The Vietnam War: A Case Study for Strategic Sealift in Large-Scale Conflict

A Monograph

by

MAJ Jon Michael King
US Army

School of Advanced Military Studies
US Army Command and General Staff College
Fort Leavenworth, KS

2020

REPORT DOCUMENTATION PAGE	*Form Approved* *OMB No. 0704-0188*

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
21-05-2020	Master's Thesis	JUN 2019 – MAY 2020

4. TITLE AND SUBTITLE
The Vietnam War: A Case Study for Strategic Sealift in Large-Scale Conflict

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
MAJ Jon Michael King

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, KS 66027-2301

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Advanced Military Studies Program

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT
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15. SUBJECT TERMS
Vietnam War, Sealift, Joint Logistic Over-the-Shore, US Transportation Command, US Maritime Administration, Military Sea Transportation Services, Merchant Marines, Deployment, Mobilization, Sustainment, Strategic Mobility Triad, Ports

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER *(include area code)*
(U)	(U)	(U)		42	

Standard Form 298 (Rev. 8-98)

Monograph Approval Page

Name of Candidate: MAJ Jon Michael King

Monograph Title: The Vietnam War: A Case Study for Strategic Sealift in Large-Scale Conflict

Approved by:

__________________________________, Monograph Director
John Curatola, PhD

__________________________________, Seminar Leader
Shane Murphy, COL

__________________________________, Director, School of Advanced Military Studies
Brian A. Payne, COL

Accepted this 21st day of May 2020 by:

__________________________________, Acting Director, Office of Degree Programs
Prisco R. Hernandez, PhD

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the US Army Command and General Staff College or any other government agency. (References to this study should include the foregoing statement.)

Abstract

The Vietnam War: A Case Study for Strategic Sealift in Large-Scale Conflict, by MAJ Jon Michael King, 42 pages.

The objective of this study is to provide recommendations to improve the United States' strategic mobility triad. This is done through a comparative analysis of strategic sealift in support of the Vietnam War against the United States' current strategic mobility posture. The intent is to analyze a point in US history that provides a parallel to the challenges the United States may face in a future near-peer conflict. The paper draws on lessons learned from history, compares the historical examples to current capabilities, and provides recommendations in anticipation of challenges facing the United States. The key lessons learned focus on insufficient strategic sealift fleet capacity, inadequate fleet operational readiness, and port congestion caused by a scarcity of adequate ports. Recommendations include recapitalizing and growing the US Transportation Command and Maritime Administration fleets by divesting high maintenance vessels and purchasing new or used strategic sealift vessels. The US Army and Navy must grow additional Joint Logistics Over-the-Shore capabilities to provide more ports of entry and bridge the gap between strategic mobility and operational sustainment.

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Acknowledgements

I would like to acknowledge and thank a few people who made this monograph possible. The first is my monograph director, Dr. John Curatola, for providing me guidance and keeping me on the right track. I would also like to thank Dr. Bruce Stanley for suggesting the topic and for interviewing me when I applied to the school. I would also like to thank my wife, Evie Ann, for all her support through the writing process.

Abbreviations

A2/AD	Anti-Access / Aerial-Denial
CONUS	Continental United States
DoD	Department of Defense
DoT	Department of Transportation
FOS	Full Operating Status
FY	Fiscal Year
JLOTS	Joint Logistics Over-the-Shore
JLRB	Joint Logistics Review Board
JP	Joint Publication
LCM	Landing Craft Mechanized
LCU	Landing Craft Utility
LOTS	Logistics Over-the-Shore
LST	Landing Ship, Tank
LSV	Logistic Support Vessel
MARAD	Maritime Administration
MSP	Maritime Service Program
MSTS	Military Sea Transportation Fleet
NDRF	National Defense Reserve Fleet
OPLAN	Operational Plan
RRDF	Roll On / Roll Off Discharge Facility
RRF	Ready Reserve Force
SPOD	Seaport of Debarkation
TA 19+	Turbo Activation 19 Plus
TBX	Transportation Brigade, Expeditionary

USMACV	United States Military Assistance Command, Vietnam
USTRANSCOM	United States Transportation Command
VISA	Volunteer Intermodal Sealift Agreement

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Introduction

> The United States confronted new dilemmas related to supplying war in 1965. The military required robust strategic mobility sea capabilities to support the Vietnam War's immense and long logistic system. The United States fielded a force that rose to a maximum of over half a million men. Support for this force required a line of communication between 9,000 and 12,000 miles long, into a country that lacked necessary facilities to support such a large and sudden surge in troop strength. There was not a rear or a front like in the previous wars, and thus, there was confusion on how the military would adequately establish logistic installations.
>
> —Julian Thompson, *The Lifeblood of War: Logistics in Armed Conflict*

> Vietnam was a different type of war. Compared with the Korean War (where supply lines to the nearest fleet base in Sasebo, Japan were 5,200 miles from the continental United States, with an additional 140 miles to Pusan, Korea) the supply lines to the fleet off Vietnam traversed 6,300 miles to the fleet base at Subic, Philippines and an additional 700 to 1,300 miles to ship loitering locations off the coast of Vietnam.
>
> —Edwin Bickford Hooper, *Mobility, Support, Endurance: A Story of Naval Operational Logistics in the Vietnam War 1965-1968*

The United States became involved in Vietnam in 1950 when President Harry S. Truman sent advisors as part of the Military Assistance Advisory Group to assist the French. United States participation changed over time from that of advisors to combat forces by 1965. With this change in roles, the United States deployed combat troops in large numbers, surging the initial troop strength at the beginning of 1965 by approximately 20,000 military personnel, then roughly 187,000 by the end of December. The number increased further to roughly 400,000 by the end of 1966 with a war-time peak close to 550,000 Soldiers, Sailors, Airmen, and Marines.[1]

The sustainment requirements for this number of personnel with combat equipment was immense. The war required a massive sea fleet to supply the lethal instrument of national power. Nevertheless, at the time of the initial build-up, the United States was ill-prepared. The United States had to rapidly deploy forces to a theater of war with limited ships, seaports of debarkation (SPOD), and associated infrastructure. Furthermore, the United States needed to sustain those

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[1] Joseph M. Heiser, Jr., *Logistic Support* (Washington, DC: Government Printing Office, 1974), 14-15.

forces for an extended period. The experience in Vietnam has parallels to the contemporary operating environment. The Department of Defense (DoD) would do well to carefully examine the Vietnam War, specifically the strategic mobility required to move and supply US forces during the initial years of combat operations. Moving and supply large forces is particularly relevant based on the United States' current outlook on the operational and strategic environment.

Within its strategic documents that guide policy, the United States codified a reemergence of great power competition and established a framework to address this reemergence.[2] The United States views Russia and China as actors shaping a world "antithetical to US values and interests," with China specifically seeking to displace the United States in the Indo-Pacific region.[3] The United States needs to prepare for the potential of a large-scale conflict in the Indo-Pacific theater. Additionally, the DoD's analysis of the US strategic mobility triad is key to appreciating the ability, or lack thereof, to fielding and supplying a large combat force in a distant theater of operation.

The objective of this study is to provide recommendations to improve the United States' strategic mobility triad. The monograph will provide this through a comparative analysis of strategic sealift in support of the Vietnam War against the United States' current strategic mobility posture. The intent is to analyze a point in US history that provides a parallel to the challenges the United States may face in a future near-peer conflict. The paper will outline the lessons learned from history, compare the historical examples to current capabilities, and make recommendations in anticipation of challenges facing the United States.

[2] Donald J. Trump, "National Security Strategy of the United States of America," The White House (Washington, DC: Government Printing Office, 2017), 25-27; US Department of Defense, "Summary of the 2018 National Defense Strategy of the United States of America" (Washington DC: Government Printing Office, 2018), 2; The Joint Staff, "Description of the 2018 National Military Strategy," Joint Chiefs of Staff (Washington DC: Government Printing Office, 2019), 2.

[3] Donald J. Trump, "National Security Strategy of the United States of America," 25.

In order to provide useful analysis, a comparative study must focus narrowly on the most relevant period in the war as it relates to initial sustainment preparedness and execution. The initial build-up of 1965 and 1966, as mentioned previously, is ripe for comparison as peacetime sustainment posture and preparedness inform initial combat operation performance. Additionally, the study will evaluate strategic level sustainment because it is one of the most challenging aspects of supporting a wartime mission. The vast pipeline caused by distance from the continental United States to Southeast Asia is particularly relevant to the challenges the United States may face in the future. Finally, the study cannot focus on all aspects of strategic sustainment. Strategic mobility, more specifically sealift capabilities, will be examined due to its significant impact on sustaining wartime operations in theater.

Analysis of the Vietnam War during the military build-up of 1965 into 1966 is the most relevant when determining current capabilities and support for large-scale mobilization into a theater in Southeast Asia. This timeframe is especially crucial because it provides a historical framework for an initial build-up of personnel and supplies into a relatively immature theater. Though the United States had a presence in Vietnam decades prior, this build-up period of 1965 to 1966 is exceptionally informative in providing valuable lessons. The United States placed large troop numbers into this theater of war. The time of 1965 to 1966 informs today's Department of Defense with a salient example of rapid troop and equipment build-up while utilizing the capacity of strategic mobility fleets from a peacetime requirement to meet wartime mandates.

The strategic level of sustainment describes the logistics and transportation effort from the United States to Vietnam and from intermediate logistics bases like Japan. An aim is to understand how the United States supplied enormous volumes of equipment and commodities in support of the war over a vast distance. The paper will examine the United States' strategic mobility assets and how the nation employed these capabilities to meet sustainment requirements and maintain its war effort. The paper will identify potential shortfalls related to how the United States sought to ensure the necessary personnel, supplies, and equipment were available to prosecute the war. Though relevant to operations in the war, the monograph will not focus on operational or tactical level logistics. The analysis will be limited to strategic mobility.

