreign nationals.

27 US DoN, Expeditionary Support Policy Council, (2004), *MARFPCOM Brief.*

28 US DoN, Naval Facility Engineering Command brief, (2004), *SEABEE Resources and Logistics (SRL)*.

a. Community Organization

The Naval Construction Force is organized under the 1st Naval Construction Division (1 NCD), based in Norfolk, Virginia. As the type commander for the SEABEE's, the Division's commander also holds the title of Commander, Naval Construction Force. The Force is divided between one active regiment in the Atlantic and Pacific Fleets, and four more regiments in the Naval Reserve. Most Atlantic Fleet units are based in Gulfport, Mississippi, under the command of the 22nd Naval Construction Regiment (22 NCR) at Norfolk, Virginia. Pacific Fleet units are based in Port Hueneme, California, and under the command of 30 NCR at Pearl Harbor, Hawaii. Two SEABEE Readiness Groups (SRG) also provide training, logistics, and mobilization support to NCF units in Gulfport and Port Hueneme.

Within the regiments, the main operational NCF unit is the Naval Mobile Construction Battalion (NMCB). There are four Construction Battalions in each regiment, as well as twelve more in the Naval Reserve. Other deploying units include Underwater Construction Teams (UCT) and Amphibious Construction Battalions (ACB), with one of each based at Little Creek, Virginia, and Coronado, California. The Naval Reserve provides Naval Construction Force Support Units (NCFSU) and Construction Battalion Maintenance Units (CBMU) for logistics and maintenance support to the active battalions when deployed. Finally, Construction Battalion Units (CBU) are non-deploying units disbursed at various fleet bases to provide local, organic construction and civil engineering support to those bases.

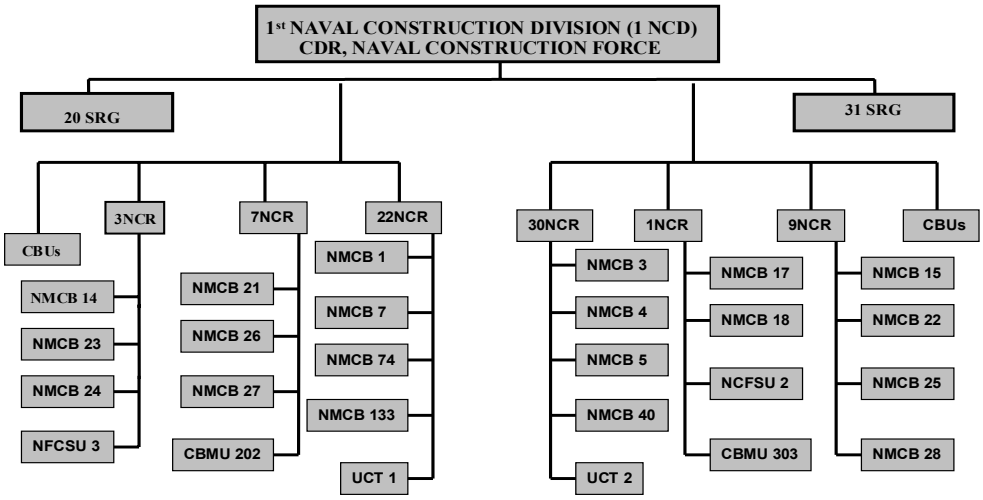


Figure 4. NCF Organizational Chart

SRG SEABEE Readiness Group
NCR Naval Construction Regiment
NMCB Naval Mobile Construction Battalion
CBU Construction Battalion Unit
UCT Underwater Construction Team

NOTE: Units from the 1st, 3rd, 7th and 9th NCR are reserve units.

The systems command for the NCF is the Naval Facilities Engineering Command (NAVFAC), based in Norfolk. NAVFAC provides support for all civil engineering and construction functions within the Navy, including military construction, public works, and combat engineering and construction. Naval Facilities Expeditionary Logistics Center (NFELC), at Port Hueneme, provides materiel, life cycle support, and training development to support the Naval Construction Force and other naval expeditionary units. NFELC manages over $1 billion in inventory in support of SEABEE operations, including procurement and sustainment of Civil Engineering Support Equipment (CESE), logistics information systems, Class IV building materials, weapons, personal combat equipment, and Maritime Pre-positioning Force (MPF) equipment. NFELC is the main point for coordination of logistics support for deployed NCF units, including mobilization, sustainment while deployed, redeployment, and demobilization.

4. Fleet Hospitals

The Fleet Hospital's primary mission is to provide a standardized, modular, flexible ashore combat service support medical/dental capability to support Marine Corps Air/Ground Task Forces deployed ashore, naval amphibious task force units deployed ashore, and forward deployed Navy elements of the Fleet, Army, and Air Force units deployed ashore. Operations are governed by the principles of the "Geneva Convention for the Amelioration of the condition of the wounded and sick in Armed Forces in the field of August 12, 1949."[29] As a secondary mission, the Fleet Hospital is capable of providing hospital services for use by U.S. government agencies involved in disaster or humanitarian relief or limited humanitarian care incident to these missions or peacetime military operations.

Fleet Hospitals deploy as medical facilities capable of performing level three medical care in designated non-combat zones. Level three medical care is defined as clinical care normally found in a facility that is typically located in a reduced-level enemy threat environment, has equipment and staffing to provide resuscitation, initial wound surgery and postoperative treatment. Level three facilities may be the first step toward restoration of functional health, as compared to procedures that stabilize a condition to prolong life.[30]

a. Community Organization

The Fleet Hospital program is comprised of 6 active duty and 2 reserve manpower units. Active duty units are based out of the following naval hospitals: Bremerton, Jacksonville, Pensacola, Portsmouth, Camp Lejuene, and Camp Pendelton. When not in a deployed status, these Fleet Hospital units work for their respective naval hospital facilities and follow their duty station's chain of command. The two reserve units are based out of naval hospitals Great Lakes and Dallas. In a non-deployment status, these units fall under their local reserve center and regional reserve readiness command for administrative support.

---

29 US DoN, (1998), OPNAVINST 3501.176B Projected Operational Environment for Navy Fleet Hospitals.

30 US DoN, (1995), Naval Warfare Publication 4-02.4 Part A, *Fleet Hospitals.*

The Fleet Hospital commands consist of over 1,000 medical, dental, supply and construction battalion personnel and have the capability to build and maintain a 500 bed hospital, which includes six operating tables (three O.R. shelters with two tables each), laboratory, radiology, X-ray, pharmacy, triage, biomedical repair, Preventive Medicine, Central Sterilization, troop housing, and galley facilities.[31] These units deploy with all medical and construction equipment and supply consumables required to build, operate and, maintain a fully functional medical center capable of providing level three medical care for the first thirty days of operation, with the exception of the hospital's fuel and water requirements which are provided by designated logistical support elements in-theater.

D. SUMMARY

Military logisticians are faced with delivering the right support with the right quantity at the right place and time in a reduced logistics footprint, operating in austere environments with limited infrastructure and a logistics supply chain that is very complex with a high demand of uncertainty/variability and longer than usual lead times as the speed of advance of the operational forces increases with today's technological advances. The following chapter provides a gap analysis of naval expeditionary community requirements and the logistics system capabilities to meet these requirements using the Organizational Systems Framework.

31 US DoN, (1998), OPNAVINST 3501.176B, Required Operational Capabilities for Navy Fleet Hospitals.

THIS PAGE INTENTIONALLY LEFT BLANK

III. SYSTEM DESCRIPTION

A. THE ORGANIZATIONAL SYSTEMS FRAMEWORK

The model for this analysis is the Organizational Systems Framework (OSF)[32]. It describes the organization as an open system with interdependent parts that should be well aligned and with congruent parts. Accordingly, misaligned parts reduce system efficiency and effectiveness. This report focuses on the Navy logistics system as the unit of analysis.

The system perspective is based on a number of assumptions. First, it assumes that there is constant interaction between the organization as a system and its environment. As the environment changes, the organization must also adapt to survive and vice versa. Second, organizational survival depends on converting environmental inputs into organizational outputs. This conversion process is referred to as throughput and describes how the organization and its design factors transform energy and information from inputs to outputs. Third, organizational outputs provide feedback to judge organizational performance. Output is defined as culture, basic goods or services and goal attainment. Finally, changes in one part of the system have effects throughout the organization. In other words, interventions create ripple effects independent of the intended purpose. Figure 5 provides a basic outline of the model.

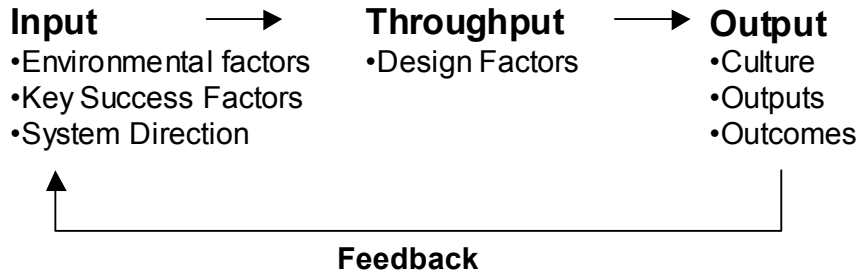


Figure 5. A Basic Outline of the Organizational Systems Framework

32 Roberts, N., Naval Postgraduate School, Monterey, CA, (2004), Strategic Management Lecture, *Organizational Systems Framework.*

B. INPUTS TO THE SYSTEM

An analysis based on the OSF starts with mapping out the inputs to the logistics system. System inputs can be viewed as the factors that make up the givens facing the organization. They are the material that the organization has to work with, and represent three main categories. First, one considers the external environment and context in which the organization operates. Next, the key factors for measuring success are identified and understood. Finally, every system will get implicit or explicit direction from external forces or stakeholders. A proper analysis will consider this direction and its impact on the organization's fundamental parts. The subsequent section elaborates on these input variables. The terms "system" and "organization" are used interchangeably, and have the same meaning.

1. Environment and Context

The environment in which a system operates is made of various external factors and influences. Some of these are physical, such as the climate and physical environment. Others are less substantive, such as political, economic, social, and technological trends that influence the organization or the industry it operates in.

When considering the logistics system supporting naval expeditionary forces, the physical environment is that of combat operations while deployed ashore in the Central Command area of responsibility. This environment provides two specific influences on the logistics system. First, the physical hazard of combat is a factor that can adversely affect the efficiency of the system. Second, deployed operations ashore mean that the customer, i.e., the expeditionary forces, is operating away from their normal lines of supply.

An optimal logistics system relies on clear and speedy lines of communication and distribution. However, force protection requirements in a combat zone further degrade and complicate the system. For example, physical lines of distribution should be direct from source to destination by the shortest possible route. This is not always possible in a combat zone, where routes may need to vary for unpredictability, or take detours around trouble spots. Furthermore, physical destruction of shipments produces an even greater variability on delivery time.

Combat operations affect variability of demand, also. Most demand models are based on relatively consistent usage patterns. For example, spare parts consumption for equipment is based on failure rates over a given period of operating hours or cycles. Anticipated operating tempo (operating hours per day, month, etc.), or OPTEMPO, can help predict how many parts may be needed for a given deployment. However, combat conditions can produce much greater variability in this operating tempo, making accurate predictions much more difficult. Furthermore, OPTEMPO itself can be variable as units surge forward on an offensive, and then bed down for a period of relative inactivity. In addition, combat losses and battle damage repair can create a demand for material that is very different from peacetime demands, and very difficult to predict through modeling or other forecasting techniques.

All of these changes are compounded when the expeditionary forces are deployed away from their normal sources of logistics support. The existing processes and relationships they rely on in homeport may be different or non-existent when deployed to NAVCENT. New relationships must be established and new processes learned. The change also affects the NAVCENT service providers, as they now support different customers than they may be normally accustomed to.

Other environmental factors may be more broad-based and strategic. For example, current trends and initiatives in the Department of Defense, such as Transformation, have an impact on this system. The requirements for "Jointness" in interoperability and other aspects also influence the logistics system. Finally, budget constraints are a constant fact that must be dealt with.

All of these aspects of the external environment will be discussed in greater detail later in the analysis, as they relate to the alignment of the system's parts or its overall execution.

2. Key Success Factors

The key success factors represent critical, agreed-upon measures that ensure that the organization meets the demands and constraints it faces. These factors support the

system direction, and can be viewed as tenets in the daily operations. The system's design and its intended results must incorporate the success factors in order to be successful.

In the case of the logistics system, these factors are to get the ***RIGHT STUFF*** to the ***RIGHT PLACE*** at the ***RIGHT TIME*** to the ***RIGHT COST***. Given the scope of this project, the cost dimension will not be analyzed. The "right stuff" means the right mix of goods, services, or other logistics support, in the right quantity to meet the customer's needs. The "right place" means not only delivering to the customer, but having strategic warehousing and distribution points that will make delivery over that last tactical mile easier and more predictable. This helps ensure that those goods and services will be there at the "right time" when they are needed.

These success factors come from accepted logistics theory, and are not unique to military logistics. However, the constraints and demands placed on a military logistics system in combat create new and unique challenges for satisfying these key success factors. These unique demands and constraints will be discussed further as they relate to the implementation of the system design and its ultimate results.

3. System Direction

Based on the environmental and key success factors, the last input variable is the system direction. System direction can come from various sources and can be targeted at various levels and segments of the system. It can be positive, giving open authority and discretion to the organization's leaders to implement the system as they see fit. It can also be restrictive, holding those leaders to conform in some way to a pre-determined set of rules or standards.

System direction can take the form of mandates, values, or missions that are explicitly stated or implicitly assumed. Moreover, strategic issues, policies, visions, or goals for that organization or for the greater environment it operates in can support the direction.

When analyzing the logistics system supporting naval expeditionary forces, that system direction comes from several levels. Strategic vision comes from the President, Secretary of Defense, Joint Staff, or the Chief of Naval Operations. Most of this direction is not focused on expeditionary support or even logistics specifically. This strategic vision gives direction to the military and DoD in general. However, they all have direct impacts on the system put in place to support naval expeditionary forces. For example, the President's focus on the Global War on Terrorism (GWOT) implies a certain direction for logistics planners in terms of the types of operations they must be capable of supporting, the environments they will be working in, etc. Other policies, such as jointness, outline very specific requirements that the logistics system must fulfill. The next level of system direction is doctrine. Logistics doctrine exists at various levels, including joint doctrine, service-specific doctrine, and community-specific doctrines form the various expeditionary communities. Applicable doctrine covers not only logistics, but also the operational doctrine of how these forces are employed in combat operations. For example, doctrine for the Naval Construction Forces calls for their Battalions to come under the operational control of the Marine Air-Ground Task Force (MAGTF) or Marine Expeditionary Force (MEF) commander. Such operational doctrine can drive logistics system planning and implementation.

In considering the NAVCENT logistics system, one must first understand the hierarchy of forces within NAVCENT, and NAVCENT's role as a service component commander under the theater combatant commander, CENTCOM. Joint doctrine discusses in detail the division of responsibility between the combatant commander and the service component commander regarding logistics support. Since combatant commanders exercise command authority over assigned forces within their geographic AOR, they are overall responsible for joint theater logistics and maintain directive authority for logistics. This directive authority ensures the effective execution of approved operation plans, the effectiveness and economy of the operation, and the prevention or elimination of unnecessary facility duplication and overlapping functions.[33] Combatant commanders are responsible for reviewing each Service component

33 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

commanders' specific requirements and establishing priorities in support of strategic objectives. Combatant commanders are also responsible for managing resource allocation and supply support among the Service components. Further, the combatant commander is responsible for a distribution network, maintenance, salvage, construction facilities engineering, base development, coordinating health services, and other services.[34]

Military Services, U.S. Special Operations Command (for special operations specific logistics) and Service component commanders are responsible for the implementation and execution of all logistics functional areas. In addition, each Service is responsible for the logistics support of its own forces and direct communication with appropriate headquarters on all supply matters, except when the logistics support is otherwise provided for by assignments to common, joint, or cross-servicing.[35] However, combatant commanders may determine that common servicing is ideal and will assign responsibility for providing or coordinating service for all military components in a designated operational area to the dominant user of that service.

Combatant commanders are responsible for any base development necessary to accomplish the mission.[36] Staff planners will assist the combatant commander with prioritizing, planning and coordinating the construction and maintenance of the logistics infrastructure necessary to support the mission. The assignment of facilities including facility acquisition and funding rests with the designated Service. Combatant commanders should ensure that minimum essential engineering capabilities and facilities required to support theater operational and tactical requirements are assigned to the Service components.[37]

The proper management of joint logistics is a complex, interdependent process that may apply leverage (plus or minus) to a combatant commander's combat power.[38] Logistics must be responsive in, and capable of, meeting military personnel, equipment,

---

34 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations*.

35 Ibid.

36 Ibid.

37 Ibid.

38 Ibid.

mobility, medical readiness, infrastructure and sustainment requirements. To do so, it is important to have an effective joint theater logistics infrastructure in which command relationships and responsibilities are well defined to meet the conditions of the joint logistics support system and joint planning requirement are satisfied to achieve strategic, operational and tactical objectives.

Logistics theory and principles also provide direction to the system. The principles of a successful logistics system are responsiveness, simplicity, flexibility, economy, attainability, and survivability. Each of these principles gives direction to logistics planners in designing a system to optimize support for the naval expeditionary War-fighter. Logistics principles are both fundamental and interrelated and form a synergy that contributes to the successful conduct of logistics operations.[39] The way in which these principles are applied to missions and situations will determine the concept of logistics support.

Finally, the stated missions of the expeditionary customers provide direction to the system. They not only tell the expeditionary forces what they must accomplish, but they tell the logistics planners what types of operations they must support. For example, a major factor in logistics planning for the Naval Construction Forces involves obtaining Class IV material, the construction and building material needed for the Seabee's projects. Without those supplies, they cannot complete their primary mission.

C. DESIGN FACTORS

The Organizational Systems Framework next examines the design of the system itself. The system design factors make up the "black box" that transforms the system inputs into some results. The system design factors are the tasks and functions it must perform, the technology it relies on to accomplish those tasks, the processes and sub-systems that perform those tasks, the structure and organization of the system, and, finally, the people involved in the system.

---

39 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations*.

