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JUST-IN-TIME OPERATIONAL LOGISTICS, A NAVAL WARFIGHTER'S VIEW

by

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

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

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The "peace dividend" of the post-cold war years is forcing the U.S. military to plan, operate, and fight under tight budgetary conditions. Requirements to balance the national deficit, coupled with a non-descript threat to world (and U.S.) peace are driving the military to examine how it does business and to reduce waste. Radical and innovative concepts are being examined in order to maximize logistics efficiency, while preserving combat readiness. As the "budgeteers" maneuver to save dollars, warfighters are struggling to maintain a balance between reducing waste and eliminating necessary combat capabilities.

"Just-in-time" inventory is a civilian concept being to military logistics in an effort to improve efficiency and save money. Although the concept has several advantages over conventional warehousing, it was designed to function in the benign civilian free market, not in a war zone or hostile environment. The system is heavily dependent on timely and reliable transportation networks in order to be effective.

The U.S. Navy is examining this concept and implementing it on a broad basis. The Navy has a rimary mission to conduct prompt and sustained combat operations at sea, in support of national objectives. This concept has the potential to limit the Navy's ability to sustain itself in the forward operating operating areas and may seriously impact the operational commander's focus on his combat mission.

To successfully conduct combat operations, an operational commander must comprehend and balance the very structure upon which war is based: strategy, tactics, and logistics. "Strategy and tactics provide the scheme for the conduct of military operations; logistics provides the means therefor." A proper balance between the requirement to present dominant combat fighting power and logistics efficiency must be maintained. The challenge is to ensure that our "just-in-time" logistics concept is not making our operational leaders more concerned with imaginary solutions to logistics problems, than with strategy and tactics.

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Abstract of

"Just-in-Time Operational Logistics" - A Naval Warfighter's Perspective

The "peace dividend" of the post-cold war years is forcing the U.S. military to plan, operate, and fight under the tightest of budget conditions. Requirements to balance the national deficit, coupled with a non-descript threat to world (and U.S.) peace are driving the military to examine how it does business and to reduce waste. Radical and innovative concepts are being examined in order to maximize logistics efficiency, while preserving combat readiness. As the "budgeteers" maneuver to save dollars, warfighters are struggling to maintain a balance between reducing waste and eliminating necessary combat capabilities.

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logistics. "Strategy and tactics provide the scheme for the conduct of military operations; logistics provides the means therefor." A proper balance between the requirement to present dominant combat fighting power and logistics efficiency must be maintained. The challenge is to ensure that "just-in-time" logistics concept is not making our operational leaders more concerned with imaginary solutions to logistics problems than with strategy and tactics.

Just-in-Time Operational Logistics - A Naval Warfighter's Perspective

"In the future our combat commanders will have to fight effectively under conditions of logistic scarcity; hence, logistic efficiency must be improved. The military must learn how best to plan and manage the large logistic reserves we must maintain in such a manner that we maintain them without an excess proportion of obsolete waste. The public must be educated to accept this need with its apparent waste. ... Only when the problem is seen and described as a whole will it be possible for the public to be so adequately informed that it will support the political and economic measures that are required."[1]

H. Eccles, 1956

Just-in-time inventory is a revolutionary civilian concept being applied to military logistics in order to improve efficiency and save money. Although the concept has several advantages over conventional warehousing, it was designed to function in the civilian marketplace, not in a war zone or hostile environment. The concept is heavily dependent on timely and reliable transportation networks to make the system work.

The U.S. Navy is examining this concept and implementing it on a broad basis. The Navy has a primary mission to conduct prompt and sustained combat operations at sea in support of national objectives.[2] This concept has the potential to limit the Navy's ability to sustain itself in the forward operating areas and may seriously impact the operational commander's focus on his combat mission.

In his book Command Logistics, Rear Admiral Henry Eccles, USN (ret) wrote: "The mental attitude of command is the first measure of logistic readiness. ...This state of mind recognizes the nature and magnitude of both the combat task and the logistic task and their interdependence. It recognizes the effect of time and distance factors in the

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1 Henry E. Eccles, Command Logistics. (Newport: Naval War College 1956), 13.

2 Naval Warfare Publication 1 (Rev. A), 1-4-1.

performance of these tasks."[3] If the U.S. military is not careful, it may find that in its quest for fiscal efficiency in its logistics structure, it has created a "force in being," incapable of responding to fast breaking contingencies due to a logistic system that has become overly dependent on civilian support and optimal conditions. This resultant lack of flexibility may seriously impact the operational commander's ability to solve the task at hand.