Strategic mobility is the capability to deploy and sustain military forces worldwide in support of national interests. The nation provides strategic mobility through common-user sealift, common-user airlift, and pre-positioned stocks.[4] The paper will focus mainly on common-user sealift capability as seaborne vessels typically transport the bulk of the material and commodities in support of large-scale military operations. Common user airlift and pre-positioned stocks, or previously named 'war stocks,' also played a role in sustaining operations during the Vietnam War. However, sealift was the predominant source of strategic movement into theater due to the ability to transport vast amounts of weight relatively cheaply and quickly.

Sealift was the heart of the strategic mobility triad in support of US efforts in Vietnam. In 1965, the United States moved 1.23 million short tons of cargo by sea from the continental United States to Vietnam. The movement by air was only 38,000 short tons. Likewise, in 1966, the United States shipped 2,831,500 short tons by common-user sealift vessel as opposed to 117,500 short tons by air.[5] In 1965 and 1966, movement by sealift constituted 97 percent and 96 percent, respectively, of total cargo shipped. Analyzing and researching the heavy-lift within the strategic mobility triad is the most prudent when providing recommendations to current capabilities.

Three significant challenges from the United States' strategic sustainment actions during the Vietnam War are potential parallels to future near-peer conflicts in the Indo-Pacific region. This paper will focus on these three main premises. First, the Military Sea Transportation Service (MSTS) fleet was insufficient in number for the overall requirement, and the United States had to activate outdated World War II-era vessels to meet mobility demands. Next, the Merchant Marine

[4] US Department of Defense, Joint Staff, Joint Publication (JP) 3-35, *Deployment and Redeployment Operations* (Washington, DC: Government Printing Office, 2018), I-7.

[5] Charles R. Shrader, *United States Army Logistics, 1775-1992: An Anthology,* Vol. 3 (Washington, DC: Center of Military History, 1997), 694.

services were not responsive to initial requirements. With much of the fleet outdated, the United States had to contract foreign-flag merchant vessels and spend time and resources to update US-flag merchant vessels. Finally, the ports in Vietnam were inadequate in number, capacity, and support capabilities. The United States required logistics-over-the-shore operations, but could only provide one port while engineers and contractors developed South Vietnamese ports through construction.[6] Understanding these shortfalls in the posture of the US strategic mobility triad and their impacts on operations in the conflict can inform decision-makers on potential risks in our current strategic mobility posture. Furthermore, incorporating the lessons learned into systemic responses may prevent mistakes or limit missed opportunities in possible future operations in Southeast Asia.

Chapter 2: Case Study – Sealift in Support of the Vietnam War

The two key drivers for the United States' reliance on immense quantities of strategic sealift in the Vietnam War were due to the high volume of service members, equipment, and commodities needed to prosecute the war and the vast distance of the Pacific Ocean. The United States required numerous ships to transport the commodities and troops needed in theater. Furthermore, the United States needed more sealift assets to account for time lost due to time and distance factors. Ships needed more time to conduct rotations from the continental United States (CONUS) to theater and back. This high volume and long distances meant the US required more assets than would generally be required to conduct resupply in a closer theater.

The materiel and troop requirements during the initial build-up from 1964-1965 were enormous. As alluded to in the introduction, at the beginning of 1965, the United States had a total personnel end strength of 23,858. By the end of the year, the total personnel end strength

[6] US Joint Logistics Review Board, *Logistics Support in the Vietnam Era* (Washington DC: Government Printing Office, 1970), 171-174.

was 184,314, a growth of over 160,000 personnel and a 770 percent increase in strength.[7] By the end of 1966, still part of the build-up of forces, the US had 485,300 personnel in Vietnam.[8] The growth of personnel, equipment, and commodity requirements increased by a similar number and the strategic lift capabilities required to provide those commodities and equipment needed to increase to maintain the supply pipeline. The ever-increasing numbers of combat and support forces created enormous logistical and mobility challenges for the United States.

The United States transported forces by sea as a standard practice throughout US history. Thus, it was not unusual that sealift was the primary means of movement of personnel, equipment, and commodities into the Vietnam theater. In 1965 the United States deployed more than half of its expeditionary force to Vietnam on troop transport ships. To provide more granularity, the MSTS delivered 82,800 troops to Vietnam in 1965, and the Air Force airlifted another 85,100, which was almost an even split between sea and air transportation.[9] At the time, Military Sea Transportation Services (MSTS) (later renamed as Military Sealift Command) was responsible for troop transportation from CONUS to Vietnam and operated sixteen troop transport ships, all of which were run solely by civilian mariners.[10] The limiting factors for how US troops entered Vietnam were related to the size of MSTS's fleet and time requirements. The US needed to put large quantities of Soldiers into the theater and could not wait for the long travel times by sea or rely on such a small fleet of troop transports to do long rotations.

US troops were not the only resource that required movement. US Military Assistance Command, Vietnam (USMACV) required extensive quantities of supplies, and sealift was the

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[7] United States Military Assistance Command, Vietnam, Military History Branch, Office of the Secretary, Joint Staff, *HQ USMACV Command History, 1965* (Alexandria, VA: Headquarters Department of the Army Information Management Support Agency, 1965), 269.

[8] Schrader, *United States Army Logistics 1775-1992: An Anthology*, 666.

[9] Salvatore R. Mercogliano, *Fourth Arm of Defense: Sealift and Maritime Logistics in the Vietnam War* (Washington, DC: Naval History and Heritage Command, 2017), 15.

[10] Ibid., 12-13.

primary source of commodities entering theater. Of the over twenty-two million short tons of dry cargo and fourteen million tons of bulk petroleum, 95 percent of dry cargo and 100 percent of petroleum arrived in Vietnam by ship.[11] In October 1965, the Navy's logistics headquarters and primary agent for sustainment planning reached a peak in distribution and operations in Saigon when the Navy offloaded more than 330,000 measurement tons (a unit of volume roughly forty cubic feet) of military cargo from some ninety-six ships. From Saigon, MSTS trans-shipped over 40,000 measurement tons of military cargo to other ports in Vietnam.[12] The US combined rate of consumption and stockage requirements by the end of 1965 equaled two shiploads, or 12,000 short tons of cargo, per day.[13] However, the United States required more ships in the pipeline than the two shiploads per day. The greater requirement for vessels was caused by travel time factors and additional supply requests which exceeded prescribed stockage levels.

The United States required a more extensive fleet than initially anticipated, not only due to the volume of supplies needed, but also due to the time and distance factor. In 1965, most vessels, traveling at the typical pace of nineteen knots, could make the passage from San Francisco to Vietnam in eighteen to twenty-one days.[14] A non-direct route to Vietnam contributed to the number of days. Although the supply line stretched 7,000 miles across the Pacific Ocean from the US West Coast, ships generally sailed northwestward, not westward, on Great Circle routes. Each vessel sailed a somewhat hazardous route across dangerous bodies of water during the winter months in the Aleutian Chain and contended with typhoons in the summer months along the coasts of China and the Philippines. The final stretch to Vietnam was through

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[11] Steve R. Waddell, *United States Army Logistics: From the American Revolution to 9/11* (Santa Barbara, CA: ABC-CLIO, LLC, 2010), 164.

[12] Edwin Bickford Hooper, *Mobility, Support, Endurance: A Story of Naval Operational Logistics in the Vietnam War 1965-1968* (Washington, DC: Naval History Division Department of the Navy, 1972), 46.

[13] United States Military Assistance Command, *HQ USMACV Command History, 1965*, 109.

[14] Mercogliano, *Fourth Arm of Defense*, 13.

dangerous shoals in the South China Sea.[15] By 1967 after the initial build-up, the United States had an average of 256 ships in the supply pipeline to Vietnam to account for the distance factor and to meet their supply requirements.[16] However, at the start of the build-up for war, the United States did not have a sufficient quantity of ships to maintain that supply chain.

The United States relied on the Military Sea Transportation Service (MSTS) and Maritime Administration (MARAD) for strategic sealift during the Vietnam War. MSTS had sixty-eight ships at the start of the build-up. [17] MARAD, managing the Merchant Marines and the National Defense Reserve Fleet (NDRF), possessed a larger fleet but had issues with operational readiness. By 1965, the Merchant Marines were operating 965 ships with a combined carrying capacity of 14.7 million deadweight tons. However, a sufficient number of the Merchant Marine fleet was not available for activation. [18] The United States had to look to other options to meet the initial requirements for strategic sealift.

As the United States realized it would need more sealift capacity, it had to draw upon capabilities from other sources. The DoD looked to the World War II shipbuilding program that produced 1,512 vessels and had a 14.4 million deadweight ton capacity. However, most of the ships were obsolete by 1965. [19] The other freighters and tankers which were not obsolete were nearing the end of their service life and taxed the efficiency of the logistics effort. [20] These vessels served as a stop-gap measure until MSTS and MARAD could integrate the new ships into the strategic mobility fleets. In 1965, Secretary of Commerce John T. Connor mobilized twenty-five ships of the NDRF. Some of those activated broke down immediately as MARAD sent them to

[15] Mercogliano, *Fourth Arm of Defense*, 13-14.

[16] Jerome G. Peppers Jr., *Military Logistics: A History of United States Military Logistics, 1935-1985* (Huntsville, AL: Logistics Education Foundation, 1988), 249.

[17] Mercogliano, *Fourth Arm of Defense*, 15.

[18] US Joint Logistics Review Board, *Logistics Support in the Vietnam Era, 173*.

[19] Mercogliano, *Fourth Arm of Defense*, 8.

[20] Ibid., 29.

sea without resolving numerous mechanical problems.[21] The government also contracted US and foreign commercial vessels. MARAD contracted thirty foreign ships (10 percent of the total chartered on average, each year) and numerous US commercial freighters that could handle oversized cargo and employ their equipment to off-load cargo at undeveloped ports.[22] The United States employed multiple temporary strategies to build capacity until it developed a more long term solution.