1. Tasks and Functions

At the highest level of the design factors are the tasks, jobs, or functions that the system must perform. These are the basic functions of the system. They identify "what" the system must accomplish, not "how" to go about doing it. The "how" is defined later in the technology and process factors.

The basic functions of a military logistics system are:

Supply	Transportation
Maintenance	Engineering
Health services	Miscellaneous services[40]

This analysis will focus on the supply and transportation functions, including warehousing and distribution. Although the Seabee's perform the engineering logistics function, and the fleet hospitals are providers of health services, this analysis considers those communities as customers, and those functions as missions of the individual communities. Other miscellaneous services include mail delivery, mortuary affairs, etc. These functions are also beyond the scope of this research, and are limited in impact to the overall functioning of the expeditionary support system.

Some other functions arise from the unique nature of military logistics and combat operations. Command and control is a critical function in communicating and coordinating customers' requirements with the various service providers that fulfill those requirements. In the context of this analysis, command and control can help to fill the void between customers' needs and the providers' capabilities.

Another vital function of the logistics system for support of naval expeditionary forces is force protection and security. Without adequate protection, the best-designed logistics system can be destroyed by the enemy and rendered useless for the forces that depend on it. Furthermore, when one considers that those forces may be relying on that

40 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

system to provide them the material they need to survive in combat; i.e., weapons and ammunition, this becomes one of the most basic and important functions for the success of the system.

Within the Central Command area of responsibility, the functions of supply, transportation, and logistics command and control are met by a network of service providers and command and control elements at both the theater (CENTCOM) and service component (NAVCENT) levels. Although Supply and Transportation are considered separate functions of logistics, the implementation of these functions in NAVCENT follows a model of a more integrated distribution network. Therefore, effective analysis of these functions requires one to consider this integrated system, rather than the separate functions. This NAVCENT theater supply, transportation and distribution network effectively merges elements of strategic and operational pre-positioning and stock consolidation points with transportation and distribution via sea, air, and land multi-modal hubs and assets to successfully support naval forces at sea or on land.

a. NAVCENT Supply and Distribution Points

Bahrain is home to NAVCENT and its subordinate commands; COMLOGFORNAVCENT, and CTF-53. COMLOGFORNAVCENT and CTF-53 coordinate all logistics support for naval forces in the NAVCENT AOR. Bahrain is the major logistics hub for all naval forces operating in the CENTCOM AOR, Supply warehousing and distribution is accomplished through a central distribution

The Bahrain and New Zealand (BANZ) warehouse freight terminal in Juffair is the primary shipping and receiving location for all incoming freight to be distributed by CTF-53 air, surface and sea assets to end user units. For example, NSWU-3 located in Bahrain may use the BANZ warehouse as temporary storage of non-classified material for further transfer to end-user NSW units.

CTF-53 operates several naval Forward Logistics Support Sites (FLSS) in the CENTCOM region that make up part of the tactical logistics distribution network. The primary locations serve as logistics nodes for the distribution of personnel, mail and cargo to and from end user units and include Al Fujairah and Jebel Ali in the United Arab

Emirates and Hurghada, Egypt. COMLOGFORNAVCENT will also establish, on an as required basis, temporary logistics support sites in remote areas to facilitate the movement of personnel, mail and cargo in support of operations. These temporary sites include Mombassa, Kenya; Victoria, Seychelles; Aqaba, Jordan; Djibouti; Aden, Yemen and Salalah, Oman.

COMLOGFORNAVCENT/CTF-53 is the NAVCENT (N4) agent for all matters relating to ordnance logistics. Further, COMLOGFORNAVCENT/CTF-53 coordinates all theater ordnance movement and provides naval ordnance logistics support for units operating in the CENTCOM AOR. However, their role is mainly limited to that of a facilitator of ordnance movement, as the Navy does not maintain any ordnance stock points within the theater, instead relying on ordnance stocks embarked on Combat Logistics Force (CLF) ships deployed in-theater.

This is significant to naval expeditionary units, in that there is no Navy ammunition supply point ashore. Furthermore, the floating stocks in the CLF ships are primarily intended to support surface ship weapons systems and aviation ordnance for the deployed carriers. This forces expeditionary units to rely on Marine and Army ammunition stock points for small arms ammunition, explosives, and munitions. In the case of NSW- and EOD-unique requirements, those communities rely extensively on community reach-back support in CONUS to meet their needs.

The Defense Energy Support Center (DESC)-Middle East, located within the FIFTH Fleet compound, is responsible for petroleum logistics in the CENTCOM AOR. The mission of DESC-ME is to provide USCENTCOM and other customers comprehensive energy support in the most effective and economical manner possible to include quality assurance and surveillance, overseas bunker contract maintenance, and oversight of regional Defense Fuel Support Points (DFSPs).[41] DESC-ME will also supervise, maintain and monitor stock levels and quality at the DFSPs.

41 Defense Energy Support Center, (n.d.), *Total Energy Solutions, Fort Belvoir, VA,* http://www.desc.dla.mil. Retrieved on September 8, 2004.

Naval Regional Contracting Center (NRCC) Naples, Bahrain Detachment, is located at Naval Support Activity (NSA), Bahrain. NRCC Bahrain supports COMLOGFORNAVCENT/CTF-53 in the execution of operational logistics in the NAVCENT/5F AOR through acquisition and contracting functions. NRCC Bahrain is the single point of contact for all contracting support for both the Atlantic and Pacific fleet units operating in the NAVCENT AOR. Additionally, NRCC Bahrain provides contracting support to all Department of Defense-Joint/Host Nation military exercises and the respective U.S. embassies throughout the AOR. NRCC Bahrain/Dubai's primary mission includes logistics support, expediting, replenishment, ship repair, ordnance handling, towing and salvage, and a host of other mission-related contracting requirements[42].

Although NRCC Bahrain provides contracting support for NAVCENT, this research found little evidence that NRCC Bahrain was supporting expeditionary forces in Iraq. However, other contracting support is available in that area from the Marine Corps, Army, and Defense Contract Management Agency (DCMA) Kuwait.

b. NAVCENT Transportation Network

The NAVCENT transportation network is also centered around the hub of Bahrain. As the major logistics hub for all naval forces operating in the CENTCOM AOR, Bahrain can accommodate all modes of transportation; air, land and sea.

Seaborne logistics support includes strategic sealift and operational lift through underway replenishment ships of the CLF. Mina Sulman is Bahrain's sea logistics hub. From Mina Sulman, Naval Support Activity, Bahrain surface operations coordinates ship and submarine logistics support for naval forces in the CENTCOM AOR. Other significant seaports include Jebel Ali in Dubai, United Arab Emirates, and Al Fujairah, also in the UAE. The port of Ash Shu'aybah, Kuwait is the Sea Port Of Debarkation (SPOD) for all material going into Iraq.

42 Russell, J. and Jenkins, B., (n.d.), *Tip of the Spear Contracting Solutions,* http://www.navsup.navy.mil/npi/lintest/julaug2000/russell.htm. Retrieved on November 12, 2004.

However, expeditionary community reliance on seaborne transportation is limited mainly to strategic sealift and maritime pre-positioning force (MPF) ships, as well as debarkation from the amphibious ships of their Expeditionary Strike Group. These topics are of marginal impact on the greater issue of sustainment of deployed expeditionary forces. Therefore, this research will focus more on the impact of air and land transportation and distribution on supporting these forces.

NAVCENT has organized a robust air transportation and distribution network within the AOR. This air network operates at the strategic, operational, and tactical levels to efficiently move cargo and personnel through the CENTCOM area. The network employs a mix of U.S. Air Force, Navy, and Marine Corps assets to link land-based hubs throughout the Middle East with ships deployed in the Arabian Sea and Persian Gulf. Air missions include scheduled flights into, out of, and within the AOR, emergent operational tasking for at-sea replenishment, and ad hoc missions for specific, one-time tasking.

The strategic air network within NAVCENT is serviced mainly by the U.S. Air Force's Air Mobility Command (AMC). The main hub for Navy support is Al Muharraq Airfield, the military portion of Bahrain International Airport in Manama, Bahrain[43]. Virtually all personnel, mail and cargo coming into theater for the Navy moves through this hub, just a few miles from Naval Support Activity (NSA) Bahrain and the main fleet base there. Navy passengers and cargo bound for other areas within the theater, or for ships at sea, move on from Bahrain via theater air or sea lift. CTF-53 organic air assets operate on aerial routes to Forward Logistics Support Sites in support of forward operating expeditionary units.

Other AMC hubs within CENTCOM are Kuwait City International Airport (KCIA), Al Udeid Air Base in Qatar, and most recently, Balad Air Base[44], about 40 miles north of Baghdad in Iraq. Kuwait City International Airport is CENTCOM's

---

43 Pike, J. (n.d.) Muharraq Airfield, Bahrain, http://www.globalsecurity.org/military/facility/muharraq.htm. Retrieved on September 1, 2004.

44 US DoD, (n.d.), *CENTCOM Deployment Distribution Operations Center (CDDOC) brief*, https://portal.USTRANSCOM.smil.mil/cddoc. Retrieved on September 1, 2004.

Aerial Port of Debarkation for Operation Iraqi Freedom and operations in the northern Arabian Gulf (NAG). The Navy uses KCIA as a secondary strategic hub to support fleet units in the NAG, as well as naval expeditionary units on the ground in Kuwait or Iraq. NAVCENT can operate to and from Balad Air Base, Iraq, the home of Logistics Support Activity (LSA) Anaconda, in support of Navy expeditionary units, such as Naval Special Warfare units and Naval Mobile Construction Battalions, operating in central and northern Iraq.

Although AMC or commercial carriers provide the bulk of the Navy's strategic airlift, the Navy does employ some organic assets in the theater. Navy and Marine Corps C-130 cargo aircraft move material, and some passengers, into and out of the theater. Also, passenger-carrying C-9 and C-40 aircraft run between Bahrain and Navy hubs in the Mediterranean, such as Rota, Spain, and Sigonella, Sicily, or the Western Pacific, such as Okinawa and Guam. However, none of these aircraft have the payload or range of the larger AMC assets.

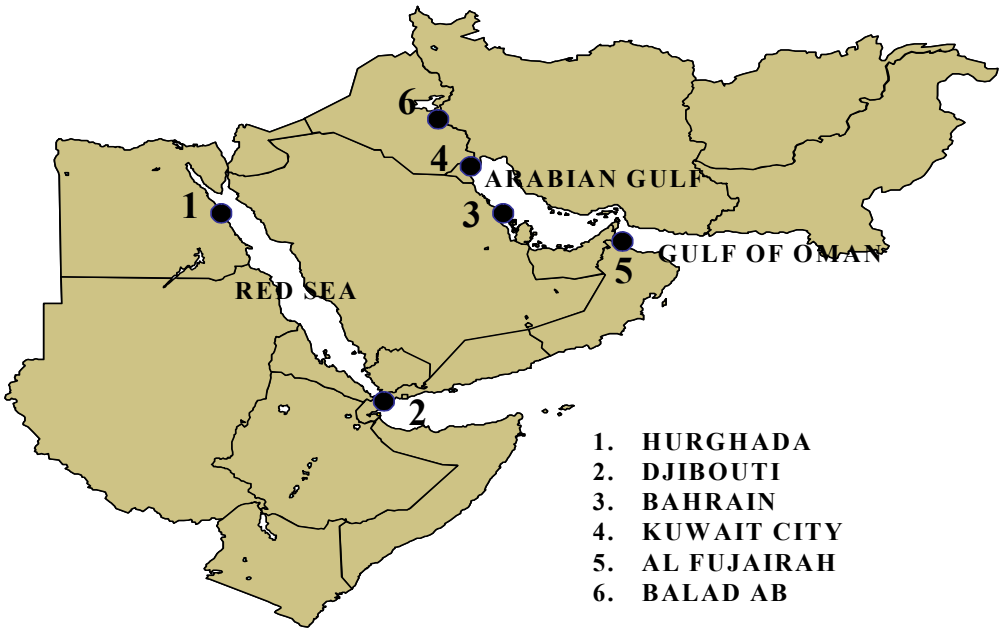


Figure 6. NAVCENT Theater Air Network

NAVCENT has a small fleet of aircraft dedicated to providing logistics support for Commander, Naval Forces Central Command, as well as servicing deployed units in the area of operations. NAVCENT's theater air assets operate from Al Muharraq Airfield at Bahrain International Airport, close to NAVCENT headquarters at NSA Bahrain.

These assets include:

- Three UC-12 aircraft, owned and operated by COMNAVCENT45, provide VIP, routine passenger, and light cargo service between land bases through the AOR.
- Three UH-3H Sea King helicopters at Bahrain[46], provide vertical on-board delivery (VOD) service for deployed ships only in the Arabian Gulf.
- Four MH-53E Super Stallions at Bahrain[47], provide heavy lift for the Navy and Marine Corps, operating over land and on larger aviation capable ships.

Deployed air assets operating in the region provide a significant portion of NAVCENT theater air logistics support. These assets provide both tactical support to their parent ships, and operational-level support, at the direction of NAVCENT, servicing land and sea-based destinations. These assets include:

- CH-46E or CH-60 VOD detachment on CLF ships in the theater.
- C-2A Greyhound aircraft onboard the aircraft carriers
- SH-60B/F and HH-60H helicopters on surface ships and aircraft carriers
- Naval Air Reserve Force C-130 Hercules aircraft deployed to Bahrain

The least robust of NAVCENT's transportation and distribution networks is its ground transportation lines. While NAVCENT has substantial ground transport assets to support local movement at its sea and air hubs, the Navy mainly relies on the Army or deployed Navy expeditionary support units for theater-level ground transportation.

---

45 Pike, J. (n.d.), *Muharraq Airfield, Bahrain*, http://www.globalsecurity.org/military/facility/muharraq.htm. Retrieved on September 1, 2204.

46 Pike, J. (n.d.), *Helicopter Combat Support Squadron (HC-2) "Fleet Angels,* http://www.globalsecurity.org/military/agency/navy/hc-2.htm. Retrieved on September 1, 2204.

47 Pike, J. (n.d.), *Helicopter Combat Support Squadron (HC-4) "Black Stallions* http://www.globalsecurity.org/military/agency/navy/hc-4.htm. Retrieved on September 1, 2204.

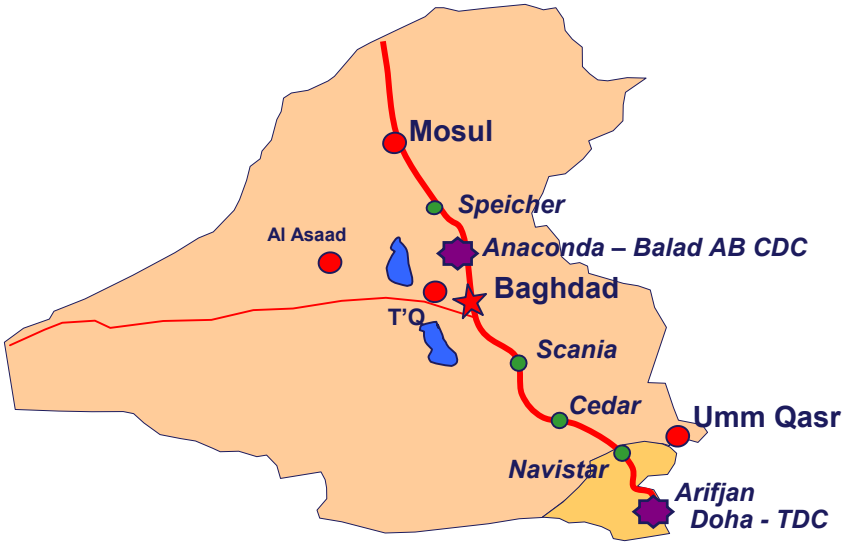


Figure 7. NAVCENT Theater Ground Distribution Line[48]

Along the route to Baghdad are various regional logistics sites, known as Logistics Support Areas (LSA). Most of these LSA's are former Iraqi air bases, and are accessible both by ground transport and by air. At Baghdad, a secondary route branches off toward the bases in the western desert, while the main line continues north toward Mosul.

About 40 miles north of Baghdad, LSA Anaconda, at Balad AB, is the Central Distribution Center (CDC); i.e., the main supply point for forces in Iraq. This is a key part of both the air and land distribution networks. It is centrally located in Iraq, accessible outside of the urban area around Baghdad, and on the main supply line to Mosul and the northern areas. According to Gen. John Abizaid, commander of U.S.

48 US DoD, (n.d.), *CENTCOM Deployment Distribution Operations Center (CDDOC)" Brief*, https://portal.USTRANSCOM.smil.mil/cddoc Retrieved on September 1, 2004.

Central Command in March 2004, " . . . we are making Balad Airfield our primary hub in the region, and the idea of doing that is because we need to have the Baghdad International Airport revert to civilian control."[49]

The Navy has few assets dedicated to theater ground transportation. Most navy assets are in and around the ports in Kuwait and at Umm Qasr in Iraq. However, these are mainly used to facilitate the unloading of ships and the movement of goods to the TDC at Camp Doha. Most onward movement to Navy units is done organically by those units, or is done through Army or Marine distribution. Part of this is due to the fact that many of the Navy expeditionary units deployed in Iraq are supporting the Army or the Marine Corps directly, or are part of combined joint task forces. For example, NMCBs are attached to the Marine Engineer Group and are under the operational control of the MEF. Therefore, by mutual agreement of both services, they rely on the Marine logistics infrastructure for much of their material.

c. Logistics Command and Control

The logistics command and control (C2) function of a logistics system handles coordination and communication of requirements and support, bringing the customer and service provider together to meet requirements in a timely manner. A major role of logistics C2 is to set priorities and deconflict requirements when needs outweigh the ability of the system to respond to all requirements in a timely manner.

NAVCENT provides logistics command and control through a variety of task-specific groups (CTG's) within CTF-53, as well as the Logistics Response Cell (LRC). The LRC was established within the NAVCENT AOR to further the logistics response capability of COMLOGFORNAVCENT/CTF-53. Comprised of a mobilized Supply Corps, Civil Engineer Corps and senior Storekeepers reserve team, the LRC was launched to handle unique logistics needs, not to address the day-to-day fleet logistics functions already performed by CTF-53. However, the LRC serves as an important liaison between NAVCENT N4 and CTF-53.[50] Specifically, the LRC has been involved

---

49 Pike, J. (n.d.) *Balad Air Base,* http://www.globalsecurity.org/military/facility/balad.htm. Retrieved on September 1, 2004.