Introduction. The "peace dividend" of the post-cold war years is forcing the U.S. military to plan, operate, and fight under the tightest budget conditions within recent memory. Requirements to balance the national deficit, coupled with a nondescript threat to world peace (and the United States) are driving the military to examine how it does business and to reduce waste wherever it can. Radical and innovative concepts are being examined in order to maximize logistic efficiency, while still preserving combat readiness. As the "budgeteers" maneuver to save dollars, warfighters are struggling to maintain a balance between reducing waste and eliminating necessary combat capabilities.

Paul Kaminiski, the Undersecretary of Defense for Acquisition and Technology was more blunt when he said, "Within the department, our warfighters have come to realize that DoD finances are a zero sum game, that every logistics dollar expended on outdated systems, inefficient or excess organic capability and unneeded inventory is a dollar not available to build, modernize or maintain warfighting capability. They also realize that

[3] ibid, 230.

the logistics slice of the defense budget is large by any measure - consuming about 50% of the DoD budget."[4]

As the 21st century nears, logistical capabilities, shortfalls and vulnerabilities continue to shape operational planning and execution.[5] Focused or "just-in-time" logistics, right-sizing, inventory and infrastructure reduction, are all cost-saving measures being carefully adopted by the U.S. military in an effort to maximize the defense dollar with theoretically minimal impact on combat readiness. These dynamic innovations of civilian industry are being carefully examined and implemented in order to pay for a smaller high tech military that is capable of responding to the projected threats of tomorrow. A key factor that one must bear in mind is that these management practices were designed to enable businesses to stay competitive in a dynamic free market (peacetime) economy by breaking the age old paradigm of mass production and warehousing. They were not designed to be functional or competitive in a situation where solid transportation links cannot be guaranteed (e.g. a war zone)

In the "just-in-time" inventory concept the overhead costs associated with storing mass-produced items are minimized by establishing the capability to rapidly produce articles when they are ordered and then delivering them directly to the customer. The success of the operation is founded on total involvement of management in every phase of the operation and is heavily dependent on reliable transportation systems, excellent information networks, and skillful managers. To a large extent, the concept is the application of operational art to civilian industry. Flexibility and responsiveness enable

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4 Paul J. Kaminiski, "The Revolution in Defense Logistics," Defense Issues, Vol. 10, number 107, 2.
5 Joint Staff, J-4 Directorate for Logistics, mission statement.

successful companies to rapidly retool production lines to respond to changes in consumer demands. Their "branches and sequels" are the changes in their customer's demands and the related market, and similar to a major military operation, they are heavily influenced by operational leadership, strategy, tactics, information, communications, and LOGISTICS. Because the time and space factors of the "just-in-time" inventory concept are solved by complex transportation systems that obviate the need to "stockpile" or warehouse products, the concept is vulnerable to interruption if the transportation network is halted. Although the concept has obvious applications to some of the military's peacetime functions, it was not designed to function in a hostile environment or in an environment where unilateral U.S. action may be a requirement for political or security reasons. This is a critical vulnerability of a logistic system totally based on the "just-in-time" concept.

The military machine of the post-cold war years is now being "right-sized" to absorb less of the national budget yet must still provide global presence and the required level of leverage in international affairs. The military philosophy of redundant systems on our platforms and robust spare parts support for our ships and aircraft is being seriously evaluated as a requirement that may no longer be necessary based on the perceived threats of the future. The reality is that it is an expensive philosophy and one which we may no longer be able to afford.

The military, like any organization, will always have room to improve its efficiency and to perform its functions more efficiently and effectively. Civilian industry and technology are playing a big part in that evolutionary process. But the U.S. military and

the American public must remain ever mindful of the fact that national security is one of those intangible commodities that has no price tag until after the fact.

Headlines of an article in the magazine Defense 97 read: "Commercial business practices plus expertise and technology, equal cost efficiency and customer SATISFACTION!"[6] The article implies that the customer is the individual combat unit operating in the field. In the logistics business that most certainly is the case. But in the job of national defense, the American public is the customer, and that customer's satisfaction has been shown to be directly proportional to the success of the U.S. armed forces when they perform in combat operations. We must never expect their compassion when our forces are unsuccessful because our zeal in adopting innovative civilian management practices has contributed to unsuccessful operations by our military forces deployed overseas!