The United States took deliberate steps to grow the MSTS and MARAD fleets to provide more reliable solutions than the initial stop-gap responses to ship shortages. From 1965 to 1968, the MSTS nucleus fleet grew from sixty-eight to ninety-one ships. Of the new additions, MSTS gained three troop transports and twenty-five Landing Ship, Tanks (LST).[23] MARAD also had modest growth during the same period. The Maritime Administration scrapped twenty-eight ships that failed to meet operational readiness requirements and focused its efforts and funding on the activation of reliable vessels. MARAD activated 172 ships from the reserve fleet at the cost of $549,000 per ship. Additionally, the US government also negotiated agreements with forty shipping companies to manage MARAD's activated vessels.[24] The United States' efforts paid off.

By the end of 1966, the United States operated the necessary sealift to sustain the war. MSTS finally had sufficient ships in the fleet and MARAD had 142 National Defense Reserve Fleet ships in service with another nineteen NDRF ships in the process of activation. Naval leaders believed the fleet was not only sufficient for the current year but projected it would meet requirements for forecasted years. The Pentagon and MSTS projected the strategic sealift

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[21] Mercogliano, *Fourth Arm of Defense*, 24.

[22] Ibid., 8.

[23] The Landing Ship, Tank is a 4,000-ton, 327-foot ship that can load and discharge cargo, including tracked and wheeled vehicles, through bow doors directly onto the beach or onto improvised ramps. Mercogliano, *Fourth Arm of Defense*, 15, 36.

[24] Ibid., 24.

capacity requirements to be below 100,000 measurement tons. Additionally, both entities did not expect the US would need to activate the additional NDRF vessels for the upcoming years.[25]

As the US government built its strategic sealift fleet, it experienced new issues. By December 1965, the backlog of ships waiting in South Vietnam or other parts of the Pacific theater was so significant due to port congestion, that it created a backlog of cargo in US ports.[26] The United States was on its way to having sufficient ships, but fleet growth was somewhat moot. USMACV had a bottleneck problem at the Vietnamese ports, and no amount of growth in strategic sealift could remedy the issue.

At the start of the war, the US strategic sealift had a limited number of viable ports it could use to sustain the war. The Republic of Vietnam only had one major deep-draft port located in Saigon. The Saigon port had its limitations due to draft depth and pier space. The only other port that could accommodate oceangoing ships was Cam Ranh Bay, and it only had one small pier. [27] The number and capabilities of the berthing sites at these ports were insufficient for the operation. Saigon had ten berths with only three for military cargo, and Cam Ranh had two berths with only one for military cargo. An officer in USMACV's J-4 (logistics) staff superbly summarized how the situation caused a bottleneck. He stated, "ten first-class ports in the continental United States were shipping materiel to South Vietnam as fast as they could, but MACV only had four second-class ports to receive it."[28] The bottleneck had significant impacts on the supply pipeline.

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[25] Thomas C. Thayer, ed., *A Systems Analysis View of the Vietnam War 1965-1972*, Vol. 12, *Construction and Port Operations in South Vietnam* (Washington, DC: OASD Asia Division, Pentagon, 1975), 56.

[26] Jack C. Fuson, *Transportation and Logistics: One Man's Story* (Washington, DC: Center of Military History, 1994), 109.

[27] Hooper, *Mobility, Support, Endurance,* 6.

[28] Mercogliano, *Fourth Arm of Defense*, 26.

The USMACV had two main problems related to the bottleneck. Because of the minimal berthing stations, USMACV could only receive so many ships at a time, and it had a limited amount of space from which to distribute further into the theater. Hence, US forces had to cope with the bottleneck on the receiving end and the distribution end. From October to December 1966, MSTS and MARAD vessels completed record numbers of successful departures to South Vietnam. However, vessels waited for long periods in holding due to the limited number of ports and berthing sites. By November 1966, the average wait time for a vessel was 22.2 days, which was slightly higher than the 21.9 day wait time a year prior, but down significantly from the peak wait time of 35.4 days in January 1966.[29] The wait time had a significant impact, not only on supply flow into theater but on efficiency and budget. Primarily, the wait reduced turnaround time for more supplies to reach theater. Furthermore, the increase in wait times cost the US government roughly $2.4 million at an average cost of $4,000 per day per ship.[30]

The bottleneck issues compounded as a multitude of US vessels cycled into the scarce ports and overwhelmed the port handling capacity. The ports became overwhelmingly congested, and vessels had to wait, not just because there were not enough berthing sites for offload. Vessels had to idle outside of the ports because the sites no longer had the space to unload. At the end of December 1965, there was a total cargo backlog of more than 164,000 measurement tons at Saigon and Cam Ranh Bay.[31] The main issue was no longer one of sites, but space. The resulting backup in shipping around Vietnamese ports prompted Washington authorities to direct USMACV give its highest priority in 1966 to unloading supplies.[32] The US realized that cargo

[29] Thayer, *A Systems Analysis View of the Vietnam War 1965-1972*, 59.

[30] Ibid., 60.

[31] United States Military Assistance Command, *HQ USMACV Command History, 1965*, 118.

[32] Joseph M. Heiser, Jr., *A Soldier Supporting Soldiers* (Washington, DC: Center of Military History, 1991), 129.

space and berthing sites were symptomatic of the root issue: the number and capability of available ports.

The situation of idle vessels and insufficient ports became so problematic that the United States established multiple solutions to resolve the issue. The US government developed its plans through subordinate elements and sought a multi-pronged solution. MSTS Far East established interim anchorages in the Philippines, Okinawa, and Guam to provide safe havens for ships to wait until ports in the Republic of Vietnam were prepared for discharge. [33] MSTS employed barges and additional lighterage ships to maximize the use of smaller ports. Additionally, the US government provided funds to USMACV for the construction of larger ports and pier systems.

Port construction was not significant during the build-up phase of the Vietnam War and did not have a substantial impact until much later. The US did not begin port build-up in earnest until July 1966, and most of its effort focused on expanding the capabilities of the Saigon port. At that time, the USMACV engineer units were just beginning to expand the port areas at Cam Ranh Bay, Qui Nhon, and Da Nang.[34] The United States invested a portion of over four million dollars (roughly thirty-one million of today's dollars) on port construction and improvement. USMACV built seven deep-water ports, over eleven million square feet of covered storage, two million square feet of refrigerated storage, and 1.6 million barrels of fuel storage facilities among other large construction projects.[35] However, these projects did not provide tangible gains until much later.

The projects which produced significant impacts on strategic sealift's capabilities during periods of port congestion were logistics-over-the-shore (LOTS) operations. The MSTS and USMACV conducted LOTS operations by employing barge piers and lighterage, the practice of moving cargo from large vessels to smaller watercraft, to ease the burden from strategic sealift in

[33] Mercogliano, *Fourth Arm of Defense*, 26.

[34] Fuson, *Transportation and Logistics*, 112.

[35] Peppers, *Military Logistics: A History of United States Military Logistics,* 276.

theater. Most strategic sealift vessels could only dock at Saigon and Cam Ranh Bay, but elsewhere the initial dependence had to be placed almost entirely on LOTS operations.[36] US forces opened and operated at multiple smaller ports with the application of these operations. LOTS operations ensured significantly more cargo could make it from CONUS into theater at a much faster rate and could also reduce the time vessels needed to conduct rotations.

The US's key element to the process of opening new ports was the Delong pier. The Delong pier (see Figure 1. DeLong Piers in Vietnam) was a structure made of barges strung together and anchored by pilings. In 1966, MSTS transported one of the piers from South Carolina to DaNang to establish a usable port. The US government contracted firms in Japan to build additional Delong piers for other Vietnamese ports.[37] By the end of December 1966, the DaNang port had one Army and two contractor-built Delong piers. The US projected a requirement of about 35,000 short tons for the DaNang port.[38] After putting in the Delong piers at DaNang, the monthly inflow of cargo span jumped from 72,936 short tons at the beginning of the year to 152,807 short tons at the end of the year, more than four times the projected requirement.[39] The US gained increased throughput, not just in DaNang, but across the Republic of South Vietnam by employing the piers. By the end of pier construction, South Vietnam could handle more than 500,000 short tons per week, up from an original 16,000 tons.[40] Nevertheless, some of the improvements to throughput also had to do with landing craft ramps and lighterage watercraft.

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[36] Hooper, *Mobility, Support, Endurance*, 6.

[37] Mercogliano, *Fourth Arm of Defense*, 33.

[38] Hooper, *Mobility, Support, Endurance*, 88.

[39] United States Military Assistance Command, Vietnam, *HQ USMACV Command History, 1966* (Alexandria, VA: Headquarters Department of the Army Information Management Support Agency, 1965), 298.

[40] Mercogliano, *Fourth Arm of Defense*, 33.

Figure 1. DeLong Piers in Vietnam. This photograph is oriented toward the east and shows DeLong pier number one on the left and DeLong pier number three being constructed on the right at Cam Ranh Bay. *USACE LNO trip slides Vietnam 5.182*. Photograph by United States Army Corps of Engineers, November 7, 1966. Vietnam Trip Briefings by OCE Liaison Officer, Office of History, Headquarters, US Army Corps of Engineers, Alexandria, VA.