50 Thomas, R. (2003). NAVCENT *LRC Established and Engaged.* Navy Supply Corps Newsletter, http://www.findarticles.com/p/articles/mi_m0NQS/is_1_66/ai_97173745 Retrieved on September 9, 2004.

in providing solutions to emergent critical logistics matters, managing reporting requirements for transportation, fuel, and ordnance and administering mortuary affairs. The LRC has emerged as an essential component in the NAVCENT logistics system by providing quality logistics services to sustain and extend the operational capabilities of end user customers.

Although not tailored to specifically support expeditionary units, the NAVCENTLRC can play a vital role as a liaison between NAVCENT's service capabilities and the requirements of the remotely deployed expeditionary forces. However, the LRC is currently a temporary organization staffed by reservists. Although it is not scheduled for deactivation in the near term, it is not a permanent part of the NAVCENT system. Therefore, in its current structure, it cannot be relied on as a permanent solution to the expeditionary support problem.

The Naval Expeditionary Logistics Support Force (NAVELSF) is a reserve component that when activated augments a Logistics Task Force such as CTF-53 to assist with accomplishing mission objectives and provide an overseas shore-based supply and transportation capability. The NAVELSF is comprised of 12 Navy Cargo Handling Battalions, two Supply Support Battalions and a total of 3,200 reservists.

d. Force Protection and Security

Finally, another critical function of the logistics system is force protection and security. Force protection is tasked with the defense of fixed bases, facilities, and infrastructure, as well individuals, homes, barracks, etc. Additionally, force protection and security is critical in ensuring the continuous flow of goods and services over the transportation and distribution networks previously discussed. Adequate security is necessary to keep these lines open and ensure goods and services are delivered in a timely manner; i.e. the "right place" and "right time" aspects of a successful logistics system.

Forces protection has become a major issue for NAVCENT in Bahrain, and has led to some controversial policy decisions. Also, force protection and security has had some unforeseen consequences on other logistics support issues, such as DoD's reliance on civilian contractors and local vendors for goods and services. These issues will be discussed in depth later in this analysis.

2. Technology and Processes

The technology and processes design factors implement "how" these functions are to be accomplished by the system. Technology addresses the flow of work through the system, the activities involved, and the interdependencies between different activities. In the Organizational Systems Framework, the processes factor considers the processes and subsystems for *financial management, human resource management, communications,* and *acquisition and contracting*. Similarly, joint logistics doctrine defines logistics processes as acquisition, distribution, sustainment, and disposition.[51] From this point of view, this analysis mainly deals with distribution and sustainment processes, briefly considering acquisition and local procurement as a means of sustainment. Command, control, communications, and information systems also are a process factor. Force protection is another process when its implementation at the unit level is considered. References for system technology and processes include various instructions, directives, and standard operating procedures that specify detailed methods for accomplishing one or more of these processes.

Each of the expeditionary communities has a unique concept of operations. From the logistics standpoint, their operations encompass many of these logistics processes, including the communication of requirements through requisitioning procedures, receipt and local distribution of goods, etc. Many of these processes are performed by some organic logistics support organization, either within the deploying unit or as a separate supporting element dedicated to those forces. Logistics command and control is achieved through information technology systems that link the deployed unit with external community logistics support or common service support systems. In the absence of specialized logistics information systems, common communications systems such as

51 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

email, the Internet, and telephones may constitute the logistics command and control system. The following section analyzes these processes and systems for each expeditionary community.

a. Naval Special Warfare Forces

When deployed, NSW forces can operate unilaterally or compliment conventional operations in support of global requirements. The mission, operating environment, employment method and capabilities of NSW forces themselves are considerations when determining force employment. During a major theater war or contingency operation, NSW forces will normally consist of Naval Special Warfare Task Groups (NSWTG), Naval Special Warfare Task Units (NSWTU) and Naval Warfare Task Elements (NSWTE), which are under the operational control of either a naval component or joint force commander. A NSWTG will maintain command and control of one or more NSWTU, which is comprised of a command and control element, support element, and a combination of one or more SEAL or SDV platoons, and/or special boat detachments.[52]

The type of operation, deployment sequence, unit basing, and AOR shape the logistics environment for SOF.[53] The regional LOGSUs and NSWTUs are the primary support providers for NSW forces and are capable of meeting NSW requirements for equipment, mobility, medical, infrastructure and sustainment. During a major theater war, contingency operations and exercises during peacetime, a LOGSU Combat Service Support Detachment (CSSD) and Mobile Communications Detachment (MCD) will deploy to construct and provide base operating support and maintain SOF communications support, respectively. In many cases, NSW forces are supported by EOD personnel, Navy divers, Seabees, Surface Warfare Officers and associated maintenance, logistics and administrative personnel to enhance force capabilities and extend operational reach.

---

52 US DoN, Naval War College, (2003), Joint Military Operations Reference Guide, *Forces/Capabilities Handbook.*

53 US DoD, Special Operations Command, (2003), *SOF Logistics Handbook*.

During OPERATION IRAQI FREEDOM (OIF), a combined NSWG 1 LOGSU-led, task-organized force located at a forward operations base (FOB) site in Kuwait, primarily supported NSW forces. The Task Force's mission was to develop and execute logistics plans to deploy and support NSWG-Central/CTF-561 missions in support of CENTCOM and SOCCENT. CTF-561 was responsible for positioning, deploying, sustaining and redeploying material, equipment and personnel to the theater of operations. If a requirement could not be met by CTF-561, it was forwarded to NSWU-3 located in Bahrain and/or LOGSU1 located CONUS for those emergent requirements that could not be satisfied within theater. It was also not unusual for forward NSW elements operating at the forefront to receive logistics support from the Marine Expeditionary Force. In closing, NSW logistics support was accomplished by adapting, developing and tailoring the inter-theater logistics system to meet the needs of end user customers, establishing FOB sites to support operations and extend operational reach, and determining and coordinating the right support in the right quantity in the right pace at the right time.

The primary logistics support systems used by NSW forces are the Sustainment, Asset Visibility and Information Exchange (SSAVIE) Extranet and Micro-SNAP. The SSAVIE Extranet is a virtual support network capable of linking NSW forces with logistics providers for SO-peculiar equipment, maintaining SOF asset visibility of inventory in use and providing an on-line technical and logistics publications library, including the end-item description, support structure, maintenance data and part lists.

Micro-SNAP is the basic supply requisitioning system, which uses a web-enabled environment to requisition and track requirements for common supplies and repair parts for NSW forces and their equipment.

b. Explosive Ordnance Disposal Units

Mobile detachments are the primary operational arm of the EODMU and can respond as an entire detachment or are split into independent teams to respond to multiple EOD missions and incidents. Usually, EOD teams comprise an officer and five

enlisted people who are trained in a variety of skills, enabling them to operate in many different environments both afloat and ashore. Each detachment has the equipment, publications and gear necessary for the task at hand.

Mobile detachments are assigned as group assets directly to deploying carrier battle groups or amphibious ready group staffs. For aircraft carrier battle groups, one EOD detachments is on board the carrier, with the officer-in-charge "dual hatted" with a task unit designator. This means that, in addition to leading the detachment, the officer functions as the EOD advisor to the carrier battle group commander, making operational assignments to all EOD task elements in the battle group. A second detachment is usually deployed in one of the group's auxiliary ships. This command structure allows the detachments to be assigned to their battle group operational commanders from the beginning of the deployment work-up cycle and to be included in all phases of training, planning, exercises and operations. EOD support to an amphibious group is similar to that provided to a carrier battle group, with the additional job of working with maneuver forces ashore.

EOD shore-based detachments are located at shore activities that need continuous EOD support, including general ordnance handling and disposal, live-fire training, range clearance and underwater ordnance testing. Shore-based detachments may be deployed to respond to military and civilian incidents, and are on-call to provide "VIP" protection support for the Secret Service and State Department.

In a logistics perspective, EOD detachments don't include organic logistics capabilities within the operating unit. Both mobile detachments and ashore detachments are collocated with a logistics command that provides basic logistics support. This support includes everything except for EOD specific items such as ordnance locators. Normally, detachments reach back to Continental US to get community specific equipment.

c. Naval Construction Force

The basic deployable unit for the NCF is the Naval Mobile Construction Battalion (NMCB). The NMCB can deploy as an integral unit of their deployed NCR, or as an independently deployed battalion. In either situation, the NMCB will normally

deploy to either one of four existing permanent main body sites, or will deploy in conjunction with the Marine Expeditionary Force (MEF). Once deployed, the battalion provides specialized, task-organized detachments to address specific support requirements at remote locations. Detachments vary in size from less than ten Sailors to up to half of the battalion. The make up and duration of time of the detachments is task-dependant based on the needs of the supported customer at the detachment site. Some detachment sites are pre-established, with existing infrastructure in place for repeated detachments. Other detachments are established to meet emergent requirements during the deployment, or are based upon the deployment of forces in the supported MEF.

The primary customer of the deployed NMCB is the Marine Air-Ground Task Force (MAGTF) or Marine Expeditionary Force (MEF). When deployed with a MAGTF or MEF, the NMCB, or other NCF unit, comes under the operational control (OPCON) of the Marine commander. If deployed as a component of their regiment, the NMCB commander operates under the immediate command of an NCR Command Element (CE), which reports directly to the MEF. In exercising OPCON over the attached NCF unit, the Marine commander has full authority to employ the NCF unit as needed to accomplish its missions. From the logistics standpoint, the Marine Corps' operational control includes responsibility for re-supply and sustainment of the NCF unit, as stated in NWP 4-04.1.

The mission of the NMCB is to provide responsive military construction support to Navy, Marine Corps, and other forces in military operations; to construct and maintain base facilities; to repair battle-damaged facilities, and to conduct limited defensive operations as required by the circumstances of the deployment.[54]

Commanded by a Civil Engineer Corps Commander, the NMCB consists of 24 officers and up to 745 enlisted Sailors (with Reserve augmentation). The NMCB consists of a headquarters company, one equipment/horizontal construction company, one camp maintenance/utilities company, two to three vertical construction companies, and a Reserve augment.

---

54 US DoD, (1997). Naval Warfare Publication 4-04.1 / Marine Corps Warfare Publication 4-11.5, *SEABEE Operations in the MAGTF*.

The NMCB is outfitted with a Table of Allowance (TOA) of equipment, weapons, communications systems, and supplies. The TOA includes approximately 300 pieces of CESE and common vehicles such as HMMWV's (i.e., "Hummvee's") and MTVR's. It also includes personal and crew-served weapons and all the messing and berthing equipment needed to support the battalion.

Within the NMCB, the S-4 department is responsible for supply and logistics support for the battalion, including its remote detachments. The battalion S-4 department consists of three officers and approximately 20 enlisted Sailors. The battalion Supply Officer (S-4) is a Supply Corps Lieutenant Commander. He is assisted by a Supply Corps junior officer as Assistant Supply Officer and a Civil Engineer Corps junior officer as the Material Liaison Officer (MLO). The MLO is responsible for procuring all Class IV material (construction and barrier material) needed to complete the unit's construction projects. Two Chief Storekeepers (SKC) provide enlisted leadership, and one SEABEE Chief Petty Officer assists the MLO with Class IV requirements. One E-4 to E-6 SK is assigned to each detachment to handle material requirements at the remote site.

Automation of logistics and supply support is achieved through several parallel systems within the S-4 department. The Project Material Planning and Tracking (PMPT) program is a new program used for ordering and tracking Class IV material; building and barrier material needed for the battalion's construction projects. Micro-SNAP is the basic supply requisitioning system, which uses a web-enabled environment to order and track requisitions for common supplies and repair parts for TOA equipment. When deployed, each of these systems are operated at the main body deployment site. Information is sent back from remote detachments and entered into the appropriate system at the main body site. Because Micro-SNAP is a web-enabled application, it can be accessed at remote detachments with Internet connectivity. However, unless specific action is taken to direct delivery to the detachment site, material will still be delivered to the main body site and forwarded on to the detachment.

The battalion's Table of Allowance includes the equipment authorized for the battalion, as well as an embedded Consolidated Allowance List (COSAL) for spare parts to maintain that equipment. Each battalion's TOA is tailored for the specific deployment missions, location, and expected duration. The embedded COSAL in the TOA is tailored to support only the equipment actually provided.

The NMCB maintains a Table of Allowance (TOA) capable of sustaining construction operations under contingency or combat conditions for 60 days without re-supply. Class I material is limited to 5 days, Class III is to 3 days, and Class V to 15 days. Class IV is limited to only those materials required to construct the NMCB's base camp. Re-supply past these timeframes is the responsibility of the supported MAGTF's G-4.[55] Therefore, the standard doctrine for supporting a NMCB deployed with the MEF or MAGTF is for the Marine Corps to provide all needed supply support, including food, fuel, and ammunition, and even common parts when those parts are available through the Marine Corps supply system.

Furthermore, procurement of Class IV materials for tasked projects is coordinated with the supported MEF G-4.[56] Since the MEF is a supported "customer" of the NMCB for construction projects, the MEF must procure and pay for all Class IV building materials needed to complete its projects. This same policy applies to other supported NMCB "customers," such as Fleet Hospitals or Naval Special Warfare units. If the SEABEE's are providing services to those units, they will rely on logistics support, including funding, from the "customer" unit to obtain required materials.

d. Fleet Hospitals

During a deployment to the Fifth Fleet AOR, reserve and active units follow the dual command structure, depicted in Figure 8, working for the Marine and Navy component commanders simultaneously.

---

55 US DoD, (1997), Naval Warfare Publication 4-04.1 / Marine Corps Warfare Publication 4-11.5, *SEABEE Operations in the MAGTF*.

56 US DoD, (1997), Naval Warfare Publication 4-04.1 / Marine Corps Warfare Publication 4-11.5, *SEABEE Operations in the MAGTF*.

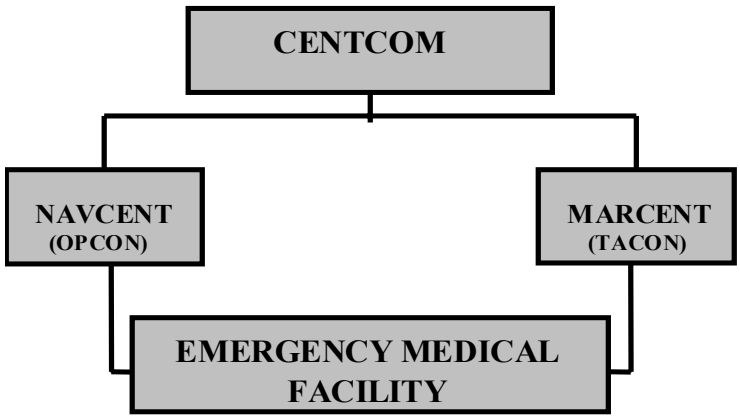


Figure 8. Deployed Fleet Hospital Unit Organizational Chart

The Marine Corps component commander (MARCENT) directs the medical facilities' movement and location, while the Navy component commander (NAVCENT) directs the logistical arrival of personnel and equipment while also assuming all administrative functions while the unit is in-theater.

Historically, the size of deployed medical facilities have centered on the ability to provide medical care on a large, cold war era, scale. However, lessons learned from operations DESERT STORM and IRAQI FREEDOM illustrated a change in warfare and mission requirements. Deployable medical systems (DEPMEDS) now must be capable of supporting a myriad of mission scenarios, and, more importantly, incorporate the additional characteristics of modularity, ease of transport, and rapid deploy ability. A new, modular/scalable capability, which could provide the theater commander with medical facility conducive with the requirements required has transformed the deployable Fleet Hospital organization. These new "Emergency Medical Facilities or Units" could be as small or as large as needed, with the smallest modular component deployed to date being a 10-bed hospital.[57]

Fleet Hospital deployments are at the request of the theater commander. Once requested, it is the responsibility of the Fleet Hospital Support Officer (FHSO) to design, and outfit the medical facility required. Pre-positioned medical equipment is

57 US DoD, (2004) FHSO Operating Procedure QP 23.

located in warehouse facilities or military sealift ships. These facilities are located throughout the world, with warehouses located in Korea, Japan, and Norway (2 complexes built into mountain), and are available for rapid deployment. Initial outfitting of the facility includes required housing and galley facilities, construction equipment, and enough medical supplies to support the facility for the first 30 days of operations.[58] The BUMED/CNO931/PML-500 dispatches a Fleet Hospital Assistance Team (FHAT), which is comprised of a Civil Engineer Corps Officer, Medical Service Corps Officer, corpsman and various Construction personnel to coordinate the shipment of equipment and supplies, conduct advance scouting of the proposed construction site, and liaise with area commanders in support of the Fleet Hospital unit. Once the equipment is on station, medical facilities are rapidly built. A 250 bed medical facility constructed in Rota, Spain was operational within one week's time. After the first thirty days of operation, the facilities' supply department assumes the responsibility of ordering supplies and coordination of shipment. The size of this department is dependent on the size of the medical facility; however, the manpower is quite substantial. For the Rota, Spain facility, the supply department consisted of 60 personnel, which included storekeepers, culinary specialists, ship servicemen, and bio-med specialists. Two construction battalion units handle the operation and maintenance of the facility and are comprised of fifty to eighty SEABEES. These personnel work closely with the supply personnel in the logistical aspects of the medical facility.

Whenever two or more services are operating within the Combatant Command's AOR, a single service may be designated as the region's Single Integrated Medical Logistics Manager (SIMLM).[59] The SIMLM provides materials management, medical equipment maintenance and repair, blood management, and optical fabrication for all joint forces within the theater of operations, except U.S. Navy gray hull ships.[60] In the CENTCOM AOR, the U.S. Army is the designated executive agent for SIMLM. Medical facilities, such as Fleet Hospital units, submit their logistical requirements to the

58 US DoD, (1995) Naval Warfare Publication 04-2 Part A, *Fleet Hospitals.*

59 US DoD, (1995) Naval Warfare Publication 04-2 Part A, *Fleet Hospitals.*

60 US DoD, (1997) DODINST 6430.2, DoD Medical Standardization Board.

SIMLM using the Theater Army Medical Management Information System (TAMMIS). The SIMLM provides standard medical supplies. Fleet Hospital units that require supplies not provided by the SIMLM must procure them through NAVCENT or other agent pre-designated by the theater commander.

e. Force Protection

Force protection has had an even greater and more direct impact on those expeditionary forces operating in Iraq. The most direct impact has been on convoy and distribution line security. Attacks on convoys have disrupted the flow of material in the theater and caused the expeditionary forces to dedicate organic manpower to security functions at the expense of their primary mission. This creates additional inefficiencies that are not experienced during peacetime operations.