This paper will examine some of the new wave of logistic innovations and the impact they may have on the operational commander's planning, his will to fight and his desire to take risks in combat when he is burdened with the fact that his logistic support might not be "JUST-IN-TIME!"

What is focused logistics? Joint Pub 4-0 defines logistics as the bridge connecting a nation's economy to a nation's warfighting forces . It is the foundation of combat power.[7]

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6 "Satisfaction," DEFENSE 97, Issue 1, 15.

7 Doctrine for Logistic Support of Joint Operations, (Joint Pub 4-0: 1995), V.

Joint Vision 2010 provides the concept of "focused logistics" as the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while enroute, and to deliver tailored logistics packages and sustainment directly at the strategic, operational and tactical level of operations. It will be fully adaptive to the needs of our increasingly dispersed and mobile forces, and provide support in hours or days, versus weeks. Focused logistics will enable joint forces of the future to be more mobile, versatile, and projectable from anywhere in the world. Logistic functions will incorporate information technologies to transition from the rigid vertical organizations of the past. Service and defense agencies will work jointly with the civilian sector, where required, to take advantage of advanced business practices, commercial economies, and global networks.[8]

"Forward...From the Sea," the Navy's operational concept of 1997, embraces Joint Vision 2010 and states: "We will increasingly be capable of providing secure afloat joint logistics support. Our logistics innovation efforts will enhance strategic sealift and seaborne logistics. These efforts also support Department of Defense initiatives to improve logistics support, such as the total asset visibility system and "just-in-time" logistics. We will seek alternatives to maintaining large quantities of spares and explore ways of enhancing joint and commercial commonality of systems components."[9]

This new vision represents a significant departure from previous naval doctrine. Naval Warfare Publication 1 used to read: "A high degree of logistic independence ...dictates that U.S. naval combatant ships be able to carry large quantities of combat

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8 " JOINT VISION 2010," Joint Force Quarterly, Summer 96, 44-46

9 "Forward...From the Sea," 8.

consumables such as fuel and ammunition, ...and be able to steam long distances without refueling. It also requires an underway replenishment force which can resupply combatant ships in the combat zone."[10] The use of the word "combat" is rapidly fading from naval vocabulary as future threats are downplayed and redundant systems that enhance combat capabilities are deemed too expensive and unnecessary.

The Air Force is taking the lead in adopting a model of the private sector substitution of fast transportation for logistics infrastructure. Known as "lean logistics," the Air Force program uses improved transportation to achieve a new emphasis on user requirements as the focus of the logistics system.

Fast transportation enables the Air Force to replace the traditional caches of "just-in-case" inventory scattered throughout the supply system with a "just-in-time" approach to material acquisition and delivery - one geared to satisfying actual customer requirements when the requirements arise.

The end result of this lean logistics approach is consolidation of wholesale inventories, a drastic reduction of base level inventory, and a new focus on customer mission requirements. The Air Force is expecting $4 billion in savings.[11]

Navy Initiatives.

Current Navy fleet initiatives include programs such as Commercial, off the Shelf (COTS) and Readiness Based Spares (RBS), designed to eliminate "unnecessary" spares from the ships and to place those spares at two central locations, one on each coast. Spares being removed from the vessels are those which have little or no documented

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[10] NWP 1 (Rev. A), 1-4-2.

[11] "The Revolution in Defense Logistics," Defense Issues 1995, Vol. 10, Number 107, 4.

usage data to support their remaining on board. The theory is that if a part is needed while a ship is deployed, it can be shipped overseas for the ship to install. In addition to regular military shipping channels, companies like Federal Express and other commercial shipping companies will be depended on to provide the bulk of the connectivity from CONUS to the deployed unit.

The COTS program allows commercial products to be purchased directly from manufacturers, thus eliminating the need for supply centers to serve as middlemen. Although this program appears simple enough when applied to such products as consumables and the like, the U.S. military's previous concerns with military specifications and protection of design technologies from potential adversaries seems to have disappeared in favor of economic efficiency.