American naval leaders understood as early as 1965 that only vessels capable of LOTS operations could ease the port congestion problem. The LST was ideally suited for the proposed mission. MSTS employed some of its LSTs to load supplies at Saigon, Qui Nhon, Cam Ranh, and DaNang and distribute the cargo at smaller ports along the coast and rivers of South Vietnam. Other ships transported material from Subic Bay and Japan. The LSTs were so useful that they were needed in greater quantity as the supply and equipment requirements increased in theater. By the end of 1965, senior navy officials activated additional ships and transferred others from the Atlantic. By March 1966, the MSTS Far East fleet grew by an additional nineteen LSTs.[41]

In 1966, USMACV developed landing craft offload sites to improve discharge rates at ports. Port performance improved significantly after USMACV developed these sites. At the DaNang port, the United States added five Landing Craft Utility ramps. In one year, after

[41] Mercogliano, *Fourth Arm of Defense*, 36.

installation of the ramps, the port's monthly discharge rate went from 485 short tons to 7,050 short tons of cargo handled.[42] Other ports also realized immense growth in capacity with the installation of sites which received lighterage vessels. Chu Lai port increased capacity from 18,275 short tons at the beginning of the year to 37,430 short tons by the end of the year after engineers constructed a four-ship LST site and dredged the channel. Cam Ranh Bay increased cargo handling from 5,523 short tons at the beginning of the year to 19,714 at year's end. Vung Tau port increased short ton handling from 5,153 short tons to 26,840. Nha Be, the ammunition handling primary berthing area of the Saigon port complex, nearly doubled its capability to 48,055 short tons by December of 1966.[43] In most instances, the addition of landing craft ramps and lighterage operations more than doubled throughput.

The main issues during the Vietnam war related to strategic sealift were an insufficient MSTS fleet at the war's onset, an unresponsive Merchant Marine fleet, and severe port congestion. The JLRB provided recommendations for the three issues described in this chapter. First, the Joint Chiefs of Staff needed to determine and fund a number (no specific number recommended) of multi-purpose ships, medium-sized container ships, barge carrying ships, and tankers for the Military Sea Transportation Service fleet to provide peacetime sealift support. Additionally, the funded ships must meet surge requirements for contingency operations until additional shipping support can be mobilized and made operational. The Secretary of Defense should support legislation for long-term build projects and seek charter commitments from commercial interests to construct multi-purpose ships and tankers for the Military Sea Transportation Service.[44] Second, regarding the issue of an irresponsive and outdated Merchant Marine fleet, the JLRB recommended the Secretary of Defense seek to update legislation to include positive provision for ensuring responsiveness of modern US flag merchant vessels, with

[42] United States Military Assistance Command, *HQ USMACV Command History, 1966*, 297-298.

[43] Ibid., 297-300.

[44] US Joint Logistics Review Board, *Logistics Support in the Vietnam Era,* 173-174.

appropriate national defense features, to meet military requirements under various conditions of emergency.[45] Finally, the JLRB also provided two recommendations to address port congestion in future conflicts. The Army needed to review current doctrine concerning LOTS operations and incorporate the planned use of mobile/prefabricated piers within the first sixty days of operations (if applicable to the theater of that operation). The Army and the Navy also needed to establish future requirements for shallow-draft vessels, tank landing ships, and beach discharge lighters.[46]

Early lessons from the strategic sealift problem have direct implications for the contemporary environment. A paucity of vessels and ports are a problem still facing the United States' ability to engage in a large-scale conflict. The Department of Defense must view capabilities not just in terms of quantity of vessels but must also assess operational readiness, age of the fleet, and contingency-based responsiveness. The outlined lessons will be explored in detail in the final section of this paper. Only after assessing the current capabilities can the United States determine its preparedness for a potential conflict of the magnitude and operational distance of the Vietnam War.

Chapter 3: Current Sealift Capabilities and Potential Challenges

The United States has multiple elements of sealift that need assessing to determine current capability. The Department of Defense (DoD) and Department of Transportation (DoT) both play a role in strategic sealift. The DoD's executive agent for transportation is US Transportation Command (USTRANSCOM), and its subordinate element Maritime Sealift Command (MSC), is responsible for strategic sealift. Additionally, the DoD has watercraft within the Army, which links strategic sealift to the shore (particularly crucial to the issues in this monograph). The DoT's executive agent for strategic sealift is the Maritime Administration

[45] US Joint Logistics Review Board, *Logistics Support in the Vietnam Era*, 174.

[46] Ibid., 175.

(MARAD) who operates the National Defense Reserve Fleet (NDRF). In order to get a more holistic appreciation for strategic sealift, the United States must assess the current capabilities and challenges within the DoD and DoT strategic sealift organizations.

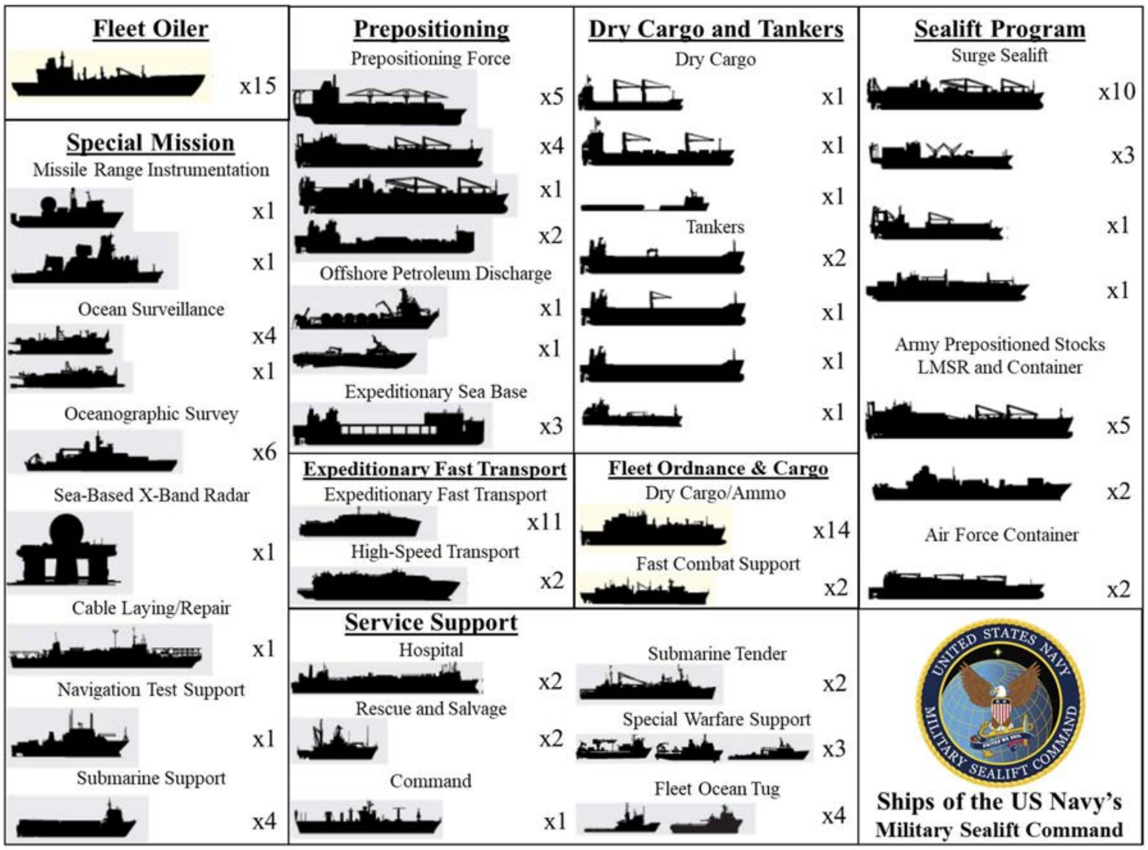

Figure 2. Ships of the US Navy's Military Sealift Command. Figure modified by author for clarity from "Ships of the US Navy's Military Sealift Command," US Navy Military Sealift Command, last modified January 2019, accessed 6 October 2019, https://www.msc.navy.mil/inventory/.

The Military Sealift Command provides the preponderance of the United States' strategic sealift. Currently, MSC provides fifteen fleet oilers (provides refueling for ships underway), twenty special mission vessels, seventeen prepositioning vessels, and fourteen service support vessels. MSC also has twenty-four sealift program vessels, three dry cargo craft, five tankers for worldwide petroleum distribution, fourteen dual-purpose dry cargo and ordnance vessels, two fast combat support ships, eleven expeditionary fast transports, and two high-speed transports (see

Figure 2. Ships of the US Navy's Military Sealift Command).[47] Each of the 127 vessels is important to the strategic sealift mission when viewing the capability holistically. Sealift is relatively useless without the support vessels for continued operations. However, the sealift program, dry cargo, tankers, dual-purpose, and transport vessels are of particular interest to the overall assessment of US strategic sealift capability.

The DoT's MARAD secures America's maritime interests through a series of programs that use government and commercial vessels to provide sealift capabilities in times of national emergency. The programs, specifically the NDRF and the Ready Reserve Force (RRF), are available to meet DoD strategic sealift needs during war.[48] The NDRF is a fleet of approximately 100 inactive, government-owned vessels that the DoT postures for reactivation in the event of an emergency or war. The NDRF consists mostly of "military-useful" cargo and tanker ships.[49] The United States also implements a program within the NDRF to support rapid worldwide deployments. This program is called the Ready Reserve Force (RRF), and it provides about 50 percent of government-owned surge sealift capability.[50]

The US Government developed RRF in 1977. Primarily, the RRF supports transport of initial supply of commodities and Army and Marine Corps unit equipment during the periods before MARAD can secure commercial for similar support, also known as 'surge' periods. In its inception, the RRF consisted of six vessels. However, now its composition is forty-six vessels (thirty-five roll-on/roll-off vessels, two heavy life/barge carrying ships, six auxiliary crane ships,

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[47] US Navy Military Sealift Command, "Ships of the US Navy's Military Sealift Command," modified January 2019, accessed 7 September 2019, https://www.msc.navy.mil/inventory/.

[48] United States Department of Transportation, Maritime Administration, "Strategic Sealift," last modified June 2019, accessed 6 October 2019, https://www.maritime.dot.gov/national-security/strategic-sealift/strategic-sealift.

[49] United States Department of Transportation, Maritime Administration, "National Defense Reserve Fleet (NDRF)," last modified July 2019, accessed 6 October 2019, https://www.maritime.dot.gov/national-defense-reserve-fleet.