Another impact of force protection and security has been on civilian contractors and local vendors. Traditional contracting relationships with vendors have required them to deliver goods and services on location to the forces being supported. For example, a Seabee battalion may contract with a vendor to provide Class IV material. That contract typically requires delivery on site in a timely manner. Failure to do so results in contractual default.

However, the security situation in Iraq has made this an unrealistic expectation in some cases. Lessons learned from Naval Construction Force units identified the fact that many local vendors were being targeted for intimidation, kidnapping, or assassination due to the fact that they were providing support for U.S. forces. Shipments were hijacked along the supply lines, with the material stolen or destroyed and the vendors or drivers kidnapped or killed. In some cases, vendors were identified as they left U.S. bases and were then kidnapped. The intent was not only to disrupt the flow of material to U.S. forces, but also to intimidate the vendors and discourage them from seeking additional contracts. Ultimately, the insurgency sees this as a means to eliminate all local material support for U.S. forces.

The local solution implemented by the Seabee's was to set up a series of logistics cells closer to the sources of supply, and away from their operating bases. Also, they established a drop off point for Class IV material at Baghdad International Airport. Vendors would drop off supplies there in a relatively secure environment. Seabee's would rely on their own organic transportation assets to move the material forward through the more dangerous supply lines outside of Baghdad to the forward bases. While this kept the vendors safe and ensured the flow of material, it comes at an expense in terms of manpower and equipment assets for the Seabee's and Marines they support.

3. The Human Factor

The human factor in the logistics system encompasses the people who execute the intra-theater logistics support to naval expeditionary forces. From the systems model perspective, this factor comprises the people's motives, expectations and mindsets as logistics personnel and their knowledge, skills and abilities to execute their mission. Accordingly, this section focuses on the logistics system's human capabilities and their ability to execute the logistics functions.

The logistics system consists of service providers and war-fighting customers. Thousands of people work hard to provide the best logistics support possible given the existing resources and capabilities. A logistics planner operates on the strategic, operational, and/or tactical level, based in CONUS or deployed into theater, afloat or ashore, and faces highly dynamic demand and supply chain variables. In spite of its complex and reactive nature, the structures and people in the logistics system strive to be proactive through pre-positioning of material and extensive contingency planning.

Support of naval expeditionary forces places additional challenges into the equation. Their dynamic and fluid organization during deployment, coupled with mission categories and concealed footprint, makes logistics support challenging. However, organic capabilities combined with training, knowledge and expertise makes it possible.

a. Organic Capabilities

This research identifies that three out of four of the expeditionary forces relevant to this report deploy with significant organic logistics capabilities. That is, NSW units, NCF units, and Fleet Hospitals deploy with logisticians familiar with the logistics

system. On the contrary, the EOD units deploy with personnel that have logistics responsibilities as a collateral function. The nature of their deployment organization, normally co-located with a supporting command, explains some of this finding. However, the need for dedicated, organic logisticians in these units should be subject for further investigation.

The importance of organic logistics capabilities in a human factor perspective is reflected through high motivation, focus and mind set. When a logistics element is part of the deployed unit, the motivation and commitment to provide the right support, in the right quantity at the right place and on the right time seems to be very high. The LOGSU, which serves the NSW forces, is as an example on the matter. Due to the nature of these units' operations, the logistics support element has established a solid infrastructure in-theater, with responsive contacts in CONUS. Focusing on support of these units, the logistics personnel adopt the attitudes and identity associated with NSW operations. The mind set is to provide the support no matter what it takes, either using the logistics pipeline or commercial providers. This professionalism and cultural features among logisticians is found in the NCF units and the Fleet Hospitals as well. In the EOD community, technicians assigned to provide logistics support seem to be very dedicated and motivated, but since this is only a collateral function, the ability to utilize the existing logistics infrastructure is probably reduced. This research does not include a specific assessment of the EOD units' need for organic logistics capabilities. Rather, it aims to raise awareness regarding the current practices and target areas for improvement. Accordingly, the report questions whether these units would be better off with a more robust logistics capability, although they normally are collocated with a supporting command.

b. Training, Knowledge and Expertise

In addition to the organic capabilities, relevant training, knowledge and expertise are critical to support of the naval expeditionary forces. Established logistics doctrine and procedures are in place to execute effective command and control of the logistics functions. For logistics personnel, this means that the organizations, roles and relationships among the providers on the Combatant Commander level, the Service

Component level and the unit level are defined[61]. Additionally, doctrine and procedures provides a common language between the interdependent actors in the system. Ideally, this ensures that communication and support processes are efficient, and align the design factors in the logistics system. This research suggests that these benefits partly exist.

The logistics personnel are trained and prepared to execute effective and efficient support. The typical logistician is educated, experienced, and trained in relevant environments. Accordingly, their ability to execute the logistics functions is in place. The S-4 department within a NMCB, as an example, seems to be sufficiently staffed and have access to adequate supply systems such as the PMPT and Micro-Snap. Provided with relevant training and experience, doctrine, sufficient staffing and support systems, this department is a viable logistics resource. NSW units and Fleet Hospitals seem to hold equivalent capabilities, indicating that the expertise is in place for adequate support of the expeditionary forces. The EOD units, with its fragmented logistics capabilities, have access to logistics support in a more indirect nature.

4. Organization and Structure

Analysis of the system's structure involves an understanding of the hierarchy of leadership within the organization, the breakdown and distribution of work, tasks, and functions, and the roles and responsibilities of the key groups and individuals in the organization. Integration of functions and responsibilities is also a key to understanding the structure, and whether it contributes to or hinders the success of the organization.

In considering the NAVCENT logistics system, one must first understand the hierarchy of forces within NAVCENT, and NAVCENT's role as a service component commander under the theater combatant commander, CENTCOM. Joint doctrine discusses in detail the division of responsibility between the combatant commander and the service component commander regarding logistics support. Since combatant commanders exercise command authority over assigned forces within their geographic AOR, they are overall responsible for joint theater logistics and maintain directive authority for logistics. This directive authority ensures the effective execution of approved operation plans, the effectiveness and economy of the operation, and the

61 US DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

prevention or elimination of unnecessary facility duplication and overlapping functions.[62] Combatant commanders are responsible for reviewing each Service component commanders' specific requirements and establishing priorities in support of strategic objectives. Combatant commanders are also responsible for managing resource allocation and supply support among the Service components. Further, the combatant commander is responsible for a distribution network, maintenance, salvage, construction facilities engineering, base development, coordinating health services, and other services.[63]

The naval component commander directly supporting CENTCOM executes NAVCENT operational logistics. COMLOGFORNAVCENT/CTF-53 working directly for NAVCENT has the responsibility to provide logistics support to all naval forces operating within the AOR. At this point, there is no distinction between whether these naval forces are operating at-sea or ashore. However, NAVCENT's role as the Navy component within the CENTCOM AOR has the responsibility for exercising command and control over all naval operations, including designation as the Joint Force Maritime Component Commander (JFMCC) during conflict implies that there is more dedicated support to naval forces at-sea. Therefore, one can conclude that the NAVCENT logistics system was developed for and intended to support naval forces at-sea with little planning and supporting consideration given to naval expeditionary forces operating ashore due to its primary C2 mission of maritime operations. COMLOGFORNAVCENT/CTF-53 serving as the logistics supporting command for NAVCENT provides the oversight of and executes the NAVCENT logistics system. Its supporting organizations are structured to provide operational logistics support for maritime forces. As a result, naval expeditionary forces ashore have had to operate in a fragmented, inefficient logistics system using ad hoc procedures in an effort to support operations.

D. RESULTS AND OUTPUTS

Finally, the Organizational Systems Framework examines the results of the system. System results should be the driving force behind any analysis of a system. If the system results are satisfactory, then few changes should be necessary. More

62 U.S. DoD, (2000). Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

63 Ibid.

importantly, any changes to the inputs or design of a system should directly reflect desired improvements in system results. The OSF considers system results in three categories. Cultural outputs reflect the impact the system has on people's behaviors, values, and relationships. System outputs refer to the tangible products of a system and the metrics for measuring that. The outcomes of the system are the consequences produced by those outputs. During this research, much of the data used to define these results came from official lessons learned, after-action reports, and personal interviews with key personnel in the logistics system.

1. Organizational Culture

The implementation of the previously-discussed design factors have led to several key cultural outcomes which adversely impact the effectiveness of the over-all logistics system. These cultural outcomes are not mutually exclusive, and often inter-related. Each cultural outcome contributes in some way to the perpetuation of one or more other outcome, thus making it very difficult to change these mindsets.

a. Conflicting Motivations and Mindsets

The first cultural indicator is a difference in perspectives and mindsets between the logistics customers and their service providers. The root of this is motivation and accountability. The customers are war-fighters driven by their individual community missions. Logistics is an enabler to accomplish that mission. The customer/war-fighter is going to do whatever is possible to accomplish that mission. If the logistics system cannot get them what they need, or even worse, if it becomes an impediment to accomplishing the mission, the customer/war-fighter will find a way around the system to get what they need.

The logistics providers' mission is to provide that needed support. However, they can be more motivated by following an established process, rather than the ultimate outcome of that process. In some cases, that outcome, i.e., the customer accomplishing their mission, is too far removed from the provider to even be visible to them.

b. Service Parochialism

This leads to the next outcome; service parochialism. Service parochialism is the natural bias one has toward one's own organization over peer organizations; mainly the Navy over other services, or one's own sub-community over other communities within the Navy. When combined with the Navy's cultural value for problem solving, this parochialism can create a tendency to seek solutions for community problems or needs from within, when the better solution may be to look outside of the immediate organization for a more efficient solution.

Another aspect of service parochialism involves an organization's tendency to focus on their "core competencies" first. In the case of operational logistics, the Navy's, and NAVCENT's, core logistics competency is at-sea logistics. Clearly, the vast majority of NAVCENT's material requirements are for ships at-sea in the Persian Gulf and Northern Arabian Sea. As the Combined Forces Maritime Component Commander, NAVCENT has responsibility for coordinating support for all forces at sea in the OAR, regardless of service or nation. However, as the Navy service component commander, they also have responsibility for providing logistics support for U.S. Navy forces in theater, regardless of whether they are at sea or ashore. Therefore, although the focus on at-sea logistics is understandable and in-line with the Navy's logistics core competencies, NAVCENT should play a more active role in providing support to those Navy forces deployed ashore, as well. This could be accomplished through increased joint planning and coordination in theater.

c. Force Protection and Shifting Organizational Values

Finally, force protection and security issues have created some additional cultural influences that impact the logistics system in NAVCENT and CENTCOM specifically. The main issue is that the threat of terrorism in the region is creating a shift in values and priorities for leaders of the organization. Their values have shifted toward protection of forces, first and foremost, forcing a reduction in forces to only those forces absolutely essential to completing the mission at hand. This is driving policy decisions

that support lower force levels at the expense of quantity and quality of logistics services provided. There is a trade-off between force protection and the ability to provide the highest levels of logistics support.

2. Outputs and Outcomes

The cultural mindsets discussed previously lead to specific metrics to measure the performance of the logistics support system. Units and individuals are held accountable for these performance metrics on evaluations and inspections. In the case of logistics customers/war-fighters, these metrics are mission-related. Waiting for the supply system to catch up to a critical requirement may adversely impact those metrics, if not actual mission accomplishment. For example, a construction battalion CO may be evaluated on his units' output of construction projects, versus that of similar battalions. The closest he may come to being evaluated on logistics may be the efficiency of his OPTAR obligations in relation to projects completed. Similarly, a Fleet Hospital CO would be evaluated on patient throughput and quality of care, while a SEAL may be evaluated on successful missions and targets destroyed.

In the case of logistics providers, their metrics focus more on the management of logistics resources rather than the mission outcomes those resources enable. These metrics can create a disincentive to accurately depict requirements if those requirements paint a negative image of the logistics process or management. For example, the Supply Officer in charge of the supply warehouse that stocks material in support of that Seabee Battalion, Fleet Hospital, or SEAL unit would be evaluated on the accuracy of stock records and their efficiency at filling documented requirements.

E. FEEDBACK AND INITIATIVES

The final aspect of the Organizational Systems Framework is the feedback loop. This is a critical link between the resulting outcomes of the system and the inputs and design factors that produced those outcomes. It is the mechanism to continuously evaluate and adapt the system to get the intended results. For the naval expeditionary logistics support system, the feedback loop involves various strategic and operational initiatives and changes currently going on that will change the way naval expeditionary forces are supported. The strategic initiatives change inputs to the system through-based

changes in focus for DoD or the Navy. Operational initiatives change elements of the design factors. They are more focused changes to processes or systems that affect the way logistics support is provided.

Based on lessons learned form the Global War on Terrorism and Operations Enduring Freedom and Iraqi Freedom, DoD is moving aggressively to transform existing logistics processes, infrastructure, and systems through Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) changes in order to create the capability to project and sustain forces rapidly with reduced footprint and to support distributed, adaptive operations.[64] This section presents DoD's strategic and operational initiatives, which are meant to maximize employment of expeditionary forces operating in a joint environment.

Although of these initiatives are currently being implemented within DoD, the Navy, or the expeditionary communities, their impact on the logistics system has not been felt to a great degree at the time of this research. Therefore, at this point, these initiatives are considered feedback to the system direction or design blocks. However, in the future they will become part of those elements and influence future implementation and results of this system.

1. Strategic Initiatives

Initiatives on a strategic level affect the military logistics system on a broader scope than operational initiatives, which are implemented to affect the system more directly. Strategic initiatives promote culture changes within the system with the intention of removing inefficiencies, which are a result of misguided policies or traditions. The following strategic initiatives will be analyzed with regards to their effects on naval expeditionary force logistics: Focused Logistics, SEABasing, and Distribution Process Owner Designation.

a. Focused Logistics - Joint Vision 2020

Joint Vision (JV) 2020, the follow-on vision to JV 2010, encompasses four operational concepts: Dominant Maneuver, Precision Engagement, Full Dimensional

64 U.S. DoD, (2004), Draft OSD document for Logistic Transformation Strategy.

Protection, and Focused Logistics.[65] JV 2020 also covers the enabling concepts of Information Superiority and Technological Innovation. Each will contribute to achieving full spectrum dominance for the 2020 force.[66] The interrelation of Focused Logistics to the other operational concepts of JV 2020 is important. While the contributions of logistics has been widely recognized throughout US history, this is the first time logistics has been formally designated a full partner in the joint war-fighting process.

Focused Logistics is the strategic concept that defines broad joint logistics capabilities that are necessary to deploy, employ, sustain, and re-deploy forces across the full spectrum of operations. The objective of focused logistics is to improve support to the war-fighter, and as such, is critical to the future support of naval expeditionary forces, which operate in a joint environment and require broader logistical support. Logistics forces have the responsibility to sustain combat at all levels, strategic, operational, and tactical providing the resources necessary for US forces to achieve and maintain battle-space dominance.[67] Focused logistics draws from the core competencies of each of the services and defense agencies. This joint logistic community effort centers on identifying and evaluating desired operational capabilities for the 2020 force. These logistics capabilities, if proven and implemented, will be translated into a future joint operating capability.

The challenge of focused logistics represents the grouping of similar logistics functions and systems to define desired operational capabilities for the 2020 force. The ones that will directly affect naval expeditionary forces are: Joint Deployment and Rapid Distribution, Information Fusion, Multinational Logistics, Agile Infrastructure, and Joint Theater Logistics Management. Defining, developing, understanding, validating and implementing these tenets becomes the essence of future joint logistic operations.[68]

---

65 U.S. DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

66 Ibid.

67 U.S. DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

68 Ibid.

Joint Deployment and Rapid Distribution is the process of moving multi-service forces to an operational area coupled with accelerated delivery of logistic resources through improved transportation and information networks. These integrated deployment, distribution, and informational networks will provide the naval expeditionary forces with improved visibility and accessibility of assets from source of supply to point of need.[69] As a result, these forces will obtain critical supplies more rapidly reducing unit downtime due to logistical inefficiencies.

Information Fusion is the primary platform and key enabler for achieving major improvements in logistic support. This concept will provide timely and accurate access and integration of logistic data across units and combat support agencies. Information technology will improve logistic support to the naval expeditionary forces by providing reliable and critical information regarding valuable resources that are either in process, in transit, or in storage.[70]

Multinational Logistics establishes mutual logistics support relationships between the United States and its allies or coalition partners. Multinational and third party logistics play an important role in most military engagements. It is essential that planners capitalize on the resources, processes, and capabilities of multinational and contractor-supported operations if these key elements are to be successfully integrated into the overall joint logistic infrastructure and organization.[71] With increase emphasis on multinational operations, naval expeditionary forces require more logistical coordination with foreign militaries in the event that the forces are in a geographical location where the host nation is providing all the logistical support.

Agile Infrastructure will effectively size the logistic footprint through intelligent reductions in logistic forces, facilities, equipment, and supplies. These reductions will be accomplished through changes to joint logistic doctrines, policies, structures and processes for inventory management, engineering, services, maintenance,

---

69 Ibid.

70 U.S. DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations*..

71 Ibid.

and infrastructure.[72] This is a critical component to the naval expeditionary force as it directly affects how they will be supported while deployed. With a decreased footprint, obtaining increased technological logistic support will be essential to make up for the decrease in size of logistical support.

