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LOGISTIC SUPPORT IN THE VIETNAM ERA

AD877976

MONOGRAPH 18

TRANSPORTATION AND MOVEMENT CONTROL

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A REPORT

BY THE JOINT LOGISTICS REVIEW BOARD

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

SS
INSTALLATIONS AND LOGISTICS

18 DEC 1970

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PAUL H. RILEY
Deputy Assistant Secretary of Defense
(Supply, Maintenance & Services)

TABLE OF CONTENTS

		Page
	LIST OF TABLES	iii
	LIST OF FIGURES	v
I.	INTRODUCTION	1
II.	TRANSPORTATION POLICIES, ORGANIZATIONS; AND MISSIONS	5
	A. INTRODUCTION	7
	B. POLICY	9
	C. DOD TRANSPORTATION ORGANIZATIONS AND MISSIONS	13
III.	PLANNING, ACQUISITION, AND USE OF TRANSPORTATION RESOURCES	27
	A. INTRODUCTION	29
	B. MOBILITY PLANNING FOR VIETNAM	31
	C. CONUS TRANSPORTATION RESOURCES	45
	D. INTER- AND INTRA-THEATER SEALIFT	53
	E. INTER- AND INTRA-THEATER AIRLIFT AND AERIAL PORTS	87
	F. INTRA-RVN TRANSPORTATION	109
IV.	MOVEMENT CONTROL OF CARGO, UNITS, AND PASSENGERS	141
	A. INTRODUCTION	143
	B. ADEQUACY OF CARGO MOVEMENT CONTROL PROCEDURES AND ORGANIZATIONS	145
	C. IDENTIFICATION AND LOCATION OF SUPPLIES IN THE TRANSPORTATION SYSTEM	155
	D. CONTROL AND COORDINATION OF UNIT DEPLOYMENTS	163
	E. CONTROL AND COORDINATION OF INDIVIDUAL PASSENGER MOVEMENTS	167
	SUMMARY	169
	APPENDIX A. TRANSPORTATION DATA BASE	A-1
	APPENDIX B. LIST OF ACRONYMS AND ABBREVIATIONS	B-1
	APPENDIX C. BIBLIOGRAPHY	C-1

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LIST OF TABLES

		Page
1.	FUNCTIONAL DESCRIPTION OF THE DOD CARGO TRANSPORTATION SYSTEM	18
2.	TRANSPORTATION COSTS CHARGEABLE/NOT CHARGEABLE TO SHIPPER SERVICES	20
3.	MEASUREMENT TONS OF AMMUNITION EXPORTED	47
4.	MEASUREMENT TONS OF DRY CARGO EXPORTED	48
5.	MSTS-CONTROLLED FLEET, 1965-1969	55
6.	MPS REQUIRED TO MOVE ARMY DIVISIONS	69
7.	EMPLOYMENT OF MSTS FLEET BY AREA	72
8.	AGE DISTRIBUTION, MSTS NUCLEUS FLEET	73
9.	ESTIMATED FY 71 U.S. FLAG COMMERCIAL DRY CARGO SHIP INVENTORY	78
10.	U.S. FLAG DRY GENERAL CARGO FLEET	79
11.	U.S. PRIVATELY OWNED CARGO FLEET	79
12.	MAC AIRLIFT FORCE INVENTORY	88
13.	CRAF LONG-RANGE AIRCRAFT INVENTORY	88
14.	AERIAL PORT FACILITIES IMPROVEMENTS	100
15.	INTRA-RVN COMMON-USER TRANSPORTATION DATA	110
16.	RESUPPLY INTRA-RVN, I CORPS	122
17.	U.S.-OWNED ROLLING STOCK	128
18.	KILOMETERS OF RAILROAD BY OPERATIONAL STATUS	129
19.	C-130 AIRCRAFT IN MACV CSAS	130

LIST OF FIGURES

		Page
1.	JOINT CHIEFS OF STAFF ORGANIZATION FOR TRANSPORTATION	16
2.	AVERAGE SHIP VOYAGE TIME (IN DAYS)	61
3.	MILITARY AIRLIFT COMMAND CARGO FORECAST/MOVEMENT WORLDWIDE	91
4.	MILITARY AIRLIFT COMMAND PASSENGER FORECAST/MOVEMENT WORLDWIDE	92
5.	MILITARY AIRLIFT COMMAND CHANNELS TO SOUTHEAST ASIA AS OF 1 JANUARY 1965	97
6.	MILITARY AIRLIFT COMMAND CHANNELS TO SOUTHEAST ASIA AS OF DECEMBER 1968	98
7.	MAC PASSENGER WORKLOAD DISPERSAL	99
8.	MAC CARGO WORKLOAD DISPERSAL	99
9.	TOTAL CARGO HANDLED BY THE MILITARY FOR ALL RVN PORTS	113
10.	AVERAGE NUMBER OF RVN SHIPS WORKING, WAITING, AND HOLDING EACH MONTH	114
11.	PRESENT ARMY WATER CRAFT FLEET LIFE STATUS	117
12.	PACOM TRANSPORTATION MANAGEMENT AND CONTROL ORGANIZATIONS	150

CHAPTER I
INTRODUCTION

CHAPTER 1
INTRODUCTION

1. BASIS FOR STUDY. The timely movement of men and material over a ten 10,000-mile pipeline to SE Asia thoroughly tested the capability and responsiveness of the transportation agencies of the Department of Defense (DOD) and their techniques of movement control. In its Terms of Reference, the Joint Logistics Review Board (JLRB) was directed to give particular attention to transportation, including airlift, sealift, containerization, military terminals, documentation, and movement control.

2. SIGNIFICANCE OF TRANSPORTATION AND MOVEMENT CONTROL

a. The war in Vietnam has provided military and commercial transportation managers with new challenges -- both in services that must be provided and in the utilization of new or improved transportation equipment and procedures. Requirements for transportation have far exceeded planning estimates based on past wars. A large and modern military force was deployed to and supported in an underdeveloped country in which there were inadequate port facilities, few roads, almost no usable railroads, and few airfields. The urgent need for the expedited movement of large quantities of men and supplies, the adverse effects of the tropic environment, and congestion at water and aerial ports demanded attention in the early phases of the buildup.

b. It is possible to judge the magnitude of the transportation effort by a few statistics. During the years 1965 through 1969, almost 18 million short tons[1] of dry cargo, excluding bulk petroleum, and over 2.2 million men[2] were transported from the continental United States (CONUS) to Vietnam. Additional dry cargo, estimated at over 4 million short tons, was transported to Vietnam from origins other than CONUS. POL consumption figures indicate that over 13 million long tons[3] of bulk petroleum were transported to Vietnam during the period 1965 through 1968. All the POL and better than 95 percent of the dry cargo tonnage was transported by sea. The remainder of the dry cargo and more than 89 percent of the passengers were moved to Vietnam by air.

c. Because of the scarcity of surface lines of communication within Vietnam, airlift and coastal shipping played an unprecedented role in in-country movements, reaching a monthly peak of 92,500 short tons by the 834th Air Division in March 1968 and 699,900 short tons by coastal shipping in May 1969. Monthly highway movement consisted of about 1,514,700 short tons at its peak in December 1968. The majority of highway movements were restricted to port clearance and short hauls within the corps tactical zones.[4]

d. Some transportation equipment and new types of aircraft and ships were used in support of combat operations for the first time during the Vietnam era. These included jet-powered transport aircraft, roll-on roll-off ships, container ships, and portable piers such as De Long Piers.

3. STUDY OBJECTIVES. The objectives of this study were to examine and evaluate the transportation support of U.S. ground, naval, and air forces during the Vietnam era, to identify strengths and weaknesses, and to make appropriate recommendations for improving the effectiveness of transportation.

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[1]Appendix A, Table A-9.
[2]Appendix A, Table A-10.
[3]Monthly POL Consumption Report, Sub Area Petroleum Office, Vietnam (SAPOV).
[4]SASM Statistical Digest, Table series 700.

4. SCOPE OF STUDY

a. Although transportation support to other areas of the world is considered in the monograph, primary attention is centered on the war in Vietnam. With this as a focal point, the study includes a review and evaluation of transportation activities in the United States, within the Pacific Command, and within the combat zone itself. The review includes major transportation policies, requirements forecasting, planning, utilization of resources, and movement control.

b. Although transportation priorities were initially considered within the scope of this monograph, it was later decided that this subject should be treated as a portion of the overall Department of Defense priority system. Material concerning transportation priorities is included in the Supply Management Monograph in a chapter dealing with the Uniform Materiel Movement and Issue Priority System. Containerization was also initially considered within the scope of this monograph; however, it was later decided that, in view of the horizontal impact that containerization concepts have on logistics, the subject warranted treatment in a separate Containerization Monograph. In addition, separate monographs have been prepared concerning ammunition and petroleum products. The movement of those items is discussed in greater detail in those commodity-oriented monographs rather than in this monograph.

5. ORGANIZATION. This monograph contains four additional chapters:

a. Chapter II contains a discussion of national and DOD transportation policies and an outline of DOD transportation organizations and missions, together with changes that occurred during the Vietnam era.

b. Chapter III includes an assessment of transportation planning and requirements forecasting, the acquisition of transportation resources, and the utilization of these resources.

c. Chapter IV contains a review of the adequacy of the control and coordination of cargo, unit, and passenger movements as a portion of the total logistic effort in the Pacific Command and in the United States that supported forces deployed in the Republic of Vietnam.

d. Chapter V contains a summary of the major issues and significant conclusions and recommendations found in Chapters III and IV.

e. A collection of pertinent transportation statistical data concerning the Vietnam era is attached to this monograph as Appendix A.

CHAPTER II

TRANSPORTATION POLICIES, ORGANIZATIONS, AND MISSIONS

SECTION A

INTRODUCTION

1. Transportation support of a U.S. military force engaged in combat operations in an overseas area is provided by several organizational elements of the Department of Defense (DOD). These interrelated elements make up a complex arrangement of operating agencies, commands, and staff agencies and activities that are collectively known as the Defense Transportation System (DTS). A general familiarity with this system and the broad national and DOD policies that guide its operation is essential to an understanding of transportation support of U.S. forces during the Vietnam era.

2. This chapter contains a description of the principal elements of the Defense Transportation System and the missions and responsibilities of each, together with a brief discussion of the major national and DOD policies that affect the manner in which transportation support is provided to U.S. military forces. In order to set the stage for a description of the organizational elements, a discussion of policies is presented first. This is followed by a description of the major elements of the Defense Transportation System that were involved in support of U.S. forces deployed within the Pacific Command.

SECTION B

POLICY

1. NATIONAL TRANSPORTATION POLICIES AFFECTING DEFENSE TRANSPORTATION

a. General. U.S. policy has encouraged the development of a diversified commercial transportation system and the regulation of carriage to the extent needed to protect the public interest. Traditionally this policy has relied on competition among and within the modes of transportation, subject to restrictions designed initially to protect the user from the carriers and the carriers from each other. There is a national transportation policy of the Congress applicable to domestic surface transportation and a series of other policy statements pertaining to civil aeronautics and to the merchant marine. These policy statements are discussed in the following paragraphs.

b. Domestic Surface Transportation. The Transportation Act of 1940 added to the Interstate Commerce Act a new preamble that states that it is the national transportation policy of the Congress to provide for fair and impartial regulation of all modes of transportation engaged in interstate commerce to the end of developing, coordinating, and preserving a national transportation system by water, highway, and rail, as well as other means, adequate to the needs of the commerce of the United States, the postal service, and the national defense.

c. Ocean Transportation. Statutes dating back as far as 1904 still govern the merchant marine and directly affect military use of ocean transportation. Pertinent portions of those Acts of most current importance to the subject of this review are shown below, with appropriate comments.

(1) The Merchant Marine Act of 1936 (46 U.S.C. 1101)

(a) According to a Maritime Administration (MARAD) analysis, the overriding policy of this Act, and of the 1946 Act discussed in paragraph (2), below, is to provide a U.S. flag merchant marine for the national defense.[1] Section 101 of the 1936 Act states that it is necessary for the national defense and development of its foreign and domestic commerce that the United States have a merchant marine sufficient to carry its domestic water-borne commerce and a substantial portion of the water-borne export and import foreign commerce; that it be capable of serving as a naval and military auxiliary in time of war or national emergency; that it be owned and operated under the U.S. flag by U.S. citizens insofar as practicable; and that it be composed of the best-equipped, safest, and most suitable types of vessels, constructed in the United States and manned with trained and efficient citizen personnel. The Act also states that it is the policy of the United States to foster the development and encourage the maintenance of such a merchant marine.

(b) Section 902 of that Act (46 U.S.C. 1242) authorizes requisitioning or purchase of any U.S.-owned merchant vessel whenever the President shall proclaim that the security of the national defense makes it advisable or during any national emergency declared by proclamation of the President.

(2) Merchant Ship Sales Act of 1946 (50 U.S.C. App 1735). Section 2 of this Act contains a statement of policy similar to that in Section 101 of the 1936 Act. It emphasizes, however, that the merchant marine should be an efficient and adequate American-owned merchant marine and adds that it should be supplemented by efficient American-owned facilities for shipbuilding and ship repair, marine insurance, and other auxiliary services.

[1] MARAD Document, subject: U.S. Military Cargoes. The Act of 1904 and the Act of 1954, furnished by the MARAD Division of Emergency Planning.

(3) Cargo Preference Act of 1904 (10 U.S.C. 2631). This Act requires military cargoes to be shipped on U.S. flag ships but also stipulates that if the President finds that the freight charged by those vessels is excessive or otherwise unreasonable, contracts for transportation may be made as otherwise provided by law.

(4) Cargo Preference Act of 1954 (46 U.S.C. 1241 (b)). This Act, incorporated as Section 901(b) of the 1936 Act, is the so-called "50-50 Law." It provides that the appropriate agencies shall take such steps as may be necessary and practicable to ensure that at least 50 percent of the gross tonnage of all such cargoes subject to the Act shall be transported on privately owned U.S. flag commercial vessels, to the extent such vessels are available at fair and reasonable rates.

(5) MARAD Analysis. An analysis by MARAD states that, although the 1904 Act does not limit the shipment of military cargoes to privately owned ships, and although it specifically permits the use of Government-owned ships, it must be administered in a manner consistent with national policy as declared in Section 101 of the 1936 Act and Section 2 of the 1946 Act.[2] Accordingly, it must be construed as requiring the DOD to give priority to privately owned U.S. flag ships over Government-owned ships, provided private ships are available at charges no higher than those charged private shippers and the use of such private ships is consistent with national defense requirements. Further, the 1954 Act overrides the 1904 Act to the extent that at least 50 percent of the military cargoes transported by sea must be shipped on available, privately owned U.S. flag commercial vessels. The net result of these statutes is to restrict the DOD in its choice of commercial ocean carriers and also tends to encourage marginal American ship owners to operate obsolete ships.[3]

d. Air Transportation. The comparable policy for air transportation is contained in a section of the Federal Aviation Act of 1958 concerning consideration of matters in the public interest by the Civil Aeronautics Board (49 U.S.C. 1302). That section states that the Board shall consider the encouragement and development of an air transportation system properly adapted to the present and future needs of the foreign and domestic commerce of the United States, the postal service and the national defense; the promotion of adequate, economical, and efficient service by air carriers at reasonable charges; competition to the extent necessary to ensure sound development of an air transportation system properly adapted to the needs of the foreign and domestic commerce of the United States, the postal service and the national defense; the promotion of safety in air commerce; and the promotion, encouragement, and development of civil aeronautics.[4]

2. DOD TRANSPORTATION AND TRAFFIC MANAGEMENT POLICIES

a. General DOD Transportation Policies. General policies governing the use of DOD-owned transportation capability and the procurement and use of commercial transportation resources are contained in DOD Directive 4500.9 of September 1968, entitled Transportation and Traffic Management. Those policy statements that have the most direct bearing on the subject of this review are shown in the following paragraphs. Other DOD policies, concerning commercial surface transportation within CONUS and augmentation of the Military Sea Transportation Service (MSTS) nucleus fleet, are discussed in paragraphs b. and c. below. There are no comparable DOD directives concerning airlift.

(1) Control and Organization of Transportation Resources. DOD transportation resources shall be so organized and managed as to ensure optimum responsiveness, efficiency, and economy in support of the defense mission.

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[2]MARAD Document, op. cit.
[3]Military Sea Transportation Service (MSTS) Pamphlet, subject: Presentation for the Joint Logistics Review Board, 19 June 1969, p. 8.
[4]Public Law 85-726, title I, 102, August 23, 1958, 72 Statute 740.

(2) The DOD-Owned Transportation Force. There shall be maintained and operated in peacetime sufficient DOD-owned transportation resources to meet approved DOD emergency and wartime requirements, having due regard for available commercial transportation. These transportation resources will be used in peacetime to provide essential training for operational personnel and for logistic needs as appropriate to ensure military effectiveness in support of national defense policies. The military capability generated thereby will be utilized in the most efficient and effective manner possible.

(3) Selecting the Means of Transportation

(a) Lowest Overall Cost. The Lowest Landed Cost policy in effect since 1958 was cancelled in 1968 and superseded by a new "Lowest Overall Cost" policy which states that the means of transportation selected shall be that which will meet DOD requirements satisfactorily at the lowest overall cost from origin to the final known destination (in CONUS or overseas). In determining the lowest overall cost, consideration shall be given to the extent to which expedited movement will contribute to economies through reductions in pipeline or stored supplies, personnel travel time, or other factors such as shipment preparation costs or reduction of loss or damage to cargo. In addition, the benefits of routing cargo to enable consolidation of shipments and distribution of fixed costs through the use of Government-controlled resources shall be considered.

(b) Foreign Flag Ships. Foreign flag ships will not be used for DOD traffic except to the extent necessary to meet military requirements when U. S. flag ships are not available or available only at prices higher than private persons are charged.

(c) Foreign Flag Air Carriers. Foreign flag air carriers will not be used for DOD traffic (cargo and passengers) except when U. S. flag air carriers are not available or capable of satisfying the transportation requirement or foreign flag air carriers will accept payment in excess or near excess U. S. -owned foreign currencies which U. S. flag carriers will not accept, and the use of such carriers will not result in increased costs to the DOD.

b. DOD Use of Civil Transportation Within CONUS. A separate DOD directive establishes DOD policy and guidance concerning emergency requirements, allocations, priorities, and permits governing DOD use of civil transportation within the continental United States. With respect to policy, the directive states that "DOD transportation plans and operations for national emergencies will conform to national policies and guidance. They will be carried out by DOD organizational elements existing at the time of emergency rather than by a new organizational structure created specifically for that purpose."[5]

c. DOD-Commerce Agreement Regarding Merchant Ships. In addition to the above, a 1954 agreement between the Department of Defense and the Department of Commerce, called the Wilson-Weeks Agreement, governs the need for and size and makeup of the MSTS nucleus fleet and the policies and priorities for its augmentation.[6] This agreement is discussed further in Chapter III, Section D, of this monograph.

---

[5]DOD Directive 3005.7, subject: Emergency Requirements, Allocations, Priorities, and Permits for DOD Use of Domestic Civil Transportation, 7 May 1968.

[6]DOD Instruction 5030.3, subject: Memorandum of Agreement Between the Department of Defense and the Department of Commerce, dealing with the Utilization, Transfer and Allocation of Merchant Ships, 20 October 1954.

SECTION C

DOD TRANSPORTATION ORGANIZATIONS AND MISSIONS

1. BACKGROUND. The Department of Defense has a complex organization, at various levels, under both civilian and military chains of command, for providing transportation and traffic management to the Services. The long-range airlift and sealift capability required during the Vietnam era for the deployment and resupply of U.S. forces in the Western Pacific was provided largely by both military and commercial resources available to the Military Sea Transportation Service (MSTS) and the Military Airlift Command (MAC). These two transportation operating agencies, together with the Military Traffic Management and Terminal Service (MTMTS), interrelate with each other, with the military Services, the commanders of unified and specified commands, and with both military and civilian superiors. The paragraphs that follow briefly describe these organizations and commands and their missions. Any changes that may have occurred subsequent to 1 January 1970 are not reflected herein. Overall responsibilities of the Office of the Secretary of Defense, the military departments, the Joint Chiefs of Staff, and the unified chain of command are summarized in Volume II, Chapter 3.

2. OFFICE OF THE SECRETARY OF DEFENSE (OSD)

a. General

(1) The National Security Act of 1947, as amended, established the Department of Defense and is the basic statute governing the armed forces. [7] Among other things this Act provided broad authority to the Secretary of Defense to transfer, reassign, consolidate, or abolish functions, especially in the area of supply or service activities common to more than one military department. [8]

(2) The Act provided for seven Assistant Secretaries of Defense (ASD) to perform such duties and exercise such powers as the Secretary may prescribe. Two Assistant Secretaries have specific responsibilities or functions in the area of transportation, in addition to the budgetary and fiscal responsibilities of the Assistant Secretary (Comptroller). [9]

b. Assistant Secretary of Defense (Installations and Logistics) (ASD I&L)

(1) According to his charter, the ASD (I&L) is the principal staff assistant to the Secretary in 11 functional fields, including transportation. [10] However, the more recent charter of the ASD (Systems Analysis), described in paragraph c below, also assigns certain OSD-level transportation functions to that office.

(2) With respect to the three single manager assignments to the military departments, under which the three transportation operating agencies (MSTS, MAC, and MTMTS) operate, the ASD (I&L) is responsible for issuing policy direction except as otherwise specifically designated in the assigning directive. [11] In developing such policies, ASD (I&L) is to collaborate with ASD (Comptroller) to ensure maximum utilization of the assignment for budgetary purposes, with ASD (System Analysis) for manpower utilization effectiveness purposes, and with other elements of OSD as appropriate.

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[7] Title 10 and Chapter 15 of Title 50, U.S. Code.
[8] 10 U.S. Code 125.
[9] 10 U.S. Code 136.
[10] DOD Directive 5126.22, subject: Assistant Secretary of Defense (I&L), 30 January 1961.
[11] DOD Directive 5160.53, subject: Single Manager Assignment for Military Traffic, Land Transportation, and Common User Ocean Terminals, 24 March 1967; DOD Directive 5160.10, subject: Single Manager Assignment for Ocean Transportation, 24 March 1967; DOD Directive 5160.2, subject: Single Manager Assignment for Airlift Service, 24 March 1967.

(3) With respect to the DOD use of civil transportation within CONUS during national emergencies, the OSD functions formerly performed by OASD (I&L) have been divided between that office and OASD (SA) by a recent DOD directive.[12] Essentially, ASD (I&L) analyzes and approves only short-term requirements for emergency use of civil transportation by DOD, in coordination with ASD (SA), whereas ASD (SA) analyzes and approves the long-term requirements. Although ASD (I&L) still forwards all DOD requirements for CONUS transportation to the Department of Transportation (DOT), ASD (SA) is now designated as the OSD agency to work with DOT, the Joint Chiefs of Staff, and the military departments in developing methods to determine overall DOD long-term commercial transportation requirements.

(4) Within OASD (I&L), the Directorate for Transportation and Warehousing Policy is the principal staff agency involved in the management of transportation resources. Under the Deputy ASD (Supply and Services), the Director is responsible for establishing policy, providing guidance, and ensuring implementation of DOD programs. Originating in 1950 as a small, non-operating policy and coordinating office, known as the Military Traffic Service (MTS), the Directorate traditionally provided OSD staff representation in dealings with the organization of the Joint Chiefs of Staff (OJCS), the Joint Transportation Board (JTB), the three transportation single managers, MARAD, and other Government transportation agencies, and the transportation industry. However, since the establishment of the Office of Assistant Secretary (Systems Analysis), the role of the Transportation and Warehousing Directorate, and of ASD (I&L), has been somewhat curtailed.

c. Assistant Secretary of Defense (Systems Analysis) (ASD (SA))

(1) In September 1965, the Secretary of Defense created the position of ASD (Systems Analysis). The cost effectiveness and other analytical functions previously performed under the direction of ASD (Comptroller) henceforth were performed at the Assistant Secretary level. The responsibilities, functions, and authorities of the ASD (SA) are broad; his charter lists 11 functions, 3 of which directly relate to transportation and are shown below:[13]

(a) Analyze and review quantitative requirements in six functional fields, one of which is transportation, including mobility and deployment.

(b) Develop planning guidance and effectiveness criteria to be used in the determination and compilation of requirements of various types, including transportation.

(c) Provide special support to the Secretary for DOD participation in certain non-governmental programs in which DOD has strong interest, specifically including the Supersonic Transport Program and maritime subsidies.

(2) Within OASD (SA), the Mobility Forces Division, under the Deputy Assistant Secretary (Regional Programs), has primary cognizance over transportation matters. The Division works closely with the Office of the Special Assistant for Strategic Mobility (SASM), with MARAD, and other transportation organizations within OSD and elsewhere.

3. THE JOINT CHIEFS OF STAFF

a. General. The Joint Chiefs of Staff was established by the National Security Act of 1947 as the principal military advisors to the President and the Secretary of Defense.[14] The Act, as amended, lists 8 duties of the Joint Chiefs of Staff, which have been expanded by the so-called "Functions Paper" into 19 specific functions.[15] Among other duties, the Joint Chiefs of Staff maintains cognizance over movement requirements and capabilities submitted by the commanders of unified and specified commands. In order to use most efficiently and economically the resources of the transportation operating agencies to satisfy the users' requirements,

[12] DOD Directive 3005.7, op. cit.
[13] DOD Directive 5141.1, subject: Assistant Secretary of Defense (Systems Analysis), 17 September 1965.
[14] 10 U.S. Code 141.
[15] DOD Directive 5100.1, subject: Functions of the DOD and its Major Components, 31 December 1958, amended 17 June 1969.

the Joint Chiefs of Staff is responsible for reviewing and evaluating movement requirements and capabilities and allocating capability when required. Within the Office of the Joint Chiefs of Staff two interrelated agencies are primarily concerned with these transportation functions: the Special Assistant for Strategic Mobility (SASM) and the Joint Transportation Board (JTB).

b. Special Assistant for Strategic Mobility

(1) The Secretary of Defense, in March 1966, directed the Chairman, Joint Chiefs of Staff, to activate the office of the SASM.[16] In so doing, he specified, among other things, that the new organization under the authority and direction of the Joint Chiefs of Staff, as shown in Figure 1, must: provide a single point of staff responsibility and authority in development of information, advice, and recommendations on strategic movement matters; act to ensure the most effective utilization of strategic movement means and transportation resources; satisfy the requirements for mobility planning and analysis in both the present and future time frame; analyze, evaluate, and monitor all aspects of mobility systems planning and operations with the objective of attaining an overview whereby the identification and solution of mobility systems problems and the achievement of an effective mobility systems posture will receive optimum consideration; provide for free access to all appropriate elements of DOD and have direct and unrestricted channels of communications in all matters related to strategic movement planning and operations.

(2) Essentially, the SASM assumed the joint transportation planning functions that had been exercised by the Director for Logistics (J-4), Joint Staff, since the 1958 reorganization of the Office of the Joint Chiefs of Staff, and the joint support and transportation data system functions that had been performed by MTMTS since its activation in 1965. Thus, a large portion of the joint planning for transportation of the units deployed to the Western Pacific and their follow-on support and resupply during the critical first year and a half of the Vietnam era was performed by the Logistics Directorate (J-4), Joint Staff; subsequent joint transportation planning was done by the staff of the SASM.

c. The Joint Transportation Board (JTB)

(1) Following the Cuban missile crisis in 1962, the long dormant Joint Transportation Allocation Board was reactivated, at the working level, by the Director for Logistics (J-4), Joint Staff, to provide a mechanism for keeping abreast of the operational transportation situation and to streamline the joint procedures for the submission of transportation requirements and the determination of space assignments and allocations. In March 1965, the Secretary of Defense directed the Joint Chiefs of Staff to initiate follow-on actions to strengthen and improve joint transportation planning;[17] the Joint Chiefs of Staff approved revised transportation procedures contained in the so-called "Machinery Paper" and established the JTB.[18]

(2) In June 1965, the Joint Chiefs of Staff formally established the JTB as an agency of the JCS, with decision authority in transportation matters except where unresolved divergent views of the members required resolution by the Joint Chiefs of Staff.[19] Under the Chairmanship of the Director for Logistics (J-4), Joint Staff, the principal members were the Director for Operations (J-3), Joint Staff, and a senior representative from each of the four military Services. The Director, Defense Supply Agency, was an associate member, participating in proceedings of interest to his agency. Although not officially a member of the JTB, the ASD (I&L) was invited to have representation at JTB meetings. Usually the Directorate of Transportation and Warehousing Policy furnished an observer.