[50] United States Department of Transportation Maritime Administration, "The Ready Reserve Force (RRF)," last modified July 2019, accessed 6 October 2019, https://www.maritime.dot.gov/national-defense-reserve-fleet/ndrf/maritime-administration%E2%80%99s-ready-reserve-force.

two aviation repair vessels, and one tanker). The RFF responds to surge periods by ensuring ships are operational in five to ten days and positioning them in the NDRF homeport of Beaumont, Texas, and at other ports around the country.[51]

MARAD has additional programs that leverage civilian ships to augment the nation's capacity to transport cargo during contingencies. Two programs that provide sealift capabilities in times of war are the Maritime Security Program (MSP) and the Volunteer Intermodal Sealift Agreement (VISA). Each program provides incentives for companies or vessels in exchange for availability during times of need. The MSP serves to maintain an active, privately-owned US flag and US crewed liner fleet in international trade, which is available to support DoD sustainment in a contingency.[52] Currently, MSP provides a stipend for sixty US-flag ships.[53]

Finally, the DoD provides capabilities to address the third premise of this paper, port inadequacies and congestion. The US Army, US Navy, and US Marines each play a role in supporting mobility and maneuver, access options, deployment of forces, and sustainment through austere access points through LOTS. The Joint Publication for LOTS states that it is the process of loading and unloading of ships without the benefit of deep draft-capable or fixed port facilities. Additionally, LOTS is a means for moving forces closer to tactical assembly areas.[54] LOTS is typically a joint endeavor and is called Joint Logistics Over-the-Shore (JLOTS).

The DoD has two main functions within JLOTS: lighterage and ports. DoD watercraft provide lighterage for moving troops and equipment onto shore in the event ports cannot berth MSC or MARAD's strategic sealift vessels. The Navy, Marines, and Army provide watercraft

[51] United States Department of Transportation Maritime Administration, "The Ready Reserve Force (RRF)."

[52] US Department of Transportation, Maritime Administration, "Maritime Security Program."

[53] General Stephen R. Lyons, US Transportation Command, testimony to the Senate Armed Services Committee, "State of Command" (Scott Air Force Base, IL, March 7, 2019), 10.

[54] US Department of Defense, Joint Staff, Joint Publication (JP) 4-01.6, *Joint Logistics Over-the-Shore (JLOTS)* (Washington, DC: Government Printing Office, 2005), xi.

transportation units to bridge strategic deployment with operational and tactical employment of ground combat forces by providing these capabilities. The US Army is the primary provider of causeways and ports. The Army watercraft mission provides additional port capabilities if there are insufficient, nonexistent, or congested ports.[55] The services each play a significant role in JLOTS operations, but there are service-specific functions only resident in the Army.

The US Navy provides the bulk of the lighterage capability. The Navy owns fifty landing craft utility (LCU) vessels. The fleet consists of two models, the LCU 2000, which carries 350 short tons, and the LCU 1610, which can carry 137 short tons. The Navy also has specialized lighterage vessels that provide ship-to-shore capabilities called the Landing Craft, Air Cushion (LCAC). The Navy operates a total of seventy-eight LCACs.[56] Each LCAC can land directly on the beaches to discharge and can access more than 70 percent of the world's beaches.[57] The Navy offers the preponderance of lighterage capabilities for JLOTS operations.

The Army also maintains lighterage capabilities in addition to the port and causeway capabilities. Within the active duty, the Army has five logistic support vessels (LSV), seven LCU vessels, nine landing craft mechanized (LCM), two roll-on/roll-off discharge facilities (RRDF), and one floating causeway pier. The floating causeway pier consists of eighteen non-powered causeway sections and support modular warping tugboats. In the Army Reserves, there are three LSVs, seven LCUs, and nine LCMs. Also of note, the US Army maintains two floating causeway pier systems with support vessels and two RRDFs per pier system in prepositioned stocks; one in Kuwait and one in Japan.[58] The Army provides limited lighterage compared to the Navy, but the

[55] US Army Forces Command, "Army Watercraft Systems 101 Briefing," (PowerPoint presentation, US Army Forces Command G-4), modified November 2016, 10.

[56] US Marine Corps, Maritime Expeditionary Warfare Integration Division, "The Maritime Expeditionary Warfare Report," Capabilities Development Directorate, Combat Development and Integration, August 2017, accessed 21 November 2019, www.mccdc.marines.mil/units/seabasing.aspx.

[57] Ibid., 25.

[58] US Army Forces Command, "Army Watercraft Systems 101 Briefing," (PowerPoint presentation, US Army Forces Command G-4), modified November 2016, 10-12.

ability to improve or place ports during JLOTS mission is primarily in the Army and essential to strategic sealift.

The United States appears to have postured itself handily after the Vietnam War. Congress instituted multiple programs to ensure the DoD and DoT have sufficient vessels to provide strategic sealift. Not only does MSC maintain a multitude of vessels, but some programs provide surge capabilities in the event of war or contingency like RRF, NDRF, VISA, and MSP. However, the capabilities of each arm of US strategic sealift, more accurately, the quantities of vessels, is not the sole indicator of the United States' preparedness for war. The United States must also understand if the respective fleets can meet readiness requirements in peacetime and in times of war. Likewise, the DoD and DoT must understand what challenges they are facing in order to provide an accurate assessment of their preparedness for war. The nation needs to evaluate the assessments and challenges to determine if it is susceptible to the same vulnerabilities in strategic sealift that the US government identified leading up to and during the initial build-up of the Vietnam War.

The USTRANSCOM sought to determine the operational readiness of strategic sealift in 2019 through exercises to test responsiveness, reliability, and wartime mission readiness. The DoD and DoT define required readiness outputs for sealift as the ability to meet real-world tasking on short notice and readiness to support operational plan timelines for deploying forces and material.[59] In September 2019, USTRANSCOM attempted to ascertain large-scale readiness of the Organic Surge Fleet by conducting a no-notice exercise. Exercise Turbo Activation 19-Plus (TA 19+) tested sixty-one ships for in-port and underway assessments.[60] The exercise provides a sobering account of the inadequacies of the fleet's performance in the report's key findings.

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[59] Bradley Martin and Roland J. Yardley, *Approaches to Strategic Sealift Readiness* (Santa Monica, CA: RAND Corporation, 2019), x.

[60] US Transportation Command, *Comprehensive Report for TURBO ACTIVATION 19-PLUS* (Scott Air Force Base, IL, December 16, 2019), i.

The vessels activated did not meet the target level of readiness for wartime response. Of the sixty-one ships alerted for the exercise, only thirty-nine (63.9 percent) were ready for tasking. There were thirty-three of sixty-one ships in Reduced Operating Status, which MSC directed to activate to Full Operating Status (FOS) for the exercise. Of these vessels, twenty-seven of the thirty-three (81.8 percent) achieved FOS and were underway in the prescribed 120-hour timeframe. USTRANSCOM conducted qualitative mission success evaluations on thirty-two vessels underway to determine if the vessels would be able to support large-scale operational plans (OPLAN) without mission impacts. The evaluation showed that nine vessels had discrepancies, which could potentially impact a trans-oceanic mission related to an OPLAN. The readiness goal for the Organic Surge Fleet is 85 percent availability. The qualitative mission success rate was 77.8 percent, and the cumulative fleet success rate was 40.7 percent for the exercise.[61] The tested fleet's inability to meet the readiness goal is an indicator of the overall readiness of MSC's ability to provide strategic sealift. However, the outcomes of TA 19+ are not the only indicator of concern.

The United States should be very concerned about the capacity and readiness of the crews who can and may potentially operate the various fleets. A report, released in September 2017 to the Senate, found there were sufficient mariners to crew the Ready Reserve Force for a short-term surge. The purpose of the report was to assess the number of citizen mariners available to crew the surge sealift fleet in times of national emergency. The report also sought to determine whether the Coast Guard's Merchant Mariner Licensing and Documentation System is sufficient for MARAD in assessing the number of qualified mariners. However, the report found that, for long-term surges, approximately 20 percent more mariners were required than were in the current force structure. The additions would be needed to sustain the surge fleet and concurrently operate the

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[61] US Transportation Command, *Comprehensive Report for TURBO ACTIVATION 19-PLUS* (Scott Air Force Base, IL, December 16, 2019), i.

commercial fleet.[62] MARAD codifies a long-term surge as anything longer than 180 days which would then require an additional 1,800 mariners.[63]

There is an additional cause for concern when one compares the current force of available crews against a more recent timeframe than Vietnam. Currently, MARAD estimates a total crew of 11,678 Merchant Mariners is required to man the Ready Reserve Fleet of forty-six vessels while concurrently operating the commercial fleet.[64] The ratio of crew to vessel is roughly 256:1, though the crew members would not serve on each vessel concurrently, but in rotations and other functions at ports. In 1991, the RRF consisted of ninety-six vessels and had a mariner pool of 25,000.[65] The same ratio during Desert Storm was roughly 260:1. The interesting point made by MARAD's agency executive Warren Labeck at the time was that the mariner pool was barely sufficient to crew the reserve sealift fleet.[66] The Maritime Administrator's comment should cause some concern. One must ask if the 260:1 crew to vessel ratio was barely sufficient in a large-scale operation in the past, why would the current administration of MARAD believe a 256:1 crew to vessel ratio be sufficient in a future large-scale operation?

The reason may have to do with advances in technology and newer vessels requiring fewer operators and maintainers for the crew. However, this assumption is flawed for two main reasons. First, the United States is still using many of the same sealift vessels from the era

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[62] US Committee on Commerce, Science, and Transportation, Maritime Authorization and Enhancement Act for Fiscal Year 2019, 115th Cong., 2d sess., 2018, S. Rep. 115-292, 4.

[63] Mark Buzby, Maritime Administrator, Testimony to the US House Committee on Armed Services, Subcommittee on Seapower and Projection Forces, *Mobility and Transportation Command Posture* (Washington, DC, March 8, 2018).