A recent study conducted conducted by the Center for Naval Analysis found that at the end of FY'94, the Navy's spare parts inventory was valued at $18 billion. The amount represented the maximum savings that could be realized if the inventory level was allowed to go to zero. The savings achievable without any adverse effects on readiness would be a fraction of that amount.[12]

A key factor in the debate concerning removal of spares from the ships is the undeniable fact that damage to a ship in the dynamic environment of the sea (whether from combat, collision or weather) is more readily remedied when there are adequate spare parts onboard, or at least within the battle group with which the ship is operating. Current figures for 1996 deployments reveal that, on the average, a part could be

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[12] Center for Naval Analyses, Balancing Investment, Transportation, and Asset Visibility To Achieve Maximum Readiness (Alexandria, Va: RAND), 28.

delivered to a ship in the Mediterranean Sea within three days of the request, while parts going to the Persian Gulf averaged seven days from the date of the request. This figure did not include the logistic link required to get the part to the ship if the ship was underway. These figures are acceptable for our current peacetime and fiscal environment, but can they support the "no notice, come as you are" conflicts that seem to be the norm today?

In 1956 when the Navy was experiencing a similar drawdown to today, Admiral Eccles wrote: "The nature of modern warfare is such that, in order to fight effectively, there must be the greatest economy in the provision of these forces and their support. But economy is not the objective; it is merely one of the essential factors in the attainment of the objective. If the objective is jeopardized by overemphasizing economy, fatal damage may be done to our national security."[13]

Analysis of the Civilian Concept of "Just-in-Time" Inventory.

Over the past twenty years, a new management paradigm has emerged in the civilian sector that is the antithesis of mass production. The new paradigm is based on four principles. First, to get new products to market quickly, companies integrate marketing, research and development, engineering, design, production, and distribution. Second, to respond quickly to shifting demand, they aim at producing small lot sizes with minimal setup times. Third, to make every aspect of production more visible, they work with fewer, more qualified suppliers and involve them in every phase of production. Finally, they delegate more operational responsibility to those who design and manufacture the

[13] Eccles, 14.

product. These new practices are shaping manufacturing and servicing industries throughout the world.[14]

This new practice of just-in-time inventory has enabled progressive civilian companies to increase their flexibility, reduce operating costs, and increase earnings. But shifting to this system is not a guarantee of success. Significant participation (by management) at all levels is required to make the system work. Studies by the RAND corporation revealed that many firms are still in the experimentation process. It also found that automating existing processes, rather than restructuring, seldom changes the organization's productivity. Instead, it simply superimposes another layer on existing bureaucracies which usually find ways to defuse or neutralize the threat to things as they are.[15] Hence, for the military to successfully implement this system, a total restructuring of our logistic thought process and system is required.

To be successful this system requires a network that links suppliers, producers, and carriers, because small quantities have to be shipped on frequent and rigid schedules. Integrated transportation and distribution systems are the backbone of this "just-in-time" inventory and reduce the carrying and storage costs of producers' inventories. An unforeseen drawback of the system that has recently manifested itself is that, due to the leanness of inventories, companies have lost significant leverage when dealing with labor disputes. Since there is no inventory to back up unanticipated requests, labor actions must be resolved rapidly or serious consequences could result. Such vulnerabilities could

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[14] Arnold Levine and Jeff Luck, "Summary (Glossary of Organizational Improvement Philosophies)," The New Management Paradigm: A Review of Principals and Practices (RAND, 1994), ix.

[15] ibid, xviii.

have serious implications on military operations if our logistics practices were to become overly dependent on these types of decentralized production practices that cannot be controlled.

Another issue which must be examined when evaluating the "just-in-time" logistics concept is the very complexion of US industry today. Many US industries are now multinational. Stock-owners and workers are frequently not US citizens. Since big business exists to make money, nationality of the work force or the stockholders is a function of making money. The transportation industry, in particular, has become a multinational operation where the controlling stocks/interests are not necessarily owned by US citizens or corporations. Lykes Lines, one the countries' oldest steamship companies, will be bought by Canadian Pacific this year but continue to fly the US flag. Additionally, American President Lines, a major US company moving DoD cargoes, was acquired by Neptune Orient Lines of Singapore. Between these two companies 13 of the 47 ships identified to participate in the Maritme Security Program (MSP) will be operated by a foreign-owned company. This situation has two implications: 1. the MSP was passed to keep the American merchant marine "alive" and available for national defense reasons. Those funds will now be paid to a foreign-owned company whose ships are flying the American flag; and 2. control of these vessels for use as national defense assets has now been surrendered to a non-U.S. company. This could pose a potential problem if those foreign owners do not (politically) support what the U.S. is doing and cancel their support of the program.