Joint Theater Logistics Management (JTLM) integrates the logistic capabilities of the forces in-theater to fulfill the common user and cross service support mission. When applied to the other challenges and desired operational capabilities of focused logistics, JTLM facilities support to the war-fighter while achieving economies and reducing the logistics footprint. JTLM optimizes resources by synchronizing all logistic support efforts in-theater. The objective is to provide rapid, timely delivery of forces, material, and sustainment to the Theater Commander. JTLM provides to the Theater Commander the ability to synchronize, prioritize, direct, integrate, and coordinate common user and cross service logistic functions necessary to accomplish the joint theater mission.[73] This policy empowers the Theater Commander to delegate support to critical operations, which will directly affect naval expeditionary forces as they conduct their high profile missions.

b. SEABasing – SEAPower 21

SEAPower 21 encompasses a new vision for the Navy and how it will operate to take advantage of the unique characteristics operation from the sea provides. The vision consists of three aspects SEAShield, SEABasing and SEAStrike, which are all enabled by ForceNet a system designed to integrate warriors, sensors, networks, platforms and weapons into one netted force. As part of integrating Sea Power 21 into the naval logistics force, an Expeditionary Support Policy Council (ESPC) was created. The purpose of the ESPC was to identify and develop logistics business rules, processes, procedures, and policies, which enhance naval and joint expeditionary operations to meet the objectives of Sea Power 21. Since SEABasing is the logistic aspect of Sea Power 21, its vision has been widely influenced by the findings of the ESPC.

---

72 Ibid.

73 U.S. DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

SEABasing is the core of SEAPower 21. It is about placing at sea capabilities critical to joint and coalition operational success: offensive and defensive firepower, maneuver, forces, command and control, and logistics. This minimizes the need to build up forces and supplies ashore, reducing their vulnerability and enhancing their operational mobility. It will be increasingly central to joint military planning because the traditional advantages enjoyed by afloat forces, such as independence, mobility, and security, are becoming ever more important to military affairs, while traditional limitations of SEABasing forces, including operational reach and connectivity, have been largely overcome by technologies and concept of operations. Because of these changes, the value of SEABasing in an increasingly interdependent world will continue to rise, providing operational freedom for joint and coalition forces, compressing deployment timelines, strengthening deterrence, and providing dominant and decisive combat power from the sea.[74] SEABasing accelerates expeditionary deployment and employment timelines by pre-positioning vital equipment and supplies in-theater, preparing the United States to take swift and decisive action during crises. Strategic sealift will be central to this effort. Moreover, building pre-positioned ships, with at sea accessible cargo, is vital to future logistical support operations. Joint operational flexibility will be greatly enhanced by employing pre-positioned shipping that does not have to enter port to offload.[75]

c. USTRANSCOM – Distribution Process Owner

The Secretary of Defense designated the Commander, USTRANSCOM, as the DoD's Distribution Process Owner (DPO). As such, it is charged with improving the overall efficiency and interoperability of distribution-related activities during peace and war. In addition, the DPO serves as the single entity to direct and supervise execution of the strategic distribution system. Prior to this designation, end-to-end distribution support to the war-fighter was marked by a multitude of process and information technology challenges. Essentially, DoD distribution was a series of stove-

74 Naval Institute Proceedings (JAN, 2003): SEABasing, Operational Independence for a New Century.

75 Naval Institute Proceedings (OCT, 2002): Sea Power 21, Projecting Decisive Joint Capabilities.

piped processes and information systems managed by many discrete owners. Such segmentation caused inefficiencies and drove DPO designation to promote enterprise solutions.[76]

As a department, the DPO will bring collective talents and ongoing initiatives together to forecast requirements, synchronize the movement of cargo and personnel from a source of supply to a designated customer, and expeditiously respond to war-fighter requirements. The intention is to provide a "factory to foxhole" distribution system, linking the entire global DoD supply chain. The DPO's focus area extends from a point of sale to the first retail activity in-theater, as designated by the theater commander. In addition, a plan to designate one IT backbone is in place, establishing business rules to link sustainment and distribution systems into a data warehouse, where supply requisitions and movement requirements are visible to distribution system customers.[77]

d. Strategic Initiatives Sub Conclusion

The implementation of these initiatives will greatly enhance the execution of logistical support to the naval expeditionary forces as it incorporates a leaner supply chain with reduced "stove piping". If properly applied, these initiatives will update critical procedures and doctrine improving the culture of support throughout the naval logistics system.

2. Operational and Tactical Initiatives

Unlike strategic initiatives, which are broad in nature, operational/tactical Initiatives provide are designed to provide a more direct impact on the logistics chain. These initiatives, once implemented, will have a profound affect on the operation of the logistics system and will directly affect the support the naval expeditionary forces receive. The following Operational/Tactical initiatives will be analyzed with regards to their affect on naval expeditionary logistics: CDDOC, RFID/TAV/ITV, DLA Central, and the Deployable LSC concept.

---

76 Ibid.

77 House Armed Services Committee Testimony by General John W. Handy, CDR USTRANSCOM. Given on March 17, 2004.

a. CDDOC

CENTCOM, in partnership with the DPO (USTRANSCOM), DLA, and other national providers, has taken steps to transform the deployment and distribution process and eliminate the seams between strategic and operational logistics. One of its initial steps was the implementation of a DPO initiative designed to improve end-to-end distribution within the DoD. The result was the creation of a CENTCOM Deployment and Distribution Operations Center (CDDOC).[78] Its mission is to link strategic deployment and distribution processes to operational and tactical functions to support the war-fighter. Combining the expertise of DLA, USTRANSCOM, the military services and other materiel distribution stakeholders, the CDDOC is rethinking and rewriting how materiel will be shipped, received, and tracked in theaters of operations. With a clearer view of all of the distribution occurring in an operation, commanders at the most senior levels will be better able to prioritize their needs and make decisions in the early stages of the distribution process. The intent is to relieve the transportation and distribution system by better synchronizing movements and potentially preventing duplicate requisitioning actions for items that were previously delayed in transit.[79] Working under the tactical command of the CNETCOM Director of Logistics, CDDOC is improving CENTCOM's ability to locate and provide data on shipment quantity, composition and delivery times to expedite the distribution of high priority commodities to the military services.[80] CENTCOM will be able to prioritize and plan for the constantly changing requirements of the military forces while improving the speed, cost effectiveness and efficiency of equipment and supplies delivered.

b. RFID/TAV/ITV

A tracking technology called radio frequency identification (RFI) that can spot and track the smallest of containers and what is inside them is set to revolutionize

78 US DoD, (FEB, 2004), USCENTCOM news release, Release number 04-02-17.

79 US DoAF, (n.d.) Randolph AF Base Newsletter: "The Transformer", Mr. Jack Hooper – New Director for CDDOC. http://www.jppso-sat.randolph.a.mil/transormer/default.htm. Retrieved on July 15, 2004.

80 DoD Kress, J., (OCT, 2004): First-Time Partnership to Improve Distribution Pipeline.

the way supplies are delivered.[81] A precise inventory can be maintained of every air dropped container with ground control being able to track its every movement from thousand of miles away.

During Operation Desert Storm, over 40,000 containers of supplies and materiel were shipped to the CENTCOM AOR. As a result of poor accounting and logistical tracking, nearly half of the containers required manual inspection in order to ascertain their contents. This time intensive procedure ultimately led to unfulfilled supply requests, which required reordering degrading the readiness and effectiveness of the requesting units. Because of these and other supply inefficiencies experienced during the first Gulf War, the DoD created the Logistics Automatic Identification Technology (AIT) Office in 1997.[82] The office was instrumental the in the creation of a new technology called radio frequency identification (RFID) which has facilitated the task of tracking critical cargo shipments. The DoD is using RFID in conjunction with the Global Positioning System to track shipments worldwide. RFID tags affixed to individual items or to cargo containers can be tracked in near real time while in transit. Military personnel can seamlessly query the RFID tags and locate the items promptly decreasing "lost in shipment" surveys dramatically.

c. DLA – Central

DLA-Central (DLA-C) was established in order for DLA to have a permanent presence in the CENTCOM region. In coordination with CENTCOM at its rear headquarters in Tampa, Fla., DLA-C creates one focal point for the DLA director and combatant commander for Southwest Asia. Currently three DLA customer service representatives work inside and outside the theater of operations to create a viable bridge towards better advisement and communication between DLA field activities and its military customers. The new organization does not have command over DLA's distribution centers; it instead provides the field activities with one point of contact for all supply requisitions in the Middle East. Similar to the already established DLA-Europe,

81 Defense World Magazine (JAN, 2003): Tracking a needle in a haystack – Radio frequency identification makes it possible.

82 Military Information Technology Magazine (AUG, 2003): *RFID "In the Box" Visibility.*

supporter to the United States European Command, and DLA-Pacific, supporter of the United States Pacific Command, DLA-C will engage customers throughout the U.S. CENTCOM AOR and its 27 nations to maximize War-fighter readiness and logistics combat power through coordination and synchronization of an enterprise solution.[83]

d. Deployable LSC

Unlike the initiatives discussed above, the Deployable Logistical Support Center (LSC) has not been implemented; however, it has been identified as a possible solution to existing deficiencies in expeditionary logistics support. As currently envisioned, the deployable LSC teams would consist of a core of 2-3 Logistical Support Representatives (LSRs) tasked to provide logistical support to naval forces in ports or operating areas where little or no infrastructure exists. The team's capabilities can be expanded through the partnering with DLA, regional NRCCs, ELSF, and other NAVSUP capabilities. Deployable LSCs would OPCON to the naval component and would be placed TACON to a naval support element, CTF, or ALSS/FLS.[84] The deployable LSC teams could reside at a FISC and serve a specific geographical area. The support would be provided to naval forces operating in remote areas not currently supported by any other logistical infrastructure such as expeditionary forces deployed inshore.

e. Operational and Tactical Initiatives Sub Conclusion

The operational/tactical initiatives, effectively applied, will provide a more robust logistics system for the naval expeditionary forces. These initiatives will facilitate the supply ordering, shipment tracking, storage, and issue process through a streamlined command and control organization, which is utilizing the most advanced electronic technology and procedures.

---

83 DLA news release (OCT, 2004): DLA-Central Supports Customers, Contingency Teams in Southwest Asia.

84 Deployable LSC draft CONOPS (JUL 2004).

THIS PAGE INTENTIONALLY LEFT BLANK

IV. ANALYSIS, CONCLUSIONS, AND RECOMMENDATIONS

The logistics support system in place in NAVCENT is a complex, multi-faceted system tasked with a difficult mission - operational logistics support to deployed naval forces. The portions of that system that support naval expeditionary forces have an even more difficult task - providing support for those forces over the shore in a hostile, combat environment. This chapter provides analysis of some of the factors discussed previously, attempts to draw some critical conclusions from that analysis, and provides recommendations for applying this analysis to improve the system and the support provided to the naval expeditionary forces.

A. ANALYSIS

The Organizational Systems Framework provided a detailed tool to break-down this complex system into a series of inter-related parts: inputs, design factors, and outputs and outcomes. This section analyzes the importance of those factors and discusses how they impact the overall system in terms of efficiency and effectiveness. Due to the scope of this research and the limited time and resources available, quantitative analysis did not prove to be practical. As the first step in a review of a very complicated system, we recommend follow-on research to further explore specific areas of the system and provide quantitative analysis of the efficiency and effectiveness of these areas. We derive our assessments from numerous interviews with key leaders and participants in the logistics system, analysis of lessons-learned and after-action reports, and reviews of findings of other governmental agencies. Furthermore, this research appears to be the first comprehensive assessment of the entire logistics system supporting all naval expeditionary communities. This view is evidenced by the response from senior expeditionary logistics leaders at the Expeditionary Support Policy Council conference in October 2004, where they expressed the opinion that they had never seen the entire system analyzed as one large, inter-related system of parts.

1. Inputs to the System

a. Environment and Context and Key Success Factors

The NAVCENT logistics system faces demanding environmental and contextual factors. Budget constraints are always a factor that affects the overall system

capabilities. This exogenous aspect is tied in to one of the system's key success factors; right cost. Moreover, in the physical hazard of combat, expeditionary forces are operating away from their normal lines of supply, force protection requirements lead to unpredictability, and destruction of shipments produces greater variability in delivery time. Moreover, combat losses and battle damage repair, coupled with variability in OPTEMPO, make forecasting demand difficult. Consequently, logisticians in the expeditionary units have to establish new relationships and support processes compared to homeport routines, and the NAVCENT service providers need to serve different customers than they may be normally accustomed to. However, the system's key success factors - right stuff, right place, right time, and right cost - will remain the same.

b. System Direction

Based on the environmental and success factors, the logistics system gets its direction from several levels and sources. First, the President's focus on the Global War on Terrorism (GWOT) implies a certain direction in terms of the types of operations logistics planners must be capable of supporting and the environments they will be working in. This vision is incorporated in doctrine. Secondly, logistics doctrine exists at various levels, including joint doctrine, service-specific doctrine and community-specific doctrine. These documents outline the hierarchy of forces and corresponding requirements within NAVCENT, as well as NAVCENT's role as a service component commander under the theater combatant commander, CENTCOM. Joint doctrine states that combatant commanders exercise command authority over assigned forces within their geographic AOR, meaning that the combatant commander is responsible for joint theater logistics and maintains directive authority for logistics. However, the combatant commander may determine that common servicing is ideal and can assign responsibility for providing or coordinating service for all Service components to the dominant user of that service.

Given the scope and interdependencies within the logistics system, it is important to understand and implement doctrine at all levels. Adherence to the defined command relationship and responsibilities is a prerequisite for an effective joint theater logistics infrastructure and its ability to support achievement of strategic, operational and

tactical objectives. For example, it is important for NSW force planners to identify and determine authorities and responsibilities in the theater of operations to coordinate support services and organic assets to fulfill requirements. Combatant commanders and theater Service component commanders, in coordination with the Theater Special Operations Command (TSOC), are responsible for ensuring that effective and responsive SOF support systems are developed and provided for assigned SOF.[85] Further, it is the responsibility of the TSOC commander or the Joint Force Special Operations Component Commander (JFSOCC), or Commander, Joint Special Operations Task Force (CDRJSOTF), on behalf of the combatant commander, to validate the logistics requirements necessary to support theater operations.

Additionally, logistics theory and principles provide direction to the system. These principles - responsiveness, simplicity, flexibility, economy, attainability, survivability - give direction to the logistics planners in designing a system to optimize support for the naval expeditionary war-fighter. Finally, individual community missions state what these forces must accomplish, and their corresponding logistics needs.

2. Design Factors

a. Tasks and Functions

Over the past 25 years, the Navy has devoted considerable resources to developing a robust logistics support system in the NAVCENT AOR. This NAVCENT theater network has continually improved, consistently proving itself very capable of sustaining potent naval forces in combat in a very challenging environment. Within NAVCENT, various agencies and organizations provide support to cover all of the logistics functions and tasks discussed in Chapter III. However, this network is largely focused on support for forces at sea in the Arabian Gulf, Arabian Sea, and Red

Sea. Furthermore, one of the key lessons learned during Operation Iraqi Freedom (OIF) is that the U.S. military needs to improve its integration of transportation and distribution systems and networks to provide better support to the war-fighter.

---

85 US DoD, (2003), Joint Doctrine Publication 3-05, *Joint Special Operations.*

b. Technology and Processes

Each expeditionary community utilizes the same fundamental processes of communicating requirements back to support elements and tracking the distribution and delivery of material forward. However, our description of the system has revealed that each expeditionary community has developed unique processes and systems to facilitate their logistics support. Each community places a different emphasis on these processes, and has achieved different levels of sophistication in developing their systems. Furthermore, each community has different levels of organic logistic support capabilities. Therefore, we conclude that there may be efficiencies to be gained by streamlining these parallel processes into one integrated system for the expeditionary communities.

c. Organization and Structure

The logistics system appears to be adequate to support naval expeditionary forces, because the human resources and capabilities are in place to meet all logistics functions, as we have demonstrated in the previous sections describing logistics *Tasks and Functions* and *Technology and Processes*. In addition, these sections demonstrated that procedures are established for effective logistics command and control. Furthermore, the doctrine that governs logistics command and control is well established, as we described in the *System Direction* section. However, the logistics system appears to be highly fragmented. Numerous sources of support exist among the Navy and other services, while some individual communities establish pre-positioned stock, or rely on reach-back to CONUS, for support that is available elsewhere in the theater. Additionally, a lack of doctrinal understanding and implementation has led to vague authorities, relationships and responsibilities. That vagueness is the basis for this research, as naval expeditionary communities operate physically removed from traditional Navy logistics support, but do not always have access to the joint or inter-service support provided by the Army or Marine Corps ashore.

3. Organizational Culture

Chapter III identified several key cultural outcomes of the existing logistics support system. These cultural outcomes have had an important impact on the efficiency and execution of the logistics system.

a. Conflicting Motivations and Mindsets

The conflicting motivations between customer/war-fighters and logistics service providers are not unique to the expeditionary communities, but there are examples of conflict throughout the fleet. This customer mind-set is fed by the Navy's proud tradition of problem solving at the lowest level. This is ingrained into every Officer and Sailor from their earliest training. This is also true of some of the individual communities. The motto of the Seabee's, "Can Do!" signifies their willingness to overcome any challenge to get the job done. While this is obviously commendable at the tactical level, it perpetuates some logistics problems by masking their true impact on mission readiness and accomplishment. Work-arounds and off-line reach-back to homeport for material requirements may solve a problem in the short-term, but it can compromise the supply system's ability to meet long-term needs. Furthermore, this practice prevents solutions from being undertaken at the appropriate level, and can lead to multiple, parallel solutions being implemented for the same problem.

b. Service and Community Parochialism

One major impact of service and community parochialism is in the development of information systems, where parallel, "stove-piped" systems have led to redundancy, inefficiency, and a lack of inter-operability between organizations, communities, and the various services. For example, several expeditionary communities have undertaken separate initiatives to develop a logistics information system that can support deployed operations for their community. Recently, they have combined their efforts under the Expeditionary Support Policy Council's IT Working Group. However, had this not been done, each community could have developed, funded, and fielded separate systems that would have done essentially the same functions. Clearly, this would be a redundant and inefficient course of action.