[64] U.S. Maritime Administration, *Maritime Workforce Working Group Report* (Washington, DC: Government Printing Office, 2017), 1.

[65] Warren Leback, Maritime Administrator, testimony to the US House Committee on Merchant Marine and Fisheries, Subcommittee on Merchant Marine, *Operation Desert Shield/Desert Storm Sealift Performance and Future Sealift Requirements* (Washington, DC, April 23, 1991).

[66] Ibid.

wherein the higher ratio was required and barely sufficient. Next, the vessels require significantly more maintenance. The two issues are somewhat tied together due to the age of the fleet.

The government-owned sealift fleet is forty-four years old on average. [67] Hence many of the vessels in the inventory are from the same era and would require similar crews. Moreover, the vessels require vast repairs due to the age and use of the fleet. [68] Some of the reserve fleet has failed Coast Guard safety inspection and has too much steel rusted from their hulls to be seaworthy. For example, while sailing to a readiness exercise in 2017, inspectors found a hole in the hull of one of the sealift ships.[69]

Multiple factors cause and conflagrate the issue of maintenance for the sealift vessels. According to the Maritime Administrator, there is an insufficient number of large dry docks to service the sealift fleet, delaying their readiness to sail.[70] Furthermore, a DoD inspector general found in an inspection in 2018 that MSC had incomplete and inaccurate maintenance plans, as well as inadequate contract administration and oversight as it related to maintenance.[71] Maintenance plans were not fully developed or articulated into a system of record. Additionally, MSC did not sufficiently codify oversight of contracting if it occurred. MSC was unable to assess the condition and readiness levels of the government-owned, contractor-operated ships due to their incomplete plans and lack of oversight.[72]

USTRANSCOM recognizes that it has similar issues with its Military Sealift Command fleet. The fleet is aging, and maintenance costs grew substantially from 2013 to 2018. MSC's

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[67] Mark Buzby, Maritime Administrator, testimony to US House Committee on Armed Services, Subcommittee on Seapower and Projection Forces and Readiness*, US Transportation Command and Maritime Administration: State of the Mobility Enterprise* (Washington, DC, March 7, 2019).

[68] Ibid.

[69] DOD Inspector General, *Military Sealift Command's Maintenance of Prepositioning Ships, Report No. DODIG-2018-151* (Washington, DC: Government Printing Office, 2018), 13.

[70] Buzby, testimony to US House Committee on Armed Services, *US Transportation Command and Maritime Administration: State of the Mobility Enterprise*.

[71] DOD Inspector General, *Military Sealift Command's Maintenance of Prepositioning Ships,* 21.

[72] Ibid.

surge fleet budgeted maintenance in 2018 was around thirty million US dollars, and the actual maintenance and repair performed cost nearly $110 million.[73] USTRANSCOM and the Navy are seeking to recapitalize the reserve fleet through three methods: building new vessels in domestic shipyards, repairing ships in the current fleet to extend their service life out to sixty years, and purchasing used, foreign-built ships.[74] Each of the methods creates additional budgetary issues, and thus the Navy and DoD must be judicious in their approach to recapitalization. The Navy has found that repairing the vessels is up to three times more expensive and has taken twice as long as initially projected. The Navy may seek the purchase of used foreign-built ships as building a new ship in US shipyards is estimated to be twenty-six times more expensive than purchasing a used, foreign-built ship.[75]

The US Army is facing similar problems with its watercraft systems and is seeking to course correct. Even with the Army's current fleet size of roughly 132 watercraft systems, the majority of the vessels vary in age and do not have a single manufacturer.[76] Despite dubious reports that the Army sought to divest itself of its watercraft mission, Congress has placed a halt on any funding to inactivate Army watercraft until the Secretary of Defense has completed a review and the findings have been validated by a federally funded research organization.[77] In recent years, the US government sought to extend vessel service life and develop prototypes for new vessels to address the current challenges of an aging fleet. According to the program status

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[73] Martin and Yardley, *Approaches to Strategic Sealift Readiness*, 28-29.

[74] Lyons, testimony US House Committee on Armed Services, *US Transportation Command and Maritime Administration: State of the Mobility Enterprise*.

[75] Ibid.

[76] US Army, "Army Watercraft Systems," US Army Acquisition Support Center, accessed 4 January 2020, https://asc.army.mil/web/portfolio-item/cs-css-army-watercraft-systems-4/.

[77] Christopher Woody, "The US Army plans to get rid of the boats that take soldiers and tanks into battle — here's what it's giving up," *Business Insider*, February 1, 2019, accessed 10 December 2019, https://www.businessinsider.com/us-army-plans-to-ditch-the-boats-that-take-soldiers-to-battle-2019-1; US Committee on Armed Services House of Representatives on National Defense Authorization Act for Fiscal Year 2020, 116th Cong., 1st sess., June 2019, H. Rep. 116-120, 219.

on the US Army's Acquisition Support Center, the Army provided service life extensions to the Modular Causeway Systems and Landing Crafts Utility-2000 throughout fiscal years (FY) 2017 and 2018. Additionally, the new Maneuver Support Vessels (Light) will soon replace the Landing Craft Mechanized with prototype delivery projected in the first quarter of the 2021 fiscal year (FY).[78]

Despite the multiple programs Congress instituted to ensure the nation has the correct quantity of strategic sealift, the United States still faces challenges that point to similar issues the US faced in the initial phases of the Vietnam War. Once again, the Joint Logistics Review Board assessed three issues related to strategic sealift: insufficient and outdated vessels in the Military Sea Transport Service; unresponsive and insufficient numbers of US Merchant Marine vessels; and congestion at ports due to scarce and inadequate ports in the theater of operation and insufficient equipment to create ports and facilities.

Currently, the United States has determined that it has sufficient sealift vessels through the nation's multiple Congressional programs; however, the fleets face multiple challenges. Many vessels struggle to be mission ready. The ships and crews do not have a sufficient rate of operational ability to meet real-world tasking on short notice nor support operational plan timelines for deploying forces and material. The fleets are aging and require recapitalization. The DoD and DoT require significant funds for maintenance to update the ships, new construction for sealift vessels, and new craft to ensure the nation is not lacking for the next potential war.

[78] US Army, "Army Watercraft Systems," US Army Acquisition Support Center, accessed 4 January 2020, https://asc.army.mil/web/portfolio-item/cs-css-army-watercraft-systems-4/.

Chapter 4: The Way Ahead

There are two sets of recommendations to address the issues noted in the Joint Logistics Review Board's assessment of strategic lift for the Vietnam War. The first set of recommendations addresses US capabilities to field sufficient and operational strategic sealift fleets for large-scale operations. The second set of recommendations focuses on ports and the connection of strategic sealift to theater logistics. Each group of recommendations addresses the challenges facing the current force, drawing upon lessons learned in the Vietnam War.

The United States may still be suffering from some of the same problems it did before the buildup of the Vietnam War, but in a different form. As previously, the United States learned valuable lessons from prior conflicts. It established multiple programs to ensure it would have sufficient sealift vessels in a time of contingency or war. However, even though Military Sealift Command and MARAD have more sealift vessels now than their equivalent entities had in the case study, many of the vessels are just as outdated, and some are even older. Moreover, many ships within the strategic sealift fleets are not operationally ready or able to become operationally ready when tasked.[79] The US may face a similar issue of being unable to provide necessary lift in the initial build-up of the next conflict due to these factors.

The trends in US capacity and capability to provide strategic sealift are sobering. USTRANSCOM provided a report to Congress on TA 19+ and analysis of current and future sealift capability. The average readiness of the fleets has been trending downward, while maintenance costs have been trending upward. In 2017 the average readiness rate was 81 percent and in 2019 it was sixty-five percent. USTRANSCOM showed a similar trend from 2017 to early 2020 in available square footage for fifteen surge sealift ships and thirty-five roll-on/roll-off

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[79] US Transportation Command, *Comprehensive Report for TURBO ACTIVATION 19-PLUS*, i.

capable RRF vessels. The square footage percentage hovered around 85 percent at the beginning of 2017 and was down to roughly 55 percent in January 2020.[80]

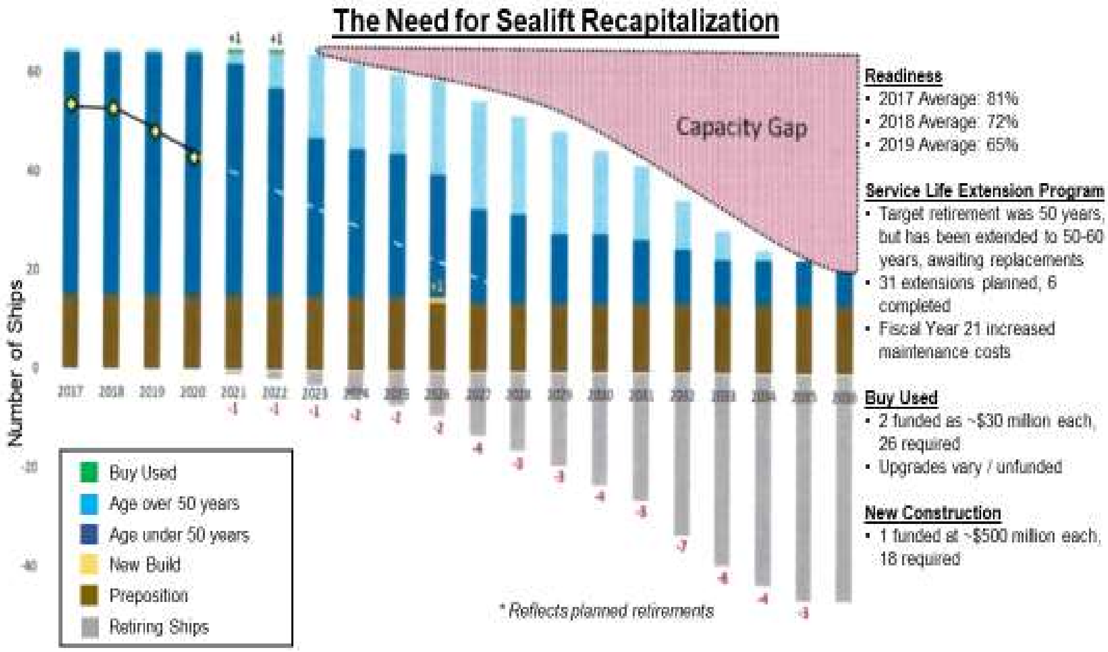

Figure 3. The Need for Sealift Recapitalization. Figure modified by author for clarity from US Transportation Command's presentation to Congress, Turbo Activation 19 Plus (TA 19+) Congressional Engagement (Scott AF Base, IL, 2020), 8.