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[16]Secretary of Defense (SECDEF) Memorandum, subject: Mobility Planning and Operations Organization (Enclosure (1) to DOD Directives 5160.2, 5160.10, and 5160.53), 22 March 1966.
[17]Deputy SECDEF Memorandum, subject: Need for a Unified Strategic Movement Command, 1 March 1965.
[18]Joint Chiefs of Staff Memorandum (JCSM) - 203-65, subject: Procedures for the Submission of Space Assignments and Allocations, 20 March 1965.
[19]JCSM - 435-65, subject: Joint Transportation Board Charter, 5 June 1965.

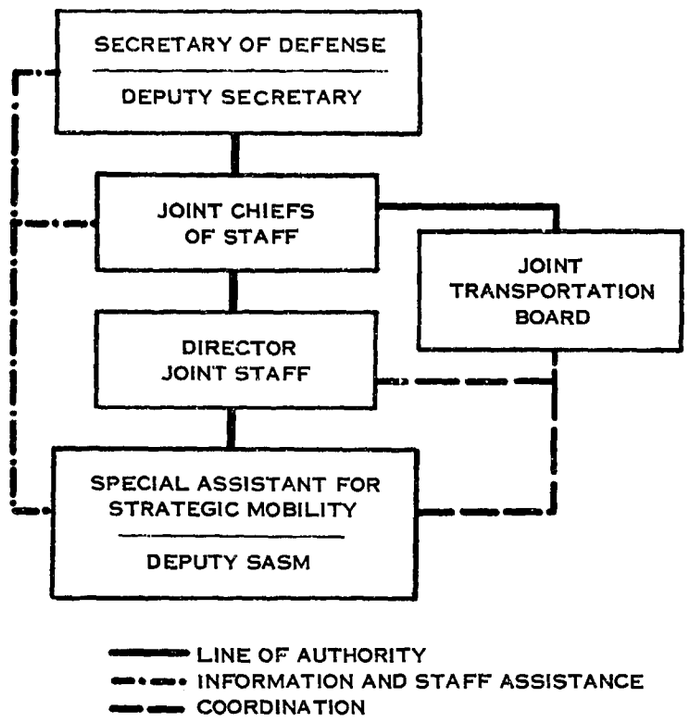

FIGURE I. JOINT CHIEFS OF STAFF ORGANIZATION FOR TRANSPORTATION

Source: Appendix to JCSM-281-66, Subject: Joint Transportation Board Charter, 2 May 1966

(3) Following the establishment of SASM, the Joint Chiefs of Staff approved a new charter for the JTB in May 1966.[20] Under the Chairmanship of the SASM, the JTB principal members consist of the Vice Director for Operations (J-3) and the Deputy Director for Logistics (J-4), Joint Staff, and the Service Chiefs of Transportation or equivalent. The charter also established a JTB Secretariat, consisting of representatives from J-3, J-4, SASM, and the transportation staffs of each Service headquarters. It provided for a full-time liaison officer to represent each of the transportation single manager operating agencies.

(4) The JTB maintained continuing cognizance over the existing situation and forecasted the balance between transportation requirements and capabilities. Managing essentially by exception, it recommended or directed, as appropriate, courses of action to resolve transportation and/or strategic movement problems.

4. TRANSPORTATION OPERATING AGENCIES

a. General. There are three military transportation operating agencies responsible for providing common-user transportation support for the DOD. Two of them (MAC and MSTS) primarily are responsible for providing worldwide air and sealift capability, while the third, (MTMTS) is primarily responsible for CONUS traffic management, land transportation and common-user ocean terminals. Table 1 summarizes the roles of each of these transportation operating agencies in the movement of cargoes from CONUS origin to overseas destination.

b. Organizational Relationships

(1) The three transportation operating agencies operate within a complex series of organizational relationships with each other, within their sponsoring service, and with OSD, the Joint Chiefs of Staff, the commanders of unified commands, and the shipper services.

(2) The three agencies are governed, basically, by separate single manager assignments.[21] Essentially each of these charters designates the Secretary of a military department as the single manager for one form of transportation, and prescribes that he establish and organize a Single Manager Operating Agency as a major command of the Service. In addition, however, the basic "Functions Paper" assigns to the Air Force the function of providing "air transport for the armed forces, except as otherwise assigned."[22] The Functions Paper does not make a comparable assignment of sealift to the Navy, although it does repeat the provisions of the National Security Act of 1947 which made that service responsible for the protection of vital sea lines of communication, the protection of shipping, and the provision of naval forces for joint amphibious operations.[23] The Functions Paper does not make a comparable assignment of CONUS land transportation functions to the Army. However, an early DOD Instruction assigned to the Department of the Army responsibilities for military utilization of land transportation in overseas areas.[24] Additionally, a recent DOD Directive designated the Secretary of the Army as single manager for Land Transportation and as Executive Agent for the DOD in matters pertaining to public highways to serve the national defense.[25]

(3) Intra-Departmental Relationships. The three charters prescribe that the Executive Directors of MAC, MSTS, and MTMTS shall be responsible to the Departmental Secretary through the command channels of the Air Force Chief of Staff, Chief of Naval Operations, and Army Chief of Staff, respectively.

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[20] JCSM - 281-66, subject: Joint Transportation Board Charter, 2 May 1966.
[21] DOD Directives 5160.2, 5160.10, and 5160.53, op. cit.
[22] DOD Directive 5101., op. cit., subparagraph V.C.1.f.
[23] Ibid., para. V.B.1.
[24] DOD Instruction 4500.2, subject: Land Transportation in Overseas Areas, 17 August 1954.
[25] DOD Directive 5160.60, subject: Highways for National Defense, 19 February 1968.

TABLE 1

FUNCTIONAL DESCRIPTION OF THE DOD CARGO TRANSPORTATION SYSTEM

Functional Link	Definition	Administered/ Managed by		Performed by		Paid for by	
		Airlift	Sealift	Airlift	Sealift	Airlift	Sealift
CONUS Line Haul	Movement between an inland military depot or supplier's plant in the CONUS and a CONUS aerial or seaport	MTMTS[1,4]	MTMTS	Shipper service, via contract air,[4] commercial rail, highway, or inland waterway	Shipper service, via commercial rail, highway, or inland waterway	Shipper services	Shipper services
CONUS Port Handling	Loading/unloading a ship or aircraft at a CONUS seaport or aerial port. Includes associated handling within the port area	MAC[2]	MTMTS	MAC	MTMTS, Navy or contractual services	MAC. Partial costs recovered from shipper services via industrial fund	MTMTS. Partial costs recovered from shipper services via industrial fund
Intercontinental Transit	Carriage by ship or aircraft between CONUS and overseas ports	MAC	MSTS[3]	MAC with military aircraft and commercial augmentation	MSTS with nucleus fleet and commercial augmentation	MAC. Partial costs recovered from shipper services via industrial fund	MSTS. Partial costs recovered from shipper services via industrial fund
Overseas Port Handling	Loading/unloading a ship or aircraft at an overseas seaport or aerial port. Includes associated handling within the port area	MAC	Overseas Command	MAC	U.S. Armed Services and contractual services	MAC. Partial costs recovered from shipper services via industrial fund	Overseas Command. Partial costs recovered from shipper services
Overseas Line Haul	Movement between an inland military depot overseas and an aerial port or seaport	Overseas Command	Overseas Command	Overseas Command, via military and commercial modes	Overseas Command, via military and commercial modes	Shipper service	Shipper service

[1]MTMTS - Military Traffic Management and Terminal Service. DOD single manager agency for intra-CONUS Military Traffic Management, Land Transportation and Common-User Ocean Terminals.
[2]MAC - Military Airlift Command. DOD single manager agency for inbound-outbound CONUS air transportation.
[3]MSTS-Military Sea Transportation Service. DOD single manager agency for inbound-outbound U.S., coast-wise, and intra-theater sea transportation.
[4]Intra-CONUS contract air includes LOGAIR and QUICKTRANS, managed by the Air Force and Navy, respectively.
Source: WSEG Report 141, Vol. II, Table 1

(4) Relationships with OSD. The charters prescribe that "policy direction in connection with this single manager assignment" is the responsibility of the ASD (I&L) in collaboration with ASD (Comptroller) and ASD (System Analysis). The two latter offices, in fact, have important impacts on the three transportation agencies and their parent military departments. An old (but still effective) directive provides for detailed financial and operational reporting to ASD (Comptroller).[26] More significantly, the charter of ASD (Systems Analysis), gives that office broad responsibility in developing planning guidance and effectiveness criteria in the determination of requirements for transportation resources, and, with specific reference to sealift resources, provides for it to render special support to the Secretary of Defense in the area of maritime subsidies (a primary function of the Maritime Administration).[27] Additionally, with respect to the DOD use of civil transportation within CONUS, a recent DOD Directive divides responsibility among various DOD agencies, with OASD (SA) playing the key role in long-term requirements determination and DOD liaison with the Department of Transportation.[28]

(5) Relationships with the Joint Chiefs of Staff. The charters prescribe for transportation operating agency participation in the planning cycle of the Joint Chiefs of Staff, and for JCS review of requirements and capabilities and approval of agency plans in support of approved contingency plans. Those charters, and the charter of the JTB, provide for SASM and JTB to act as the interface between the Services, the Agencies and the Joint Chiefs of Staff, and for JCS and JTB to allocate the transportation resources when lift capabilities are insufficient to meet requirements.[29]

(6) Relationships with CINC, Services, and Defense Supply Agency. The three charters prescribe that "all DOD components, as applicable," will perform a series of tasks concerning the submission of requirements, the preparation of material for shipment, and the payment of transportation costs. According to the procedures established by the Joint Chiefs of Staff, the military departments consolidate and transmit to the appropriate transportation agency the forecast transportation requirements of the Service Component Commanders (of the CINCS) and their own requirements.[30] For specific contingency plans, the three agencies participate in initial planning to the extent agreed upon and participate in the CINC coordination conferences described in Chapter I of this monograph. Numerous joint regulations, publications, manuals, and single-service directives elaborate on the DOD and JCS procedures.

(7) Inter-Agency Relationships. Finally, each of the three charters specifies extensive specific responsibilities and relationships of MTMTS and DOD components with respect to ocean passenger, cargo, and bulk POL traffic (MSTS), CONUS outbound air traffic (MAC), and various types of movement operations (MTMTS).

c. Industrial Fund Concept. All three transportation operating agencies function under the Industrial Fund Concept, authorized by the National Security Act to provide working capital for commercial type activities that provide common services within or among the departments and agencies of DOD. Within OSD, precise regulations govern the industrial funds of the three military departments.[31] Under this concept, MTMTS, MSTS, and MAC charge the shipper services for part of the costs of transportation services based on published tariff rates. These tariff charges are calculated to minimize annual gains and losses to the transportation operating agencies' segment of the industrial fund of the parent military department (e.g. Army Industrial Fund for MTMTS, Navy Industrial Fund for MSTS, etc.). Other costs to the Government, not borne by the user Services, are paid for by the parent military department from appropriated funds. Table 2 summarizes the types of transportation costs for which the shipper service is charged by MTMTS/MSTS/MAC and the unfunded costs to the Government that are not reflected in the MTMTS/MSTS/MAC tariff rates.

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[26]DOD Directive 4100.31, subject: Reports on Single Manager Operations, 2 September 1960.
[27]DOD Directive 5141.1, op. cit.
[28]DOD Directive 3005.7, op. cit.
[29]JCSM-281-66, op. cit.
[30]JCSM-680-68, subject: Mobility System Planning Policies and Procedures (U), 2 November 1968, 77 pp., (C).
[31]DOD Directive 7410.4, subject: Regulations Governing Industrial Fund Operations, 20 May 1968

TABLE 2

TRANSPORTATION COSTS CHARGEABLE/NOT CHARGEABLE TO SHIPPER SERVICES

Functional Link	Chargeable Costs	Other Costs to Government
CONUS Line Haul	Contract costs for commercial carriers	1. Single-manager (MTMTS) revolving and O&M funds for hq and area command operations 2. Military personnel costs
CONUS Port Handling[1]	1. O&M costs 2. Demurrage 3. Contractual cargo handling and related service	Military personnel costs
Inter-theater Transit	1. Single-manager (MAC and MSTS) O&M funds for hq and area command operations 2. MAC force and MSTS nucleus fleet operations including a. Vessel and aircraft stores, supplies and equipment b. Vessel and aircraft repairs and maintenance c. Propulsion fuel d. Civil Service salaries, wages, and benefits[2] e. Allocation for activation and deactivation of NDRF Ships, and ship modification costs[3] 3. Charges incurred by MAC and MSTS for commercial airlift and sealift augmentation	1. O&M funds for MAC operations not chargeable to shipper services 2. Construction and operating differential subsidies for sealift 3. Base operating support costs (airlift only) 4. Military personnel costs[2] 5. Aircraft modification costs
Overseas Port Handling	Contractor costs for cargo handling and related services such as terminal functions, and contractor-furnished material and equipment	Military personnel costs

[1]Port handling costs are dominated by personnel costs, predominately military in the case of airports and predominately civilian in the case of seaports.
[2]MSTS nucleus fleet ships are manned by civilian (Civil Service) crews, whose costs are included in MSTS billing rates. MAC flight crews and most ground personnel are military personnel, paid directly from appropriated funds.
[3]NDRF - National Defense Reserve Fleet, i.e., Ships of the Maritime Administration's mothball fleet.

Source: Adapted from WSEG Report 141, Vol II, Tables 3-5.

d. Military Traffic Management and Terminal Service (MTMTS)

(1) MTMTS was established on 15 February 1965, almost coincident with the commencement of the Vietnam buildup. However, it was the successor to a series of similar agencies dating back to 1956. Consolidation of military traffic management activities within CONUS was effected 1 May 1956, with the designation of the Secretary of the Army as Single Manager for Traffic Management. A Military Traffic Management Agency (MTMA) was established in July 1956, as a specialized field activity under the jurisdiction of the Army's Chief of Transportation. With the establishment of the Defense Supply Agency (DSA) in 1961, MTMA was transferred to DSA and redesignated the Defense Traffic Management Service (DTMS). As the result of a joint study of the CONUS air and ocean terminal system, conducted in 1964, common-user ocean terminals were also placed under the centralized control of MTMTS, which was established on 19 November 1964 as a joint agency under the Secretary of the Army.[32]

(2) MTMTS, then, was the synthesis of the DTMS, the Army Terminal Commands, the Joint Army-Navy Terminal at Oakland, California, and certain other elements whose functions were closely allied to CONUS traffic management and ocean terminal services. Thus, the MTMTS role is essentially the management and clearance of the use of commercial transportation resources principally within CONUS, as distinguished from the worldwide carrier operational roles of the other two single manager operating agencies, MSTS and MAC.[33]

(3) The basic mission of MTMTS is to provide effective, responsive, and economical support to the Services, the Joint Chiefs of Staff, the CINC, and other DOD agencies with respect to military traffic management, land transportation, and common-user ocean terminals within the CONUS.[34] The MTMTS responsibilities for providing transportation planning support and for developing and operating an integrated transportation information system originally were quite broad. However, coincident with the establishment of the SASM in March 1966 (discussed earlier), MTMTS involvement in these activities was limited to support of its own mission.[35]

(4) The current MTMTS charter lists 18 specific functions in support of its mission. In addition, it provides that the Commander, MTMTS, will command overseas Army terminal units in support of the Department of the Air Force and other agencies as assigned, and will provide worldwide traffic management for the DOD Household Goods Moving and Storage Program.[36] Additionally, MTMTS was assigned responsibility for implementation of the DOD authority to administer the War Air Service Program (WASP) Air Priorities System for DOD traffic within CONUS in the event of a national emergency.[37]

(5) MTMTS is organized as a major field command of the Department of the Army with its national headquarters located at Bailey's Crossroads, Virginia, and two area commands, eastern and western, located at Brooklyn, New York (EAMTMTS) and Oakland, California (WAMTMTS), respectively. Additionally, a field office of the EAMTMTS is located at St. Louis, Missouri. A specialized facility, the United States Army Transportation Engineering Agency is located at Fort Eustis, Virginia; and several outports and air clearance offices are located around the country.[38]

(6) Command, policy, management, control, and staff supervision are lodged at the national headquarters. The EAMTMTS and WAMTMTS provide domestic traffic management services, control movement into air and ocean terminals, issue export traffic releases, and manage common-user ocean terminal facilities. The EAMTMTS also exercises command

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[32]Industrial College of the Armed Forces, Transportation: The Nations Lifelines, Washington, D.C., 1968, pp. 135-136.
[33]MTMTS Pamphlet, subject: MTMTS-Four Years of Progress, 27 January 1969 p. 3.
[34]Ibid., p. 2.
[35]MTMTS pamphlet, subject: Chronology of the MTMTS, 24 February 1969, p. A-12.
[36]DOD Directive 5160.53, op. cit.
[37]Army Regulation 59-10, subject: DOD Use of Commercial Air Transportation Under the WASP, 12 December 1968.
[38]MTMTS pamphlet, 27 January 1969. op. cit., p. 4.

over certain overseas Army transportation terminal units. The St. Louis Field Office, as an adjunct of the EAMTMTS, also provides domestic traffic management services in the central United States, and manages the Defense Freight Railway Interchange Fleet.[39]

(7) MTMTS finances its terminal operations and certain operations of the Defense Freight Railway Interchange Fleet from the Army Industrial Fund. Under the original concept of MTMTS operations, customers were to be billed for all MTMTS services. However, because of the complexity of costing traffic management and other MTMTS services, customers are billed only for water terminal services. The Services, themselves, budget for the costs of CONUS freight and passengers and for worldwide personal property movements, as well as for MTMTS terminal handling costs.[40]

e. Military Sea Transportation Service (MSTS)

(1) The Military Sea Transportation Service was established by the Secretary of Defense on 2 August 1949, as a single ocean transportation service under the direction and control of the Department of the Navy. Thus the Army and Navy ocean transport services were consolidated shortly before the outbreak of the Korean conflict, but each Service operated its own ocean terminals until their assignment to the Military Traffic Management and Terminal Service at the beginning of the Vietnam era. With the decision, early in 1956, to establish single managerships for various common supply and service operations, MSTS was rechartered. A DOD directive of 28 May 1956 formally designated the Secretary of the Navy as a single manager for ocean transportation. In turn, MSTS became the Single Manager Operating Agency for Ocean Transportation. After the establishment of SASM in 1966, MSTS, like MAC and MTMTS, was rechartered on 24 March 1967.

(2) The current MSTS charter, like those of the other two transportation operating agencies, does not contain a mission statement. Rather, it lists purposes, functions, specific responsibilities and relationships with respect to ocean transportation of passengers and cargo.[41]

(3) From these, the Commander, MSTS, has derived a fourfold mission of providing an immediate sealift capability in emergencies; planning for expansion in emergencies; providing ocean transportation for the Armed Forces in non-war periods; and providing ships for oceanographic exploration, range instrumentation, and missile tracking.[42]

(4) MSTS is a major component of the Navy and is organized as a worldwide command with headquarters in Washington, D. C. There are four area commands, two of which are counterparts of the MTMTS area commands: MSTSLANT, collocated with EAMTMTS at the Brooklyn Army Terminal, and MSTSPAC, located at the Naval Supply Center, Oakland, adjacent to WAMTMTS. There is a close day-to-day working arrangement between MSTS and MTMTS area commands, since ocean military cargo flows to MSTS through MTMTS channels (in CONUS). Even though MSTS is responsible for effective utilization of individual ships, control actually is limited because MSTS does not call the cargo to shipside, nor does it plan stowage of cargo in the ships. These are the functions of MTMTS in its role as traffic manager and terminal operator.[43] This is in marked distinction to the airlift situation in which MAC is responsible for the operation of aerial ports and air terminals (including the processing of traffic) and for the loading and discharge of aircraft.[44]

f. Military Airlift Command (MAC)

(1) Portions of the Air Force and Navy air transport services were combined in a Military Air Transport Service (MATS), under the direction of the Air Force, on 1 June 1948,

[39] Ibid, p. 4
[40] Ibid, p. 11
[41] DOD Directive 5160.10, op. cit.
[42] MSTS Pamphlet, 19 June 1969, op. cit.
[43] Ibid.
[44] DOD Directive 5160.2, op. cit.

antedating the establishment of MSTS by about a year. Although MATS took over transport aircraft assets from the Air Force and the Navy, both Services retained a substantial number of transport aircraft for their own organic airlift requirements. Following the Korean conflict, Air Force studies proposed that MATS be operated along the same lines as MSTS, with broad authority to contract and with MATS units forming a USAF organic air transport force.[45]

(2) In December 1956, MATS was placed under the single manager plan, as MSTS had been some 7 months previously. The Secretary of the Air Force was designated the single manager for airlift service, with MATS serving as his operating agency. The duplication of scheduled or route type air transport operations was to be eliminated, with MATS serving all customers. Industrial funding procedures were instituted so that airlift service could be provided on a reimbursable basis with users charged predetermined tariff rates. In addition, MATS was charged with providing technical services, such as air rescue, and with negotiating long-term contract air services within CONUS for the Air Force LOGAIR and the Navy QUICKTRANS domestic air cargo services.[46]

(3) In 1958, at about the time of the Lebanon and Taiwan Straits crises, the President directed OSD to study the role of MATS in peace and war. The study, completed early in 1960, suggested several courses of action. These centered around the policy of developing wartime airlift capability in a Civil Reserve Air Fleet (CRAF), while modernizing a military capability to perform hard-core military airlift that could not be performed adequately by commercial air carriers on a timely basis. At about the same time, the special subcommittee on National Military Airlift of the House Committee on Armed Services (the Rivers Committee) recommended that MATS be modernized by the development of a long-range specialized cargo aircraft and by the procurement of additional off-the-shelf aircraft. It also recommended that CRAF be upgraded through acquisition of modern long-range aircraft and be made more responsive to emergency situations short of general war. In Public Law 86-601, 7 July 1960, Congress appropriated $310 million for the Air Force to develop, construct, procure, and modify transport aircraft, provided none of it would be used for scheduled passenger service. In subsequent years, Congress implemented this policy by further appropriations.[47] These events, and the emergence of a concept of deterrence under conditions of less than general war, created a new climate that enabled MATS to develop doctrines, techniques, and organizations to meet changing Defense airlift requirements, employing the newer equipment to be procured.[48]

(4) On 1 January 1966, MATS was redesignated the Military Airlift Command (MAC), thereby implementing another of the specific recommendations of the 1960 Rivers Committee.[49] Like MTMTS and MSTS, MAC was rechartered on 24 March 1967; unlike MSTS, MAC retained responsibility for terminal operations and for the loading and discharge of aircraft, and was assigned responsibility for operating a worldwide passenger reservation system for international air travel.[50]

(5) The basic DOD directive governing MAC contains a list of purposes and functions, including the maintenance and operation of a DOD airlift service system and the operation of aerial ports and terminals.[51] The derived mission of MAC is "to maintain, in a constant state of readiness, the DOD military airlift system and other services to perform all tasks assigned by the Joint Chiefs of Staff."[52]

(6) MAC functions in a dual role as a major Air Force command and as the single manager operating agency for airlift Service for the DOD. Since 1 January 1958, headquarters, MAC, has been at Scott AFB, Illinois. The two major airlift components of MAC

[45]MAC Pamphlet, subject: The Development of Strategic Airlift for the Armed Forces of the United States, July 1968, pp. 8-12.
[46]ICAF Textbook, op. cit., p. 141, and ICAF Student Research Report No. 85, pp. 6-7.
[47]MAC Pamphlet, op. cit., pp. 15-16.
[48]Ibid., p. 17.
[49]ICAF Student Research Report, op. cit., p. 7.
[50]DOD Directive 5160.2, op. cit.
[51]Ibid.
[52]MAC Manual MM76-1, subject: Military Airlift Transportation Manual, 16 June 1969.

are the 21st AF, headquartered at McGuire AFB, N.J., and the 22nd AF, based at the Travis AFB, California. MAC military airlift is based at nine AF bases in CONUS and PACOM. MAC aircraft provide both regularly scheduled airlift over prescribed channels, i.e., routes and special assignment airlift missions (SAAM).

5. COMMANDERS OF UNIFIED AND SPECIFIED COMMANDS

a. Background

(1) The DOD Reorganization Act of 1958, in a basic amendment to the National Security Act of 1947, provided for the President, with the advice and assistance of the Joint Chiefs of Staff, through the Secretary of Defense, to establish unified or specified combatant commands.[53] Seven unified commands and one specified command resulted. The Unified Command Plan (UCP) states that their primary purpose is to provide for the optimum effectiveness of U.S. military forces in combat operations and for the projection of U.S. military power as required to support and advance the national policies.[54]

(2) The UCP authorizes a commander of a unified command to plan for, deploy, direct, control, and coordinate the actions of assigned forces and to exercise directive authority within his command in the field of logistics.[55] In addition, with respect to sealift, the UCP charges CINCLANT and CINCPAC, in coordination with adjacent U.S. commanders of unified and specified commands and Allied Commanders, to develop overall plans for the control and protection of shipping throughout the Atlantic and Pacific Oceans, the Indian Ocean, and their contiguous waters.[56] Basic procedures for naval control of shipping, including matters pertaining to routing, reporting, convoy organization, and tactical diversion of shipping of allied nations, have been agreed to by all NATO nations.[57]

(3) As a result of experience in the initial stages of the Vietnam buildup, the Joint Chiefs of Staff formalized two broad classes of commanders of unified commands:[58]

(a) Supported commander—one who is assigned a task in the Joint Strategic Capabilities Plan or by a Joint Chiefs of Staff directive for the conduct of specific operations.

(b) Supporting commander—one who provides augmentation forces to a supported commander.

For the Vietnam operation, the supported commander was the Commander in Chief, Pacific (CINCPAC), and the supporting commander was the Commander in Chief, U.S. Strike Command (CINCSTRIKE). The role of CINCSTRIKE in planning for unit movements for the Vietnam buildup is discussed in Chapters III and IV of this monograph. Following is a brief summary of the types of transportation forces in PACOM and of the PACOM organization for transportation management.

b. Commander in Chief, Pacific (CINCPAC)

(1) CINCPAC, with headquarters at Camp Smith, Hawaii, is the commander of a unified command whose area of responsibility includes the Pacific Ocean, Japan, Korea, and the countries of Southeast Asia. His command is comprised of the forces assigned by the Joint Chiefs of Staff, including intra-theater airlift forces, under CINCPACAF. No comparable common-user intra-theater sealift forces are assigned to CINCPAC.[59] However, ships of the

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[53] 10 U.S.Code 124

[54] JCS-SM-1400-53, subject: Unified Command Plan, 20 November 1963, para. 3.

[55] Ibid., Annex B, paragraphs (1) and (3).

[56] Ibid., paragraph 14.

[57] ATP2 (A), Allied Naval Control of Shipping Manual.

[58] JCS Publication 15, Mobility System Planning Compendium Glossary of Terms (U), 1 October 1968 (C); and JCS SM-680-68, op. cit.