A more significant factor for military planners is the fact that there is no real legal action that can be taken against a foreign transportation company that refuses to carry national defense cargo into a designated hostile-fire zone. In Operation DESERT SHIELD/STORM several foreign-flagged ships that were chartered by the Military Sealift Command refused to enter the Gulf and had to be offloaded and their cargo reloaded onto US flag merchant ships. An International Transportation Agreement of 1986, of which the United States is not a signatory, makes entry into a war zone by a merchant ship totally voluntary. The MSP was designed to ensure that U.S. flag merchant ships are available for our next conflict but already we can see that that might not be the case.

The impact that this may have on the operational commander who is planning or conducting military operations with such potentially critical logistic vulnerabilities makes one question the amount of risk involved in relying on such transnational shipping organizations. Can this "just-in-time" logistics concept really support actual combat operations, or are we fooling ourselves to make the budget figures work?

Operational Art and the Role of Logistics.

"If the commander does not have a clear personal knowledge of his logistic capabilities the full play of his mind will be either seriously hampered or grounded in fiction."[16]

Perhaps the most important components of operational art[17] are operational factors, which, if properly considered and applied, allow the commander to obtain freedom of

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[16] Henry E. Eccles, Logistics in the National Defense, (Harrisburg, Pa: Stackpole Company 1959), 118.

[17] Operational art is the critical link between strategy and tactics. When applied across the full range of military operations, it provides a framework for decision-making by tactical commanders. The principal

action. The key operational factors and their combination are space, time, and forces.[18] This time-space-force relationship is much more complex and more difficult to calculate at the operational level than at the tactical level.[19]

Time and space are also critical factors of the "just-in-time" logistics concept. Making the required delivery date and the production date nearly simultaneous removes the requirement for the space necessary to store the product until it is finally shipped. Flexible and reliable transportation systems make spatial separation between factory and customer transparent and, in the end, everyone theoretically wins. While the concept has obvious potential for military logistics in a peacetime environment, can it work in wartime or in the Somalias or Bosnias of tomorrow?

Operational leadership is that factor of operational art which is challenged with assembling and evaluating all of the factors, information and forces, and producing a plan that executes the mission successfully. A sound logistics plan gives the operational leader flexibility in planning and controlling the operation. Mao Tse-Tung said "...the flexible employment of forces is the central task in directing a war, a task most difficult to perform well. ...Flexibility in command can be realized only through the discovery of order, light, and certainty amidst such circumstances peculiar to war as confusion, darkness, and uncertainty."[20] Since order and certainty are the first things to come under fire in war, flexibility provides a solution to the problem. A logistic system that is founded on critical information exchange and civilian transportation networks removes

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fields of study of operational art are operational factors, functions, planning and training, elements and principles of operational warfare, methods of combat force employment, and operational leadership.

[18] Milan Vego, "Operational Art," (Newport: Naval War College, 1996), 6.

[19] Milan Vego, "Operational Leadership," (Newport: Naval War College, 1996), 1.

[20] Mao Tse-Tung, On the Protracted War, (Peking: Foreign Language Press, 1954), 101.

certainty from the mind of the commander and could force him to be more concerned with his logistic limitations vice his tactical ones. Only the logistics support that is readily available and capable of delivery can provide the level of certainty and order required to enable the operational commander to focus on the operational-tactical task at hand.

Conclusions. Fiscal efficiency should always be an underlying theme of the military's procurement and administrative processes, but it cannot have such an overbearing emphasis that it impacts on our ability to effectively plan and fight of the battlefield. Armies, by design, are inefficient organizations. The military must always be prepared to rapidly replace material losses from combat operations, so that the operational commander can successfully complete the mission.

Flexibility and operational momentum require a logistic system that is ready and responsive to meet the needs of the operational commander so that maximum advantage can be taken of the circumstances at hand. LtGen. Gus Pagonis' description of Operation DESERT SHIELD/DESERT STORM as a "come as you are" operation implies that, in spite of the logistic successes of the operation, a significant amount of readily available logistic support will always be required if our armed forces to continue to be able to fight and win our nation's wars. Breaking the paradigms of such practices as ships maintaining their own spare parts onboard, eliminating war reserves, or reducing the Navy's combat logistics force and its capability to resupply the fleet at sea, should be carefully examined, not just for the economic effects, but for their psychological effects

on our operational leaders and how they perceive their ability to fight, take risks and sustain damage. Under combat operations at sea, anything that is not onboard can never be "just-in-time," and, Martin Van Creveld warns, "logistics make up as much as nine tenths of the business of War."[21] Great care must be taken to ensure that the military's mission of national defense has transitioned to that of fiscal efficiency and bureaucracy.