USTRANSCOM's projections of future US sealift all point to the necessity for recapitalization, a term with several meanings within the military. However, in this case, recapitalization refers to the reorganization of equipment, specifically sealift vessels, in any combination of the following actions: service life extension of existing equipment, upgrade of existing equipment, acquisition of new equipment, or acquisition of used equipment. USTRANSCOM analyzed current trends in operations and maintenance against the current plan for recapitalization. By analyzing the age of the vessels in the fleet, vessel retirement dates, and planned acquisitions of new and used vessels, USTRANSCOM projected a significant sealift capacity gap arising in 2023 and growing into 2036 (see Figure 2. The Need for Sealift Recapitalization). Congress funded the current plan to purchase two used and one new vessel as

[80] US Transportation Command, "Turbo Activation 19 Plus (TA19+) Congressional Engagement," (Power point presentation, US Transportation Command) modified January 15, 2020, 6-8.

well as extending the service life of thirty-one vessels from fifty years of service to sixty years.[81] Even after implementing these efforts, USTRANSCOM will still suffer a capacity gap.

The DoD and DoT should improve their readiness through the various means of recapitalization to ensure national strategic sealift does not inhibit contingency or war efforts. The United States must determine how it will recapitalize the fleets. More precisely, the US government must determine the correct composition of the various recapitalization methods within budgetary constraints. The current plan is not sufficient based on what Congress has prioritized through funding. USTRANSCOM projected it requires twenty-six used and eighteen new vessels, and Congress has only funded three at the time of writing this monograph.[82] The United States must balance service life extension, maintenance, and acquisitions to avoid creating a capability gap.

The United States has several options to address the composition of recapitalization. Congress could fund the acquisition of all USTRANSCOM's required vessels. However, the likelihood of this option is very low due to the extremely high costs of the initial investment. Instead, Congress could assume risk in how it budgets funding and directs the missions of the DoD and DoT as it relates to strategic lift. Congress could temporarily reduce operating and maintenance funds for Military Sealift Command and Maritime Administration and budget those funds into procurement. Essentially, instead of budgeting more funds for the ever-increasing maintenance costs of old vessels and investing funds into extending their service life, Congress could look to reduce operating and maintenance funding by 5 percent over multiple years and budget that money for acquisition.

The United States should focus on the acquisition of new or used vessels, which will have extended service life and will not cost as much to maintain and operate. The recommended plan is

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[81] US Transportation Command, "Turbo Activation 19 Plus (TA19+) Congressional Engagement," 8.

[82] Ibid.

to redirect funds from maintenance to procurement over multiple years to allow for the acquisition of used or new vessels. The plan would require specific actions from the DoD and DoT. USTRANSCOM and MARAD would need to analyze their most maintenance costly ships and slate those vessels for mothball status, ceasing all repairs. Each department would then use its budgeted operating and maintenance funds for the remainder of their respective fleets. Congress could program those maintenance funds as procurement funds and seek acquisition of new or used sealift vessels.

The plan to mothball existing vessels that have substantial maintenance costs may or may not increase risk. Risk increases in the event the US government activates the entirety of the fleet for contingency or war. However, as mentioned above, those vessels that require significant maintenance and are in reduced operational status are not ready for tasking and are currently not operational. Removing them from the fleet frees up maintenance dollars for lower maintenance cost vessels. MARAD already maintains the Ready Reserve Force in this manner: maintenance is directed to vessels with the most pressing need instead of evenly on all ships. MARAD's depot-level maintenance is mission funded as general appropriations, which allows flexibility to which vessels receive maintenance. MARAD has the ability to adjust resources to any vessel requiring maintenance because Congress and MARAD do not earmark maintenance funds to individual ships within the fleet.[83] Hence, the fleets will not incur severe risks by divesting a small portion of the fleet's maintenance-heavy ships.

Congress could then focus on purchasing new vessels for each of the fleets. The recommendation is to focus on a mixture of used and new vessels in a three (used) to two (new) ratio. The purpose of this ratio is to ensure that Congress levels out costs and procurement funds over the acquisition plan of twenty-six used and eighteen new vessels. Otherwise, if Congress acquires the preponderance of the used vessels at the beginning of the plan, then the United States

[83] Martin and Yardley, *Approaches to Strategic Sealift Readiness*, 25.

would need to pay a more massive bill later. The concept of the plan is to ensure a steady induction of newer craft to reduce maintenance and operating costs over time. The plan prepares for the scheduled retirement of large portions of the fleets, reduces scheduled costs of extending the service life of older vessels, and maintains the necessary sealift capacity of the nation. The plan would also allow for additional acquisitions of new or used vessels in years where the DoD budget increases (see Table 1. Sealift Procurement). The plan would purchase vessels to replace those reaching retirement to ensure USTRANSCOM maintains sealift capacity.

Table 1. Sealift Procurement

Year		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Retiring Ships		1	1	1	2	2	2	4	3	3	4	3	7	6	4	3	0
Purchase Used Ship (Funded)		1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Purchase New Ship (Funded)		-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Cumulative # of ships retired and not replaced on current plan		0	0	1	3	5	6	10	13	16	20	23	30	36	40	43	43
Proposed Procurement Plan																	
Retiring Ships		1	1	1	2	2	2	4	3	3	4	3	7	6	4	3	0
Purchase Used Ship (26 required)	Funded	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Proposed	0	1	1	1	2	2	2	1	2	2	1	2	2	1	2	2
Purchase New Ship (18 Required)	Funded	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
	Proposed	0	0	1	2	1	0	1	2	1	1	2	1	1	2	1	1
Cumulative # of ships in excess of current (FY 2020) fleet size		0	2	3	4	5	6	5	5	5	4	4	0	-	-	-	-
Cumulative # of ships retired and not replaced on proposed plan		0	0	0	0	0	0	0	0	0	0	0	0	3	4	4	1

Source: Table created by author. Source: US Transportation Command's presentation to Congress, *Turbo Activation 19 Plus (TA 19+) Congressional Engagement* (Scott AF Base, IL, 2020), 8.

The second set of recommendations addresses port congestion and the ability of strategic sealift to offload into the theater of operations. The case study of the Vietnam War provided ample illustrations of vessels hindered at the ports. The symptomatic issues of port congestion were insufficient deep-water ports, too few berthing areas at deep-water ports, insufficient cargo areas, and too few barges and utility landing craft. In order to address the problems, the United

States built seven deep draft ports, shipped in multiple Delongs piers for JLOTS, contracted modular ports and barges, established interim anchorage ports throughout the Indo-Pacific region, and built more utility landing craft.

The DoD could implement one primary solution to reduce the symptomatic issues related to port congestion. The DoD should invest in more JLOTS units like those found in the US Army's 7th Transportation Brigade, Expeditionary (TBX) and the US Navy's Naval Beach Groups (NBG). Each element provides necessary capabilities for establishing ports, moving equipment and personnel from ship to shore, and ensuring steady flow from beaches and ports into theater. Growing more organizations like these within the force would provide additional capabilities that severely reduce the issues the United States encountered in Vietnam.

The US Navy's NBG primarily ensures forces can land and marshal at beaches but also plays a role in JLOTS operations to ensure US forces can gain a foothold for the establishment and operation of ports. The NBG mission is to serve as the Navy JLOTS commander supporting the offload of Navy and MSC maritime prepositioned squadron ships and the offloading of maritime shipping in support of landing-force operations. NBGs also provide ship-to-shore movement and LOTS units. The NBG missions include wartime forward littoral operations supporting Marine Corps amphibious assault and follow-on joint combat missions.[84] The Navy is integral to the JLOTS mission and increases the DoD's overall capacity to operate beaches and ports.

The US Army's 7th TBX provides a host of capabilities for JLOTS as well. The expeditionary brigade and subordinate elements can create ports for bare beach and can improve degraded ports and fixed ports by making them more robust. These elements also conduct terminal operations, execute loading and off-loading of vessels, and operate marshalling yards. The 7th TBX is responsible for inter and intra theater water main supply routes for ship-based

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[84] US Navy, *US Navy Program Guide 2017* (Washington, DC: Government Printing Office, 2017), 82.

cargo transfer. Finally, the unit conducts mission planning for marine terminal and watercraft operations with joint and coalition partners, like the Navy's NBGs.[85] The transportation brigade's capabilities address and provide mitigations for each of USMACV's various symptoms with port congestion. Likewise, they provide necessary mitigation in future conflicts.

The current JLOTS/LOTS capability, however, is not robust enough to provide sufficient ports, port operations, and inter/intra-theater ship-based cargo transportation. There is only one transportation brigade in the active army and various companies and detachments in the US Army Reserves. The modular causeways and roll-on/roll-off discharge facilities (RRDF) are vital elements for additional ports and port capacity. The US Army has only one modular causeway in the active force with two supporting RRDFs, and there are two modular causeways in prepositioned stocks, each with two RRDFs (one set in Kuwait and one set in Japan). [86] Similarly, the Army has a small but capable fleet of inter/intra-theater vessels for cargo transport. Throughout the active duty, reserve force, and preposition stocks, the Army has thirty-four LCUs, thirty-six LCMs, and eight LSVs.[87] While the Navy has sufficiently more lighterage vessels that contribute to JLOTS operations, the Army has an insufficient capacity to employ and operate additional ports. Likewise, the two NBGs are limited in the number of beaches they can support. The capabilities, number of units, and quantity of mission essential equipment are insufficient for sustained operations.