[59] CINCPAC Instruction 4600.3B, subject: Common User Transportation in PACOM, 3 April 1967.

Amphibious Force, U.S. Pacific Fleet, were used for special sealift missions (which did not interfere with the Fleet's primary mission). COMSTS provided intra-theater, as well as inter-theater, common user sea transportation. Essentially, MAC provided common user inter-theater airlift, but furnished intra-theater airlift beyond the capability of PACAF forces as augmented. Neither MAC nor MSTS forces are under the operational control of CINCPAC or his component commanders. However, in the event naval control of shipping were ordered within PACOM, MSTS and merchant ships in the affected area would come under the operational control of CINCPACFLT through the Naval Control of Shipping Organization.[60]

(2) The Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV), with headquarters in Saigon, Vietnam, was the commander of the PACOM subordinate unified command responsible for Vietnam. Under the operational control of the Commander, Seventh Air Force (a PACAF commander who is also the deputy COMUSMACV for Air), the 834th Air Division provided airlift capability within Vietnam. In general, land transportation in Vietnam was the responsibility of the Naval Component Commander of CINCPAC (CINCPACFLT) in I Corps, and of the Army Component Commander (CINCUSARPAC) in the II, III, and IV Corps areas.[61]

(3) The principal roles of CINCPAC and of COMUSMACV with respect to transportation involved planning for and coordinating the optimum utilization of resources. CINCPAC, like his unified command counterparts, is responsible for coordinating transportation facilities and means assigned to his command, including air, sea, and land transport.[62] To implement this resource responsibility, the PACOM transportation organization at the beginning of the Vietnam era consisted only of a small transportation section assigned to the J-4 Logistic Plans Branch (J-41) at PACOM headquarters, and a small WESTPAC Transportation Office (WTO) located at Tachikawa Air Base, Japan. These two staffs were responsible for CINCPAC involvement in all transportation policy management, and operational problems throughout PACOM.

(4) As the Vietnam effort expanded, CINCPAC strengthened his logistics organization by expanding the WTO; by establishing a PACOM Movement Priority Agency (PAMPA) in January 1966, as a separate staff element (J-46) collocated with Western Area, MTMTS, Oakland, California; by elevating the status of the Transportation Section to a Branch (J-48); and by establishing, in August 1966, a PACOM Joint Transportation Board (JTB) modeled after the Joint Chiefs of Staff Joint Transportation Board. In addition, to oversee intra-Vietnam transportation matters, COMUSMACV established a Traffic Management Agency (TMA).

(5) Descriptions of these PACOM organizations and their missions are contained in appropriate portions of Chapters III and IV of this monograph.

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[60]OPNAV Instruction 03450.14A, subject: Control of MSTS Ships and Merchant Ships Under MSTS Authority During Contingency Situations, 29 April 1966.
[61]CINCPAC Instruction 4600.3B, op. cit.
[62]JCS Publication 2, Unified Action Armed Forces (UNAAF), November 1959, paragraph 30609.

CHAPTER III

PLANNING, ACQUISITION, AND USE OF TRANSPORTATION RESOURCES

SECTION A

INTRODUCTION

1. Chapter III contains a discussion of the planning, acquisition, and adequacy of transportation resources for continental United States (CONUS) movements, inter-theater movements from CONUS to SE Asia, and movements within the Republic of Vietnam (RVN).

2. Chapter III is divided into the additional following sections. At the end of each section there are pertinent conclusions and recommendations.

a. Mobility Planning for Vietnam—Procedures for determining mobility requirements, contingency planning for SE Asia, and deployment planning for SE Asia.

b. CONUS Transportation Resources—Air and surface capability and military ocean terminals under the cognizance of the Military Traffic Management and Terminal Service (MTMTS).

c. Inter- and Intra-Theater Sealift—Ocean and coastal shipping under the cognizance of the Military Sea Transportation Service (MSTS).

d. Inter- and Intra-Theater Airlift and Aerial Ports—Airlift resources controlled by the Military Airlift Command (MAC) and tactical airlift resources assigned to the Pacific Air Force (PACAF).

e. Intra-RVN Transportation—Air, water, highway, and railroad transportation resources, and ports and terminals available within RVN.

SECTION B

MOBILITY PLANNING FOR VIETNAM

1. STATEMENT OF THE ISSUES AND THEIR SIGNIFICANCE

a. This section summarizes mobility planning associated with the Vietnam buildup. The following are the three principal issues:

(1) Were the procedures for submission of transportation requirements adequate, and are they appropriate today?

(2) Was transportation contingency planning for reaction to aggression in SE Asia adequate?

(3) What effect did national decisions have on planning for transportation support?

b. Because forces cannot be deployed and supported overseas without transportation resources, which adequacy depends on planning and decisions resulting therefrom, this subject is of major importance to the overall review of logistic support in the Vietnam era.

2. PROCEDURES FOR DETERMINING TRANSPORTATION REQUIREMENTS

a. Background

(1) Mobility. The global scope of modern military operations in support of U.S. military strategy emphasizes the importance of mobility, of which transportation is a key factor. Two types of mobility are now recognized. Strategic mobility is the capability to deploy and sustain combat-ready military forces anywhere in the world, as the operational requirement dictates; tactical mobility is associated with the movement and maneuver of forces within the operational or battle area.[1]

(2) Mobility Forces. Three types of mobility resources are now recognized.[2] Strategic mobility forces consist of the common-user pool of airlift and sealift resources of MAC and MSTS, augmented as described in Sections D and E, which deploy and support general-purpose forces, support other overseas forces, and resupply certain allied forces. Tactical mobility forces consist of transport airlift of the Tactical Air Command (TAC) that becomes an integral part of the intra-theater transportation system when deployed, and of Navy and Marine Corps tactical airlift forces. Mobility System Support Resources (MSSR) consist of the manpower, facilities, and equipment of the various Services needed to provide local transportation and to operate aerial ports, sea ports, and depots.

(3) Categories of Movement Requirements. The Joint Chiefs of Staff (JCS) have promulgated guidance and specific procedures for the submission of requirements for mobility forces.[3]

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[1] Joint Chiefs of Staff Publication 15, Mobility System Planning Compendium, October 1968, paragraph 010102.

[2] Office of the Secretary of Defense Document, subject: Secretary of Defense Major Program Memorandum on Mobility Forces, Enclosure 1 to OSD Control CCS X-3026, 11 June 1969, pp. 3, 16, and 22.

[3] Joint Chiefs of Staff SM-680-68, subject: Mobility System Planning Policies and Procedures, 2 November 1968.

Separate procedures exist for requesting common-user transportation resources in support of three categories of requirements:

(a) Contingency plans

(b) Major training exercises

(c) All other requirements.

b. Support of Contingency Plans

(1) The commander of the originating unified command, known as the supported commander, determines the requirement for the types of military forces needed to carry out his plan and makes a general estimate of the transportation resources needed to deploy and initially support such forces. His estimate specifically includes those deployments that could be made with mobility forces assigned or otherwise available to him, and those that would require lift resources in excess of his capability. He transmits the contingency plan and these requirements for mobility resources to the Joint Chiefs of Staff for review and approval.[4]

(2) Following approval by the Joint Chiefs of Staff, the commander(s) of supporting unified command(s) and the Services designate specific military units to meet the general requirements of the supported commander. The Services determine resupply, special cargo, and replacement personnel requirements for all units.

(3) The three military transportation operating agencies (TOAs),[5] develop plans to meet the movement requirements.

(4) If necessary, the supported commander convenes a coordination conference to resolve movement constraints. He then publishes his movement schedule. The Services, the supporting commanders, and the TOAs publish appropriate supporting plans to be filed for possible implementation in the future.

(5) Thus, transportation requirements in support of contingency plans are thoroughly staffed at all appropriate levels and represent the coordinated judgment of experienced Service and joint planners.

c. Support of Routine Requirements

(1). On the other hand, requirements for peacetime and wartime movements, other than for support of contingency plans or major exercises, are prepared under separate procedures by different people.[6]

(2) Each Service submits its own airlift and sealift requirements, and those of eligible non-DOD agencies for which it has sponsorship responsibilities, to MAC or MSTS (with copies to the Joint Chiefs of Staff, MTMTS, and, in the case of airlift, to Headquarters, U.S. Air Force). The appropriate Service also submits the requirements of commanders of component commands (e.g., Army for Commander in Chief, U.S. Army, Pacific) for intra-theater and inter-theater lift that cannot be met from movement resources assigned to the commander of the supported unified command (e.g., Commander in Chief, Pacific (CINCPAC)). The U.S. Agency for International Development (USAID) submits its own sealift requirements as a shipper service, but submits its airlift requirements via a designated military department, as do other non-DOD agencies for both air and sealift support. Thus, movement requirements, other than for the support of contingency plans or major exercises, are unilateral Service requirements.

[4]An integral part of current procedures is the electronic data processing Deployment Report System (DEPREP) that was not fully operational at the beginning of the Vietnam era. Otherwise, the basic responsibilities and general procedures in Chapter 3 of SM-680-68, op. cit. are substantially unchanged from those in effect at the beginning of the Vietnam era.

[5]MAC, MSTS, and MTMTS.

[6]SM-680-68, Chapter 1, op. cit.

(3) Basically, these routine movement requirements are of two types:

(a) Forecasts – submitted in July of each year and updated in mid-fiscal year to enable MAC and MSTS to plan for long-term commercial augmentation for the fiscal year beginning 12 months hence.

(b) Short-range statements—submitted some 11 weeks ahead of the operating month to enable MAC and MSTS to develop tentative operating schedules and advise the shipper Services of proposed assignments of space. If there is insufficient capability to satisfy all requirements, the problem may be submitted to the Joint Transportation Board (JTB) for resolution; this was done in several instances during the Vietnam era.

(4) Although the preceding procedures allow for changes in movement requirements, they do not specifically require that the Services refine either their forecasts (except at mid-year) or their short-range statements when changes occur or are anticipated. Under industrial funding procedures, the TOAs are constrained from procuring commercial resources beyond what has been requested by the individual Services, except when a specific contingency plan is implemented, as in the Dominican Republic intervention. The requirements that the Services levy on the TOAs, however, will not reflect changing needs for lift resources unless specific provision is made within each Service to ensure that the personnel responsible for preparing transportation requirements statements are apprised of changing circumstances.

3. CONTINGENCY PLANNING FOR SOUTHEAST ASIA

a. Basic Contingency Plan

(1) The basic contingency plan for the defense of SE Asia provided for rapid deployment of land, sea, and air forces from both CONUS and PACOM to SE Asia. Forces were to be accompanied by initial equipment and supplies needed to sustain themselves until scheduled resupply was assured. Primary reliance was to be on air resupply of units in-country until surface lines of communications were established and thereafter for emergency or high-priority resupply. The plan recognized that transportation facilities in SE Asia were extremely limited, that port facilities were inadequate, and that shallow-draft vessels would be required in many situations.

(2) The plan stated that intra-theater airlift (i.e., Pacific Air Force (PACAF) transport units) would require augmentation from MATS[7] resources to effect various intra-theater deployments and resupply, including all deployments by air from Hawaii, and that all CONUS augmentation airlift deployments and resupply would require MATS lift. It visualized that the PACOM Strategic Reserve of Merchant-type shipping, consisting of tank landing ships (LSTs) and miscellaneous auxiliary ships "mothballed" at Sasebo, Japan, would be reactivated to support intra-theater sealift deployment and resupply requirements, but that most common-user sealift would be provided by other sealift resources of MSTS.

(3) The Logistics and Personnel Annex assumed that "transportation to implement this plan, which is beyond the capability of PACOM assigned forces to provide, will be made available as required." The supporting plan of the Commander, MSTS, assumed that emergency requisitioning of commercial shipping would be directed when needed to meet sealift requirements, and that the Joint Chiefs of Staff would allocate shipping resources when the combined requirements of the services exceeded available capability.[8] Similarly, MATS estimates of capability to airlift outsized cargo and/or vehicles were predicated on a number of factors, including recall to active duty of Air Force Reserve C-124 units and augmentation by C-130 aircraft from the Strike Command (STRICOM).[9] In addition, MATS planning assumed implementation of the Civil Reserve Air Fleet (CRAF) agreement, described in Section E, in order to obtain necessary airlift augmentation from the commercial airlines. These underlying

[7]Prior to 1 January 1966, MAC was known as MATS (Military Air Transport Service).
[8]Information furnished by Office of Assistant Chief of Staff, Plans and Policy, Headquarters, MSTS.
[9]Headquarters, MATS, Memorandum, 18 December 1964.

assumptions of both MATS and MSTS, although based on historical precedent and guidance of the Joint Chiefs of Staff, proved to be in error under the policies in effect during the Vietnam era. Sections D and E discuss the problems faced by the transportation operating agencies because of this lack of anticipated national emergency authorizations and the measures taken to overcome them.

b. Transportation Capability Problems

(1) One of the many actions of the Department of Defense to assist the Treasury Department in overcoming the Flow of Gold problem was a plan to withdraw from CINCPAC airlift resources of two C-130 squadrons and one C-124 squadron during 1964. The expectation of the Office of the Secretary of Defense (OSD) was that an extention of MATS routes within PACOM would compensate for this lost capability.[10]

(2) In April 1964, CINCPAC convened a conference to review the effects on the basic SE Asia contingency plan. MATS was willing to make available a major portion of its CONUS-based airlift capability; however, MATS emphasized that this would significantly delay the closure of CONUS augmentation forces planned for deployment by air.[11] In July 1964, Commander in Chief, U.S. Strike Command (CINCSTRIKE), in his capacity as supporting commander, held a conference on air and sea capabilities for movement of CONUS Army and Air Force augmentation forces to RVN. New requirements were stated for air movements of Army component forces. MATS would be unable to meet these requirements, and MSTS would not have the sealift capability to meet the desired closure dates because of the long lead times required to obtain and position commercial shipping. The CINCPAC representative indicated that, if the airlift shortage could not be overcome, the contingency plan would require major revision.[12]

c. Feasibility Studies

(1) In early June 1964, the Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV) expressed concern about the congestion at jet-capable airfields at Tan Son Nhut, Bien Hoa, and Da Nang and submitted plans for improvement.[13] Following a PACAF study, CINCPAC advised the Joint Chiefs of Staff that aerial terminal capacity would be adequate if planned augmentation of personnel and equipment were provided and the contingency plan were implemented as a complete reaction plan. He assessed ocean terminal capacity as being sufficient, but recommended early planning to prestock Army lighterage to align capabilities in SE Asia with the time-phased requirements of the plan.[14]

(2) A complete logistic appraisal of the contingency plan, completed in October 1964, indicated a need for remedial action related to augmentation units from CONUS sources and in the facilities and procedures associated with storage, transportation, and supply.[15]

(3) The 2-4 August 1964 Gulf of Tonkin incident was followed by the Joint Congressional Resolution of 7 August 1964 that approved retaliatory attacks and supported the President in taking "all necessary measures to repel any armed attack against the forces of the United States and to prevent further aggression."[16]

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[10]Headquarters, CINCPAC, Commander in Chief Pacific Command History, 1964, 23 April 1965, (Enclosure to CINCPAC 5750 ser. 000152), p. 106.
[11]Headquarters, U.S. Air Force Memorandum for MAXWP, subject: Joint Planning Conference on CONUS Augmentation Forces, ...OPLAN, 13 July 1964.
[12]Ibid.
[13]Headquarters, U.S. Military Assistance Command, Vietnam, Command History, 1964, p. 155.
[14]CINCPAC, op. cit., p. 47
[15]Ibid., p. 48.
[16]Sharp, Admiral U.S.G. and Westmoreland, General William C., Report on the War in Vietnam (as of 30 June 1968), p. 4, Washington: U.S. Government Printing Office (undated).

(4) During October 1964, a Joint Logistic Team made an on-site survey of key areas in the Western Pacific and SE Asia. They reported that logistic support systems were strained because the systems were not geared to accommodate the sudden increase in supply and transportation requirements subsequent to the Gulf of Tonkin incident; CINCPAC transportation and enroute staging facilities required further augmentation.[17]

(5) With the assistance of the four Services, the Logistics Directorate, Joint Staff, made an intensive logistic feasibility analysis of the various courses of action being considered at the national level subsequent to enemy attack on Bien Hoa.[18] In the mobility area, the assessment pointed up the need to improve aerial and sea ports, pre-position Army lighterage, and obtain national emergency authority to augment MATS and MSTS. It stated the need to reactivate five LSTs from the PACOM Strategic Reserve, to deploy Army engineering and transportation augmentation units, and to obtain contingency funding authority.

(6) At the beginning of 1965 there were no U.S. ground combatant forces in SE Asia, and U.S. air forces were engaged only in limited combat operations there. Following a series of Vietcong attacks on American installations in RVN, a national decision was made early in February 1965 for a limited commitment of U.S. ground combat forces in RVN.[19]

d. Logistic Support Analysis

(1) In mid-February 1965, the Assistant Secretary of Defense (Installations and Logistics) requested analyses of the ability of the United States to carry out basic contingency plans for SE Asia. Each of the Services, the Joint Staff, and the Defense Supply Agency made comprehensive analyses of the plans, with special reference to 12 logistic considerations that the ASD (I&L) memorandum stated were of special interest. The results were further reviewed and consolidated by the Logistics Directorate, Joint Staff, in coordination with the office of ASD (I&L).

(2) On 12 March 1965, the Joint Chiefs of Staff forwarded their detailed appraisals to the Secretary of Defense.[20] They stated that in addition to other actions there was a need for:

(a) Callup of all Air Force Reserve and Air National Guard strategic airlift units (Presidential declaration of national emergency required).

(b) Activate Stage III of the CRAF (Presidential declaration of national emergency required).

(c) Requisition a majority of U. S. flag commercial cargo ships, commercial passenger ships, and U. S. flag commercial tankers. (The Secretary of Commerce already had authority to do this, as a result of the declaration of national emergency by former President Truman in connection with Korea).

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[17]Joint Chiefs of Staff document, subject: Report of Joint Logistic Team's Visit to SE Asia (U), 5 November 1964, (SECRET).

[18]Joint Chiefs of Staff Memorandum to SECDEF (JCSM 100-65), subject: Courses of Action SE Asia - First Eight Weeks, 11 February 1965 (TOP SECRET).

[19]Headquarters, CINCPAC, Commander in Chief Pacific Command History 1965, Vol II (Enclosure to CINCPAC 5750 ser 000202, 13 May 66) pp. 449 and 452.

[20]Memorandum from the Chairman, Joint Chiefs of Staff (JCSM-177-65), subject: Logistic Studies with Respect to ...OPLANS..(U), 12 March 1965 (TOP SECRET).

(d) Obtain priority use for rail cars in CONUS (Presidential declaration of transportation emergency required).

(3) The analysis also pointed up the need for increasing the capability to clear ports and airfields. Because of the physical limitations in the transport and supporting facilities in SE Asia, and because of the effects of monsoons, the analysis suggested that forces and supplies be rescheduled and that pre-positioning of lighterage and the activation of additional LSTs would materially assist the port discharge capability.

4. PLANNING THE ACTUAL DEPLOYMENTS

a. Background

(1) On 6 March 1965, the United States announced that, in response to a request of the Government of the Republic of Vietnam (GVN), two U.S. Marine Corps battalions would be stationed in the Da Nang area for the security of the air base complex and that additional forces would be sent as requested by the GVN and COMUSMACV.[21]

(2) On 13 March, the Joint Chiefs of Staff directed CINCPAC to develop a time-phased course of action that, without prejudice to existing contingency plans, would involve minimum ground, air, and naval forces in RVN and elsewhere in SE Asia.[22] The security restrictions surrounding this new planning were so tight that CINCSTRIKE, the TOAs, and others who would need to make advance movement plans were not aware of the steps being contemplated.[23]

b. Initial Deployment Planning

(1) On 5 April 1965, the Secretary of Defense asked the Joint Chiefs of Staff for a new plan and for a schedule of logistic actions to support the forces to be deployed. To develop the plan within the specified time limit a conference was hurriedly convened at CINCPAC Headquarters early in April 1965. In attendance were key planners from the Joint Staff, the Service headquarters, CINCSTRIKE, PACOM component commands, COMUSMACV, and others not including the TOAs.

(2) The resultant plan proposed the deployment of combatant U.S. and allied ground forces and additional air elements to SE Asia. The new plan was based on the enclave concept, with operations paced to coincide with the incremental increase in the capability of the deployed forces.[24]

(3) The logistic portion of the April 1965 plan pointed to specific limitations then existing in the lift forces, support facilities, and port and beach clearance.[25]

(a) Airlift. Several months would elapse before C-141 lift capability would be sufficient to offset losses due to the programmed phase-out of other units; almost all available commercial airlift already had been purchased by MATS for the balance of FY 65; TAC C-130s were overcommitted and intra-PACOM airlift was fully committed through FY 65.

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[21]Sharp, Admiral U.S.G. and Westmoreland, General William C., DOD Annual Report for Fiscal Year 1965, p. 7, op. cit., p. 5.
[22]CINCPAC Command History, 1965, op. cit., pp. 274-277.
[23]Joint Chiefs of Staff Document, subject: Minutes of the Joint Transportation Board First Meeting (U) 24 March 1965, 15 April 1965.
[24]CINCPAC Command History, 1965, op. cit., pp. 280-282.
[25]Ibid., pp. 286-287.

(b) Sealift. One of the four MSTS aircraft transports and the only MSTS dock landing ship was committed to the national space program and very few U. S. flag cargo ships were potentially available, under normal competitive conditions, to augment the MSTS nucleus fleet.

(c) Port and Airport Facilities. The focal point for airlift into SE Asia, Clark Air Base, already was frequently saturated; terminal base capability to accept transport aircraft in RVN was critical; available indigenous resources to offload and receive cargo over-the-beach at Qui Nhon and Nha Trang were extremely limited.

(4) On 28 April 1965, the contingency plan for the Dominican Republic was implemented. Lift resources of MATS and MSTS augmented those of CINCLANT and TAC as planned. These resources were not available for the Vietnam buildup until their Dominican Republic tasks were completed.

(5) During subsequent months, there were periodic revisions to the strategy for the developing situation in SE Asia and in the force deployment plans. In general, only a very limited group of key planners within the Joint Staff and the Services was involved in this planning. Because of time and security factors, transportation planning largely was accomplished by a limited group within the Joint Staff in consultation with liaison officers assigned by TOAs. In general, transportation planners within the Services were by-passed.

c. Initial Mobility Planning Problems

(1) General. The circumstances previously discussed created four interrelated problems directly affecting transportation resource planning during the early days of the buildup:

(a) Readying specific units to be deployed and positioning lift resources to effect the movements

(b) Clarifying relative priorities for strategic mobility resources among SE Asia, the Dominican Republic, and other areas

(c) Optimizing the use of scarce mobility resources

(d) Compensating for delayed decisions.

(2) Unit Deployment Procedures. Because of the decision not to implement any previously approved contingency plan for SE Asia, it was necessary for the Joint Chiefs of Staff to establish a procedure for requesting, approving, and deploying units. Because some Army and Air Force units in CONUS were assigned to the operational command of CINSTRIKE, while others were not, it was necessary to clarify the deployment responsibilities of CINCSTRIKE vis-a-vis those of the Services. Because existing procedures for requesting transportation resources did not provide for these circumstances, it also was necessary to amplify basic transportation procedures. The resulting system is discussed in Section D of Chapter IV of this monograph.

(3) Relative Movement Priorities. Authorization to obtain reserve and commercial lift augmentation under national emergency procedures was not granted. The strategic mobility resources that would be required to effect the impending deployments to SE Asia, while supporting forces deployed to the Dominican Republic and elsewhere, were in short supply. Therefore, following the initial STRICOM conference on 29 and 30 June 1965, the JTB took specific action to clarify relative movement priorities. They approved for planning purposes the CINCSTRIKE movement plan and authorized the TOAs to accord unit movements to SE Asia priority over all other commitments except those for specific PACOM destinations and the Dominican Republic, special weapons movements, and the JCS-assured airlift to other areas of the world.[26]

[26]Joint Chiefs of Staff, Message, S 5128/022307 Z July 1965.

(4) Optimizing Available Resources. Following the second STRICOM conference on 10 and 11 July 1965, the Joint Chiefs of Staff determined that, in order to retain sufficient airlift capability for other purposes, the helicopters for the Airmobile Division should be moved by sea rather than by air when the division deployed. They supported the Chief of Naval Operations in obtaining authorization to reactivate a mothballed ex-escort carrier and to divert the helicopter amphibious assault ship, USS BOXER, from its next assignment. The JTB also agreed that a brigade from the 25th Infantry Division should be airlifted, even though this would result in aerial backlogs in excess of desirable operating levels and would force reductions in joint airborne training and exercises.[27]

(5) Compensating for Decision Delays. Approvals to deploy major units to RVN were not made far enough in advance of the dates the units were required to be in RVN to permit them to be readied and moved under normal peacetime procedures, yet wartime secrecy was in effect. An average of 50 days normally was required between the issuance of a movement directive and arrival at a SE Asia destination, if equipment moved through a west coast port, or 60 days, if moved through an east coast port. With OSD concurrence, the JTB on 15 July 1965, authorized preparatory actions to be taken to minimize this problem. Necessary common-carrier land transportation and commercial shipping could be ordered prior to receipt of movement directives for the Airmobile Division and related units, but these actions were to be taken "as inconspicuously as possible."[28] On 28 July 1965 there was a national announcement that the Airmobile Division and certain other forces were being ordered to Vietnam and that additional forces would be sent later, as requested.[29] Subsequently, the MTMTS representative advised the JTB that this advance authorization had saved about 19 days in the normal movement cycle. Ocean transportation was arranged for 187,000 measurement tons to be loaded out of 11 ports into 25 ships, and 14 installations levied requirements for 1159 rail cars, most of which were loaded and spotted prior to 29 July when the actual movement directive was received.

d. Consolidated Transportation Planning Guidance. In July 1965, the JTB summarized the transportation situation a... ows: MATS, TAC, and intra-theater airlift capability were fully committed, as were MSTS t. hips; MATS was obtaining maximum available commercial aircraft; and the charter market fo. both U.S. and foreign flag ships was tight. In view of the planned commitment of transportation resources to meet standing worldwide requirements and the need to support previously unprogrammed movements to SE Asia, the JTB, acting for the Joint Chiefs of Staff, promulgated broad guidelines covering five general areas:[30]

(1) To minimize uncertainties concerning the deployment approval status of the many units that CINCPAC had requested be in RVN by specific dates, the message established three categories of requirements:

(a) "JCS-Approved for Deployment". Units whose deployment had been authorized by the Secretary of Defense and directed by the Joint Chiefs of Staff.

(b) "Probable." Units whose deployment had been approved for planning purposes by the Joint Chiefs of Staff but not yet authorized by the Secretary of Defense.

(c) "Possible". Units that had been recommended as additional requirements but not yet approved for planning purposes.

(2) To provide maximum lead time to the TOAs for procuring and positioning lift capability against the changing requirements, the message established a standardized procedure for stating SE Asia requirements. Thereafter, the Services would confirm the requirements for lift resources that were agreed on at the STRICOM movement planning conference as required to move JCS-approved for deployment units. Similarly, the Services would update their forecast requirements to include "probable" or "possible" deployments. Transportation requirements for the estimated supply level buildup were to be handled in a similar manner.

[27]Minutes of Sixth (Special) JTB Meeting, 12 July 1965.
[28]Joint Chiefs of Staff, Message, 5931/152250 Z July 1965.
[29]Department of Defense Annual Report for FY 1966, 1967, U.S. Government Printing Office, p. 3
[30]Joint Chiefs of Staff, Message, 6207/201625 Z July 1965.

(3) The TOAs were to take immediate action to procure and position the lift needed to meet JCS-approved requirements and to make early requests for augmentation of their resources, specifying decision dates, if forecast capabilities appeared sufficient to meet "probable" requirements.