In the past twenty years the DoD has gone through several cycles of privatization that have met with varied and mixed results. To date, our relationship with the civilian transportation industry and others companies has been inconsistent and wavering, yet we are now relying on them to be poised and ready to fill our logistics shortfalls. The more removed and demilitarized our logistics system becomes, the more likely it is that it will forget that its sole existence is to support American fighting forces as they protect U.S. citizens and national security interests abroad.

Admiral Henry Eccles articulated this challenge in 1956 when he wrote:

"Many of the requirements for organizations and personnel that are herein stated as necessary to logistics effectiveness and efficiency in wartime may be considered to be too costly for our peacetime establishment. This is a matter in which official opinion and decisions will vary in accordance with the degree of apprehension as to our national security which may exist at a particular time. Regardless of what the decision may be it is still important that the military professional have a clear idea of the manner in which various deficiencies affect our combat strength.

... There is an important distinction between the rigorous elimination of waste and unwarranted luxury and the mirage of false economy. The first is merely the application of logistic discipline. The second is a delusion based upon a failure to understand the nature and magnitude of the logistics base on which our combat forces must rest before they can begin to fight. High military commanders must accept many arbitrary and unsound political decisions, but they themselves must never fall into the trap of self-deception."[22]

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21 Martin Van Creveld, Supplying War, (Cambridge: Cambridge Press, 1977), 241.

22 Eccles, 262.

To successfully conduct combat operations, an operational commander must comprehend and balance the very structure upon which war is based: strategy, logistics, and tactics. "Strategy and tactics provide the scheme for the conduct of military operations; logistics provides the means therefor."[23] A full balance between the requirement to present dominant combat fighting power and logistics efficiency must be maintained. The challenge is to ensure that our "just-in-time" logistics concept is not making our operational leaders more concerned with notional solutions to logistics problems than with strategy and tactics.

[23] ibid, 7.

Bibliography

Center for Naval Analyses. Balancing Investment, Transportation, and Asset Visibility To Achieve Maximum Readiness. July 1996.

"Court OKs Lykes reorganization." American Shipper, May 1997.

Creveld, Martin Van. Supplying War. Cambridge: Cambridge Press, 1977.

Eccles, Henry E., Rear Admiral, USN (ret). Command Logistics. Newport, R.I. : Naval War College, 1956.

_____. Logistics in the National Defense. Harrisburg, Pa: Stackpole Company, 1959.

Joint Chiefs of Staff, Doctrine for Logistics Support of Joint Operations, January 1995.

_____. J-4 Directorate for Logistics, JCS Link (from the Internet), April 1997.

_____. "Joint Vision 2010," Joint Force Quarterly, Summer 1996.

Kaminski, Paul G. "The Revolution in Defense Logistics." Defense Issues, Volume 10, Number 107, 1995.

Levine, Arnold and Jeff Luck. The New Management Paradigm: A Review of Principles and Practices. RAND, !994.

Mao Tse-Tung. On the Protracted War. Peking: Foreign Language Press, 1954.

"NOL plans to buy APL." American Shipper, May 1997.

Pierce, Terry C. "Voodoo Logistics Sink Triphibious Warfare." Proceedings, September 1996.

"Satisfaction." Defense 97, Issue 1.

U.S. Navy, Forward ... From the Sea, The Navy Operational Concept, (from the Internet) March 1997.

_____. Naval Logistics, Naval Doctrine Publication 4.

_____. Strategic Concepts of the U.S. Navy, Naval Warfare Publication 1 (Rev.A).

Bibliography (contd)

_____. Supply and Financial Management Brief, COMNAVSURFLANT N41, 1997.

Vego, Milan. Operational Leadership, (unpublished article) Naval War College #4107, Joint Military Operations Department, September 1996.

_____. Operational Art, (unpublished article) Naval War College #4090, Joint Military Operations Department, August 1996.