Furthermore, if ports are degraded, insufficient, or lacking in infrastructure, two bare beach ports will not be sufficient for large-scale combat operations. The Vietnam War is only one indicator of the number of additional ports required based on such limiting factors. The US government built seven additional deep draft ports throughout the war to meet their throughput

[85] US Army Forces Command, "Army Watercraft Systems 101 Briefing," 12.

[86] Ibid, 10.

[87] Ibid., 10-12.

requirements.[88] If ports are sufficient and modern, one expects the US would have a reduced requirement for modular causeways and JLOTS capabilities. For example, in Desert Storm / Desert Shield, the United States used two of Saudi Arabia's modern ports without employing modular causeways. The US had little need for more ports since seven of Saudi Arabia's ports could handle 5,000 to 10,000 metric tons a day. However, the US Army and Navy still employed transportation and port operations units for lighterage, port opening, and management.[89] Another critical factor in Desert Storm / Desert Shield, which the US may no longer be able to assume, is that the ports were uncontested, and all operations occurred in a benign environment.

There are two main reasons the quantity of units and corresponding equipment is insufficient for future large-scale conflicts. The first reason is a physics issue of distance, time, volume of requirements, and available equipment. The second reason is due to the anti-access / aerial-denial (A2/AD) threat environment inherent to near-peer or peer large-scale combat operations. Either of these factors, when analyzed alone, signals the necessity for additional resources. However, the reasons reveal an urgent necessity for growth when evaluated holistically.

The first reason that necessitates additional JLOTS capabilities is due to the sheer physics of deploying and sustaining a large-scale combat force. In a scenario where the force is conducting entry operations onto a bare beach, the full JLOTS terminal package includes a modular causeway with supporting RRDFs and ten LCUs. This package is roughly a third of the total quantity in the Army's inventory. Currently, the Army can operate two bare beach terminal packages requiring both the reserve and active duty forces. Though the equipment exists for a third such terminal package, the US Army only has the personnel to operate two packages unless the Navy is employed to assist. The US Navy is also limited with two NBGs. Under perfect

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[88] Peppers, *Military Logistics: A History of United States Military Logistics, 1935-1985,* 276.

[89] Waddell, *United States Army Logistics: From the American Revolution to 9/11,* 172.

conditions, the packages can offload one armored brigade combat team in seven days and an infantry brigade combat team in five days.[90] Under the above conditions (twenty-four hour cycle of ten LCUs per package, perfect sea conditions, two bare beach terminal packages, seven days for an armored brigade combat team to offload), one would presume the unit quantity and equipment sets are sufficient. However, the scenario assumes perfect conditions. It does not account for friction, sea-state, weather, contested ports, or cargo movement of resupply commodities (a primary source of port congestion in the case study).

The second reason necessitating the growth of US Army JLOTS transportation elements is due to the current environment. Peer and near-peer adversaries possess A2/AD capabilities that threaten ports and US freedom of action within potential theaters of operations. These threats were not a significant issue during the Vietnam conflict, and the case study does not provide a useful parallel. However, there are three main techniques to counteract or cope with A2/AD concerning SPODs and JLOTS operations: dislocation, dispersion, and redundancy. Dislocation means establishing and operating SPODs outside of the range of the A2/AD systems. The dispersion technique is when friendly forces establish multiple ports, and the entry force does not concentrate large forces at any one location. The final technique of redundancy means maintaining multiple redundant units and addresses the high likelihood the enemy A2/AD will either destroy portions of friendly forces or seriously delay friendly operations.[91] The US must have a larger quantity of JLOTS transportation units to effectively employ any of the three techniques and an even greater quantity if it wants a robust strategy to counter the threat by employing all three techniques simultaneously.

The DoD requires more port opening capabilities and should increase the quantity of lighterage supporting JLOTS, either in the Army or the Navy. The US Army should double the

[90] US Army Forces Command, "Army Watercraft Systems 101 Briefing," 19-20.

[91] Samuel R. Bethel, "Sustainment in an Anti-Access/Area-Denial Environment," *Army Sustainment* (January-February 2016): 15.

number of expeditionary transportation brigades, to include subordinate units, to ensure it can cope with the potential threats of a future conflict. Likewise, the US Navy should build an additional NBG into the force to provide additional JLOTS capabilities. The United States must mitigate the high possibility of port congestion due to bottlenecking or lack of deep-water berthing. The ability to employ two bare beach ports is inadequate when looking at past examples. Four bare beach ports will significantly enhance the ability to sustain a large force and will provide additional points of entry into the theater. Additionally, the US may face enemies with advanced capability to target available ports with A2/AD systems. US forces will need robust and redundant JLOTS capabilities to employ the various techniques to counter these threats.

In summation, Congress should revise budgeting to allow the DoD and the DoT to recapitalize and grow their respective fleet capabilities. USTRANSCOM and MARAD need to divest themselves of high maintenance strategic sealift vessels which do not contribute to operational readiness. Divestiture of high-cost vessels will free funding for investment in new and used vessels, which ensures the US maintains sealift capability and capacity. Additionally, the US should no longer spend vast quantities of money to extend the service life of older vessels as it acquires new(er) ships for the fleet. Finally, the DoD should build additional Army and Navy watercraft capabilities to ensure the necessary ports, landing craft, and port operational elements can deploy and sustain forces from the sea into theater.

Conclusion

This monograph sought to provide a framework from which the United States could prepare for potential future conflict. The framework was through the historical lens of the Vietnam War with a specific focus on strategic sealift's role in the war effort. The case study laid out the specific sealift challenges US forces faced in the war, provided the solutions implemented during the conflict, and then presented recommendations based on assessments completed after the war. The monograph then evaluated the Department of Defense and the Department of Transportation's current capabilities as well as current and potential future challenges. Finally, the monograph concluded with recommendations for the United States to better posture itself for future large-scale conflict.

The United States had to contend with three primary main issues concerning strategic sealift during the Vietnam War. The Military Sea Transportation Service's fleet was not large enough to handle the volume of troops, equipment, or commodities. Furthermore, the Maritime Administration's Merchant Marine fleet was aging and not reliable when activated. Finally, US sealift struggled with port congestion as MSTS and MARAD built up their respective strategic sealift fleets.

The US government and US forces developed multiple solutions to deal with their strategic sealift issues. In order to build capacity and capability, the US government activated additional US commercial and foreign flag vessels for transport. MARAD also mobilized ships of the National Defense Reserve Fleet. Additionally, MSTS commissioned new vessels and activated World War II-era vessels. The US government also had to solve the compounding problem associated with ports in the Republic of Vietnam. MSTS's multiprong solution was to build or expand port capabilities and execute JLOTS operations by installing Delong piers and using smaller craft to move cargo from large vessels to the shores and ports. US efforts eventually ensured that strategic sealift was sufficient and no longer a limiting factor for the war effort.

The US presently faces similar sealift challenges as it did during the build-up to the Vietnam War. Though the US has a sufficient quantity of sealift vessels, the fleet is aging significantly and Military Sealift Command and MARAD struggle to maintain operational readiness. USTRANSCOM projects the situation will create significant capability gaps if the US government does not execute recapitalization on the fleet. Another critical component of sealift capability in the current operating environment is the US Army and US Navy's JLOTS capabilities. The Army only has one expeditionary transportation brigade with JLOTS capabilities, specifically employing ports, in the active duty and has companies and detachments in the reserve forces. Likewise, the US Navy only has two Naval Beach Groups available for ship-to-shore movement and JLOTS. The DoD faces many of the same issues in a future conflict as it once did in the Vietnam war due to poor operational readiness or insufficient capabilities to handle the challenges of mobility and entry operations.

The US should improve the operational readiness of the strategic sealift fleets for the long term and build the force's JLOTS capabilities. The recommendation is to divest the fleets of high maintenance vessels. Congress can reallocate the funds which would go to high maintenance vessels towards the procurement of used and new sealift ships. The concept is to acquire used and new vessels in a three to two ratio to ensure high costs are not avoided on the front end and pushed to later years when Congress can terminate procurement due to budget constraints. Additionally, the US Navy should generate an additional Naval Beach Group and the US Army should double the quantity of JLOTS capable expeditionary transportation brigades and subordinate units. The current capabilities to operate bare beach ports or augment degraded ports are insufficient in an environment against peer or near-peer competitors who possess anti-access / aerial-denial capabilities.

At the time of writing, the DoD and DoT were grappling with the issues described in this monograph. The US government was conducting multiple studies to determine the preparedness of its fleets and seeking recommendations on how best to move forward. At the time of publishing this monograph, the issue was still evolving, each service was putting forward its recommendations, and the DoD had not established a course of action. Both the DoD and DoT recognized issues existed with strategic sealift and both entities were seeking, at the time of writing, answers to ensure they would be postured for future conflicts.

The United States may wish to further research other areas to develop military preparedness for large-scale combat operations. This paper focused on sealift, but it may behoove the US government and DoD to evaluate the capacity and effectiveness of the other elements of the strategic mobility triad: airlift and prepositioned stocks. Additionally, the Department of Defense may gain additional benefit from assessing the current capacity and ability of operational and tactical level logistics as it relates to the ability to process and move equipment from SPODs. As mentioned throughout the paper, the US's strategic sealift in support of the Vietnam War eventually gained sufficient capacity and momentum to provide the necessary personnel and commodities to the theater from CONUS. The limiting factor for sustaining the war was the choke points at and beyond the SPODs. The US consistently struggled with an inability to berth sealift vessels, offload the supplies quickly, inventory the commodities for tracking, store supplies in sufficient quantity, and transport them quickly from SPODs to forward logistics nodes. Each of these facets is a potential area for future research.

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