(4) To ensure that essential airlift requirements of the Services could be met, the message established a minimum daily average airlift tonnage criterion for key MATS channels to PACOM and reaffirmed that the highest priority for available airlift would be for movements in support of SE Asia and the Dominican Republic, in that order.

(5) To optimize the use of available common-user lift resources, it reaffirmed the policy that maximum use should be made of sealift for unit movements (personnel and equipment) and directed commanders of unified commands to apply their assigned resources, including tactical airlift and operating ships, to augment lift capability to the extent that operational missions would permit.

(6) This consolidated transportation guidance message permitted more realistic mobility planning under the circumstances then prevailing in which major deployments were being made without implementation of a specific contingency plan. Procedures such as these, however, have not been incorporated into the current mobility system planning doctrine described in paragraph 2.

e. Accelerated Force Buildup

(1) Background. From the beginning of the Vietnam era through mid-1965 relatively few new units arrived in RVN. Essentially they were U. S. Marine Corps units, deployed in PHIBPAC ships, self-deployed Air Force units, and Army units requiring relatively little common-user transportation support. During July 1965 two U. S. Army brigades and one U. S. Marine Corps brigade arrived. The accelerated force buildup commenced with the deployment of the 1st Cavalry Division (Airmobile) described in Section D.

(2) August CINCPAC Conference. CINCPAC convened a second major planning conference on 3 August 1965. Representation was similar to that of the April conference, with the addition of the TOAs. The planning centered on determining specific troop lists, deployment priorities, transportation schedules, and airfield construction requirements. Critical problems directly related to mobility were identified as:

(a) Decision Dates. If the closure dates of the first 13 units were to be met, a decision would be required by 15 August 1965. (It was 23 August before the Joint Chiefs of Staff recommended to the Secretary of Defense most of the major deployments proposed by CINCPAC.)

(b) Port of Saigon. Its capacity would be strained by the arrival of the 1st Infantry Division.

(c) Schedule Slippage. The lack of shipping or cargo handling facilities, enemy action, or adverse weather could induce unloading delays and port congestion.[31]

(3) Subsequent Deployment Planning

(a) Subsequent planning was based in general on a three-phase concept, covering forces required through the end of 1965 (Phase I), mid-1966 (Phase II), and subsequent to 1 July 1966 (Phase III).

(b) An October 1965 CINCPAC conference determined the additional forces required to recover the military initiative from the Vietcong (Phase I Add-ons). To meet the

[31] CINCPAC Command History, 1965, op. cit., p. 294.

Phase II closure dates desired by CINCPAC, the Joint Chiefs of Staff requested early authority to call up selected reserve units and individuals, to activate new units, and to extend terms of service.[32] However, it was decided not to call up reserves for active duty at that time.[33]

(c) A January-February 1966 CINCPAC conference prepared a new requirements and deployment program based on a revised concept for 1966. These requirements were matched against Service capabilities under three cases, each of which assumed that the forces would be drawn from different combinations of sources. Each case was developed in building block sequence, with troop lists and deployment priorities firmed up first, after which tonnages, throughput, and movement requirements were determined. It was recognized that port throughput capability in RVN would be a limiting factor in all cases during the early months of 1966, primarily at Saigon and Cam Ranh Bay. Subsequently, the Joint Chiefs of Staff concluded that the total CINCPAC force requirements should be approved, but that the deployments should be stretched-out over 16 months instead of the 10 originally contemplated. The resulting deployment program was based on a worldwide draw down of forces, with resources applied in the order of CINCPAC's Case I desired closure dates.[34]

(d) By the end of October 1966, four separate force level plans for 1967, based on different piaster expenditures in RVN, were under consideration. The ultimately approved Deployment Program 4 was significantly less than that recommended by the Joint Chiefs of Staff. There were continual, time-consuming tradeoffs of units in order to remain within Program 4 ceilings. To achieve a viable balance of forces needed for sustained military operations, some units previously approved for deployment had to be eliminated in order to allow for others under the fixed piaster ceilings. The Secretary of Defense questioned changes in specific small units. There were numerous uncertainties, including the fundamental one of which units were and were not included within Program 4.[35]

(e) In 1967, OSD questioned the rationale for the forces proposed for FY68. Ultimately a ceiling of 525,000 men was established. In order to have a viable military force within this ceiling, some 12,500 military spaces were converted to civilian manning.[36]

f. Major Mobility Planning Problems

(1) Background. Determining realistic requirements for movements and obtaining sufficient lift capability to meet the need became increasingly more difficult in the accelerated deployment phase. Sealift, discussed in Section D, became as critical as airlift, discussed in Section E, partly because of port congestion in RVN, discussed in Section F. Some abuse of super priorities, discussed in the Supply Management Monograph, contributed to airlift capability shortages. The JTB deliberated on each of these problems and took action to minimize or resolve most of them.

(2) Inadequate Requirements Determination. This was a continuing problem during early periods of the accelerated Vietnam buildup. For example:

(a) Discussions at the June 1965 meeting of the JTB emphasized the continuing need for the Services to improve their statements of transportation requirements for buildup, resupply, and specialized lift; the difficulties involved in forecasting requirements under unknown conditions of escalation; the inaccuracies and inadequacies of using budgetary figures to forecast long-range capability; and the dependence of long-range forecasts of sealift capability on lead time, probable location of shipping, and sources of augmentation.[37]

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[32] Ibid., pp. 295-308.
[33] Department of Defense Annual Report for FY 66, op. cit., p. 4.
[34] CINCPAC Command History, 1966, op. cit., pp. 421-430.
[35] Ibid., pp. 449-453, and Headquarters, CINCPAC, CINCPAC Command History, 1967, Vol. II, pp. 544 and 545.
[36] Ibid., p. 532.
[37] Minutes of Fifth JTB Meeting, 29 June 1965.

(b) Following the August 1965 CINCPAC planning conference, the Director for Logistics, Joint Staff, advised the Military Logistic Council that port capacities were critical and would be the controlling factor in carrying out the planned movements. He emphasized the increasingly critical need to tailor shipments to actual requirements, and to direct them to the proper port because of the inadequate inter-port transportation system in RVN, the congestion in Saigon, and the fact that Qui Nhon required over-the-beach discharge of ships. He also stressed the need to plan resupply requirements in anticipation of deployment approval so that the resulting cargo movements could be made in an orderly manner.[38]

(c) At the JTB meeting that considered the deployment of the 1st Infantry Division, both MTMTS and MSTS indicated they had insufficient detail on service resupply requirements. The importance of firm estimates of lift requirements for aluminum matting and for fillers and replacements was emphasized.[39]

(d) In November 1965, the Assistant Secretary of Defense (Installation and Logistics) cited over-estimation of requirements by the Services as a reason for his view that the shipping situation was not as critical as claimed by MSTS.[40]

(3) Increasing Deployment Flexibility. In October 1965, the JTB promulgated certain principles to provide greater flexibility in determining the final destination of troops, to facilitate loading ships, to preserve unit integrity, and to minimize port congestion.[41]

(a) They requested that COMUSMACV submit consolidated troop lists as early as practicable, and that CINCPAC maintain a single-integrated priority list of required troop deployments, including replacements, fillers, and rotations. This would allow maximum advance planning at all levels.

(b) They requested that CINCPAC indicate the general period (1st or 2d half of month) during which he desired that units arrive at specified ports of entry, rather than specifying exact dates as before. Then CINCSTRIKE would have greater flexibility in developing movement plans to consider the availability and readiness of the units and of lift resources, and CINCPAC could adjust the resultant plans as necessary.

(4) Managing Scarce Lift Resources

(a) On at least three occasions during the accelerated deployment phase the JTB took positive action to allocate scarce airlift resources:

1. In November 1965, COMUSMACV requested the Army to provide 9,000 replacements for major combat units by the end of December 1965. Because MATS already had advised the Army that it could not meet an end of November requirement, the Army requested the JTB to approve a Special Assignment Airlift Mission (SAAM). The JTB agreed that STRICOM should augment MATS with a minimum of 3 C-130 aircraft and that Army should defer four SAAMs for weapons, whereupon MATS should fly the troops.[42]

2. The December 1965 JTB meeting that was convened because of the critical RVN port situation (described in Section F) also was faced with resolving a critical airlift situation. The Army needed to airlift 1442 tons of additional follow-on support for the 25th Infantry Division, while the Air Force needed to airlift 400 tons of air munitions. There already was an airlift deficit of 2800 tons. MAC was using in support of PACOM 86 percent of

[38]Memorandum for Record, dated 16 August 1965, subject: 43d (Special) Meeting of Military Logistic Council, 12 August 1965.
[39]Minutes of 9th (Special) Meeting of JTB, 16 August 1965.
[40]ASD (I&L) Memorandum for the Secretary of Defense, subject: Far East Sealift, 12 November 1965.
[41]Joint Chiefs of Staff to CINCPAC, Message, 3094/011456Z October 1965.
[42]Minutes of 13th (Special) JTB Meeting, 24 November 1965.

its military capability, including available air frames from TAC, the Air Force Reserve, and the Air National Guard and 70 percent of its commercial augmentation. The only remaining capability was the JCS-Assured Airlift Capability, reserved for SAAMs to other areas of the world, and commercial augmentation not suitable for over-ocean support of PACOM. In view of the situation, the Air Force withdrew its requirement and the JTB requested CINCPAC to confirm the Army requirement, proposing three alternatives: (1) diverting the cargo to sealift or stretching out its arrival by air, (2) reducing channel airlift support to SE Asia, (3) sealifting the cargo to some PACOM area where it could be airlifted to RVN with PACAF resources. CINCPAC affirmed the need to airlift the Army cargo without reducing channel traffic to PACOM.[43]

3. In August 1966 the Army had an urgent requirement to lift 1950 fillers and replacements, including 1350 for RVN. To accomplish this lift in the required time frame would have required 16 C-141 missions, representing 326 tons of cargo; there already was an air backlog of 13,000 tons of cargo. The JTB granted a waiver for the use of C-141 for troop lift, accepted the cargo impact, and directed that MAC make the lift.[44]

(b) The difficult airlift situation continued through early 1967. At the late April JTB meeting, the Air Force requested the Services to reduce their airlift requirements, because all available commercial jet capability already had been procured by MAC, which was being forced to buy piston prop aircraft at much higher cost. However, there were low cargo backlogs at both aerial ports and ocean terminals in CONUS. On 3 May 1967, a special JTB meeting was convened at Air Force request to consider the reverse situation: the under generation of cargo by the Services, with resultant excesses in airlift capability.[45] This downward trend in airlift requirements continued until finally, in September, the JTB rescinded its embargo on airlift of Priority II cargo and its restrictions on CONUS SAAMs, both imposed in July 1965.[46]

5. CONCLUSIONS AND RECOMMENDATIONS

a. Conclusions

(1) Although the procedures of the Joint Chiefs of Staff for the submission of movement requirements distinguished between those in support of routine requirements and those in support of contingency plans, they did not provide for a major military operation based on a series of incremental deployment decisions without implementation of an approved contingency plan. Transportation guidance issued in July 1965[47] to correct this situation has not been incorporated in current procedures (paragraphs 2c and 4d).

(2) Transportation planning by the Commander in Chief, Pacific, in support of basic SE Asia contingency plans was thorough. It correctly identified the need for airlift and sealift support by the Military Airlift Command and the Military Sea Transportation Service and recognized the need for remedial action to overcome deficiencies in the Republic of Vietnam (RVN) port capabilities and the intra-RVN transportation system (paragraphs 3a and 3c).

(3) Military transportation planning for Vietnam was based on the assumption that national emergency procedures would be implemented to obtain augmentation of airlift, sealift, and related mobility forces. These procedures were not implemented and might not be in a future contingency (paragraphs 3a(4), 3c(5), and 3d(2)).

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[43]Minutes of JTB 15th (Special) Meeting, 30 December 1967, and associated papers.
[44]Joint Chiefs of Staff, Message, 1219/271751Z August 1966.
[45]Minutes of JTB 36th Meeting, 19 April 1967, and JTB 37th (Special) Meeting, 3 May 1967.
[46]Minutes of 43rd JTB Meeting, 28 September 1967.
[47]Joint Chiefs of Staff, Message, to Services, CINCs, and TOAs, 6207/201625Z July 1965, subject: Transportation Guidance.

(4) The 1964 decision to withdraw Pacific Command intra-theater airlift because of gold flow problems complicated planning for both strategic and tactical airlift and contributed to airlift shortages early in the buildup (paragraph 3b).

(5) The security restrictions surrounding the closely held planning for support of Vietnam, from about March 1965 until after the public announcement of 28 July 1965, were so tight that those who needed to know to make realistic logistic (including transportation) arrangements were not included in the planning process (paragraphs 4a(2) and 4b(5)).

(6) Decision makers did not always allow for necessary lead times to permit their decisions to be carried out in an orderly manner under the peacetime constraints in effect during the Vietnam era (paragraphs 4c(5) and 4e(2)).

(7) Until at least mid-1967 there were varying degrees of uncertainty as to whether specific units would be deployed, and as to the timing of such deployments. Due to these uncertainties, transportation requirements submitted by the Services to the Military Air Command, the Military Sea Transportation Service and the Military Traffic Management and Terminal Service understated the need for specialized and outsized lift in the early months and overstated lift requirements in 1967 (paragraphs 4d(1), 4e(3) (d), and 4f(2)).

(8) The need to support simultaneously both the Dominican Republic intervention and the Vietnam operation while supporting other forces worldwide created problems of determining relative priorities for scarce lift resources (paragraphs 4b(4) and 4c(3)).

(9) Timely actions by the Joint Transportation Board enabled the Joint Chiefs of Staff to minimize the most pressing mobility problems associated with the Vietnam buildup (paragraphs 4c, 4d, and 4f)).

b. Recommendations. The Board recommends that:

(1) The Joint Chiefs of Staff revise their procedures for the submission of movement requirements (Chapter 1 of SM-680-68) to incorporate specific provisions for revising such requirements during periods of heightened tension (TR-1) (conclusion (1)).

(2) Mobility planning guidance of the Joint Chiefs of Staff for contingencies short of general war provide for the alternative of augmenting the lift capabilities of the Military Airlift Command and the Military Sea Transportation Service by contractual means in the event that mobilization of reserve and commercial resources is not authorized (TR-2) (conclusion (3)).

(3) The Services re-evaluate their systems for estimating movement requirements in light of the Vietnam experience to ensure a greater degree of reliability during periods of heightened tension, with particular regard to requirements for specialized surface lift and outsized airlift during the deployment phase (TR-3) (conclusion (7)).

(4) The Joint Chiefs of Staff continue to provide for a Joint Transportation Board which could become operational on short notice during periods of heightened tension (TR-4) (conclusion (9)).

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SECTION C

CONUS TRANSPORTATION RESOURCES

1. STATEMENT OF THE ISSUES AND THEIR SIGNIFICANCE

a. This section contains a discussion of the adequacy of the Continental United States (CONUS) transportation resources to meet military requirements. The primary resources utilized by the Department of Defense (DOD) were:

(1) Commercial transportation provided by the air, highway, and railroad transportation industries.

(2) DOD Interchange Fleet controlled by the Military Traffic Management and Terminal Service (MTMTS) and operated by commercial railroad carriers. (This does not include the specialized railroad equipment assigned to The Surgeon General of the Army.)

(3) Aerial ports, water ports, and terminals operated by the Department of Defense and commercial transportation industries to include materials handling equipment (MHE), i.e., the Mobility Systems Support Resources (MSSR).

b. In the logistic feasibility study of the basic SE Asia operations plans, the Joint Chiefs of Staff (JCS) concluded that to accomplish the time-phased force deployments of this plan would require the priority use of about 16,000 rail cars. The JCS also emphasized the importance of a port clearance capability. Although the basic plan was not implemented, the force deployed to Vietnam approximated the one included in the plan; however, the deployment scheduling was at a slower rate than that provided for in the plan.

2. BACKGROUND

a. Transportation Lift Resources

(1) The Services procure their required CONUS transportation lift resources directly from the carrier, except for shipments falling within the following categories that are controlled by MTMTS:

(a) Shipments of 10,000 pounds or more by rail or truck

(b) Full carload or truckload shipments

(c) Shipments of 1,000 pounds or more by bus or commercial air

(d) Group movements of 15 passengers or more

(2) The Defense Freight Railway Interchange Fleet (DFRIF) is a small rail car fleet registered for interchange service and is operated and maintained by the St. Louis Field Office of MTMTS. At the close of FY 65, the fleet of cars available for service was as follows:

General Purpose Tank Cars	2,598
Special Purpose Tank Cars	755
Flat Cars	932

DF Box Cars	898
Box Cars	94
Gondola Cars	8
TOTAL	5,285

b. Water Ports and Terminals

(1) As the DOD single manager operating agency for common-user terminal service, MTMTS operates military ocean terminals in CONUS with primary gateway terminals located at Bayonne, New Jersey (MOTBY), on the east coast and at Oakland-San Francisco Bay Area, California (MOTBA), on the west coast. The primary ammunition terminal is the Sunny Point Army Terminal (MOTSU) Southport, North Carolina. As of 1 December 1969, MTMTS had "outport" operations at Long Beach, California; Seattle, Washington; New Orleans, Louisiana; Philadelphia, Pennsylvania; Baltimore, Maryland; Boston, Massachusetts; and Charleston, South Carolina. MTMTS had "port detachment" operations at Savannah, Georgia; Mobile, Alabama; and Beaumont, Texas. Outports were tailored units supervising and controlling the movement of DOD cargo by contract through the commercial facility where located. The outport reported directly to the appropriate MTMTS Area Command Headquarters where located. Port detachments were small detachments (4 or 5 men) that supervised the movement of military cargo through the commercial facility where located and reported directly to the outport to which assigned. The Kings Bay Army Terminal (MOTKI) at Saint Mary's, Georgia, is a standby ammunition facility that was not activated for Vietnam support. The Navy facilities at Concord, California; Bangor, Washington; and Earle, New Jersey, were also used as terminals to transship ammunition and explosives. As required additional support is obtained from such Navy port facilities as Port Hueneme, California, and Naval Supply Center, Norfolk, Virginia.

(2) The ocean terminals are the point of functional contact between MTMTS and the supported forces overseas. Many shipping problems can be minimized by actions taken at the outloading port. MTMTS maintained close liaison with U.S. forces in Vietnam by direct coordination with theater agencies such as the Traffic Management Agency of the Military Assistance Command, Vietnam (MACV-TMA), and the Pacific Command Movements Priority Agency (PAMPA). See Chapter IV for further discussion of MACV-TMA and PAMPA.[45]

(3) Delays in cargo movement and some CONUS port congestion were experienced in 1965 and 1966. Specific problems concerning the shipment of such commodities as lumber and ammunition will be discussed in more detail in paragraph 3.

c. Air Transportation Resources

(1) There are two commercial contract airlift operations in support of CONUS movement requirements of the Services. These operations are primarily associated with Air Force and naval weapons systems. LOGAIR, under the operational control of the Air Force Logistics Command (AFLC), is a civilian-operated air carrier service that provides regularly scheduled flights criss-crossing the CONUS. The LOGAIR network includes an east-west continental trunk line, linked with the Military Airlift Command (MAC) aerial ports of embarkation, and feeder lines to depots and supply centers. LOGAIR also provides for aircraft and on-call crews for special missions on a priority basis. A similar service is provided under the QUICKTRANS contract for the Naval Supply Systems Command. Although the services of these dedicated airlift systems were available to the Army commands, they made little use of either of the systems because few of their depots and supply centers were located near QUICKTRANS and LOGAIR airports.

(2) CONUS domestic airlift shipments in excess of 1,000 pounds are controlled by MTMTS in coordination with the civilian air carriers. Procedures have been established to obtain assets of the Civil Reserve Air Fleet (CRAF) to meet emergency CONUS airlift requirements associated with LOGAIR and QUICKTRANS operations.

[45] MTMTS, Briefing, for JTRB, 10 June 1969.

3. DISCUSSION

a. Air, Highway, and Rail Resources. The commercial transportation support provided by the air, highway, and railroad transportation industries during the Vietnam era has been consistently excellent. Except for periodic operational shortages of particular type rail cars, in specific areas, due to seasonal requirements of agriculture and industry, there were no major problems in obtaining domestic surface transportation. In a few isolated cases, the staging of entire trains at the ammunition terminals awaiting outload directly to a ship has contributed to a shortage of available cars to support subsequent shipments.

b. Port Congestion

(1) Conditions approaching if not reaching congestion occurred in the CONUS ports as well as in Vietnam. Some of this congestion could be attributed to the shortage of available lift, the requirement to stage equipment in order to obtain unit integrity, and inadequate or late receipt of documentation. By November 1965, the excessive ship waiting time in the southwestern Pacific was resulting in unbooked cargo awaiting ships at the CONUS ports. After the organization of PAMPA in January 1966, some delays could also be attributed to the regulation of the flow of cargo to the Republic of Vietnam (RVN) in accordance with the recipients' need for the material and his ability to receive it.

(2) Lumber was procured from a number of private vendors located throughout the Pacific northwest on a Free-on-Board (FOB) contract basis. These vendors normally have their own deep-water pier facility where delivery is accepted. Fluctuations in ships schedules and vendor production occasionally resulted in congestion of the vendors limited facilities.

(3) In the rapid buildup of forces in Vietnam in late 1965 and early 1966, all Services shipped ammunition through the west coast terminals to save ship sailing and pipeline time. This terminal work load, aggravated by ship slippage, ship breakdowns, and crew shortages soon caused the storage capabilities of the terminals to be saturated. The key factor regulating the terminal holding capability was the quantity and distance storage criteria of the particular explosives being shipped rather than physical storage capacity. Safety requirements necessitate dispersal of the delivering carriers' equipment, rail and/or truck, over relatively large, isolated areas for consolidation into shipload lots.[46] This capability is rarely available through a commercial facility because of the limited demand for such a facility. In 1966, after the practice of shipping ammunition to SE Asia via Sunny Point proved both responsive and cost favorable, most subsequent Army ground munitions were routed through the east coast. By early 1967, selected Air Force air munitions were also routed through Sunny Point, North Carolina or Earle, New Jersey. The rapidly escalating work load of these ammunition terminals, as shown in Table 3, with the accompanying special handling problems contributed to the congestion and indicate why a military outloading capability is required. Additional information on ammunition support for Vietnam can be found in the Ammunition Monograph.

TABLE 3

MEASUREMENT TONS OF AMMUNITION EXPORTED

Facility	FY 65	FY 66	FY 67	FY 68
Bangor, Wash.	66,275	223,783	459,155	501,283
Concord, Calif.	183,499	634,325	827,604	956,446
Sunny Point, N. C.	115,296	290,805	734,814	1,377,771
Earle, N.J.	22,385	17,831	5,643	194,280
Total	387,455	1,166,744	2,027,216	3,029,780

Source: Headquarters, MTMTS, Annual Historical Summary, 1 July 1967 to 30 June 1968.

[46]Headquarters, MTMTS, Annual Historical Summary, 1 July 1966 to 30 June 1967.

(4) In the handling of general cargo, terminal backlogs were also experienced, particularly on the west coast, in FY 66 and FY 67. Actions taken to ease the backlog included the reactivation by the Military Sea Transportation Service (MSTS) of vessels from the Maritime Administration's National Defense Reserve Fleet, single port vessel loadings, cargo unitization, and expansion of use of commercial ports for DOD cargo. By 1 January 1968, 68 percent of the military cargo was moving through CONUS terminals within 15 days of arrival. Although the volume of cargo shipped through the east and Gulf coast ports increased significantly from FY 65 through FY 68, the tremendous increase in tonnage through the west coast ports, as shown in Table 4, contributed to the congestion experienced.

TABLE 4

MEASUREMENT TONS OF DRY CARGO EXPORTED

Facility	FY 65	FY 66	FY 67	FY 68
Military Ocean Terminal, Bay Area	1,844,577	2,899,345	2,812,836	2,525,000
Oakland, Calif. (commercial)	144,921	477,070	1,118,229	1,673,514
Long Beach, Calif.	134,715	697,803	1,283,560	1,398,118
Seattle, Wash.	178,932	205,315	360,956	489,895
Naval Supply Depot, Seattle, Wash.	93,187	496,260	922,713	790,616
Total	2,396,332	4,685,793	6,518,294	6,877,143

Source: MTMTS Annual Historical Summary, 1 July 1967 to 30 June 1968.

c. Ship Loading Techniques. In October 1965, when ship congestion in the Saigon area was at its peak, only 7 percent of the ships sailing from U.S. west coast ports discharged at a single Vietnam port. Loading for single port discharge was finally adopted in early 1966 as standard procedure to help reduce ship turn-around time, and during that year 285 ships were loaded for single port discharge. By 1968, of the 1,309 ships outloaded by MTMTS, 80 percent were loaded for single-port discharge. Ships loaded for single port discharge averaged from 10 to 14 days less turn-around time than ships requiring multi-port discharge. Other practices adopted to help simplify terminal operations in RVN included block stowage of cargo by consignee or port and maximum use of palletization and unitization of cargo to facilitate identification and rapid discharge; maximum use of deck space for cargo susceptible to such handling; and maximum effort to get documentation into the hands of the receiving port on time and in usable form.[47] As an example of the early measures taken to help reduce port congestion, in November 1965, the Commander Service Force Pacific Fleet (COMSERVPAC) instituted a program for all-weather packaging, heavy duty strapping, and palletization of all cargo destined for Da Nang or Chu Lai; requested MTMTS to assemble ship load lots for direct sail to Da Nang and to segregate and block store all Chu Lai cargo to expedite transshipment; and requested ordering agents to reduce peaks and valleys as much as practicable.

d. Labor Relations. Historically, labor relations have had a profound effect on ocean terminal operations. Approximately 25 labor disputes occurred from 1964 to 1969. Only two of these were major disputes and involved strikes by the International Longshoreman's Association on the Atlantic and Gulf Coasts. The unions have cooperated in moving DOD sponsored cargo, and the impact of these strikes on military terminal operations has been minimal. The ability to divert DOD cargo through the military terminals vice commercial piers during strike periods has been important in maintaining a smooth flow of military sponsored cargo. Under similar circumstances, the segregation and collection of DOD cargo diffused through large volumes of frustrated commercial cargo would be both expensive and impractical.[48]

[47] MTMTS Briefing for JLRB, 10 June 1969.
[48] Ibid.

e. Terminal Modernization. During FY 68, of 19.7 million measurement tons (MTONS) of military cargo outloaded at the CONUS ports, approximately 52 percent moved through the military terminals. A percentage breakdown of the total cargo handled through military terminals in FY 68 is shown below.[49]

General Cargo	45.9%
Vehicles	20.3%
Ammunition	11.6%
Reefer Cargo	3.3%
CONEX & VANS	14.7%
Household Goods and Baggage	2.2%
Unboxed Aircraft	2 %
TOTAL	100 %

Indications are that increased efficiency and rapid handling of cargo will tend to create larger and fewer intermodal port complexes. MOTBA and MOTBY are located within the largest communications and transportation hubs on the east and west coasts. As evidenced by the successful movement of ammunition to Vietnam by intermodal container in December 69-January 70, the military ocean terminals handling ammunition as well as those handling general cargo need to be capable of interfacing with the evolving intermodal transportation system. In order to keep the military terminals apace with the modern technology in the shipping industry, programs have been developed to modernize the major military ocean terminals (including the ammunition terminals). This program would provide an austere but updated capability to handle containerships at these ports. These military terminals provide control and flexibility that is lost when cargo is integrated into the commercial systems. This capability of holding, consolidating, and diverting is essential to the support of military operations. The military terminals also provide an on-the-job training function not available through our military school systems. Personnel on these assignments gain valuable experience by dealing with commercial stevedores, unions, contracts, community relations, and commercial transportation systems. This experience can later be of use in overseas theaters.[50]

f. Retrograde Cargo

(1) The most significant problems encountered to date in the handling of retrograde cargo from Vietnam concern the condition of the cargo itself. Despite loading port certification to the contrary, live ammunition has been found in shipments of shell casings, aircraft, armored carriers, and other vehicles. Aside from the danger to personnel and property, the resulting administrative problems and terminal delays are costly and unnecessary.[51]

(2) The discovery of rats and insects in retrograde cargo from Vietnam in early 1967 alarmed the Department of Agriculture and public health and customs officials. Preventive measures taken by the Armed Forces and other federal agencies have been partially successful. Because of the limited availability of cargo staging areas and decontamination facilities at the RVN ports, an effective job of cargo decontamination can be expected only if the phase down of forces is orderly and spread over a reasonable period of time. If the in-theater decontamination process is not good, the probable result will be a backlog of ships at the CONUS ports awaiting fumigation or decontamination before they can be discharged.