However, service parochialism goes beyond the scope of physical system procurement. Interviews and lessons-learned documents indicated that some communities (or at least some deployed units) were unaware of the joint theater distribution system in place to move material up from Kuwait or distribute it from logistics sites in Iraq. USTRANSCOM and CENTCOM have made great strides in

improving the flow of material throughout the theater. However, some of these units are not tapping in to this system, but are relying instead on costly organic transportation assets and routes to get their needed material.

c. Force Protection and Shifting Organizational Values

The cultural impact of force protection and security is evident through a shifting of organizational values. In view of the grave threat to forces posed by terrorists, the preeminent organizational value has now become force protection and security of forces, installations, and resources. While performance, efficiency, and mission accomplishment are certainly still critical values of the organization, this research found numerous instances where the need to ensure safety and security prevailed over these values when making strategic, operational, or tactical logistics decisions.

One such impact is in areas where logistics support may need to be expanded to meet the new needs of the war in Iraq. Expanded services will require more people, and possibly new or larger bases. This larger footprint now requires a larger security force to protect it, which then requires more personnel support (barracks, galley, etc), which require still more people to operate. Thus, it becomes a conflict with the policy of reducing the manpower (i.e., terrorist target) in theater. Naturally, the higher priority for the NAVCENT commander is the security of his forces. Therefore, the need for expanded logistics support in theater loses out to the need to reduce force levels, particularly non-war-fighting forces.

This policy directly manifested itself in the removal of families from Bahrain early in 2004. All DoD personnel are now on one year unaccompanied tours to Bahrain. This decision then resulted in a new cultural outcome; a dramatic decrease in motivation of the personnel providing some logistics services[86]. The impact is difficult to quantify, but leaders expressed a deep concern about a marked decrease in quality of service provided as personnel shifted their focus away from their work and towards new, emergent personal concerns. For example, a one-year tour means that the person is leaving the job only shortly after becoming effective in that job. It is a constant cycle of

86 Interview, CAPT Kurt Kunkle, SC, USN, ACOS for Logistics (N4), U.S. Naval Forces Central Command, 28 Oct 2004.

training a new relief and preparing to leave for the Sailor's next assignment. Also, that Sailor will begin negotiating for orders to that next assignment very soon after arriving in Bahrain, once again shifting his focus away from the very important job at hand. Also difficult to quantify, but acknowledged as a detractor, is the impact on that Sailor of being on an unaccompanied tour away from his or her family for 12 months, leading to increased financial, emotional, or medical issues for both the Sailor and their family back in the United States.

This policy also had a negative impact on the DoD civilian work force supporting NAVCENT. The one-year unaccompanied tour policy is compounded by the fact that civilians do not qualify for many of the financial incentives that military members enjoy while assigned to Bahrain. These incentives include Imminent Danger Pay, Family Separation Allowance, and Combat Zone Tax Exclusions. The result is that many civilians are choosing not to extend their tours at the end of the year. Furthermore, when they leave, it is increasingly difficult to get a replacement to come from CONUS, as there is no incentive to do so. That worker would get paid basically the same amount of money, as they would get to live in Omaha, with their family, and without the threat of a terrorist attack.

The impact is particularly critical in civilian-intensive organizations in NAVCENT, such as the NRCC in Bahrain. One leader estimated that NRCC civilian manning was approaching 50 percent. Unlike other aspects previously discussed, this impact is relatively easy to quantify, as NRCC's throughput capacity for processing contracts would also decrease to roughly 50 percent of its intended capacity. Furthermore, additional analysis has already shown a probable need to increase NRCC contracting capacity to provide support to the naval forces deployed in Iraq.

4. Outputs and Outcomes

The NAVCENT logistics system is a detailed, efficiently functioning system or service providers. The logistics *Tasks and Functions* section in Chapter III illustrated that NAVCENT and CENTCOM have all the necessary resources and capabilities to meet all logistics functions. Although the NAVCENT logistics system is adequate, its operational reach is dictated by supporting maritime forces at-sea. During OIF,

expeditionary forces operating in areas with limited or no existing infrastructure had to be self-reliant and/or, partner with other services for logistics support. This proved problematic at times when determining the assignment and responsibility for common item support such as transportation, contracting and health services support. Further, the majority of the logistics challenges experienced by the naval expeditionary forces were from an ineffective joint theater distribution network and poor intra-theater asset visibility. As one senior logistician stated, "DoD is failing logistics personnel by putting them in the position of having to work around the system in order support units forward."

5. Overall Logistics System Execution

Despite the human capabilities and established doctrine, the size and complexity of the logistics system influences its execution. System execution includes making assumptions about the operating environment, assessing the organization's capabilities, linking strategy to operations and the people who are going to implement the strategy, synchronizing those people and their various disciplines and linking rewards to outcomes. In its most fundamental sense, execution is a systematic way of exposing reality and acting on it[87]. In a human factor perspective, this research identifies cross-functional awareness and understanding of roles and relationships as two major areas of improvement, as we will illustrate in a later section of this chapter.

Cross-functional awareness can be viewed as the anti-dote to "stove-piped" entities. But as it currently stands, logistics support of expeditionary forces seems to run the risk of getting too focused on the respective units. Awareness and integration with higher echelons will likely suffer from this situation. Establishing individual support mechanisms within the logistics system, rather than understanding what resources already exist and allowing the system to operate as intended, reduces overall system efficiency. Furthermore, it risks fragmenting the forces rather than integrating them. Given the social complexity - the number and diversity of players, structural relationships, and extensive geographical range of the logistics personnel, and the technical complexity - the number of technologies that are involved, the immense number of possible

87 Bossidy, L./Charan, R., (2002), Execution. The Discipline of Getting Things Done.

interactions among them and the rate of technical change[88], the challenge is to create an integrated logistics system that pulls together the assets from all four services into a comprehensive whole.

The logistics system's execution will not improve unless each entity adopts a more systemic view on logistics support, meaning a greater awareness and commitment to the already established structures and capabilities. Integral rather than separative initiatives, collaborative rather than solitary attitudes, and trustfulness rather than doubtfulness on behalf of the Big Navy are values that each entity can pursue. In addition to improved system execution, these features seem to support the future transformation initiatives that assume joint efforts. The NCF initiatives to standardize their support systems with the Marine Corps' practices are excellent examples of constructive efforts to improve the system's overall execution. In terms of technical complexity, standardization of support systems and terminology will ease the cross-functional interaction between logistics planners on any level and between any services in the logistics system.

The size and complexity of the logistics system requires unambiguous principles and definitions of its intended division of responsibilities. A system without these clarifications will be chaotic and degrade performance. Although this research suggests that the logistics system to support naval expeditionary forces is adequate and that doctrine is established, we have found evidence suggesting limitations in system execution. These limitations, in our view, result from a lack of doctrine implementation.

A doctrine is an overarching document that provides system direction and some critical definitions, such as roles and relationships. Despite its subordinate perspectives, this document is important on any level in the organization. In order to implement it, however, operational leaders and logistics planners from each service and expeditionary community must translate and shape the doctrinal concepts into meaningful operating terms for their own units, based on the applicable concepts of operations for each

88 Conklin, J., (2003), Wicked Problems and Social Complexity.

community. The expeditionary forces subject to this report have not fully applied this doctrine. Accordingly this represents an important area of consideration for improved system execution.

B. CONCLUSIONS

The research question underlying this report asks whether there are potential areas within the NAVCENT logistics system to target for improvement, restructuring or realignment to better support the expeditionary units in the CENTCOM AOR. Based on the OSF, a gap analysis of expeditionary community requirements and the logistics system capabilities suggests a set of answers to the question. This section presents these findings. Based on the fact that naval expeditionary forces are mission capable and successfully deployed in combat operations in Iraq, the overall results of the logistics system are adequate. However, in addition to the various strategic and operational initiatives and changes that are currently being introduced, this report constructively addresses certain areas for improvement that seek to contribute to the feedback loop that continuously evaluates and adapts the logistics system. These recommendations are detailed in Section C of this chapter.

1. Logistics System Design is Adequate

This conclusion is supported by two key findings; all required logistics functions, tasks, and capabilities are established and in place with the NAVCENT and CENTCOM logistics system, and doctrine to define the roles and responsibilities for joint, service, and community logistics support is established and available.

a. Logistics System Functions and Capabilities are Adequate

The design of the logistics system is sufficient to support naval expeditionary forces. Within the Central Command AOR, the functions of supply, transportation and logistics command and control are met by a network of service providers and command and control elements at both the theater (CENTCOM) and service component (NAVCENT) levels. This network effectively merges elements of strategic and operational pre-positioning and stock consolidation points with transportation and distribution via sea, air, and land multi-modal hubs and assets to

successfully support naval forces at sea or on land. COMLOGFORNAVCENT/CTF-53, DESC-Middle East, NRCC Bahrain, and the NAVCENT transportation network are central providers in this system.

NAVCENT provides logistics command and control through a variety of task specific groups (CTGs) within CTF-53, including NAVELSF forces and the temporary LRC. Moreover, in order to reduce military force structure, DoD relies extensively on civilian contractors and local vendors for goods and services. At the community level, sufficient organic capabilities are in place in the NSW forces, NCF forces and Fleet Hospitals. Deployed EOD units assign logistics as a collateral function within the unit, and are, thus, dependent on being collocated with a support command while deployed.

From a human factor perspective, the motivation, focus, and mind set, coupled with the training, knowledge and expertise of the experienced logisticians, suggests that the system is adequate. The organic logistics capabilities within the expeditionary units lead to a high level of commitment and professionalism at the unit level. Logistics personnel adopt the language and identity associated with expeditionary operations, and their training and experience make them well suited for execution of the logistics functions.

b. Logistics Doctrine is Established

Extensive Joint and Navy doctrine exists for all aspects of operational logistics support. The NAVCENT logistics system has established doctrine and procedures that provide breakdown and distribution of work, tasks, functions and roles and responsibilities of the key groups and individuals in the organization. Readily available publications at the theater level assist naval theater logisticians in adapting the logistics system to provide Navy expeditionary forces with support and sustainment. Based on this finding, we do not believe there is a need for any new doctrine to be created that would improve expeditionary support.

2. System Execution is Not Optimal

Although the logistics system has adequate resources, capabilities, and doctrine and in place in the theater, we found some customers had difficulty getting access to

some of these resources. Furthermore, we found an apparent lack of awareness of how to implement the established doctrine. The result was that the manner in which the doctrine is implemented and these resources allocated is less than optimal in supporting naval expeditionary forces.

a. Access to Some Logistics Resources and Capabilities is Difficult

Although this research found that all required logistics functions and capabilities are in place with the NAVCENT system, lessons learned data and interviews highlighted a lack of awareness of and ability to gain access to some of these capabilities for the deployed expeditionary customers.

For example, lessons learned from the NCF indicated that they were not aware of the Army-run CENTCOM theater ground transportation and distribution network, or the logistics command and control capabilities of the CENTCOM Deployment and Distribution Operations Center (CDDOC) in Kuwait. Feedback from a Fleet Hospital logistician indicated a similar lack of awareness, in that he by chance found a Defense Supply Center-Philadelphia (DSCP) representative working in Iraq. Once aware that that resource was available to him, he was able to get a great deal of assistance from that representative in expediting logistics requirements. However, he expressed concern that there was no standard process in place to advertise those services to the many units in the region who could benefit from the assistance.

Another aspect of difficulty in accessing logistics support was through interoperability of logistics C^2 and information systems. The NCF unit embedded in the MEF had no training on using Marine Corps logistics information systems, such as ATLASS, to requisition and track material requirements. The NCF relied on the Navy MicroSNAP system, which did not interface with ATLASS. Therefore, they had difficulty accessing their primary point of supply for most of their non-Class IV material requirements due to non-interoperable systems.

Other, similar, lessons learned data led to the conclusion that a lack of interoperable or common logistics C^2 and information systems is creating a barrier to effectively accessing some logistics support capabilities, systems, and processes.

b. Lack of Awareness or Implementation of Doctrine, Roles, and Responsibilities

As discussed in the previous section, this research led to the conclusion that the existing joint, Navy, and community-specific operational and logistics doctrine is well thought out and thorough. However, a common theme throughout the research was a lack of awareness or understanding of that doctrine, what it actually meant, and how it could or should be implemented. This conclusion applied both to how the expeditionary communities seek out and obtain support as well as to NAVCENT's self-perceived role in supporting those expeditionary forces.

For example, NCF Lessons learned from Operation Iraqi Freedom indicated that the formal structure to implement doctrine providing for Marine Corps support for SEABEE units was not well established prior to deploying into Iraq. Consequently, the processes for implementing support, and the levels of support to be provided, had to be established between each SEABEE unit and their supporting MEF as they rotated into the theater. There was no systematic method involved in establishing support, and issues were worked out as they arose. The result is that supported units could not accurately predict prior to deploying what types of support they would receive and what levels they actually would be supported at. This is not to fault the SEABEEs or the Marine Corps, but rather to point out that the actual implementation of the stated doctrine did not provide for the degree of integration that was intended.

Another example of implementation of doctrine is in NAVCENT's focus on at-sea logistics support. NAVCENT's focus on at-sea support is understandable and in-line with the Navy's logistics core competencies. However, as a service component commander, NAVCENT has responsibility for providing logistics support for U.S. Navy forces in theater, regardless of whether they are at sea or ashore. This responsibility necessitates a greater role for NAVCENT in supporting deployed naval expeditionary units, even after they cross the beach to operate ashore.

3. The Logistics System is Fragmented and Lacks Integration

Numerous, unaligned logistics service providers, operating on different logistics C^2 systems, lead to a logistics system that fragmented and lacks integration. Social and

technological fragmentation represents fragmenting forces to the logistics system. Consequently, logisticians that support expeditionary forces run the risk of getting too focused on their respective units, and losing a wider strategic view. Awareness and integration with higher echelons and cross-functional entities suffers from this attitude. Lessons learned repeatedly discussed how units establish alternate support mechanisms within the logistics system. From this, one can conclude that this fragmentation leads to inefficiencies in the system due to inadequate asset utilization. Furthermore, lack of doctrinal understanding and implementation at the tactical level adversely affects system execution. The existing doctrine is not translated and shaped to fit the expeditionary forces at the unit level. Incomplete implementation leads to blurred execution of roles and responsibilities, and creating a disconnect between support processes and intended support relationships.

Furthermore, some aspects of fragmentation seem to stem from the cultural outcomes of the logistics system. There is a difference in perspectives and mindsets between the logistics customers and their service providers resulting from conflicting motivations. The customer/War-fighter does whatever is necessary to accomplish the mission, whereas the logistics providers may be more motivated by following an established process, and less focused on the ultimate outcome of that process. Much of these mindsets come down to specific metrics these units and individuals are held accountable for on evaluations and inspections. In other words, the logistics system's incentive structure seems to encourage short-term solutions such as work-around and off-line reach-back to homeport. Furthermore, it prevents solutions from being undertaken at the appropriate level, and can lead to multiple, parallel solutions being implemented for the same problem. Logic dictates that these parallel solutions not only create further inefficiencies, but also perpetuate the fragmentation of the larger system.

a. Integration of NAVCENT with CENTCOM Theater Logistics System

This research recommends a review of both the NAVCENT and CENTCOM logistics systems to identify an overlap of capabilities and/or logistics support gaps. Closer planning, coordination, integration, and synchronization are

recommended among the logistics support in the expeditionary communities, NAVCENT and CENTCOM to determine how to best leverage existing resources and capabilities to meet customer demands and expectations. Simply, the best course of action may be to re-allocate existing intra-theater resources and capabilities and/or redefine the roles and relationships of service providers to optimize support and reduce redundant functions and processes. In doing so, logistics planners will identify where inadequate logistics support exists and linkages between shared task responsibilities to establish lead-partner relationships (i.e., executive agent and dominant-user responsibilities) in an effort to make the logistics system more responsive, adaptive and flexible. Limited logistics resources, combined with reduced force infrastructure, fewer forward locations, austere operating locations with limited infrastructure, and increased joint operations in the battlespace make it imperative to capitalize on the assets and capabilities in theater to facilitate support to the war-fighter.[89]

One area were this may be critical is in contracting support. One solution for naval expeditionary support is to rely on Army, Air Force, and Marine Corps contracting resources in Iraq. The combination of NRCC, Bahrain's civilian workforce challenges and limited access to Iraq support this. Furthermore, the Army has taken the lead for contracting issues within the theater.

Another critical area for integration with CENTCOM logistics systems is in ammunition and ordnance support for naval expeditionary forces. COMLOGFORNAVCENT/CTF-53 coordinates all theater ordnance movement and provides naval ordnance logistics support in the region. However, their role is limited to that of a facilitator of ordnance movement. Consequently, the Navy does not maintain any ordnance stock points within the theater, and relies on ordnance stocks embarked on CLF ships deployed in theater. This is significant to naval expeditionary forces, in that there are no Navy ammunition supply points ashore. Furthermore, the need to reduce the force footprint ashore, due to force protection concerns, makes it unfeasible for a navy ammunition stock point to be constructed. Instead, naval expeditionary forces rely on

89 U.S. DoD, (2000), Joint Doctrine Publication 4-0, *Logistics Support of Joint Operations.*

Marine and Army ammunition stock points for small arms ammunition, explosives and munitions. In the case of NSW- and EOD-unique requirements, those communities rely extensively on community reach-back support in CONUS to meet their needs. Consequently, delays and lead times could complicate responsive logistics support. However, feedback from the affected communities indicate that the combination of inter-service and reach back support adequately meet their ammunition requirements.

Another opportunity to benefit from integration is in ground transportation and distribution for expeditionary units. NAVCENT's ground transportation lines are the least robust part of its transportation and distribution network. Currently, the Navy relies on the Army or deployed Navy expeditionary support units for theater-level ground transportation. Part of this is due to the fact that many of these units deployed in Iraq are supporting the Army or the Marine Corps directly, or are part of combined joint task forces. The logistics consequences of this may be lack of flexibility and increased coordination between the services.

It is essential, therefore, for naval expeditionary forces to leverage both NAVCENT and CENTCOM logistics system capabilities and resources to achieve maximum logistics support, economies of scale and reduce their overall logistics footprint. This can be accomplished by adopting and employing the strategic, operational and tactical logistics initiatives discussed earlier in the *Feedback and Initiatives* section of Chapter III.

b. Integration of Naval Expeditionary Communities into Service-Wide Support

One of the key findings of this research was that the four expeditionary communities examined operate separate and apart from established logistics support systems of the Navy or other services. Although doctrine exists for providing support from various sources, analysis determined that these communities often are not following this doctrine in a systematic manner. This is not to say that these communities are not obtaining support from these systems. Rather, support is obtained through informal local

networking or leveraging organic capabilities, often less efficiently than may be possible through full integration. There is little or no consistent, systematic reliance on any one system for a particular type of support.