[49]MTMTS, Briefing, for JLRB, 10 June 1969.
[50]Headquarters, MTMTS, prepared Briefing on Military Ocean Terminal Modernization, data provided 24 October 1969.
[51]MTMTS, Briefing, 10 June 1969 op. cit.

g. Dedicated Ports. The dedicated port concept was developed by eastern area, MTMTS, for the management of the flow of export cargo. It designates ports of embarkation on the east and Gulf coasts to serve particular destinations overseas and would generally balance the port work loads along the lines experienced in the Vietnam era. The present system depends on the use of a multiplicity of CONUS ports to support overseas destinations; the port of outloading for each shipment being selected on the basis of the lowest landed cost for that particular shipment in consonance with the shipping priority. This system would facilitate the rapid collection of cargo in shipload lots at designated CONUS ports for single destinations overseas thereby reducing ship loading and "tramping" times. In basic terms it provides better use of available shipping assets and provides better service to the customer. The study also projects a significant savings in the length of the supply pipeline and costs involved. As of 31 December 1969, implementation was delayed pending approval of OSD.

4. CONCLUSIONS AND RECOMMENDATIONS

a. Conclusions

(1) Although some water port congestion was experienced in the continental United States early in the Vietnam buildup, the congestion never significantly limited the flow of cargo to Vietnam (paragraph 3b).

(2) Due to the security, safety, and other special problems inherent in the handling of ammunition, it is essential that an adequate military ammunition port handling capability be retained (paragraph 3b).

(3) Loading at ports in the continental United States for single port discharge and the block stowage of cargo helped to relieve port congestion in SE Asia and to reduce ship turnaround time (paragraph 3c).

(4) The availability of the military ocean terminals has proven to be a valuable asset in support of SE Asia operations. The ports provided the necessary capability to hold, consolidate, and divert cargo, as well as providing a capability for on-the-job training not available through formal schooling (paragraph 3e).

(5) Modernization of the military ocean terminals at Bayonne and Oakland as well as Ammunition Terminals is required if the Services are to keep pace with the new developments in containerized shipments (paragraph 3e).

(6) Continued instances of inadequate decontamination of retrograde cargo overseas could result in a buildup of quarantined ships at ports in the continental United States (paragraph 3f).

(7) The adoption of the dedicated port concept would facilitate loading for single port discharge and would decrease ships days, cargo time in port, and supply pipeline time -- thereby resulting in significant dollar savings (paragraph 3g).

b. The Board recommends that:

(1) The recommendation contained in Chapter VII, paragraph 5b(1) of the Ammunition Monograph be supported. The recommendation is quoted below.

> "The responsible Services continue to maintain current ammunition outloading facilities on both the east coast and west coast, giving continuing emphasis to the maintenance of adequate explosive safety zones at these facilities." (TR-5) (conclusion 2)
>
> "The military departments maintain the current ammunition outloading facilities on both the east and the west coasts adequate for planned contingencies, giving continued emphasis to the maintenance of adequate explosive safety zones at existing ammunition outloading ports." (TR-5) (conclusion 2)

(2) The Secretary of Defense support modernization programs for military ocean terminals (including ammunition terminals) in order to provide necessary facilities to accommodate containerized shipping (TR-6) (conclusions (4) and (5)).

(3) Plans for moving retrograde cargo include providing the capability and requiring overseas commanders to decontaminate cargo in accordance with existing directives (TR-7) (conclusion (6)).

(4) The Secretary of Defense approve the dedicated port concept proposed by the Military Traffic Management and Terminal Service (TR-8) (conclusion (7)).

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SECTION D

INTER- AND INTRA-THEATER SEALIFT

1. STATEMENT OF THE ISSUES AND THEIR SIGNIFICANCE

a. This section examines the sealift resources that were available to support military operations in Vietnam, discusses the utilization of inter- and intra-theater sealift during the buildup and resupply periods, and assesses the adequacy and future of available sealift resources in the light of lessons learned and experience gained during the Vietnam era.

b. Four major issues are discussed in this section.

(1) The availability of inter-theater sealift resources to meet requirements for large unit moves.

(2) The availability of sufficient military and commercial cargo ships for trans-oceanic lift of cargo from the continental United States (CONUS) to the Republic of Vietnam (RVN).

(3) The strength of sealift capability to support requirements for intra-theater cargo movement to RVN.

(4) The adequacy of available sealift resources and their limitations.

c. Because adequate sealift support is required to sustain military forces deployed overseas by delivering large amounts of supplies and equipment, sealift support is a significant part of the overall review of logistic support in the Vietnam era.

2. BACKGROUND

a. Common-user inter- and intra-theater sealift to support Department of Defense (DOD) transportation requirements was provided by the Military Sea Transportation Service (MSTS). The mission, organization, and funding details of MSTS are documented in Chapter II of the Transportation Monograph. There were no common-user intra-theater sealift forces under the operational control of the Commander in Chief, Pacific (CINCPAC). The Commander, Military Sea Transportation Service (COMSTS) provided intra-theater (as well as inter-theater) common-user sea transportation to support CINCPAC requirements (also Commander in Chief, Atlantic (CINCLANT), and Commander in Chief, Europe (CINCEUR)). Ships of the Amphibious Forces and Service Force, U. S. Pacific Fleet, however, were used for special sealift missions, and Commander in Chief, U. S. Pacific Fleet (CINCPACFLT), policy is to provide opportune space on PACFLT ships when such utilization will not affect operational commitments.[52]

b. The Cargo Preference Act of 1904 required that all military cargo be shipped in U. S. flag vessels, if available and reasonably competitive in price.

c. The Cargo Preference Act of 1954 or "50-50" law required that at least 50 percent of all military cargo be carried in privately owned U. S. flag ships.

d. The 1954 Memorandum of Agreement between the Secretary of Commerce and the Secretary of Defense, better known as the Wilson-Weeks Agreement, constituted interdepartmental recognition of the need for the DOD to have a nucleus fleet of merchant-type ships under its exclusive custody, jurisdiction, and control. The agreement specified that MSTS, under the command of the Chief of Naval Operations, is the sole agency of the DOD for providing all

[52] CINCPACFLT Instruction 4600.3B, subject: Fleet Lift Capability, Policy for Using, 12 May 1967.

ocean-going transportation for the DOD, subject to priorities established by the Joint Chiefs of Staff (JCS). The agreement, however, restricted the nucleus fleet, under conditions short of full mobilization, to those transports, cargo ships, tankers, and specialized ships needed for the following:

(1) To carry out current logistic needs of the military departments that cannot be met by commercial interests.

(2) To provide immediate capability in an emergency.

(3) To provide an adequate base for necessary expansion to meet emergency or mobilization requirements in support of approved plans for national defense.

e. The Wilson-Weeks Agreement was a mandate to use commercial shipping assets to the maximum. It required that necessary shipping beyond the capability of the MSTS nucleus fleet be obtained in the following order of priority, "consistent with military requirements and prudent management":

(1) Maximum utilization of available U. S. flag berth line space (i. e., cargo space aboard regularly scheduled liners).

(2) Time or voyage charter of privately owned U. S. flag merchant ships voluntarily made available by industry, but only to the extent that U. S. flag berth space will not suffice.

(3) Shipping provided by the Maritime Administration (MARAD) under General Agency Agreement (GAA) (i. e., Government-owned shipping operated for MSTS by a MARAD-approved commercial shipping company).

(4) Foreign flag shipping, but only for urgent military requirements when suitable U. S. flag shipping is not available.

f. MSTS acquired the ships and personnel to support DOD transportation requirements from the MSTS nucleus fleet, the U. S. Merchant Marine, the National Defense Reserve Fleet (NDRF), and foreign flag ships. A brief description of sealift resources follows:

(1) MSTS Nucleus Fleet. MSTS maintains a U. S. Government-owned nucleus fleet of ships as a purely readiness measure. This fleet is by design relatively small, consisting of assorted and special purpose ships that primarily have unique capabilities not ordinarily available from commercial sources. On 1 January 1965, the nucleus fleet consisted of 89 ships, suitable for common-user transportation. (See Table 5.)

(2) The Active U. S. Merchant Marine. The U. S. Merchant Marine is the primary sealift resource that the DOD has traditionally depended on to support military transportation requirements.[53] This is a privately owned fleet of ships composed of berth liners that are regularly scheduled on specific routes and tramps that are not regularly scheduled or routed that operate on an opportune lift basis. This privately owned American fleet, on 1 January 1965, consisted of a total of 970 ships (1000 gross tons and over). The owners of berth line ships have difficulty in making their ships available to lift DOD cargo, because removing these ships from normal trade routes creates the problem of regaining the lost commerce after release from DOD use. However, owners of tramp ships normally are eager to charter their ships to DOD.

(3) The National Defense Reserve Fleet. The NDRF is under MARAD control and consists of inactive ships, built during World War II, that are not normally required by either the maritime industry or the military in peacetime. During emergencies, these ships may be activated for use by MSTS, and they are then operated by commercial operators under GAA. The General Agency Agreement is a contract entered into when a General Agent is appointed by the Maritime Administration to operate a Government-owned ship,

[53] Merchant Marine Act of 1936 and Wilson-Weeks Agreement.

TABLE 5

MSTS-CONTROLLED FLEET, 1965 - 1969

Type of Ship	Jan. 65	July 65	Jan. 66	July 66	Jan. 67	July 67	Jan. 68	July 68	Jan. 69	July 69	Jan. 70
DRY CARGO SHIPS											
Special Purpose Ships											
Aircraft Transports (T-A)KV)	4	4	6	5	6	6	6	6	4	4	1
Roll-on/Roll-off (Ro/Ro)	3	3	3	3	3	4	5	5	4	4	4
MSTS Nucleus Fleet (T-AKR)	(2)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(2)	(2)	(2)
Long-Term Charter	(1)	(1)	(1)	(1)	(1)	(1)	(2)	(2)	(2)	(2)	(2)
Vehicle Carriers (Seatrain Lines)	0	0	0	1	3	10	12	12	12	12	11
Total Special Purpose	7	7	9	9	12	20	23	23	20	20	16
General Cargo Ships (Break Bulk)											
MSTS T-AK[1]	16	16	16	19	19	19	19	19	19	19	19
Ex-NDRF (GAA Operated)	0	1	59	99	151	164	133	142	109	107	35
Privately owned (Chartered)[2]	1	22	89	118	136	135	135	124	122	132	122
U.S. Subsidized Lines	0	(1)	(49)	(26)	(33)	(37)	(41)	(46)	(48)	(43)	(37)
U.S. Non-Subsidized Berth Lines[3]	0	(3)	(7)	(25)	(30)	(25)	(25)	(25)	(20)	(24)	(33)
U.S. & Foreign Tramp[4]	(1)	(18)	(42)	(67)	(73)	(73)	(69)	(53)	(54)	(53)	(52)
Total Break-Bulk	17	39	164	236	306	318	287	285	250	246	176
Contract Container Service[5]				3	3	7	11	11	12	12	12
Reefer Cargo Ships											
MSTS T-AF	5	6	6	6	6	6	6	6	6	6	5
GAA	2	2	2	2	2	2	2	2	2	2	2
Chartered	0	1	7	7	14	15	13	13	11	11	4
Total Reefer	7	9	15	15	22	23	21	21	19	19	11
Shallow Draft and Coastal											
T-LST's	17	25	27	36	38	42	42	42	42	41	38
Other	8	8	8	8	8	8	7	8	8	8	7
Total Shallow Draft - Coastal	25	33	35	44	46	50	49	50	50	49	44
Total Dry Cargo	56	88	223	307	389	418	391	390	351	346	260

TABLE 5

MSTS-CONTROLLED FLEET, 1965 - 1969 (Continued)

Type of Ship	Jan. 65	July 65	Jan. 66	July 66	Jan. 67	July 67	Jan. 68	July 68	Jan. 69	July 69	Jan. 70
POL SHIPS[6]											
Large Tankers	13	17	8	7	12	13	9	10	12	11	[illegible]
Medium Tankers	10	15	38	34	42	40	40	38	35	39	[illegible]
MSTS T-AO	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Chartered U.S. Flag	(6)	(11)	(34)	(30)	(38)	(36)	(36)	(34)	(31)	(35)	(32)
Small Tankers	28	24	25	25	27	26	30	30	27	26	25
MSTS T-AO/T-AOG	(20)	(21)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(21)
Chartered U.S. Flag	(8)	(3)	(3)	(3)	(5)	(4)	(8)	(8)	(5)	(4)	(2)
Foreign Flag	0	0	1	1	10	23	22	25	5	0	3
Total Tankers	51	56	72	67	91	102	101	103	79	76	68
TROOP TRANSPORTS	13	16	16	15	14	7	7	3	3	3	3
Total MSTS - Controlled[7]	120	160	311	389	494	527	499	496	433	425	331
Total MSTS-Nucleus	(89)	(102)	(107)	(117)	(119)	(117)	(116)	(113)	(110)	(109)	(100)
Total GAA	(2)	(3)	(61)	(101)	(153)	(166)	(135)	(144)	(111)	(109)	(37)
Total Charter-Container Contract	(29)	(55)	(143)	(171)	(222)	(244)	(248)	(239)	(212)	(207)	(194)

Source: MSTS Ship Inventory Reports (3110-4) for months indicated, supplemented by information from staff of Assistant Chief of Staff (Operations) and Commercial Contracting Office, HQ, MSTS.

[1] MSTS-TAK (Transport Cargo Ship) - Includes 2 very heavy lift ships, 12 Victory ships, 1 C-3, and 1 ex-AKA; in mid-1966 3 more Victory ships were configured to "Forward Floating Depot" capability.

[2] Chartered Ships - Summarizes general cargo ships chartered by MSTS from the sources indicated. Omits a small number of both U.S. (1) and foreign flag (4-6) ships and craft chartered for support of NASA and other "special assignment" operations (and not used in normal common-user transportation support) and bulk carriers.

[3] Non-subsidized - Excludes Ro/Ros and vehicle carriers separately shown in A2 and A3.

[4] Tramps - Includes all "tramp ships," U.S. and foreign, under charter during months indicated. Excluding "Special assignment" ships, a total of 30 foreign flag ships, plus 1 tug, were chartered during 1965-66, most for single voyages. Of these, 17 lifted cargoes from CONUS to Far East ports, including RVN, while the remainder lifted cargoes between CONUS and Europe. Two of the foreign charter ships were unique types: German SS TANNENFILS, a heavy lift ship to transport Army LCUs, and Norwegian SS VESTROY, an extra-large hatch ship to move steel pipe to RVN.

[5] Contract Container Service - Numbers of container ships operated by Sealand Service, Inc. (a non-subsidized line) under contract with MSTS. Technically these ships are not part of the MSTS-controlled fleet and are excluded from MSTS Ship Inventory Reports.

[6] POL Ships - For purpose of this listing, U.S. tankers have been categorized as follows:

(1) Large - Capacity in excess of 35,000 Dead Weight Tons (DWT) ("Super Tankers").
(2) Medium - 20-30,000 DWT, including T-5.
(3) Small - Under 20,000 DWT, including T-3, T-2, and T-1.

Foreign flag tankers are shown by total numbers, regardless of capacity.

TABLE 5

MSTS-CONTROLLED FLEET, 1965 - 1969 (Continued)

[7] Total MSTS-Controlled - Depicts all common-user ships controlled by MSTS, less PHIBPAC LSTs, plus Sealand contract containerships. Numbers (as of 1 January 1970) of MSTS nucleus fleet ships shown are some 40 less than those listed in source document, since the following have been omitted:

(1) 35 "Special Project" ships (specialized ships such as helicopter repair ship USNS CORPUS CHRISTI BAY, oceanographic ships, range instrumentation ships, etc.)

(2) 6 specialized cargo ships and craft that perform specialized tasks not associated with common-user sealift (1 LSD - type committed to NASA since 1965, 3 fleet ballistic missile ships, 2 AKLs, and 1 LSM).

usually one that is withdrawn from the Reserve Fleet. All costs such as crewing, bunkering, and stevedoring are paid by the Government, and a fixed-fee-per-day is paid to the steamship company that has been appointed agency for operating the ship. These GAA ships are activated to carry cargo when requirements exceed the capability of the nucleus fleet and available U.S. merchant marine ships. On 1 January 1965, the official inventory of the NDRF listed 1,288 ships in reserve. The size of the inventory gave the impression that there was a great reserve of potential military value; however, only 541 of these ships were under preservation and technically available for use, whereas 747 were scheduled for scrapping.

(4) MSTS Controlled Fleet. The combination of ships from the MSTS nucleus fleet, chartered merchant marine ships, and GAA ships from the NDRF comprise the MSTS controlled fleet. An MSTS controlled ship inventory for the period 1 January 1965 to 1 January 1970 is shown in Table 5.

(5) MSTS Ship Personnel Resources. Because of the decreasing employment opportunities offered by the American Merchant Marine, the maritime labor force numbered only about 100,000 men on 1 January 1965. Their average age was 45, which compares poorly with the average age of 25 for Navy personnel. Experience has shown that it takes about 1.9 men to keep one sea-going billet filled throughout the year. The 100,000 merchant seamen, therefore, were able to staff approximately 55,000 positions afloat. Any subsequent, substantial increase in the size of the fleet would present serious problems in finding qualified men to crew the ships. Included in these statistics were the approximately 6,800 civil service marine personnel manning the MSTS nucleus fleet. Altogether, the MSTS maritime labor pool totalled about 7,700 men. There were no active marine training programs in existence except those to educate young men to serve as licensed officers. The output of the maritime schools for officers was less than 600 men per year.[54]

g. Sealift provided most of the inter- and intra-theater lift of cargo and troops for unit deployments throughout the Vietnam era, although use of sealift for personnel decreased to practically nothing once the major deployments were completed. Military sponsored cargoes shipped by sea to RVN increased from 1.2 million short tons in CY 65 to a peak of 5 million short tons in CY 68. During the period of primary buildup, 96.2 percent of the dry cargoes (by weight) shipped from CONUS to RVN went by sea. In the subsequent 3 years, 95.6 percent of DOD sponsored cargoes were shipped by sealift.[55]

h. The MSTS controlled ship inventory increased from 120 ships in 1965 to 527 in July 1967. (See Table 5.) Despite this increased capability, there were periods when sealift requirements exceeded MSTS controlled ship capability, which necessitated chartering foreign flag tankers and cargo ships.

i. Special sealift requirements generated by the Vietnam conflict were met principally by reactivating ships from the NDRF, by using available U.S. merchant shipping, and by chartering foreign flag cargo ships and tankers when U.S. flag shipping was unavailable. In addition, a number of special purpose ships were reactivated, including LSTs and aircraft transports.

3. DISCUSSION

a. Unit Deployments

(1) Troop transports. In April 1965, there were 13 MSTS transports in operation; 7 were assigned to the Pacific and 6 to the Atlantic. Because of impending unit moves then under discussion and the Joint Chiefs of Staff (JCS) transportation policy to use maximum sealift for unit deployments, COMSTS phased three transports from a ready reserve status to full operational status and

[54] MSTS, Briefing, for JLRB, 19 June 1969.
[55] Based on cargo figures furnished from SASM Statistical Digest.

assigned them to the Pacific.[56] By 2 July 1965, there were a total of 16 operational MSTS transports available to support large unit troop movement requirements. Planning had presupposed the availability of MSTS troop ships for unit deployments. Had the initial deployments occurred a couple of months later than they actually did, at least eight of these ships would not have been available, because of the 8 December 1964 program change decision to retire these ships by the end of FY 1965. These transports are now in reserve status and future requirements for their use would necessitate program change actions (including funding) and crews, for availability.

(2) Aircraft Transports. MSTS had four aircraft transports in operation on 1 April 1965; two were assigned in the Pacific and two in the Atlantic. At that time, MSTS was given an immediate requirement to transport three Army helicopter companies to Vietnam. Because one of the aircraft transports (USNS CROATAN) was committed to NASA support, MSTS aircraft transport capability was not sufficient to support this requirement. Through close coordination between the Army and Navy, the sailing of the amphibious assault ship USS IWO JIMA (LPH) from the west coast was delayed in order to augment the movement requirement of the three Army helicopter units.[57] To increase the aircraft transport capability, COMSTS was given authority to activate the carrier USNS KULA GULF from the Reserve Fleet on 29 June 1965. Activation of the ship was originally scheduled for 90 days, but was reduced to 30 days because the ship was required to assist sealift of First Cavalry Division (Air Mobile) aircraft and helicopters to Vietnam. USNS PT. CRUZ was activated in September 1965. Initial outfitting of these reactivated ships was accomplished on an expedited and austere basis at an average cost of 3.1 million dollars per ship. Hence, pilots and flight crews did not accompany aircraft, but were sent to RVN by MSTS troopships, and were transferred to the aircraft transport upon their arrival in RVN to fly off the aircraft to their destination.

(3) Deployment of the First Cavalry Division (Air Mobile)

(a) The First Cavalry Division was ordered in mid-July 1965 for deployment to Vietnam. To move this unit there was a requirement for 6 troop transports, 4 aircraft transports, and 10 cargo ships. On 15 July, the Joint Chiefs of Staff directed COMSTS to position all six Atlantic troop transports at east coast CONUS ports for unit troop movement of the First Cavalry Division. Beginning with the cancellation of the sailing of USNS UPSHUR from New York on 26 July 1965, MSTS transports were withdrawn from regular service in the Atlantic as they arrived in New York. These transports were available for the unit deployment by 12 August 1965. Three MSTS aircraft transports and one LPH Helicopter Landing Platform borrowed from CINCLANT Fleet (USS BOXER) transported 452 fixed wing and rotary aircraft of the First Cavalry. The Atlantic Fleet amphibious assault ship USS BOXER (LPH) had been diverted from a scheduled NATO mission in the Mediterranean in order to bolster the limited MSTS aircraft transport capability.[58] Had it not been for this action, movement of 211 aircraft would have been curtailed.

(b) The lift of the First Cavalry Division by sea to RVN clearly demonstrated the responsiveness of sealift to provide the required capability on short notice. It took approximately 3 months from the day the movement order was received to the time of final closure in RVN. The operation involved the transport of 15,050 personnel and 98,103 measurement tons (M/T) of cargo, including 452 fixed wing and rotary aircraft. The time from the departure at the port of embarkation (POE) to the close final destination (An Khe) averaged 48 days for general cargo, 43 days for aircraft, and 30 days for troops.[59]

b. Cargo Sealift - CONUS to RVN

(1) Expedited Sealift. In April 1965, the Joint Chiefs of Staff directed the Chief of Naval Operations (CNO) to have MSTS initiate an expedited sealift service from CONUS to

[56] CINCSTRIKE History of Unit Deployment to SEA, p. 14.
[57] Minutes of First JCS/JTB Meeting, 15 April 1965.
[58] Minutes of Sixth JCS/JTB Meeting, July 1965.
[59] SASM figures.

SE Asia (Saigon and Bangkok), to begin as soon as possible, and to operate on a guaranteed schedule. The purpose of this accelerated sealift, referred to as SEA Express, was to relieve overtaxed airlift service and air cargo backlog in CONUS by routing urgent shipments via ocean lift, in lieu of air, to the maximum extent possible. The Services and transportation operating agencies were required to institute joint procedures to handle expeditiously cargo that was designated for shipment by the SEA Express. This service was placed in effect 15 April 1965 and provided for 19 to 21 days sailing time to Saigon and Sattahip. SEA Express proved to be most responsive and effective in relieving overtaxed air service, and was continued until March 1968,[60] when it was suspended subject to later activation if the need existed. This suspension was due primarily to improvements in the transportation system, i.e., better item visibility and improved port throughput capability.

(2) Increased Cargo Movement Requirements. In midyear 1965, as the tempo of the buildup increased, cargo movement requirements greatly exceeded MSTS cargo ship capability. It was purely a matter of coincidence that, during the 77 days between 15 June and 1 September 1965, operations of subsidized cargo ships on the east coast of the United States were suspended because of a labor-management dispute. Department of Defense cargo was cleared for transportation in ships that otherwise would have been strikebound. When the emergency requirement for sealift was made known to the operators, a substantial number of subsidized ships, including some of the newest and fastest ships in the merchant marine, were offered for charters for initial periods of 3 to 6 months. Of the 54 ships offered, 34 were new ships built since 1960. Had it not been for the strike, many of these ships would not have been available,[61] such as 8 of the 10 ships chartered by MSTS to lift the supporting equipment of the First Cavalry Division.

(3) Activation of NDRF Cargo Ships

(a) COMSTS anticipated that upon termination of the strike, most of the merchant marine cargo ships then in the MSTS controlled fleet would return to normal commercial operations. To avoid a reduction in sealift capability at a time when cargo movement requirements were increasing, COMSTS was granted authority to request MARAD to activate a number of ships from the NDRF. Because of the urgent need for these ships, the first activations were handled on an overtime basis. This was so costly that only 25 ships (at an average cost per ship of $541,000) were put through the yards in this manner, with no time allowed for sea trials. Breakdowns following these rapid activations resulted in a mandatory 48-hour sea trial as a part of all subsequent reactivation specifications. A heavy volume of Navy work in the west coast commercial shipyards created reactivation problems and generally made reactivations costly.

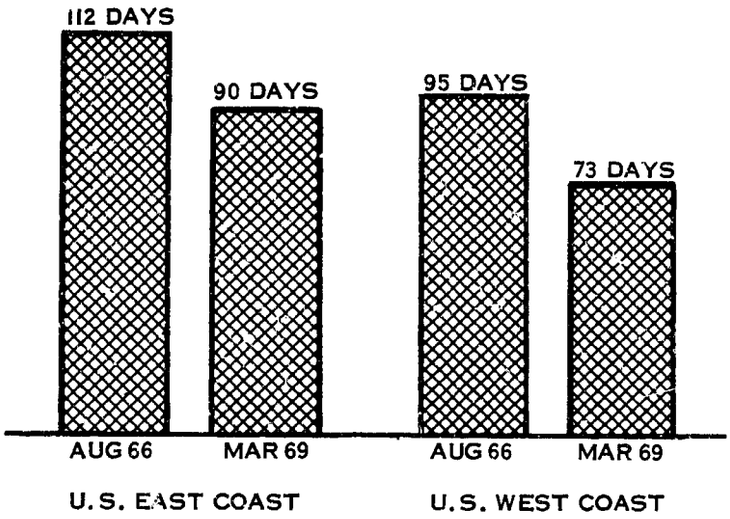
(b) Over a 3-year period from 1965 through 1967, 162 ships were reactivated from the NDRF as follows: 52 ships in 1965 - average cost per ship of $503,300; 91 ships in 1966 - average cost of $629,900 per ship; 19 ships in 1967 - average cost of $816,700 per ship. The increase in cost was primarily due to the fact that the ships in better condition (most of these were really not very good) were activated first, whereas the cargo ships activated in 1967 were in very bad shape.[62] As shipyard experience increased and more comprehensive knowledge of critical areas of repair and overhaul was obtained, performance of reactivated ships improved. Nevertheless, in the fall of 1967, 28 ships with submarginal records of performance were released to MARAD for scrapping. In general, the performance of the remaining Victory ships has been satisfactory.[63]

(4) The Manpower Problem. As the number of ships reactivated from NDRF increased, the manpower problem became acute. Extraordinary efforts were made by both unions and operators to find qualified seafarers to man the ships. Nevertheless, delays because of crew shortages were incurred by all types of cargo ships. In 34 months, from 1 May 1966 to

[60]OASD (I&L) Memorandum to Services, subject: Evaluation of SEA Express Procedures, 9 February 1968.
[61]MSTS, Briefing, for JLRB, 19 May 1969.
[62]Cost figures furnished by MSTS Comptroller.
[63]MSTS, Briefing, for JLRB, 19 June 1969.

1 March 1969, MSTS lost 2,796 ship-days. This is equivalent to over 45 round-trip voyages based on 60 days per round trip.

(5) Cargo Ship Delays in RVN. Added to the time lost from crew shortages was the delay experienced as a result of the congestion of the Vietnamese ports in the early days of the buildup. Some ships carrying military cargo actually lay at anchor in holding ports, both in Vietnam and other friendly ports of the Far East, for many weeks. As port problems in RVN were eased through better control of warehouses, improved working conditions, and more ship berths, plus the opening of new ports with modern facilities, the delays experienced by ships were reduced substantially. Delay time billing in FYs 67 and 68 and the first half of FY 69 is shown in Figure 2. Port congestion problems in RVN also affected ship round-trip times. Figure 2 also shows both east and west coast turn-around times in August 1966 and the significant improvement in March 1969. The delays inhibited ship capability and were extremely expensive.



THE DELAYS INCURRED WERE EXPENSIVE BOTH IN SHIP CAPABILITY AND IN DOLLARS. DELAY TIME BILLINGS FOR FY 67 – 68 AND THE FIRST HALF OF FY69 ARE SHOWN.

(DOLLARS IN MILLIONS)

		FY67	FY68	FY69 (1 ST HALF)
RVN –	DAYS	11,240	6,915	3,020
	BILLING	$55.2	$34.5	$15.1
THAILAND –	DAYS	771	138	0
	BILLING	$ 2.9	$ 8.5	$ 0

FIGURE 2. AVERAGE SHIP VOYAGE TIME (IN DAYS)

Source: MSTS Briefing for JLRB, 19 July 1969.

(6) Ship Turn-Around

(a) By the end of August 1965, the excessive ship turn-around times in SE Asia ports were causing increased concern. A number of factors, such as the decision to keep the resupply flowing in spite of limited port throughput capabilities, loading ships with cargo for several ports, packaging deficiencies, and the bunching of ship arrivals, contributed to increasing turn-around times. This resulted in a need for selective regulation of ship sailings to Vietnam. Steps to initiate such regulation resulted from the buildup of a backlog of ships awaiting off-loading in the fall of 1965. Because the recycling of ships was being protracted by such delays, MSTS recommended activation of additional ships from the NDRF to make up the

shortfalls occurring at POEs. COMSTS reported that there was stiff competition with industry and other Government agencies for chartering commercial ships.[64]

(b) By July 1966, MSTS recommended that when total throughput capability of ports of discharge (PODs) is the limiting factor, procurement of additional scarce shipping should be based on this factor rather than on requirements for shipping stated by the Services.[65] August 1966 was a critical month for ocean movement of cargo. MTMTS reported that the increase in unbooked cargo was approaching the critical level as it concerned traffic management. As of 24 August 1966, there were 186,114 M/T of backlogged cargo.

(c) MSTS estimated a 43-ship deficit by September 1966 and a 58-ship deficit by October 1966, based on their forecast requirements. Concern was expressed about the possibility of additional requirements due to U.S. Agency for International Development (USAID) cargoes. The MSTS solution was:

1. Activation of 10 ships per month from NDRF through January 1967, and charter additional SEA TRAIN when available in October 1966.

2. Charter 10 additional ships, when available, during the next 4 to 8 months.

3. Exercise first option on use of 25 C-4 troopships, released from NDRF for conversion to container ships, when available over the next 9 to 12 months.[66]

(7) Ammunition Lift

(a) In April 1965, the Chief of Staff, U.S. Air Force, requested COMSTS to assign five ships to support the Special Express system of transporting Air Force munitions exclusively from CONUS to Western Pacific destinations. This concept of exclusive use ships was justified at that time because of the critically limited facilities ashore and the necessity to provide flexibility in making different types of air munitions available at various bases for a wide range of missions. The ships in this service were loaded for selective and optional discharge, and served both as ocean carriers and floating depots. The number of Special Express ships increased to 10 in July 1965, 12 in December 1965, 15 in May 1966, and finally increased to 19 in June 1966. In July 1966, the Chief of Naval Material requested COMSTS to assign four ships to a "Navy Ammo Express" system similar in character to that of the Air Force Special Express. These dedicated ammunition ships were not under MSTS control, and on 29 August 1966 the Joint Chiefs of Staff solicited CINCPAC's views on the "private" fleets. After consulting his component and subordinate commanders, CINCPAC noted that the special fleets were of benefit to operations in RVN. Nevertheless, he listed the following disadvantages of the existing system:

1. Slow ship turn-around

2. Less than full utilization of ship capacity

3. Loss of the flexibility to use shipping in accordance with the needs of all users

4. Disruption of port discharge work load.

(b) CINCPAC recommended that a specific phase-out date for the ammunition fleets should not be established until after improvements were made ashore with respect to storage facilities and stock levels. He stated that he would later report the results of a reevaluation of stockage objectives and storage capacity with a view toward recommending a firm date for phase-out. (Return to MSTS control of those ships dedicated to the USN and USAF for

[64]Minutes of JCS/JTB Meeting, May 1966.
[65]Minutes of JCS/JTB Meeting, July 1966.
[66]Minutes of JCS/JTB 27th Meeting, 31 August 1966.

ammunition shipments.) By 19 November 1966, this re-evaluation was completed, and CINCPAC had a plan to remedy the situation. Ammunition would be loaded for a single port of discharge (POD), except for permitting two-POD loading of USAF munitions for RVN ports other than Nha Be and Cam Ranh Bay. The two-POD loading was to be limited to instances where multi-Service loading would not provide a shipload for one POD. CINCPAC therefore recommended that more efficient use of shipping resources could be obtained by following his recommended modifications of ammunition loading and shipping procedures. He also recommended requisition under a pull system vice a push system for all munitions except preferred items in short supply due to limited production. CINCPAC's recommendations were approved, and the loading to designated PODs was initiated on 5 December 1966. The Ammunition Monograph contains a review in depth of ammunition movement from the producer in CONUS to the user in RVN.

(8) Sealift of POL. To provide sealift of POL to the Armed Forces, MSTS operates a small fleet of USNS tankers, supplemented by commercial ships chartered on the open market. Sufficient U.S. flag tankers were generally available to meet MSTS tanker requirements until October 1966. With increasing requirements and nonavailability of U.S. flag tankers, it became necessary to increase foreign charters. Closing of the Suez Canal on 6 June 1967 resulted in a scarcity of tankers in the worldwide market and a great increase in tanker rates. Prior to June 1967, it was necessary to charter 8 to 10 foreign flag tankers each month. They were readily obtained on the dates and of the type required. During a 1-week period from 7 through 14 June 1967, all major oil companies, both U.S. and foreign, entered the market and chartered large numbers of tankers for several voyages -- and for periods of 1 year or more, as a hedge against the Suez Canal closing. MSTS chartered 21 foreign flag tankers for 1-year periods. From June 1967 to June 1968, MSTS was obliged to charter up to 35 foreign flag tankers each month, for single voyages, to fulfill POL requirements. In 1966 U.S. flag tankers carried all but 5 percent of the total POL tonnage, 17 percent in 1967, 22 percent in 1968, and about 13 percent during the first 9 months of FY 69.[67] The POL monograph should be reviewed if a detailed background and analysis of the requirements, distribution, and consumption is desired.

(9) Sealift of Reefer Cargo. The delivery and supply of chilled and frozen foods to RVN was a logistics problem requiring intensive attention because of insufficient warehouse space and short life of sensitive chill produce. To help alleviate this shortfall in the early stages of the buildup and in addition to the use of reefer barges by the Services, such as at Da Nang, MSTS chartered two refrigerator ships specifically for use as a floating refrigerated storage; however, the short shelf life of sensitive chill produce continues to cause much difficulty. Intra-theater sources of supply in Japan, Taiwan, and even in Vietnam have been exploited as the opportunity afforded, but delivery of the produce has required the continued employment of two chartered reefers. The low utilization factor of these ships increased the transportation cost of sensitive chill produce to as much as $420 per measurement ton. The use of refrigerated containers as an alternative to this intra-theater service is being explored by MSTS, the Army, the Commander, U.S. Military Assistance Command (COMUSMACV), and CINCPAC.[68] Shipment of perishable stores in reefer containers from CONUS to RVN began in July 1967, with the inception of the Sea Land service. From a monthly lift of 120 reefer containers to Da Nang, this mode expanded to approximately 420 containers monthly delivered to Da Nang, Cam Ranh Bay, Qui Nhon, and Saigon. This mode offered many advantages over breakbulk carriage: reduced handling; increased expeditious delivery; decreased spoilage; and alleviated problems associated with permanent shore installations.[69]

(10) Vehicle Carriers. Commencing in 1966, multipurpose ships of the Seatrain Lines were chartered by MSTS to bolster the shortfalls in vehicle lift capability of the nucleus fleet. These were excellent ships for transporting heavy and bulky vehicles, rolling stock, and wheeled or tracked construction equipment. These ships were also used to transport light aircraft and helicopters, although the ships were inferior to the MSTS aircraft transports in the

[67] MSTS, Briefing, for JLRB, 19 June 1969.
[68] Ibid.
[69] Ibid.

protection they afforded from weather and spray, handling and securing of aircraft, fly-away capability, and accommodations for personnel. These ships were also inadequate for the transport of breakbulk general cargo, containers, low-profile vehicles and nonrollable special cargo. Seatrain Lines owners are considering the conversion of these ships to a container configuration; however, the ships are old and are much slower than the new high-speed container ships of other operators. For this reason, the Seatrain Lines owners are also considering scrapping these ships.[70]

(11) Container Service. Container service was initiated with deliveries from Seattle, Oakland, and Long Beach to Da Nang on 1 August 1967, and Cam Ranh Bay on 3 November 1967. Subsequent recurring service was provided on a 15-day frequency basis by contract with Sealand Services, Incorporated. Container service throughout the rest of the Pacific is provided on a competitive basis by shipping agreement. Many factors led to the development of MSTS integrated containership systems to Okinawa, the Philippines, and RVN, including the need for more productive cargo delivery systems, improvement in port throughput capability, and the mandate to gain experience in using such systems to support military operations in underdeveloped areas. Container operations and requirements are discussed in detail in the Containerization Monograph.

(12) Transport of Lighterage. Transport of lighterage to RVN was a considerable problem during the buildup because there were only two self-sustaining heavy-lift ships in the entire U.S. flag inventory, and these two were in the MSTS nucleus fleet. Because of the urgent requirement to move lighterage to RVN and the shortfalls in self-sustaining heavy-lift shipping, MSTS had to improvise techniques to transport this lighterage. One method was the ocean tow of barges and LCU piggy-back style — accomplished by placing one barge or landing craft utility (LCU) on top of another and securing the pair with welded steel straps. Several pairs were then towed in trail by tugs from the CONUS east coast through the Panama Canal and across the Pacific Ocean to RVN. Another technique was to utilize dockside or floating heavy-lift cranes to load lighterage on the open decks of conventional cargo ships. The lighterage was placed across the open decks and tightly secured to prevent movement in heavy sea. These were required to carry considerable salt water ballast to reduce rolling tendency in open seas due to heavy topside weight. There were occasions when U.S. Navy landing shipdock (LSDs) were transferred empty from the Atlantic to the Pacific, affording opportune lift to MSTS for transport of lighterage to west coast ports. From there, the lighterage was ocean towed to RVN. This opportune lift provided a considerable monetary savings because ocean tow from the east coast through the Panama Canal to RVN was very expensive. By employing the foregoing techniques, MSTS was able to meet the requirement for transport of the urgently required lighterage to RVN.

c. Intra-PACOM Sealift. This paragraph discusses the acquisition and utilization of intra-PACOM sealift resources to provide support of RVN requirements. The use of shallow-draft shipping and lighterage for coastal and inland waterway cargo lift and for port clearance in RVN is discussed in Section F.

(1) Common-User Intra-Theater Sealift. CINCPAC did not have common-user sealift under his operational control. Common-user sealift was provided by COMSTS through Commander, Military Sea Transportation, Far East (COMSTSFE) to support intra-PACOM requirements for surface movements to RVN.

(2) Landing Ship Tank (LST) Activation. Because of the anticipated force increase in RVN and the lack of sufficient deep-water ports, there was a critical requirement for shallow-draft vessels to provide sealift of personnel, supplies, and equipment to minor port areas in RVN.[71] In 1965, COMSTSFE was operating 17 LSTs in Asiatic waters, which was considered an insufficient number to provide the lift that was being planned. Pursuant to the DOD policy promulgated shortly after World War II, Japanese seamen were employed aboard these ships. An additional 14 LSTs, assigned to MSTS during the Korean War and then laid up in Sasebo, were available if activation was directed. There was not, at that time, a definite decision on the extent of the force

[70] Information provided by MSTS cargo ship section.
[71] CINCPAC Command History, 1965, Volume II, p. 556.

increase, but in March 1965, the Joint Chiefs of Staff approved immediate activation of 8 of the 14 LSTs mothballed at Sasebo. These 8 LSTs were crewed with South Koreans because the Japanese Seaman's union refused to provide personnel. By 2 July 1965, COMSTSFE had 25 LSTs under his operational control (OPCON). Twelve of these LSTs were assigned for intra-RVN coastal operations, whereas the remainder were carrying out long-haul movement from Japan and Okinawa to Vietnam.[72]

(3) Requirement for Additional LSTs. Results of a COMUSMACV/MSTSFE study in August 1965 indicated a need for 10 additional LSTs. In December 1965, CINCPAC reported to the Joint Chiefs of Staff that shipping congestion in RVN confirmed the need for immediate action to provide additional LSTs for coastal movement of cargo, and CINCPAC initiated the following actions:

(a) He programmed 49 additional LSTs for WestPac. This included deployment of 7 additional CINCPACFLT LSTs; reactivation of 9 LSTs; transfer of 11 LSTs in the Atlantic Fleet to CINCPACFLT; reactivation of 17 Naval Reserve Fleet (NRF) LSTs; loan of USS STARK COUNTY to Thailand; Republic of Korea (ROK) deployment of 2 additional LSTs to RVN and Government Republic of China (GRC) providing 2 LSTs for third-country participation in RVN.

(b) He speeded up the schedule to provide additional terminal service companies, lighterage, and tugs and barge capability.

(c) Alaska Barge and Transport Inc., a commercial contractor was contracted to provide lighterage and stevedoring services and intra-coastal lift in RVN.[73]

(4) LST Inventory. The in-country and intra-theater shallow-draft shipping requirements in support of the U.S. and Allied operations in RVN continued to exceed ship capability throughout 1966, particularly during the latter months of that year. The status of LST shipping available for RVN logistic support was as follows:

(a) 36 MSTSFE LSTs, manned by Japanese and Korean crews provided most of the intra-theater and coastal shallow-draft sealift in SE Asia.

(b) 11 MSTSFE controlled LSTs, manned by U.S. Navy personnel provided additional shallow-draft support for RVN.

(c) 3 ROK, 2 GRC, and 1 Thailand LST provided coastal shallow-draft support.

(d) CINCPACFLT augmented MSTSFE capability when fleet LSTs could be made available.

(e) An average of 20 LSTs from MSTSFE and CINCPACFLT were engaged in the movement of cargo in support of RVN requirements set forth by COMUSMACV.[74]

(5) Intra-Theater Use of LSTs. A number of LSTs were being utilized for lift of cargo from Far Eastern Pacific ports to RVN. To relieve pressure on LST assets and in order to make more shallow-draft shipping available in RVN, COMSTSFE procured small foreign flag ships and detained some of the CONUS-to-RVN shipping resources for employment on intra-theater runs. This additional deep-draft shipping combined with the increasingly rapid turn-around time in RVN ports contributed substantially, during the First Quarter, to decreasing the pressure on LST resources and permitted increased use of LSTs for deliveries to ports where only shallow-draft ships could be received. Nevertheless, LST requirements in support of RVN continued to be sufficiently heavy to maintain pressure on theater LST assets.

[72]MSTS Briefing for JLRB, 19 June 1969.
[73]CINCPAC Command History, 1965.
[74]Point Paper, J4812, CINCPAC, subject: Shallow Draft Shipping Support of RVN, 5 January 1967.

The transshipment of cargo from major port areas in RVN to areas supported by over-the-beach operations continued to be a large operation. CINCPAC favored the continued development of deep-water berths in various RVN ports such as Vung Ro, Qui Nhon, and Vung Tau in order to reduce dependence on LST operations.

(6) LST Requirements 1967-1968. The need for armed LSTs and for a review of LST assets occurred in March 1967 when COMUSMACV requested that six armed LSTs be provided, two of which would be used on the Da Nang-Dong Ha shuttle and four in support of operations in the Delta.[75] In order to lower the costs of cargo deliveries, a decision had been reached to remove the armament of 11 Service Force LSTs and convert them for manning by Korean civilians. Six had been converted and five were in the process of being converted. CINCPAC provided CNO with alternative recommendations concerning the delay of this action.[76] CNO directed that the conversion of the five LSTs be delayed until requirements were resolved. Thereafter, CINCPAC requested that COMUSMACV study his LST needs and provide firm requirements, utilization data, and operation information. This information was needed to determine what augmentation of MSTSFE LST assets should be made from CINCPACFLT assets. COMUSMACV advised that there was a requirement for 38 LSTs, including 3 for the Mekong Delta Riverine Assault Forces (MDRAF) and 35 for current intra-RVN logistic support and other FY 68 force requirements.[77] CINCPACFLT reaffirmed the commitment of three LSTs for MDRAF in FY 68, but recommended that assets other than those of PACFLT be used for additional intra-RVN logistic support. COMSTSFE stated that 35 LSTs could be provided for logistic support for a relatively brief period on an emergency basis, and that on a long-term basis, 26 LSTs (plus the 3 armed vessels for MDRAF) could be provided without degrading support to RVN from other PACOM ports. COMSTSFE also indicated that the 26 LSTs were sufficient to meet COMUSMACV's requirements in part because of increased efficiency in utilization by COMUSMACV. At CINCPAC's request, COMUSMACV reviewed RVN LST utilization factors and re-evaluated LST requirements. In reply, COMUSMACV concurred with the MSTSFE assessment that 26 LSTs were sufficient to move estimated monthly tonnage requirements, but he indicated that an additional 5 or 6 LSTs would be required by mid-1967 for support of operations in I Corps Tactical Zone (CTZ).[78]

(7) Roll-on/Roll-off (Ro/Ro) Service. These services made valuable contributions to intra-theater support of the Vietnam operation. The requirement to provide intra-theater Ro/Ro service to Vietnam necessitated the suspension of these services to the forces in Europe. On 1 April 1966, the U.S. Army Trailer Service Agency was returned from MTMTS to the U.S. Army Supply and Maintenance Command, subsequently relocated to Okinawa. The Ro/Ro ships - the USNS COMET, the USNS TAURUS, and the SS TRANSGLOBE - were transferred from MSTSLANT to the Pacific and Ro/Ro service was initially established from Okinawa to Cam Ranh Bay and Saigon, and was later extended to include Qui Nhon, Da Nang, and Bangkok. The use of Ro/Ro ships for channel lift of cargo from Okinawa to RVN contributed to the release of LSTs (which were being used in a deep-draft role) and the return to shallow-draft operations. Ro/Ro service in the Atlantic was re-established on 20 December 1967 with the delivery of the ADMIRAL WILLIAM M. CALLAGHAN to MSTS on a long-term charter.

(8) Sealift Assistance Program. In addition to the use of intra-theater sealift provided by MSTSFE throughout the 1965-1968 period, a significant lift capability was provided by the logistic support ships of the Pacific Fleet. Commander, Service Force Pacific Fleet, working closely with CINCPACFLT and Commander Western Sea Frontier (COMWESTSEAFRON) actively pursued a program to achieve full utilization of organic surface lift departing CONUS and middle Pacific ports. Fleet units were required to report all available space prior to departure to COMWESTSEAFRON, who administered the Sealift Assistance Program. High priority material was assigned to fill all unused space. Such space utilization substantially augmented the PACOM intra-theater sealift capability.

[75] CINCPAC Command History, 1967.
[76] Ibid.
[77] Ibid.
[78] Ibid.

4. ASSESSMENT OF SEALIFT RESOURCES

a. Background

(1) The lessons of the Vietnam era again emphasized the importance of a responsive sealift capability for the deployment of major ground units with their accompanying equipment, for moving the preponderance of supplies and equipment, and for transporting the petroleum products required by land, sea, and air forces. The inadequacies of U.S. sealift resources to move specialized cargoes and to operate in restricted waters were evident during this period.

(2) This section examines the available and foreseen sealift resources in light of the Vietnam experience in order to assess the capability of the United States to project national power by sea in the future. In order to minimize security classification problems, the analysis does not attempt to derive specific numbers of ships that might be required to implement specific contingency plans or alternative national strategies. Rather, it looks at the requirements for specific categories of ships and at foreseeable sources of supply.

(3) Traditionally common-user ships of the MSTS fleet have been categorized by terms derived from the merchant marine (i.e., cargo, passenger and tanker) and by their ownership status (i.e, the DOD-owned MSTS nucleus fleet operated by Civil Service crews, commercially owned or operated ships chartered by MSTS, and MARAD-owned ships operated for MSTS by commercial companies under GAA). In recent years the Five-Year Defense Program (FYDP) has subdivided the cargo category of the nucleus fleet into four groups: cargo and stores ships, landing and coastal ships, forward floating depot (FFD) ships, and fast deployment logistic (FDL) ships. None of these systems adequately reflects the fact that some MSTS-controlled ships are essential elements of the DOD strategic mobility force, others are primarily intra-theater lift resources which provide tactical mobility support, and others are scientific support ships not used in either the strategic or tactical mobility roles. Additionally, they do not recognize the fact that the traditional concepts of the MSTS nucleus fleet and of chartered ships no longer are mutually exclusive categories in view of the trend toward replacement of some nucleus ships by long-term chartered ships, including those built by their commercial owners, with Government assistance, specifically for this purpose.

(4) In recognition of the fact that the types of sealift required for strategic mobility are different from those required for intra-theater logistics support, this section considers requirements under four broad categories: strategic cargo, intra-theater cargo, POL, and troop sealift. Similarly, it considers the capabilities of both DOD-owned and long-term chartered ships of the MSTS fleet in connection with each category, and discusses augmentation by reserve ships and by the active merchant marine in connection with the NDRF and the RESPOND program, respectively.

b. Strategic Cargo Sealift

(1) General

(a) This section is concerned with deep-draft ships that provide transoceanic movement of military supplies and equipment. For maximum usefulness, it subdivides the cargo and stores ships and FFD categories of the FYDP into the classes of ships required to move major military end items (principally aircraft transports, Ro/Ro ships and very heavy lift ships), those required to move classes of supply which require special handling (ammunition and refrigerated (reefer) products) and those needed to move other types of equipment and supplies. Thus it looks at our present and future capability to meet the sealift problems discussed in paragraph 3.

(b) Because containerization is the primary subject of the Containerization Monograph, this section's analysis concentrates on the need for a military-controlled sealift capability other than that which may be provided in future military operations by commercial container ships.

(2) Aircraft Transports

(a) The decision to organize and deploy the 1st Cavalry Division (Air Mobile) highlighted the serious deficiency in capability to move helicopters and light aircraft. For deployments to Vietnam, it became necessary both to divert helicopter assault ships of the Atlantic and Pacific Fleets from their normal missions and to reactivate old Commencement Bay class escort carriers as discussed in subparagraph 3a above.

(b) Current concepts visualize the rapid deployment by air of major units to pre-positioned equipment. Yet the costs of pre-positioning and maintaining large numbers of helicopters would be prohibitive. Helicopters, being large and bulky with a shaft, rotor head, and tail extending well above the body of the aircraft, are difficult to move, store, or transport. There is a high probability of damage in transit, unless they are carefully handled and protected from the weather.

(c) With varying degrees of disassembly, helicopters can be airlifted, but the numbers that can be transported in a given aircraft are small (e.g., one CH-47 or five HU-1s per C-133). With the advent of the C-5A, the numbers of helicopters that could be airlifted, with their crews, will be somewhat greater, but every airlift sortie used for moving helicopters is one less available for air movement of other high priority cargo (or troops).

(d) According to a recent Navy study,[79] made in response to a specific request of the Deputy Secretary of Defense,[80] the one overriding sealift deficiency is the inability to ferry aircraft in the numbers required, in an operable status, to permit employment in the early stages of a contingency. As the situation in Vietnam stabilized, the requirement for MSTS aircraft transports (T-AKVs) decreased. Although these ships have excellent capabilities for moving small type aircraft in a fly-away condition, they serve no other useful purpose. All but one now is in ready reserve status, and would require from 30 to 180 days to be made operational. FYDP plans for none after FY 1973.

(e) Small observation type aircraft (some 20 percent of total wartime helicopter and light aircraft requirements) can be transported in available Ro/Ro ships, containerships, or break-bulk ships. Although Ro/Ro ships can also be used to move helicopters, these ships are less efficient in this role than T-AKVs and are more urgently needed to move large numbers of wheeled and tracked vehicles. The 15 vehicle carriers of the SEATRAIN type can be used for point-to-point movement of helicopters and light aircraft, but have only a limited fly-away capability (more than Ro/Ros, but considerably less than T-AKVs). Moreover, there is only a relatively small commercial requirement for such ships. Upon the expiration of its current contract with MSTS, it is entirely possible that Seatrain Lines, Inc. will dispose of its oldest vehicle carriers (2 of which were built in 1932) and convert some of its newer ones (the most recent of which was built in 1951) to more profitable containership configuration. However, MSTS plans to retain four of the Puerto Rico class Seatrains (converted T-2 tankers originally built in 1944) under long-term charter, primarily as interim replacements for the retired T-AKVs and for movement of outsize cargoes which do not require very heavy-lift self-sustaining ships.[81]

(f) There is a large variation in helicopter and non-self-sustaining aircraft shipping requirements during contingency operations, with the initial deployment requirement being some six times as much per month as that during sustaining operations; the peacetime requirement is even less.[82] For this reason, the CNO study recommended that the ideal method of transporting aircraft would be by a multi-purpose ship (MPS), capable of moving aircraft and related equipment, as required, but also capable of moving other types of cargo

[79] CNO study, subject: Integrated Sealift Study, Alternative Sealift Programs for the Mobility Forces MPM, 1 October 1969, p. 26.
[80] Deputy SECDEF Memorandum for the Secretary of the Navy, subject: Major Program Memorandum MPM on Mobility Forces, 11 June 1969.
[81] Information furnished by MSTS Cargo Division (M-32) and Systems Analysis Division (M-62).
[82] CNO Study, op. cit., p. B-5.

and unit equipment when not required in the aircraft ferry role. For optimum value in contingency operations, especially in areas where adequate port facilities are not available, the MPS would have a large helicopter pad and the associated devices to permit fly-on/fly-off loading/off-loading. The current FYDP contains provisions for 10 MPS under a "build and charter" program, whereby the Commander, MSTS would contract with industry for the ships to be built for commercial owners, who would then charter them to MSTS. As indicated in Table 6, 10 MPS would be required to deploy the aircraft, unit equipment, and vehicles for one armored division.