The basic approach to integration across these communities, and then upward with the various services, is to identify linkages between shared support responsibilities and requirements, and establish lead-partner relationships among the stakeholders. In most cases, one community can be identified as either the primary provider of support or the primary generator of requirements for a certain type of support. In that case, it makes sense for that community to take the lead on those issues, while collaborating with other communities that have a stake in that area.

For example, the Army and Marine Corps are currently working together on the development of the Global Combat Support System (GCSS), an information system for managing readiness and support for ground combat weapons systems. The Army has the lead on development of the system. However, the Marine Corps joined in as a partner in the development, since they operate many of the same weapons systems and essentially operate in the same manner as the Army. This system may provide a solution to naval expeditionary forces in managing support and readiness for their equipment, as well.

Conversely, one important lesson taken from OIF was that the Seabee's have more refined expertise in Class IV material management than the Marine or Army combat engineers. Viewed as their "bullets," Class IV material is the building and construction material needed for Seabee's to conduct their construction projects. Based on this lesson, one initiative being explored by the NCF and the Marine Corps is to integrate the system for Class IV requirement generation and material procurement and management. While under the operational control of the Marine Engineer Group (MEG), a sub-component of the MEF, the Class IV requirements for both services could be managed by the Seabee's. The Seabees would assume a lead relationship, with the Marine Corps as a partner. The Project Material Planning and Tracking Program (PMPT), an information system for automating Class IV support, could play a role in this

cross-service integration. Furthermore, the relationship could be extended to combat engineer units in the Army and Air Force, when deployed in a large-scale theater operation such as OIF.

4. The Threat of Terrorism and Force Protection Requirements Have Had a Negative Effect on the Logistics Support System

Finally, force protection and security has become a major issue for NAVCENT in Bahrain, and has led to some controversial policy decisions. The threat of terrorism in the region is forcing a reduction in forces to only those absolutely essential to completing the mission at hand. This is driving policy decisions that support lower force levels at the expense of quantity and quality of logistics services provided. Discontinuation of certain financial incentives, especially concerning the DoD civilian work force supporting NAVCENT, reinforces this negative cycle.

In order to reduce the military footprint and secure American military families in Bahrain, the Navy moved these families back to CONUS and changed all assignments to one year unaccompanied tours. Besides the fact that Sailors are deployed unaccompanied for year-long assignments and the corresponding morale issues, external factors in the logistics system have had some unforeseen consequences, such as difficulties with command and control, language barriers, cultural differences, lack of professionalism, and hijackings, kidnappings and assassinations.

In Iraq, the insurgents' intent is to disrupt the flow of material to U.S. forces, discourage vendors from seeking additional contracts, and eliminate all local material support. Tactics such as road-side bombs, highjackings, kidnappings, and beatings have become commonplace. Local vendors, fearing for their safety, have defaulted on contracts, reducing the numbers of sources of supply for some materials, such as Class IV building materials for the SEABEE's that are traditionally sourced through the local economy. This creates a new logistics challenge, as alternate sources must be found. Convoy routes and vendor delivery points have been altered to mitigate the threat. However, increased physical security requirements divert manpower away from operational or logistics duties, further degrading the efficiency and effectiveness of the process.

Although we have reached valid conclusions on the negative impact terrorism, and the resultant force protection policies, have on the effectiveness and optimization of the logistics system, recommendations to improve this aspect is beyond the scope of this research or the expertise of the researchers. Certainly, every effort to protect Sailors, Marines, civilian workers, and family members must be made. The importance of logistics efficiency and effectiveness is clearly overshadowed by the need to protect human lives. However, logistics planners should be aware of, anticipate, and plan for this impact when assessing their requirements and capabilities.

C. RECOMMENDATIONS

The findings of this report suggest that the NAVCENT logistics system in support of naval expeditionary forces is adequate, but less than optimal. Based on these findings, there are several recommendations proposed to achieve the MBA project's goal of establishing a more effective and efficient logistics system in support of naval expeditionary forces. First, we recommend improving the understanding and awareness of existing logistics support doctrine, thereby seeking to execute the logistics system the way the established doctrine intends it be executed. Secondly, we recommend developing common and/or inter-operable logistics command and control and information systems, thereby facilitating more effective and efficient access to all available logistics resources in the theater. Finally, we recommend against implementing the proposed Deployable Logistics Support Center, as its current concept of operations will not provide any new logistics capabilities or resources that are not already available in the theater.

1. Improve Understanding and Awareness of Doctrine, Roles, and Responsibilities

Naval expeditionary forces operating ashore unilaterally or in a joint environment must recognize the extent of their own organic logistics capabilities and the logistic support to be provided by parent service or between service components. Therefore, it is essential for expeditionary forces to be familiar with the geographical theater logistics systems' organizations and structures and the authorities and responsibilities for logistic operations prior to entering a joint area of operation.

Joint and Navy doctrine is a primary source for understanding these roles and responsibilities. Joint Publication 4-0, *Doctrine for Logistics Support of Joint* Operations, and Naval Doctrine Publication 4, *Naval* Logistics, are the primary publications for logistics doctrine. However, more detailed doctrine for specific logistic functions or services or for specific types of operations is presented in subordinate publications in the JP 4-0 and NDP or NWP 4 series. For example, service component commanders should refer to Naval Warfare Publication 4-01.1, Navy Expeditionary Shore Based Logistic Support and Reception, Staging, Onward Movement and Integration Operations, which assists naval theater logisticians in adapting the logistics system to provide Navy expeditionary shore-based logistics support and sustainment. Joint publications are available online in the Joint Electronic Library (JEL) at www.dtic.mil/doctrine/jel. Navy doctrine publications are available through the JEL at www.dtic.mil/doctrine/jel/service_pubs or through the Navy Warfare Development Command at www.nwdc.navy.mil/library/documents/ndps.

Furthermore, the Joint Professional Military Education (JPME) program provides formal training on joint doctrine. These courses are taught through the Naval War College for Navy officers, and are available either through in-resident study in Newport, Rhode Island, or through various non-resident "fleet seminars" in major fleet concentration areas, including the Naval Postgraduate School. Currently, JPME Phase 1 certification is only required for Unrestricted Line officers, but is highly encouraged for restricted line and staff corps officers. However, since most logistics planners discussed in this report are Supply Corps officers, it is recommended that they receive this training.

Another, less formal, recommendation for improving understanding of logistics support roles and responsibilities is a pre-deployment brief and desk-top or electronic guide for logistics resources in the theater. The brief should be conducted prior to deployment, and give specific details of organizations and resources available, what their capabilities are, how to access them, and how services or materials are paid for. The desk-top guide would provide similar information in a reference format that the

deploying supply or logistics officer could take with them into theater. It would help them initially set up a support network, ensuring they have access to needed resources as requirements emerge.

2. Develop Common/Inter-Operable Logistics Processes, Information Systems, and Command and Control Systems

A key finding of this research was the need to fully integrate these expeditionary communities into the larger service logistics support systems, allowing them to leverage these more robust capabilities for improved support while deployed ashore. The tool to enable integration and optimize system execution is common logistics processes, information systems, and command and control (C^2) systems. Common processes and systems allow efficient sharing of data, expediting requirements and potentially improving readiness. They can also achieve cost savings through virtual consolidation of inventory and improved asset visibility and in-transit visibility.

The long-standing reliance throughout DoD on community-specific processes and systems has hampered joint and service integration at all levels. When USTRANSCOM began consolidating and integrating distribution functions as the Distribution Process Owner (DPO), they encountered nearly 300 separate information systems involved in material distribution across the services. These redundant and incompatible systems greatly complicated the task of consolidating that function. The consequences of separate IT systems are that some units do not tap into the existing joint theater distribution system, and rely instead on costly, organic transportation assets and routes to get their needed material.

Therefore, expeditionary communities should seek to integrate with and adopt service-wide processes and systems before developing new community-specific systems. Additionally, the expeditionary communities could benefit even more from looking beyond the Navy at logistics command and control systems that the Army and Marine Corps are using or developing for deployed logistics support ashore. The Global Combat Support System (GCSS) is one such system being developed by the Army and Marine Corps as a common cross-service system to support their needs.

However, the answer to integration may not be as straight forward as simply integrating with the bigger Navy systems. Rather, the best solution may lie with selectively integrating with the service support system that can provide the most robust and dependable support for that given function, requirement, or environment. Support options provided by the Navy, Marine Corps, Army, Air Force, or joint support processes need to be considered by the individual expeditionary communities.

In the case of the NCF, the optimal course of action may be to integrate with the Marine Corps for ground combat support. As has been previously discussed, NCF units deploy under the operational control of the MEF or MAGTF commander, and rely on the Marine logistics tail for support. Therefore, formal integration with their systems and processes may provide the best level of support while deployed. The NCF is already moving in this direction. In a memorandum dated 19 Jul 2000, then-DCNO (Logistics) VADM J.F. Amerault directed the Naval Facilities Engineering Command (NFEC) to develop a plan to improve their logistics systems and processes. Their stated goal was to develop a logistics system that is "well integrated and more compatible with the rest of the Navy-Marine Corps team."[90]

It may be appropriate for the Fleet Hospitals to partially integrate with the Army logistics support systems. Fleet Hospitals obtain logistics support from the Single Integrated Medical Logistics Manager (SIMLM), as designated by the theater Combatant Commander. In CENTCOM, and in most cases, the Army is designated as the SIMLM.

The recommended solution for NSW and EOD forces is not so clear. These forces may operate independently, or be attached to larger forces of various services or other governmental agencies. Their concept of operations is much more fluid and adaptable. However, they share many commonalities in operations, weapons systems, and requirements with like forces of the other services. Therefore, the optimal solution for these forces may be to develop a joint SOF support structure and logistics C^2 systems.

90 Memorandum, DCNO (Logistics), (2000), Naval Construction Force Logistics Improvement.

3. Deployable Logistics Support Center (LSC) Not Recommended

In the context of the NAVCENT AOR, the deployable logistics support center (LSC) is not recommended and may not add value to the current logistics support system. The deployable LSC concept would primarily provide short-term support for contingency operations for forward deployed expeditionary forces. The structure, capabilities and functions of the existing joint theater and Navy component logistics systems are adequate to support naval expeditionary forces. Further, there are adequate supporting mechanisms in place such as CTF-53, CDDOC, NAVCENT LRC, other Services (i.e. Marine Corps and Army), community organic logistics support, contingency contracting personnel, and NAVELSF personnel to provide operational logistics support to these forces.

Instead, as discussed previously, closer planning and coordination is recommended among the logistics planners on the CENTCOM and Service component command staffs and within the expeditionary communities to determine how to best leverage existing resources and capabilities to meet their demands and expectations. Alternatively, there may be a role for the Deployable LSC as an integrator and logistics command and control element, either coordinating efforts between NAVCENT and CENTCOM, or between the expeditionary communities and NAVCENT. However, that is a very different role and mission from that originally envisioned for the LCS. If that change in the concept of operations is made, the proposed organization, manning, and capabilities of the Deployable LSC would have to be significantly altered. Therefore, based on its current proposed concept of operations, creation of a Deployable Logistics Support Center is not recommended as a solution to improving logistics support to naval expeditionary forces.

D. RECOMMENDATIONS FOR FUTURE RESEARCH

This research has provided a comprehensive analysis of the over-arching doctrine, functions, and capabilities of the existing logistics system supporting naval expeditionary forces in the NAVCENT AOR. It successfully identified commonalities and differences in the missions and concepts of operations for the four expeditionary communities, as well as the basic requirements that these operations generate. However, there is still much research to be done to thoroughly analyze all the factors affecting support for these

forces. Some areas for future research include detailed quantitative analysis of various aspects of the system, analysis of specific alternatives for common logistics support systems for these communities, the application of these findings beyond the NAVCENT area of operations, and the impact of future logistics initiatives on expeditionary support.

1. Quantitative Analysis

One major area for future research is in quantitative analysis of various aspects of the expeditionary logistics support system. One area for concentration is in the capabilities and capacities of service providers in the NAVCENT AOR. This research concluded that all of the logistics functions of supply, contracting, transportation, distribution, and command and control were currently provided for within NAVCENT, CENTCOM, and other joint and service agencies. However, the research did not look at the specific capacities of each of the various service providers. Further analysis should consider their capacity to provide services, the amount of that capacity already taken up by existing support requirements, and their ability to absorb added requirements from naval expeditionary forces. This analysis could quantify any deficit in capacity or capabilities, and make recommendations for increasing resources, if necessary, to support these forces. One possible product may be a Cost/Benefit Analysis of alternative support options for filling these quantitative gaps.

Conversely, further research can focus on quantitative analysis of expeditionary force logistics requirements, as well. The task of quantifying requirements for each of these four communities is extensive, but also required. One approach may be to analyze supply effectiveness metrics for expeditionary forces during Operation Iraqi Freedom, identifying specific shortfalls in supply stock levels, transportation and distribution throughput, etc. One possible product may be the identification of Top 10 readiness degraders for each of the expeditionary communities.

2. Information Technology

Information technology plays a critical role in logistics support. Furthermore, it is the key behind many ongoing DoD and joint logistics initiatives. Initiatives such as Total Asset Visibility, In-Transit Visibility, RFID, and the Joint Theater Logistics Management System all rely heavily on state-of-the-art informational technology tools and systems.

One area for future research may be to conduct a feasibility study of incorporating a common logistics IT system across all naval expeditionary communities. Additionally, this research could examine the feasibility of adopting common systems with the Army or Marine Corps, since many naval expeditionary communities deploy and operate closely with these services. An example of such a system is the Global Combat Support System (GCSS), currently being developed by the Army and Marine Corps as a common solution for sustainment of ground forces in theater. This system may provide a suitable solution to support Navy forces, as well.

3. Application to Other Theaters

This research focused mainly on the infrastructure in place within the Central Command area of responsibility, and the lessons learned from the naval expeditionary forces deploying there. However, the doctrinal principles discussed apply to all regions of the world. Similar research could examine the logistics support systems in place in other theaters, such as Korea, the greater Pacific region in general, and Europe. Such research could compare the infrastructure in those theaters with that of the NAVCENT and CENTCOM, and look for major differences that could affect support if/when naval

expeditionary forces deploy into those theaters. Some research is already being done in this area, as USTRANSCOM is considering deploying a Deployment and Distribution Operations Center (DDOC) to Korea, as it did in Kuwait.

4. Impact of SEABasing

Finally, the CNO's SEAPower 21 is transforming the way the Navy approaches its mission for the 21st Century. The concept of SEABasing is intended to give the Navy an even greater capability to sustain forces ashore from the sea. This initiative will reduce the Navy's dependence on shore-based infrastructure to sustain joint, Marine Corps, and Navy expeditionary forces. It envisions a comprehensive system of afloat platforms independent of significant forward-area shore bases and facilities.

This concept has the potential to radically change the way these four expeditionary communities will be supported when deployed in a combat or contingency operation. In some cases, it will negate some of this research, dramatically changing the

concept of operations, doctrine, and processes of these communities. However, in some cases, those changes will require closer ties to joint systems for naval expeditionary units, because SEABasing will greatly reduce the naval logistics footprint ashore.

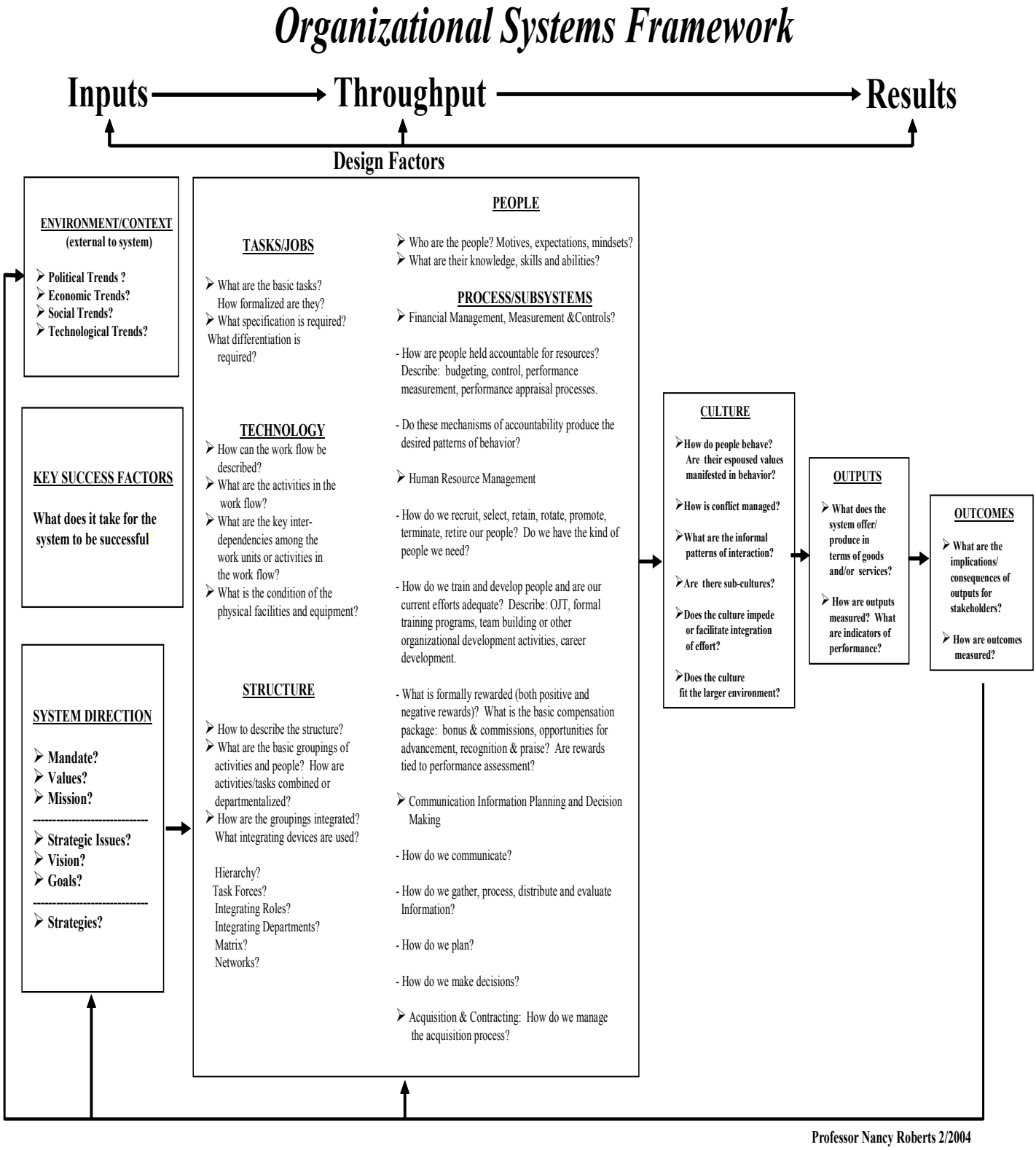
Further research can explore in detail the concepts, processes, and systems of the envisioned SEABase and apply that to the expeditionary logistics support system.