TABLE 6

MPS REQUIRED TO MOVE ARMY DIVISIONS

Type	Aircraft	Unit Equipment (Short Tons)	Vehicles	MPS Required
Infantry	94	30,045	5,401	7
Armor	61	57,490	5,111	10
Mechanized	61	50,048	4,756	9
Airborne	88	9,121	4,037	4
Airmobile	422	9,331	3,030	6

Source: MSTS Systems Analysis Division (M-62)

(3) Wheeled and Tracked Vehicle Carriers

(a) Ro/Ro ships were conceived and built primarily to deploy Army wheeled and tracked vehicles, even though most of them were used during the Vietnam era in the intra-theater role already described in subparagraph 3c. They also can transport aircraft, as described in subparagraph (2) above, and unit equipment. Together with ships of the Seatrain type, having long, unobstructed decks, they are very valuable ships for deploying Army forces. Most ships in the merchant marine cannot efficiently lift either aircraft or vehicles, and, with the trend to containerships, the available supply of suitable ships will decrease.[83] In addition to the four Ro/Ro ships now under MSTS control (Table 5) there are only five in the active merchant fleet, including four new C 5-S-78a (MORMAC SEA BRIDGE class) containerships with limited Ro/Ro capability and one pure Ro/Ro ship (SS PONCE de LEON), with an additional Ro/Ro ship planned for new construction.

(b) If MPS are added to the MSTS fleet in sufficient numbers, the loss of most Seatrain type ships should not pose strategic problems. In addition to its aircraft transport capabilities, the MPS is planned to be a Ro/Ro ship, with its internal cubic capacity convertible to container, break-bulk, or unitized cargo operation. It is planned to have the capability for helicopter discharge of cargo and other self-sustaining features including a stern ramp for amphibious movements and very heavy lift facilities.[84]

(4) Very Heavy Lift Ships

(a) Among the earliest problems of the Vietnam era was the urgent requirement to move Army lighterage and harbor craft both from Europe and the CONUS east coast to SE Asia. As indicated in Section B, CINCPAC recognized the need for these craft as early as mid-1964, yet the almost total lack of ships with the capability to hoist aboard, transport, and lower into the water this Army lighterage necessitated the improvisations described in paragraph 3b(12), above. At the start of the buildup, most ships in the U.S. merchant marine had maximum boom capacities of 50 tons - a few could handle 60 tons. There were only two U.S.

[83] OSD Document, subject: Secretary Defense Major Program Memorandum on Mobility Force (Enclosure 1 to OSD Control CCS x-3026) 11 June 1969, p. 14.

[84] CNO Memorandum for the Senior Navy Member, JLRB, ser 001132P404, subject: MSTS Ship Replacement Program, as amplified by MSTS staff, 22 October 1969.

flag ships with boom capacities in excess of 100 tons: the MSTS heavy lift ships USNS MARINE FIDDLER and USNS BROSTROM.

(b) The very heavy lift situation has been considerably improved. In addition to the above ships, two of the former MSTS C-4 troopships, released by DOD to MARAD for sale to industry, have been converted to very heavy lift ships. Both the SS TRANSCOLORADO and TRANSCOLUMBIA have two 120-ton booms, which can be married to lift 240 tons. These ships, now under long-term charter from the Hudson Waterways Corporation, as well as the Ro/Ro ship GTS WILLIAM M. CALLAGHAN, the first of the "build and charter" ships, are capable of self-sustaining movement of LCUs (145 to 180 tons), harbor tugs (100 to 160 tons), and other very heavy cargoes. In addition, four other commercial ships, including one containership, have the capability to lift at least 125 tons with their own booms. If the "build and charter" MPS are authorized and built as now planned, they will have the capability of self-sustaining lift of 2 LCU's, like the CALLAGHAN.[85]

(5) Ammunition Ships

(a) As many as 160 cargo ships, representing over 45 percent of the total deep-draft ships in the controlled fleet, were commited to the movement of ammunition during the Vietnam era. Without exception these ships were Government-owned break-bulk ships from the NDRF, operated under GAA agreement. Commercial steamship operators are reluctant to handle ammunition in quantity, and commercial insurance rates are high, whereas the Government assumes the liability for its ships.[86]

(b) Because of limited port facilities in RVN, or any underdeveloped area, significant delays are incurred in the turn-around of ammunition ships. Further, the number of break-bulk ships that will be available in either the merchant marine or in the NDRF will decrease sharply in the immediate post-Vietnam period. In view of these facts, the future movement of ammunition in containers is being planned by all Services.[87] However, very few commercial container ships are self-sustaining. One of these few recently conducted an Army-sponsored lift of containerized ammunition from CONUS to SE Asia.

(c) The Commander, MSTS, has recommended the procurement of 11 ammunition ships for the MSTS fleet to ensure an initial ammunition-carrying capability in future contingency operations. The initial concept calls for self-sustaining containerships considerably smaller than those currently under construction for industry (some 530 feet vice 625-675 feet in length, some 75 feet vice 90-95 feet beam, and some 28 feet vice 34-35 feet draft). These ships would be configured especially for transporting 750-800 variable height ammunition gondolas below the main deck and would have a container crane for self-sustaining discharge in underdeveloped areas. Alternatively the ships would have the self-sustaining capability to handle some 750 standard 20' x 8' x 8' containers, carried three high on deck.[88]

(6) Reefer Ships

(a) The primary importance of the MSTS-controlled reefer fleet is to serve out-of-the-way areas of the world not served by commercial ships with reefer capability. For example, some 16 of these ships operated in the Pacific during the Vietnam era providing trans-Pacific service to mid-Pacific islands, shuttle service to and from Asian sources of fresh produce, and floating storage for forces in Vietnam. Two of the four MSTS-owned ships in the Pacific were so old that they could not hold their freeze temperatures[89] and one of these was scrapped in the autumn of 1969.

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[85]Information furnished by MSTS Cargo Division (M 323) during January-February 1970.
[86]Information furnished by MSTS System Analysis Division (M 62) during February 1970.
[87]Headquarters, MSTS study, MSTS Fleet Study, Strategic Sealift Ships, Part I: Inter-theater Dry Cargo, 8 December 1969, pp. I-1 through I-4.
[88]Comparison of characteristics in enclosure (3) to OPNAV Memorandum, op. cit., with those in MSTS publication MSTS P504, subject: Merchant Ship Register, October 1969.
[89]MSTS, Briefing, to PAC Cargo Division, 24-25 June 1969.

(b) The newer Racer-class general cargo ships in the merchant marine can accommodate 3,000 M/T of reefer (freeze or chilled) in addition to some 10,000 M/T of dry cargo. Similarly, reefer containers are increasingly being used for commercial purposes. However, commercial ships do not service small locations, particularly in the Pacific. For example, States Lines formerly served Midway, for a minimum fee of $10,000 but no longer does. Pacific Far East Lines serves Kwajalein, and MSTSPAC is endeavoring to have them serve Johnson and Eniwetok. Until adequate commercial service is assured, however, MSTS must continue to rely on the deteriorating nucleus and GAA reefer ships. Discharge delays, ship break downs, and other eventualities disrupt the schedules. When ships are inactive due to repairs or overhauls, there are no substitutes.[90]

(c) The MPS, if actually constructed as planned, will resolve the reefer problem by providing for reefer containers. A major advantage of the MSTS-controlled MPS over a commercial container ship is that, whereas commercial containership operators probably would continue their unwillingness to stop at the smaller military bases that are off their regular routes, the MPS could deliver reefer and other cargoes to such areas.

(7) Other General Cargo Ships

(a) In addition to the need for a responsive sealift capability to transport the various types of major end items and specialized supplies discussed above, there continues to be a military requirement for moving other commodities by sea, particularly in the early days of a contingency operation before a commercial container system can be mobilized and placed into operation. Container service for military cargoes was not established until July 1966 (to Okinawa), a full year after the beginning of the accelerated buildup, and was not initiated to mainland RVN (Da Nang) until July 1967. Initiation of such service could undoubtedly be made much sooner in a future major contingency. For any contingency in an underdeveloped area which lacks container facilities, however, it would be prudent to assume a delay of up to 6 months until the first commercial containers were in the hands of overseas military personnel.[91] This time would be required for the negotiation of necessary contracts, construction of necessary containership terminals, reorientation of the contractor's commercial system, and for the initial movement of the ships over new routes.

(b) There are only 19 ocean-going, general purpose cargo ships in the MSTS nucleus fleet, including the 2 heavy-lift ships and the 3 FFDs (Table 5). These ships are intended as the nucleus from which the MSTS fleet can be rapidly expanded to support military operations, as discussed in subparagraphs f and g below. These ships, however, provide support for DOD during peacetime. Because there are so few of them, operating on a worldwide basis, the probability of many of them being readily available for wartime tasks on short notice is remote. Table 7 shows the current employment of these ships, plus others under long-term charter, by broad geographic area. As shown in Table 8, none of these ships is less than 20 years old, and 18 were built more than 25 years ago. Thus, all are obsolescent and most are obsolete.

(c) If the MPS ships now in the FYDP are authorized, built, and chartered to MSTS as planned, they will have the capability to substitute for the MSTS general purpose cargo ships. However, the numbers presently in the FYDP are insufficient to replace all the ship types discussed in the preceding paragraphs. Further, some elements of OSD believe that the MPS is to be a substitute for the FDL ships, which the 91st Congress again disapproved. This is not the case. The Joint Chiefs of Staff recently emphasized[92] that these build and charter MPS are urgently required as replacements for obsolescent MSTS break-bulk ships. They are needed both for peacetime multi-purpose common-user lift

[90]MSTS Briefing, to PAC, op. cit.
[91]Study prepared for the JLRB by American Power Jet Company, Ridgefield, N. J., January 1970, subject: Containerization Based on Lessons of the Vietnam Era, p. 6-12.
[92]JCS Memorandum for the Secretary of Defense, JCSM 426-69, subject: Major Program Memorandum on Mobility Forces (U), Appendix 2A, 9 July 1969.

TABLE 7

EMPLOYMENT OF MSTS FLEET [1] BY AREA

(as of February 1970)

Class	Total[2] Active	Atlantic	Pacific	Far East	Inactive
I. Dry Cargo Ships					
Aircraft Transport (T-AKV)	1		1		5[4]
Ro/Ro	4 (2)	1 (1)	3 (1)		
Vehicle Carriers	4 (4)		4 (4)		
General Cargo	30 (11)	10	16 (11)	4	
Reefer	6 (2)	2	4 (2)		
LSTs	38			38	3[4]
Other Coastal	7	2	1	4	
TOTAL DRY CARGO	90 (19)	15 (1)	29 (18)	46	8
II. Tankers					
Medium	4[3]				
Small	21[3]		1	5	
TOTAL TANKERS	25				
III. Troop Transports	3		3		8[5]
TOTAL MSTS FLEET	118				16

NOTES: 1. Active nucleus sealift fleet (excludes 34 special project ships and 6 other ships/craft) plus 2 GAA reefer ships and 17 other cargo ships on long-term (more than 3 years) charter.

2. Figures in parenthesis are numbers of ships under long-term charter, included in totals.

3. All tankers except 6 small T-1 are centrally controlled by HQ, MSTS.

4. In ready reserve status, requiring 30-180 days to be ready for operations.

5. Being inactivated for transfer to NDRF.

Source: Adapted from MSTS Ship Inventory Report, 16 January 1970.

TABLE 8

AGE DISTRIBUTION, MSTS NUCLEUS FLEET*

(As of January 1970)

Class	Total Ships	Under 5 Yrs	5-9 Yrs	10-14 Yrs	15-19 Yrs	20-24 Yrs	25 Yrs-Over
I. Dry Cargo							
Aircraft Transports	1						1 (100%)
Ro/Ro	2	1 (50%)		1 (50%)			
General Break Bulk	19					1 (5%)	18 (95%)
Reefer	5						5 (100%)
LSTs	38						38 (100%)
Other Coastal	7			1 (4%)			6 (86%)
II. Tankers							
Medium	4			4 (100%)			
Small	21		1 (5%)	1 (5%)		5 (24%)	14 (66%)
III. Troop Transports	3				3 (100%)		
TOTAL NUCLEUS FLEET	100	1	1	7	3	6	82

*Excludes the long-term chartered ships and GAA reefer ships shown in Table 7.

Source: Adapted from Enclosure (2) to COMSTS Notice 3110, 1 January 1970, subject: Assignment of MSTS Ships and Service Craft, as amplified by MSTS Cargo Division (M-3X).

capability and for emergency use in lifting oversized and unit equipment, non-containerizable cargo, and ammunition in the deployment of forces overseas. Additionally, the assumption that these ships could be so operated and managed as to improve their availability for emergencies ignores their peacetime role. The Joint Chiefs of Staff correctly pointed out that restricting the routes of these ships would preclude their total availability as common-user sealift resources; partial loading of these ships, as in the FDL concept, would further constrain their total availability.

c. Intra-Theater Cargo Sealift

(1) General. This subparagraph examines the two principal types of ships included in the FYDP category of landing and coastal ships.

(2) LSTs

(a) Other than the need to move Army lighterage and harbor craft, the most urgent sealift requirement in the early part of the Vietnam buildup was for LSTs, discussed both in Section B and in subparagraph 3c, above. It was difficult to convince OSD that it was vital to reactivate every available LST for logistics-over-the-shore (LOTS) support of the Vietnam operation.

(b) The numbers and types of mobility forces required for contingency operations are very sensitive to time and distance factors, to the physical configuration of the probable objective area, and to the degree of opposition expected. For example, both the planned Cuba intervention of 1963 and the actual Dominican Republic intervention of 1965 were in relative proximity to the CONUS. Yet, the latter required relatively little sealift, whereas the former would have required considerable LOTS-capable lift beyond the capability of the amphibious forces. But the types of sealift planned for Cuba differed considerably from those that would be required in a Middle East contingency. Similarly, the differences in the time and distance factors between a Western Hemisphere and a Middle East contingency would have a great effect on the numbers and types of both sealift and airlift required. It would be prudent to plan for the availability of LOTS-capable sealift for future contingencies in areas such as Cuba and Vietnam.

(c) As shown in Tables 7 and 8, all active MSTS LSTs still are under the operational control of Commander, MSTS, Far East (as are five Amphibious Force, U.S. Pacific Fleet (PHIBPAC) LSTs). Three LSTs are in Ready Reserve Status. The FYDP plans to phase out the active inventory by FY 1975 and all the small MSTS LSTs, which are better suited for logistics-over-the-shore operations in shoal waters than are the larger, deeper draft LSTs of the General Purpose Forces (i.e., those Amphibious Force LSTs which normally would be a part of PHIBPAC or the Amphibious Force, U.S. Atlantic Fleet (PHIBLANT). Concurrently, the LST inventory of the General Purpose Forces is being reduced.

(3) Other Coastal Ships

(a) As shown in Table 7, most of the small force of MSTS-owned C 1 cargo ships are still in the Pacific, operating in direct support of mainland RVN. As shown in Table 8, all but one of these coastal ships are 25 years old, including two with heavy-lift (80-ton) capacity (the USNS O'BRIEN and the USNS SHORT SPLICE).

(b) With the increasing trend toward larger ships, optimized for operations between major port complexes, very few ships remain in the U.S. flag merchant marine with the capability of operating in and out of minor ports; and those that remain are old and obsolete. This can be a difficult problem in military resupply operations. For example, the new port created as a supplement to Saigon is incapable of handling C 4 cargo ships, which constitute most of the post-World War II U.S. flag merchant ships. If replacement of the old MSTS coastal ships is not initiated, there will be none available for military operations within a few years.

(c) A possible solution is barge-carrying ships, such as the C 8-5-82a (SEABEE class), of which three are under construction for Lykes Bros. Steamship Co., or

the C 8-5-81a (LASH class), of which 11 are under construction for the Prudential Lines and for the Pacific Far East Lines. The Commander, MSTS, has proposed that six barge carrier-type ships, along the general lines of the SEABEE Class, be procured for the MSTS nucleus fleet. In effect, these would be multi-purpose ships, but, whereas the MPS would be used solely in the strategic sealift role, these barge-carrying ships could be utilized for either intra-theater or strategic sealift. The following advantages are foreseen for a military adaptation of the SEABEE class ships:

1. Their over-the-beach capability will permit use in areas where port facilities are nonexistent, insufficient, or unusable.

2. Barges for one destination can be dropped off at or near that port, while the ship proceeds to the next port -- thus reducing unproductive time in port.

3. The elevator astern allows carriage of the largest floating craft, tugs, and LCUs.

4. They could serve as aircraft ferries, with efficient fly-off delivery.

5. Without barges on board, they are easily converted for use as Ro/Ro ships, container ships, or break-bulk ships.[93]

(d) If available in the MSTS-controlled fleet, these barge-carrying ships probably would be adequate replacements for the old MSTS nucleus coastal ships and LSTs and would supplement the strategic mobility capabilities of the MPS.

d. Tankers

(1) The POL Monograph contains an extensive discussion of the problems encountered in supporting the POL requirements of land, sea, and air forces in SE Asia and the Western Pacific. Subparagraph 3b(8), above, discussed the MSTS-controlled tanker situation, depicted in Table 5. As indicated in Table 8, only 1 MSTS tanker is less than 10 years old, whereas 19 are more than 20 years old.

(2) The recent Integrated Sealift Study made an extensive analysis of tanker requirements for military operations of the future. Among other things, it emphasized the significant DOD demands for "handy-sized" (25,000 DWT with a draft of 32 feet or less) and larger (33,500 - 40,500 DWT with a draft of 34 to 36 feet and more) tankers. The study found that DOD will be considerably dependent on foreign tankers, both from the so called "Effective U. S. Controlled (EUSC) fleet" (foreign flag ships owned by U. S. citizens) and from other friendly foreign flag sources. If present construction trends continue, there will be little problem in obtaining the larger tankers in the 1975 time frame. There are no tankers in the "handy" class under construction, however, and existing ones both in the MSTS fleet and the merchant marine are old. The study concluded, in effect, that the only realistic source of such tankers is a DOD-sponsored build and charter program. There are 9 tankers currently in the DOD program; the study concluded that 12 was an absolute minimum requirement.[94]

e. Troopships

(1) As discussed in subparagraph 3a above, most major Army units were deployed to Vietnam by MSTS troopships, although advance parties were airlifted. As recently as mid-1969 the Joint Chiefs of Staff reaffirmed[95] the military requirement both for MSTS troopships and for augmentation by commercial passenger sealift resources.

[93]Memorandum for the Senior Navy Member, JLRE, op. cit. and MSTS Fleet Study, op. cit., p. IV-3.
[94]Integrated Sealift Study, op. cit., pp. 61 through 65.
[95]JCSM 426-69, op. cit. Appendix 2b.

(2) The probability of responsive troop sealift being available for a future contingency grows increasingly remote. As indicated in Tables 7 and 8, only 3 18-year old troop ships remain in active service, all in the Pacific; 8 more such ships, in the 20-25 year age bracket, now in ready reserve status are due to be placed in the NDRF by 30 June 1970; 3 others, for a total of 14, are in the NDRF; the remaining 2 of 16 used for the 1965-66 Vietnam deployments have been sold by MARAD to private interest for conversion to cargo ships. All that remains in the NDRF are the old World War II Victory-class troopships that have not been used for a quarter-century. Similarly, U. S. flag commercial passenger ships are being retired from service because of their inability to compete with foreign passenger ships and the international airlines.

(3) If the MPS is authorized and built as planned, each ship will have the capability of installing, on a temporary basis, austere accommodations for 250 troops. Otherwise, unless unforeseen action is taken to replace the MSTS troop ship capability, future troop deployments must be by C-5 A and other aircraft.

f. The National Defense Reserve Fleet

(1) As discussed in subparagraphs 2b through 2c above, two statutes and a DOD-Commerce agreement require that the DOD make maximum use of commercial ships. Space aboard commercial ships (the first priority of the Wilson-Weeks Agreement) may suffice for many routine DOD shipments, and was used for the Sea Express system to RVN discussed in subparagraph 3b(1) above. However, for the deployment phase and for most resupply operations, the use of entire ships is required. MSTS must make maximum use of U. S. flag merchant ships voluntarily made available by industry before turning to any other source. An OSD official has pointed out[96] that: "Since the (RVN) buildup began, the directly subsidized operators, who receive Government funds to build and operate their ships, have voluntarily provided only about 20 percent of the extra sealift requirement for the Vietnam war. If it had not been for the National Defense Reserve Fleet (the 'Mothball Fleet'), which has met one third of our added requirements, we would have had a serious problem meeting our Vietnam needs."

(2) Because MSTS was unable to obtain sufficient ships from the active merchant marine during the Vietnam era, it became necessary to reactivate them from the NDRF, as had been done during the Korean era. However, the NDRF is a dwindling asset. As of 30 September 1969, a total of 908 ships of all types (exclusive of harbor craft, such as tugs) were in the NDRF. Of these 470 (52 percent) were awaiting scrapping. Of the remaining 438, more than half (256) are military auxiliaries (repair ships, amphibious assault ships of various types, and hospital ships), leaving some 182 marginally usable cargo ships, troop transports, and tankers. All of these ships were built prior to 1946, and they are overage, with obsolescent facilities and equipment, requiring relatively large crews by modern, automated standards.

(3) In time of emergency these ships would be available, at the earliest, only after a reactivation period of at least 30 days, assuming the availability of ship yards and workmen. The costs of reactivation in the future undoubtedly would be greater than those discussed in subparagraph 3b, as would the crewing and operational problems. Finally, the entire NDRF will be phased out after FY 78. Therefore, for future contingencies, even greater reliance must be placed on the MSTS fleet and the active U. S. merchant marine than in the past.[97]

g. The RESPOND Program

(1) In an effort to ensure more responsive sealift support under circumstances where requisitioning of shipping was not authorized, DOD discussed with the shipping industry the desirability of a contractual agreement, comparable to the CRAF program for airlift augmentation discussed in Section E. The Committee of American Steamship Lines (CASL),

[96]Interview with Dr. L. E. Lynn, Jr., Deputy ASD (SA), entitled "Sealift - Obscured by a Smokescreen of Myths," Armed Forces Management, December 1968, p. 42.
[97]MSTS Fleet Study, op. cit., p. II-3.

representing the subsidized owners, proposed a program with the acronym RESPOND. Coordination among DOD, MARAD, other interested non-DOD agencies, and various shipping industry groups resulted in refinements to the CASL proposal.[98]

(2) The resultant RESPOND program, modelled after CRAF, provides for call-up of merchant ships under three stages, the third of which requires Presidential declaration of emergency, and, thus, is tantamount to the requisitioning of shipping now provided for under Section 501 of the Merchant Marine Act of 1936. Whereas requisitioning authority would cover the total fleet, including tramp ships, RESPOND is limited to the berth line operators. Table 9 summarizes the number of U. S. flag dry cargo ships anticipated to be available for both military and commercial purposes in FY 71, those anticipated to be in the MSTS-controlled fleet under normal contractual arrangements, and those in the RESPOND program. As indicated therein, MSTS probably will have under charter some 24 percent of the useable U. S. flag merchant marine, including many ships that otherwise would be included in any implementation of RESPOND.

(3) The number of commercial cargo ships that would be required by MSTS during future contingency operations, both to support such operations and to maintain other worldwide support, depends on the location, timing, and extent of the military commitment, and the amount of cargo that would be airlifted. During the Vietnam era, both before and after the C-141 was available, 96 percent of military cargoes (by volume) dispatched from CONUS to RVN went by sea. As shown in Table 5, the peak RVN-era dry cargo sealift requirement (July 1967) was for 418 ships, of which only 84 (including 50 LSTs and coastal vessels) were in the MSTS nucleus fleet. Adding the miscellaneous ships excluded from Table 5, the peak RVN total was 429 ships (91 nucleus, 166 GAA, and 172 charter). The comparable peak requirement during the Korean era (July 1953) was for 409 ships (108 nucleus fleet, 143 GAA, 158 charter).[99] The requirement for cargo sealift augmentation in future emergencies has been stated by OSD[100] to be equivalent to nearly 300 C-5-S-75a cargo ships.

(4) The principal characteristics of the C-5-S-75a of importance to mobility planners are its speed (in excess of 20 knots) and its cargo capacity (over 1-million bale cubic feet, or 25,000 measurement tons (M/T)). In the entire U. S. flag merchant marine there were, on 31 December 1969, only 14 ships of the C5 class or better, 9 of which are container ships. As indicated in Table 10 there are only 124 dry cargo ships of all types capable of speeds of 20 knots or more (including 4 combination passenger-cargo ships) and only 178 ships in the 17.5 or better speed range, all but two of which are owned by the subsidized lines. As indicated in Table 11, most of the faster ships, however, are of C4 or C3 configuration, with only some two-thirds of the cargo carrying capacity of the C5 cargo ship, and most of the 15-17 knot ships are of the C2 class, with only about half the cargo capacity of the C5 ship. Thus, to obtain the equivalent cargo capability of a given number of C5 cargo ships would necessitate obtaining considerably more than that number of actual ships, including many in the 15-17 knot speed range built before or during World War II, as was the case during the Vietnam era. An adequate number of ships with reasonably adequate speed does not now exist in the U. S. merchant marine.

(5) Because of the difficulties of obtaining the better subsidized ships during Vietnam, it was necessary for MSTS to rely both on the nonsubsidized operators and, particularly, on the owners of the tramp ships. As indicated in Table 11, all the tramp ships are both old and slow, as are many of those of the nonsubsidized operators. Some non-subsidized operators, however, such as Sea Land Service, Inc. (Litton) and Seatrain Lines (Hudson Waterways), have converted some of the more usable older ships (including former MSTS troopships from the NDRF) into militarily useful containerships and vehicle carriers.

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[98]Interview with Deputy ASD (SA), op. cit.
[99]Information furnished by MSTS Staff (M-3E).
[100]MPM on Mobility Forces, op. cit., p. 3.

TABLE 9

ESTIMATED FY 71 U.S. FLAG COMMERCIAL DRY CARGO SHIP INVENTORY

Subsidized Lines	Total Fleet[1]	RESPOND Eligible (60%)[2]	Controlled Fleet[3]	Net Remaining[4]
RO-RO/Con	25	15	-	15
C-5	3	2	-	2
C-4	101	60	21	39
C-3 (new)	54	32	12	20
RO-RO/Con (old)	4	2	-	2
C-3 (old)	55	33	6	27
VC2	6	4	-	4
C-2	51	31	4	27
Subtotal	299	179	43	136
Unsubsidized Lines				
RO-RO/Con (new)	2	1	1	-
RO-RO/Con (old)	74	44	1	43
C-4 (old)	3	2	3	-
C-3 (old)	45	27	-	27
VC2	12	7	11	-
C-2	36	22	14	8
Subtotal	172	103	30	78
Total Berth Line	471	282	73	214
Tramps				
C-4 (old)	8	-	8	-
C-3 (old)	13	-	10	-
VC2	32	-	17	-
C-2	51	-	28	-
Subtotal	104	-	63	-
Total	575	282	136	214
Percent of total fleet		49	24	37

Notes 1. Excludes same ships as Table 5, plus 6 "Liberty" ships and other miscellaneous types with configurations not suitable for strategic deployment; includes anticipated new construction.

2. The numbers of ships which could be called up under Stages I and II of RESPOND (60% of ships of berth line operators).

3. Ships anticipated to be under charter to MSTS. In view of new MARAD policy, numbers of subsidized ships may be optimistic.

4. Ships not in MSTS controlled fleet, potentially available for call-up under RESPOND (Col 2 - Col 3). Numbers of some ship types actually under contract with MSTS may exceed numbers in RESPOND program, e.g., C-4 (old) and C-3 (old), above.