E. SUMMARY

In summary, this research recommends integrating the logistic capabilities of the intra-theater service providers and naval expeditionary forces to fulfill war-fighter requirements. Identifying the intra-theater service providers and determining how to best leverage the capabilities and resources of these various services' systems and support networks to meet naval expeditionary forces' requirements, demands, and expectations accomplish this. In doing so, the overall theater logistics systems are effective and efficient and will not require external support mechanisms such as the deployable LSC during contingency operations.

Although this research was successful in analyzing the logistics system in place to support naval expeditionary forces within the NAVCENT AOR, there are many opportunities for further research on this topic. Many of the findings, recommendations, and conclusions drawn in this paper warrant dedicated and more in-depth quantitative analysis or consideration from different perspectives, such as inter-operability of systems, and application to other theaters of operations or under newly-evolving operational concepts.

APPENDIX A: ORGANIZATIONAL SYSTEMS FRAMEWORK



THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B: DEFINITION OF ACRONYMS

ACB	AMPHIBIOUS CONSTRUCTION BATTALION
ACOS	ASSISTANT CHIEF OF STAFF
ACSA	ACQUISITION AND CROSS-SERVICING AGREEMENT
AFLC	AFLOAT FORCE LOGISTICS COORDINATOR
AIT	AUTOMATIC IDENTIFICATION TECHNOLOGY
AMC	AIR MOBILITY COMMAND
AOR	AREA OF RESPONSIBILITY
APOD	AERIAL PORT OF DEBARKATION
BANZ	BAHRAIN AND NEW ZEALAND
BUMED	BUREAU OF MEDICINE
C^2	COMMAND AND CONTROL
CAPT	CAPTAIN
CDRJSOTF	COMMANDER, JOINT SPECIAL OPERATIONS TASK FORCE
CVW	CARRIER AIR WING
CBMU	CONSTRUCTION BATTALION MAINTENANCE UNIT
CBU	CONSTRUCTION BATTALION UNIT
CDC	CENTRAL DISTRIBUTION CENTER
CDDOC	CENTCOM DEPLOYMENT AND DISTRIBUTION OPERATIONS CENTER
CDR	COMMANDER
CE	COMMAND ELEMENT
CENTCOM	UNITED STATES CENTRAL COMMAND
CESE	CIVIL ENGINEERING SUPPORT EQUIPMENT
CLF	COMBAT LOGISTICS FORCE
COMLOGFORNAVCENT	COMMANDER, LOGISTICS FORCE U.S. NAVAL FORCES CENTRAL COMMAND
CO	COMMANDING OFFICER
CONUS	CONTINENTAL UNITED STATES
COSAL	CONSOLIDATED ALLOWANCE LIST
CSSD	COMBAT SERVICE SUPPORT DETACHMENT
CTF 53	COMMANDER, TASK FORCE FIVE THREE
C2	COMMAND AND CONTROL
DCMA	DEFENSE CONTRACT MANAGEMENT AGENCY
DEPMEDS	DEPOYABLE MEDICAL SYSTEMS

DET	DETACHMENT
DESC-ME	DEFENSE ENERGY SUPPORT CENTER – MIDDLE EAST
DLA	DEFENSE LOGISTICS AGENCY
DPO	DISTRIBUTION PROCESS OWNER
DOD	DEPARTMENT OF DEFENSE
DON	DEPARTMENT OF THE NAVY
DSCP	DEFENSE SUPPLY CENTER-PHILADELPHIA
EOD	EXPLOSIVE ORDNANCE DISPOSAL
EODGRU	EXPLOSIVE ORDNANCE DISPOSAL GROUP
EODTEU	EOD TRAINING AND EVALUATION UNIT
ESPC	EXPEDITIONARY SUPPORT POLICY COUNCIL
FHAT	FLEET HOSPITAL ASSISTANCE TEAM
FHSO	FLEET HOSPITAL SUPPORT OFFICE
FLC	FORCE LOGISTICS COORDINATOR
FLSS	FORWARD LOGISTICS SUPPORT SITE
GCSS	GLOBAL COMBAT SUPPORT SYSTEM
GOO	GULF OF OMAN
GWOT	GLOBAL WAR ON TERRORISM
HSS	HEALTH SERVICE SUPPORT
ISSA	INTER-SERVICE SUPPORT AGREEMENT
IT	INFORMATION TECHNOLOGY
ITV	IN TRANSIT VISIBILITY
JEL	JOINT ELECTRONIC LIBRARY
JFC	JOINT FORCE COMMANDER
JFMCC	JOINT FORCE MARITIME COMPONENT COMMANDER
JFSOCC	JOINT FORCES OPERATIONAL COMPONENT COMMANDER
JPME	JOINT PROFESSIONAL MILITARY EDUCATION
JTLM	JOINT THEATER LOGISTICS MANAGEMENT
JV 2020	JOINT VISION 20/20
KCIA	KUWAIT CITY INTERNATIONAL AIRPORT
LAMPS	LIGHT AIRBORNE MULTI-PURPOSE WEAPONS SYSTEM
LCDR	LIEUTENANT COMMANDER
LOC	LINES OF COMMUNICATION
LOGSU	LOGISTICS SUPPORT UNIT
LRC	LOGISTICS RESPONSE CENTER
LSA	LOGISTICS SUPPORT AREA

LSC	LOGISTICS SUPPORT CENTER
MAGTF	MARINE AIR-GROUND TASK FORCE
MARCENT	MOBILE COMMUNICATIONS DETACHMENT
MEF	MARINE EXPEDITIONARY FORCE
MLO	MATERIAL LIAISON OFFICER
MPF	MARITIME PRE-POSITIONING FORCE
MSC	MILITARY SEALIFT COMMAND
NAG	NORTHERN ARABIAN GULF
NALCC	NAVAL AIR LOGISTICS COORDINATION CENTER
NAS	NORTH ARABIAN SEA
NAVCENT	U.S. NAVAL FORCES CENTRAL COMMAND
NAVELSF	NAVAL EXPEDITIONARY LOGISTIC SUPPORT FORCE
NAVSUP	NAVAL SUPPLY
NAVSUPPACT	NAVAL SUPPORT ACTIVITY
NAVSPECWARCOM	NAVAL SPECIAL WARFARE COMMAND
NCD	NAVAL CONSTRUCTION DIVISION
NCF	NAVAL CONSTRUCTION FORCES
NCFSU	NAVAL CONSTRUCTION FORCE SUPPORT UNIT
NCR	NAVAL CONSTRUCTION REGIMENT
NFELC	NAVAL FACILITIES EXPEDITIONARY LOGISTICS CENTER
NMCB	NAVAL MOBILE CONSTRUCTION BATTALION
NOLSC	NAVAL OPERATIONAL LOGISTICS SUPPORT CENTER
NRCC	NAVAL REGIONAL CONTRACTING CENTER
NRF	NAVAL RESERVE FORCE
NSW	NAVAL SPECIAL WARFARE
NSWG	NAVAL SPECIAL WARFARE GROUP
NSWTE	NAVAL SPECIAL WARFARE TASK ELEMENT
NSWTG	NAVAL SPECIAL WARFARE TASK GROUP
NSWTU	NAVAL SPECIAL WARFARE TASK UNIT
OIC	OFFICER IN CHARGE
OIF	OPERATION IRAQI FREEDOM
OPCON	OPERATIONAL CONTROL
OPLAN	OPERATIONAL PLAN
OPORD	OPERATIONAL ORDER
OPTEMPO	OPERATING TEMPO
OSF	ORGANIZATIONAL SYSTEMS FRAMEWORK

PMPT	PROJECT MATERIAL PLANNING AND TRACKING
POE	POINT OF EMBARKATION
RFID	RADIO FREQUENCY IDENTIFICATION
RRF	READY RESERVE FORCE
SBT	SPECIAL BOAT TEAM
SDDC	SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND
SDV	SEAL DELIVERY VEHICLE
SEAL	SEA-AIR-LAND
SIMLM	SINGLE INTEGRATED MEDICAL LOGISTICS MANAGER
SKC	STOREKEEPER CHIEF PETTY OFFICER
SOCCENT	SPECIAL OPERATIONS COMMAND, CENTRAL COMMAND
SOCOM	UNITED STATES SPECIAL OPERATIONS COMMAND
SOF	SPECIAL OPERATION FORCES
SPOD	SEAPORT OF DEBARKATION
SRG	SEABEE READINESS GROUP
SSAVIE	SOF SUSTAINMENT ASSET VISIBILITY AND INFO EXCHANGE
SWA	SOUTHWEST ASIA
TACON	TACTICAL CONTROL
TAMMIS	THEATER ARMY MEDICAL MANAGEMENT INFORMATION SYSTEM
TAV	TOTAL ASSET VISIBILITY
TOA	TABLE OF ALLOWANCE
TSOC	THEATER SPECIAL OPERATIONS COMMAND
USTRANSCOM	UNITED STATES TRANSPORTATION COMMAND
UCT	UNDERWATER CONSTRUCTION TEAM
VOD	VERTICAL ONBOARD DELIVERY

LIST OF REFERENCES

Bossidy L. and Charan R., (2002), *The Discipline of Getting Things Done.* Crown Business, New York.

Conklin, J., (2003), *Wicked Problems and Social Complexity.* CogNexus Institute. http://www.cognexus.org. Retrieved on September 1, 2004.

Defense Energy Support Center, (n.d.), *Total Energy Solutions*, http://www.desc.dla.mil Retrieved on September 8, 2004.

Defense World Magazine (Jan 2003), *Tracking a needle in a Haystack – Radio Frequency Identification makes it possible.*

Friermood, M., Email correspondence dtd: 14 October 2004.

Handy, J.W., General USAF (n.d.), Testimony by General Handy to the House Armed Services Committee.

Jolin, D., Email correspondence dtd: 16 September 2004.

Jolin, D., Email correspondence dtd: 17 September 2004.

Kress, J., (NOV, 2004), US DoD news release article, *First-Time Partnership to Improve Distribution Pipeline*.

Kunkle, K, CAPT SC USN, (2004), Interview conducted between CAPT Kunkle and LCDR Tessier on 28 October 2004.

Military Information Technology Magazine (AUG, 2003), *RFID "In the Box" Visibility.*

Nash, M., (2000), *COMLOGFORNAVCENT/CTF-53…Integrated Logistics for USN/USMC Forces in the NAVCENT AOR.,* http://navsup.navy/npi/lintest/julaug2000/nash.htm. Retrieved on July 29, 2004.

Naval Institute Proceedings Magazine, (JAN, 2003), *SEABasing, Operational Independence for a new Century*.

Naval Institute Proceedings Magazine, (OCT, 2002), *Sea Power 21, Projecting Decisive Joint Capabilities.*

Naval Studies Board, (1999), *Naval Expeditionary Logistics, Enabling Operational Maneuver from the Sea*, http://www.books.nap.edu/html/naval. Retrieved on September 1, 2004.

Pike, J., (n.d.), *Commander Logistics Force (COMLOGFORNAVCENT),*

http://www.globalsecurity.org/military/agency/navy/ctf-53.htm. Retrieved on July 22, 2004.

Pike, J., (n.d.), *Muharraq Airfield, Bahrain*, http://www.globalsecurity.org/military/facility/muharraq.htm. Retrieved on September 1, 2004.

Pike, J., (n.d.), *Helicopter Combat Support Squadron Two (HC-2) – Fleet Angels,* http://www.globalsecurity.org/military/agency/navy/hc-2.htm. Retrieved on September 1, 2004.

Pike, J., (n.d.), *Helicopter Combat Support Squadron Four (HC-4) – Black Stallions, http://www.globalsecurity.org/military/agency/navy/hc-4.htm. Retrieved on September 1, 2004.*

Pike, J., (n.d.), *Balad Air Base*, www.globalsecurity.org/military/facility/balad.htm. Retrieved on September 1, 2004.

Roberts, N., Naval Postgraduate School, Monterey, California., (2004), Strategic Management Lecture, *Organizational Systems Framework.*

Russel, J. and Jenkins, B., (n.d.), *Tip of the Spear Contracting Solutions*, http://www.navsup.navy.mil/npi/lintest/julaug2000/russell.htm. Retrieved on November 12, 2004.

Secretary of the Navy, (1996), *Annual Report to the President and the Congress*, http://www.nova.edu/library/dils/lessons/apa/print.htm. Retrieved on July 22, 2004.

Systems Engineering and Analysis Cohort Six (SEA-6). Seabasing and Joint Expeditionary Logistics. Unpublished Research Paper, Naval Postgraduate School, Monterey, CA: December 2004.

Thomas, R., (2003), *NAVCENT LRC Established and Engaged,* http://www.findarticles.com/p/articles/mi_m0nqs/is_1_66/ai_97173745. Retrieved on September 9, 2004.

US DoD, (2003), Joint Doctrine Publication 3-05, *Joint Special Operations.*

US DoD, (2000), Joint Publication 4-0, *Doctrine for Logistics Support of Joint Operations.*

US DoD, (2000), Joint Publication 4-07, *Joint Tactics, Techniques, and Procedures for Common-User Logistics During Joint Operations*.

US DoD, Special Operations Command, (2003), *SOF Logistics Handbook*.

US DoD, (2004), *Fleet Hospital Support Office Operating Procedures, QP 23.*

US DoD, (1997), DODINST 6430.2, *DoD Medical Standardization Board*.

US DoD, (1999), Joint Publication 5-00.2, *Joint Task Force Planning Guidance and Procedures*.

US DoD, (2004), Draft document from the Office of the Secretary of Defense, *Logistics Transformation Strategy*.

US DoD, (FEB 2004), USCENTCOM news release, Release number 04-02-17.

US DoD (OCT, 2004), Defense Logistics Agency news release, *DLA-Central Supports Customers, Contingency Teams in Southwest Asia*.

US DoD, (n.d.), *CENTCOM Deployment Distribution Operations Center Brief*, https://portal.USTRANSCOM.smil.mil/cddoc. Retrieved on September 1, 2004.

US DoN, (1998), COMSECONDNCB/COMTHIRDNCB INSTRUCTION 4400.3, SEABEE Supply Manual.

US DoN, Expeditionary Support Policy Council, (2004), *MARFPCOM Brief*.

US DoN, (1995), Naval Doctrine Publication 4, *Naval Logistics.*

US DoN, (1999), Naval Warfare Publication 4-01.1, *Naval Expeditionary Shore Based Logistic Support and Reception, Staging, Onward Movement and Integration Operations.*

US DoN, Naval War College, (2003), Joint Military Operations Reference Guide, *Forces/Capabilities Handbook*.

US DoN, Naval Special Warfare Command Website, (n.d.), Naval Special Warfare Command, http://www.navsoc.navy.mil/navsoc_missions.asp. Retrieved on July 27, 2004.

US DoN, Naval Facility Engineering Command Brief, (2004), *SEABEE Resources and Logistics*.

US DoN, (1998), OPNAVINST 35001.176B *Projected Operational Environment for Navy Fleet Hospitals*.

US DoN, (1995), Naval Warfare Publication 4-02.4 Part A, *Fleet Hospitals*.

US DoN, (1998), OPNAVINST 3501.176B, *Required Operational Capabilities for Navy Fleet Hospitals*.

US DoN, (1997), Naval Warfare Publication 4-04.1/Marine Corps Warfare Publication 4-11.5, *SEABEE Operations in the MAGTF*.

US DoN, (JUL, 2004), Draft Concept of Operations, *Deployable LSC*.

US DoN, Joint Letter from DCNO, Fleet Readiness and Logistics and Deputy Commandant, Installations and Logistics, (2003), *Terms of Reference: Navy-Marine Corps Logistics Integration*

US DoN, DCNO, Fleet Readiness and Logistics, (2000), Memorandum, *Naval Construction Force Logistics Improvement*

US DoN, (2003), OPNAV N41 Brief, *Navy/Marine Corps Logistics Integration*.

US DoN, (2004), 1 NCD Brief, *MEG G4 Operation Iraqi Freedom II*.

US DoN, (2003), NAVFAC Expeditionary Logistics Center Brief, *31 SEABEE Readiness Group – Naval Facilities Logistics Center*.

US DoN, (2004), NAVFAC Expeditionary Logistics Center Database, *OEF/OIF Lessons Learned (Version 2)*.

US DoAF, (n.d.), Randolph AF Base newsletter "The Transformer" article, *Mr. Jack Hooper – New Director for CDDOC* http://jppso-sat.randolph.af.mil/transformer/default.htm. Retrieved on July 15, 2004.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
   Ft. Belvoir, Virginia

2. Dudley Knox Library
   Naval Postgraduate School
   Monterey, California

3. Naval Operational Logistics Support Center
   Norfolk, Virginia

4. The Norwegian Defense Logistics Organization (NDLO)
   Oslo, Norway

5. The Norwegian Defense Logistics and Management College
   Oslo/Halden, Norway

6. Norwegian Naval Education and Training
   Bergen, Norway

7. Royal Norwegian Air Force Academy
   Trondheim, Norway

8. Commanding Officer, DCMA Raytheon
   Tucson, Arizona