Source: Annex A to Fiscal Year 1971 RESPOND Determination and Findings, as amplified by MSTS Staff (M-OOB and M-62e).

TABLE 10

U.S. FLAG DRY GENERAL CARGO FLEET[1]

(as of 31 December 1969)[2]

Speed	Total Ships	Privately Owned[2]	USG Owned[3]	USG NDRF[4]
20 Knots +	124	124		
17.5-19 Kts	54	54		
16.5-17 Kts	231	197	10	24
14-16 Kts	395	196	87	112
Under 14 Kts	393	6		387
TOTAL	1197	577	97	523

NOTES: 1. Excludes 48 bulk carriers (ore, coal, etc.), 18 old reefer cargo ships (most under MSTS control during the Vietnam era) and 60 old coastal types, (7 under MSTS control, 53 in NDRF); includes 7 combination cargo-passenger ships.

2. Both active ships (including those under charter to MSTS - Table 5) and ships temporarily out of service.

3. All either under GAA to MSTS (Table 5), or in reserve operating status under MARAD control.

4. Ships mothballed in National Defense Reserve Fleet.

Source: Adapted from MSTS, Merchant Ship Register, January 1970, p. 504, Pages I and III, amplified by MSTS Staff (M-3D).

TABLE 11

U.S. PRIVATELY OWNED CARGO FLEET

Owners	Grand Total Ships	Post WW II (17.5 Kts +) RO/RO Total	Con	C5	C4	C3	Overage (11-17 Kts) RO/RO Total	Con	C4	C3	VC	C2	Other
Subsidized Lines	230	176	14	5	103	54	104	4		52	4	42	2
Non-Subsidized Domestic Lines	201	2	2				199	74	3	46	12	34	30
Tramps	96						96		3	13	30	47	3
TOTAL	577	178	16	5	103	54	399	78	6	111	46	123	35

NOTES: Ro/Ro Con: Roll-on/Roll-off, Vehicle, or Container Ships;
C-5, C-4, etc: Break-bulk cargo ships;
VC: "Victory" cargo ships.

Source: Adapted from MSTS, Merchant Ship Register, January 1970, p. 504, Pages I and III, amplified by MSTS Staff (M-3D).

(6) The RESPOND program would produce a maximum of 282 ships (less those already under charter to MSTS), with the probability of only 100 ships. As indicated in Table 11, most of the better ships are operated by the 11 subsidized lines. Similarly, of the 26 ships being built in U.S. yards, all except 2 Matson Navigation Co. container ships are for subsidized lines. These major steamship companies are obligated by their operating differential subsidy contracts to make a specified number of voyages on their assigned trade routes. In order for them to be relieved of this contractual obligation, either (a) MARAD must waive the requirement, or (b) requisitioning of merchant shipping must be ordered.

(7) In January 1970 MARAD advised all subsidized operators[101] that all new or relatively new subsidized ships (built subsequent to 1950) now under charter to MSTS must be returned to commercial berth line service as soon as practicable without disrupting the operations of MSTS. Under the new policy, MARAD will not approve new charters or extensions of existing charters to MSTS of any ships built since 1950 with Government subsidy assistance, unless it can be shown that such ships are urgently required by MSTS and/or are not needed for commercial operations. Because all subsidized operators must have MARAD clearance before making their ships available under RESPOND, it is unrealistic to count on RESPOND to produce many of the 179 ships listed in Table 9, unless MARAD policy changes or unless wartime requisitioning authority is implemented.

(8) The 103 RESPOND-eligible ships of the nonsubsidized lines, unless already under charter to MSTS, probably would be made available under RESPOND. It must be recognized, however, that owners of commercially profitable shipping systems will be reluctant to make available to DOD significant numbers of ships, except under wartime conditions. Their normal trade would be diverted to foreign flag lines and would be difficult to recapture under the intense competitive conditions existing in the world shipping industry. The only remaining source of commercial augmentation is the old tramp ships, which depend primarily on Government charters to remain in business. The desire of the Services and GSA to utilize containers to the maximum, however, means that there will be minimal peacetime business for the older break-bulk ships. Unless there is peacetime employment for these ships, they will be scrapped. Already the tramp operators are scrapping their old ships at an accelerated rate.[102]

(9) The prospects of the DOD obtaining sealift augmentation in future contingencies from either reserve or commercial sources are poor because of the following:

(a) The NDRF, the principal source of both Vietnam and Korean era sealift, will no longer exist by the end of FY 78

(b) Most tramp operators, who provided the most responsive support, will have been forced out of business within the next decade

(c) Many nonsubsidized operators will be reluctant to lose their long-term competitive advantage in order to accommodate DOD under less than wartime conditions

(d) Unless current MARAD policies are modified, the subsidized operators, who own most of the best ships, will not be permitted to charter them to MSTS, the RESPOND program notwithstanding.

(10) Finally, it must be recognized that any actions by DOD to charter large numbers of ships immediately alerts the shipping industry that a major military operation is forthcoming. As discussed in Section B, OSD authorized the transportation operating agencies to take necessary actions, "as inconspicuously as possible," to arrange for the lift needed for the early Vietnam deployments. Despite the elaborate steps taken to avoid publicity, the maritime press correctly anticipated the Vietnam buildup prior to public announcement of the decision.

[101] MARAD Circular Letter No. 1-70, 2 January 1970.
[102] Enclosure (1), subject: Fiscal Year 1971 Respond Determination and Findings to UnderSec Navy Memorandum for ASD (I&L) Ser 00137, 17 November 1969 (basic memo not available to JLRB).

h. New Merchant Marine Policy

(1) On 23 October 1969 President Nixon submitted to the Congress a message on the merchant marine. He stated that: "The United States Merchant Marine -- the fleet of commercial ships on which we rely for our economic strength in time of peace and our defense mobility in time of war -- is in trouble."[103] He proposed a substantial merchant ship building program of Government subsidies both to shipbuilders and to ship operators.

(2) With respect to shipbuilding, he proposed, among other things:

(a) Increasing new construction from 10 ships per year to 30 ships per year.

(b) Reducing Government subsidies from 55 percent to 35 percent over a period of years.

(c) Paying subsidies directly to builders to encourage innovations and efficiency.

(d) Committing funds under a multi-year procurement system to realize economies of scale.

(3) With respect to ship operations, the President proposed realigning the operating differential subsidies system to provide incentives for efficient management and for better labor management relationships. He also advised the Congress that the Departments of Commerce and Transportation will work with related industries and local governments to improve CONUS port operations.

(4) The Maritime Administration has recently let two contracts for the development of basic ship designs for the merchant fleet of the 1970s. Among other things, these contracts provide for development of the preliminary design for general cargo vessels and for dry and liquid bulk carriers needed to carry a significant portion of the projected U.S. foreign trade in the next decade.[104]

(5) In order for the new merchant marine policy, if approved by the Congress, to be of value to the military, two things are required:

(a) There must be a firm national commitment to make ships available to DOD when required for military purposes.

(b) There must be provision for incorporating into the designs of new construction ships those national defense features which would be required for military purposes but not for normal commercial operations.

(6) The RESPOND program has not been effective to date, and, under the new MARAD policy, probably will be even less responsive in the future. If the merchant marine of the future is to be a military auxiliary, as in the past, the legislation which implements the President's program must provide specifically for making available to DOD the necessary ships under various contingency situations. Part of the problem undoubtedly is the political one of defining the various types of contingency situations under which DOD would have priority for merchant shipping. As discussed in Chapter II, MARAD has found that the overriding policy of the Congress, as reflected both in the Merchant Marine Act of 1936 and in the Merchant Ship-Sale Act of 1946, is to provide U.S. flag merchant shipping "for the national defense." Yet current MARAD policy precludes MSTS from chartering the newer ships. Unless the Congress stipulates the types of circumstances under which the DOD can pre-empt commercial shipping, the military will be totally dependent on airlift, plus such few ships as may be available in the MSTS-controlled fleet.

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[103]White House Press Release, dated 23 October 1969.
[104]MARAD News Release MA NR 69-70, dated 13 November 1969.

i. National Defense Features

(1) Section 501 of the Merchant Marine Act of 1936 (46 USC 1151) authorizes construction-differential subsidies "to replace worn-out or obsolete tonnage with new and modern ships." A key provision of this section is that the new vessel "will meet the requirements of the foreign commerce of the United States, will aid in the promotion and development of such commerce, and be suitable for use by the United States for national defense or military purposes in time of war or national emergency." The act requires that plans for such ships be submitted to the Navy Department for examination and "suggestion for such changes therein as may be deemed necessary or proper in order that such vessel shall be suitable for economical and speedy conversion into a naval or military auxiliary..." There is no comparable requirement with respect to nonsubsidized ships.

(2) Under Navy procedures[105] the Chief of Naval Material submits copies of ships plans to the Department of the Army, COMSTS, and other DOD agencies for comment and recommendation. Among the current military objectives that have had ready acceptance by MARAD and industry are 20-knot speed and suitable lift capacity. The military objective of self-sustaining capability for containerships, however, is counter to the commercial objective of maximum payload, and has not been successful.

(3) The program of national defense features, like the availability of merchant ships to DOD, depends on a clear statement of priorities. If the overriding purpose of present legislation is to make ships available for the national defense, then national defense features should have high priority; however, this is not the case. The owner wants a ship that will be cost-effective on a particular trade route and if a particular military feature will benefit him commercially, he will accept it, particularly if funded by MARAD. The lack of available MARAD funds or the lack of industry agreement, however, could prevent the subsidy from being granted, if the Navy Department insisted on expensive national defense features. Because the numbers of new ships are so few, the tendency is to accept what the market will bear, irrespective of the military desirability of certain features not normally found in commercial ships.

j. The Build and Charter Program

(1) The greatest present hope for replacement ships for the MSTS-nucleus fleet is the "build and charter" program. As indicated above, the new Ro/Ro, the ADM CALLAGHAN was the first ship under this program. Planned, but not yet approved by the Congress, are 10 MPS and 9 handy tankers.

(2) The build and charter program, however, is not a complete solution because the ships in this program will be commercially-owned and operated. The CALLAGHAN, for example, is a commercial ship, flying the house flag of Sun Export lines. It is not a U.S. naval ship. Similarly, build and charter ships of the future will be commercial ships, not public vessels, and during wartime, such ships will be subject to the international legal obligations of merchant ships, without the privileges of public vessels.

(3) Further, the number of ships that can be made available under a build and charter concept is limited to that which is attractive to industry. Because the owner is a commercial operator, who has a long-term (e.g., 10 year) charter with MSTS, he must weigh the probability of a commercial use for the ship, if the charter is not renewed. If he feels that a ship, such as the MPS, built to military specifications, has commercial utility, and if he can obtain the funding through commercial sources, he may be willing to contract for a substantial number. Otherwise, the only alternative is Government financed, built, and owned ships, as in the MSTS nucleus fleet.

(4) Finally, the build and charter method of procuring ships is more expensive to the Government than is the building of such ships for Government ownership and operation.

[105] OPNAV Instruction 4700.13A, subject: National Defense Features for New Construction Merchant Ships, 21 July 1967.

The Integrated Sealift Study computed that the most economical source of replacements for the MSTS fleet would be long-term charter of privately built ships if only the initial 10-year cost were considered. However, if costs beyond 10 years are considered, it becomes less costly for the Government to buy rather than lease ships. The overall cost saving is considerable when the traditional ship life of 20-25 years is considered, and is even more if ship life is assumed to be 30 years.[106]

k. Cost-Effectiveness Criteria. Analytical studies of cost-effectiveness have provided major factors with regard to decisions concerning the types and numbers of aircraft and ships to be procured, and the planned utilization of these means of transportation. There are two fundamental problems with such studies. The first is that the normally used figures for the cost portion are the tariff rates charged for industrial funding purposes and not the total cost to the Government of the transportation, including terminal charges, pipeline, packaging and overhead. The second is that decisions to do with strategic mobility resources must go beyond the least-cost solution and include such military factors as readiness for rapid deployment.

5. CONCLUSIONS AND RECOMMENDATIONS

a. Conclusions

(1) During the initial period of the buildup in the Republic of Vietnam, the Military Sea Transportation Service nucleus fleet had insufficient capability to support the inter-theater requirement for movement of helicopters and light aircraft and of Army lighterage and other outsized cargo, and, as in the Korean buildup, a shortage of deep draft cargo ships was experienced. To meet requirements throughout the period escort carriers and general cargo ships were reactivated, amphibious force ships were used, both U.S. and foreign flag merchant ships were chartered, and contracts were let for long-distance towing operations (paragraphs 3a(2), 3b(2), and (3), 3b(9) and (10), and 3b(12)).

(2) LSTs for operations over-the-beach and in minor ports were in such critically short supply during the first 3 years of the Vietnam buildup that old LSTs were reactivated from all available U.S. sources and were borrowed from other countries (paragraphs 3c(1) through 3c(6)).

(3) During the buildup period, up to 100 Military Sea Transportation Service-controlled ships were used for moving ammunition from the continental United States to SE Asia, including 23 used in a dedicated transportation system for delivery of air munitions. Some of these ships were also utilized to provide temporary floating storage until adequate facilities and stockage levels could be established ashore (paragraphs 3b(7) and 4b(5)).

(4) The lack of adequate reefer storage facilities in Vietnam led to the requirement for the Military Sea Transportation Service to charter reefer ships for floating storage (paragraph 3b(9)).

(5) During the initial period, the failure of the Commander, U. S. Military Assistance Command, Vietnam, and of the Commander in Chief, Pacific, to regulate ship sailings to Vietnam in accordance with the limited throughput capabilities of Vietnam ports, until directed to do so by the Joint Chiefs of Staff, was the major cause of slow ship turn-around which increased the requirement for augmentation shipping (paragraphs 3b(5) and 3b(6)).

(6) There is a military requirement during the deployment phase of contingency operations, with lesser requirements during the resupply phase, for a military sealift capability to:

(a) Deploy helicopters in fly-away condition (paragraph 4b(2)).

(b) Deploy wheeled and tracked vehicles in roll-off condition (paragraph 4b(3)).

[106] Integrated Sealift Study, op. cit., p. 45.

(c) Move very heavy outsized end-items (such as lighterage) for discharge by ship's gear in the area of operations (paragraph 4b(4)).

(7) There is a military requirement during the resupply phase of contingency operations, with lesser requirements in the development phase, for a military sealift capability to:

(a) Move ammunition (paragraph 4b(5)).

(b) Move containerized and break-bulk supplies and equipment until commercial augmentation can be mobilized and made operational (paragraphs 4b(6) and 4b(7)).

(8) There is a military requirement for shallow draft shipping capable of operating in minor ports and over beaches (paragraphs 4c(2) and 4c(3)).

(9) There is a peacetime requirement for a military controlled sealift capability to provide container and break-bulk service (including reefer) to areas not normally served by commercial shipping companies (paragraphs 4b(6) and 4b(7)).

(10) To satisfy the above requirements the Military Sea Transportation Service fleet (Government-owned ships plus long-term chartered ships) as of March 1970 consisted of:

(a) One overage aircraft transport, four roll-on/roll-off (Ro/Ro) ships, four vehicle carriers, and five very heavy lift ships (including one of the Ro/Ros) for the principal sealift requirements of the deployment phase (Table 7).

(b) No containerships, and only 32 old break-bulk general cargo and reefer ships for the resupply phase and for peacetime operations (Table 7).

(c) Forty-five old LSTs and coastal vessels, all due for inactivation by the end of FY 73, for shallow draft operations (Table 7).

(11) To satisfy those requirements in the future:

(a) The Five-Year Defense Program provides for 10 multi-purpose ships, but that number could move the aircraft, vehicles, and unit equipment of only one armored division or of one airmobile and one airborne division. (paragraphs 4b(2) and 4b(3)).

(b) The Commander, Military Sea Transportation Service, has proposed that the Department of Defense procure 11 medium-sized self-sustaining containerships (primarily for ammunition) and 6 specially configured barge-carrying ships (both as a supplement to the MPS in the strategic sealift role and for intra-theater LOTS capability), but neither proposal yet is in the Five-Year Defense Program (paragraphs 4b(5)(c) and 4c(3)(c)).

(12) If the above proposals are authorized, Military Sea Transportation Service fleet would have the peacetime capability to serve DOD installations in areas of the world not included in commercial containership systems, a contingency capability for the deployment of military end items and for the movement of military supplies and equipment until large-scale commercially-procured containership service can be established to the contingency area, and for shallow-draft operations (paragraphs 4b(2)(f), 4b(3)(b), 4b(4)(b), 4b(5)(c), 4b(6)(c), and 4b(7)(c)).

(13) Unless the Military Sea Transportation Service fleet is modernized with sufficient numbers of an appropriate mix of ships there will be no peacetime capability to move containers to areas of the world not served by commercial container systems, no capability to move containerized unit equipment to contingency areas for about the first 6 months of contingency operations, no shallow-draft capability, and insufficient capability to move military end items (helicopters, wheeled and tracked vehicles, and lighterage) and ammunition (paragraphs 4b(2)(d), 4b(3) through (7), and 4c(2) and (3)).

(14) The Five-Year Defense Program plan to replace old Military Sea Transportation Service tankers with nine new construction handy-sized tankers is necessary to provide petroleum, oils, and lubricants support to areas which will not accommodate large tankers of the types that are now in the merchant marine and being constructed for commercial owners (paragraph 4d).

(15) Although the Joint Chiefs of Staff continue to state military requirements for large numbers of Military Sea Transportation Service troopships and commercial passenger ships for unit deployments, most such ships are being retired from both the Department of Defense and commercial service (paragraph 4e).

(16) The National Defense Reserve Fleet will not be a source of sealift augmentation beyond FY 78 (paragraphs 4f(2) and (3)).

(17) The RESPOND program is not a realistic means for ensuring responsive sealift support from the U.S. merchant marine in future contingencies (paragraphs 4g(6) through (10)).

(18) In order for the merchant marine to be a responsive source of military sealift augmentation in future contingency operations, (1) current Maritime Administration Policy must be replaced by a firm national commitment to make modern ships available to the Department of Defense when required for military purposes, and (2) there must be positive provision for the determination, incorporation, and funding of national defense features in new construction merchant ships. (paragraph 4h(5) and (6) and 4i(3)).

(19) Because build and charter multi-purpose ships will be commercial ships, rather than public vessels, they will have the wartime obligation of merchant ships without the privileges of naval vessels (paragraph 4j(2)).

(20) Although the build and charter method of procuring multi-purpose ships is the best short-term solution to the urgent Military Sea Transportation Service ship modernization problem, commercial interests may be unwilling to commit their financial resources to the numbers of ships required (paragraph 4j(3)).

(21) Considering that the life of a ship is 25 to 30 years, it would be less costly in the long run for the Government to build and operate multi-purpose ships as Military Sea Transportation Service nucleus fleet ships than to have commercial interests build them for commercial operation under Military Sea Transportation Service charter (paragraph 4j(4)).

(22) The current single manager tariff rates used for comparing airlift and sealift costs do not reflect total costs to the Government (paragraph 4k).

b. Recommendations. The Board recommends that:

(1) The Joint Chiefs of Staff establish positive procedures to ensure that the commanders of unified commands determine realistic cargo reception and clearance capabilities in connection with their contingency planning, that those commanders and the Services consider those capabilities in determining the phasing of their equipment and supply requirements, and that ships not be sailed to the contingency area unless they can be unloaded expeditiously (TR-9) (conclusion (5)).

(2) The Secretary of Defense support necessary legislation to authorize long-term build and charter commitments so that the multi-purpose ships and handy-sized tankers now in the Five-Year Defense Program as the initial increment of the Military Sea Transportation Service fleet modernization program may be constructed by commercial interests and chartered to the Military Sea Transportation Service (TR-10) (conclusions (1) through (4), (5) through (14), and (20)).

(3) The Joint Chiefs of Staff determine the numbers of multi-purpose ships, medium-sized container ships, barge carrying ships, and handy-sized tankers which must be in the Military Sea Transportation Service fleet to provide peacetime sealift support to U.S. forces and to meet surge requirements for contingency operations until such time as additional shipping support can be mobilized and made operational (TR-11) (conclusions (11) through (14)).

(4) The Joint Chiefs of Staff re-examine the wartime requirement for troopships (TR-12) (conclusion (15)).

(5) The Secretary of Defense seek to have the legislation stemming from the President's merchant marine program include positive provision for ensuring the responsiveness of modern U.S. flag merchant ships, with appropriate national defense features, to meet military requirements under various conditions of emergency (TR-13) (conclusion (18)).

(6) The Secretary of Defense include in future Five-Year Defense Programs positive provision for a follow-on program of modernization for the Military Sea Transportation Service fleet, with due regard to the advantages of Government ownership versus charter of mobility resources (TR-14) (conclusions (20) and (21)).

SECTION E

INTER- AND INTRA-THEATER AIRLIFT AND AERIAL PORTS

1. STATEMENT OF ISSUES AND THEIR SIGNIFICANCE. Section E reviews inter- and intra-theater airlift capability and the aerial port facilities that supported airlift capability during the Vietnam era.

a. During the rapid deployment of military units to SE Asia and the resupply operations necessary to support these units, there was a shortage of airlift. There was also a shortage of suitable aerial port facilities on the west coast of the continental United States (CONUS) and SE Asia.

b. Factors contributing to these shortages, the impact of the shortages on the operation, and the actions taken to compensate for these deficiencies will be discussed in this section.

2. INTER-THEATER AIRLIFT

a. Background

(1) Source of Common-User Airlift. Common-user airlift is provided by the Military Airlift Command (MAC) and is derived from the following resources: MAC's transport fleet aircraft; specific Air Force Reserve and Air National Guard units with transport aircraft assigned; and certain civil air carriers that have qualified and are members of the Civil Reserve Air Fleet (CRAF) program. Most of MAC's airlift capability is used to satisfy the stated forecast requirements of the Services by establishing route structure and frequency of operation on a pro-rata basis. Commercial augmentation is procured to satisfy those requirements beyond the capability of the military force aircraft. The Joint Chiefs of Staff (JCS) has provided the priorities and guidance that govern the utilization of MAC's airlift capability.

(a) First priority is given to the JCS-assured airlift missions. These are channel traffic missions that the Joint Chiefs of Staff has directed MAC to operate on a given frequency between specified ports in order to provide minimum essential support for deployed units and overseas forces. During the Vietnam era most of the JCS-assured missions were to destinations other than SE Asia.

(b) Second priority is given to the Special Assignment Airlift Missions (SAAM) and the airlift provided to meet JCS-approved mobility exercises and joint airborne training requirements.

(c) Third priority is given to the productive capability that remains after these higher priority missions are satisfied and is applied to channel traffic requirements. The major part of MAC's airlift capability is in this category.

(2) Aircraft Equipment Resources

(a) MAC, in 1965, had a mixture of aircraft types assigned, -- propeller, turboprop, and jet. All three types of aircraft had different airlift capabilities in speed, range, and allowable cabin load (ACL). MAC's airlift force inventory contained 21 squadrons of C-124s, 3 squadrons of C-133s, 7 squadrons of C-130s, and 3 squadrons of C-135s (converted KC-135 tankers). During the buildup, the major portion of MAC's new C-141 fleet was still in production. As of 30 June 1965 only 16 C-141 aircraft were in the MAC inventory -- 12 were assigned for crew training at Tinker AFB, Oklahoma, and 4 were assigned to Travis AFB, California,

for Category III (using command) testing and were not available for channel airlift.[107] Not only did MAC lack this first line aircraft for support during the initial phases of the Vietnam conflict, but there was an additional burden of Phase III testing and the transition to a new aircraft that involved intensive training and familiarization of both aircrews and ground crews. (See Table 12). A comparison of the inventory of MAC's airlift force unit equipped (UE) aircraft from the beginning of FY 1964 through 1968 is shown in Table 12.

TABLE 12

MAC AIRLIFT FORCE INVENTORY

Type	1 July 64	1 July 65	1 July 66	1 July 67	1 July 68	1 July 69
C-118	58	9	0	0	0	0
C-124	291	318	243	188	183	48
C-130	112	119	95	35	34	0
C-133	43	39	41	38	38	38
C-135	40	28	17	10	0	0
C-141	0	4	94	220	242	242
TOTAL	544	517	490	491	497	328

Source: MAC Annual Summaries

(b) In addition to the MAC inventory, the reserve forces were equipped with C-97, C-124, and C-121 aircraft that were 12 or 15 years old, difficult to maintain, and only capable of transporting approximately 10 short tons per trip over the Pacific routes. The MAC military airlift force does not have the capability to carry out the entire airlift mission during either peacetime or war, therefore it was necessary to augment MAC's capability by the use of reserve units and/or the procurement of airlift from U.S. civil air carriers. At this time the civil air carriers had assigned 107 jet aircraft and 84 prop and turboprop aircraft to the CRAF program. Table 13 shows the total inventory of the CRAF long-range aircraft by fiscal year.

TABLE 13

CRAF LONG-RANGE AIRCRAFT INVENTORY

Type	1 July 64	1 July 65	1 July 66	1 July 67	1 July 68	1 July 69
DC-6	8	7	14	3	3	0
DC-7	26	22	23	21	18	0
L1049/1649	29	29	23	23	0	0
L-382 (C-130E)	0	0	2	3	3	0
CL-44	21	23	22	21	17	0
DC-8/CU-880 (Jet)	29	32	63	55	76	112
B 707 (Jet)	78	116	143	186	242	240
TOTAL	191	229	290	312	359	352

Source: HQ MAC form 0-315 or equivalent complied monthly by the Directorate of War Plans.

NOTE: No attempt to identify convertibility or separate cargo and passenger configurations has been made.

[107] MAC History, Vol. I, 1 July 1964 to 30 June 1965.

(c) Although the CRAF program was not implemented, MAC was able to make use of the aircraft of the civil air carriers through normal contractural arrangements. As shown in Table 13, however, there was a limited number of long-range jet aircraft available during 1965. Most commercial carriers had to be scheduled into South Vietnam during daylight hours only, creating uneven work periods and limitations on CONUS terminal capabilities.

b. Discussion

(1) MAC Airlift. MAC took several management actions to achieve greater airlift capability as follows:

(a) MAC increased its flying hour program from 5 to 8 hours per day per aircraft.

(b) By 1 April 1966 additional personnel, some of whom were crew members of units being phased out of the Strategic Air Command, were being assigned to MAC. This greatly assisted in achieving the flying hour program.

(c) At the request of MAC, the Joint Chiefs of Staff approved the reduction of mobility exercises and joint airborne training. This action permitted MAC to divert 113,000 flying hours in FY 65 to other missions.

(d) In 1 year MAC C-141 inventory increased from 12 to 112 aircraft. This increase in the MAC fleet capability, plus the largest commercial augmentation in MAC history (during FY 66 value $394,169,000 vs. $231,264,000 for FY 65), provided sufficient airlift in the support of SE Asia by the end of 1966.

(2) MAC Personnel Resources. In 1965, MAC was levied with requirements to transfer 1,400 personnel to other organizations. The large turnovers of personnel, the delay in assigning replacements, and the lengthy training periods to qualify these replacements degraded MAC's airlift capability. During this period, the initial impact was felt in the pilot resources; however, each crew position became the limiting capability factor at one time or another. Personnel and aircraft had to be diverted from airlift missions to accomplish this training. During active periods of training, purchase of commercial airlift was required to offset the military capability lost.[108]

(3) Reserve Forces. The reserve forces were not mobilized, and their contribution to the total airlift capability was on a voluntary basis. Because of their responsibilities in civilian life, it was necessary, in most cases, to use reserve forces on the shorter, low requirement channels. This limitation coupled with the older, slower aircraft assigned to the reserve forces almost completely restricted them from the long SE Asia channels. The opportune airlift capability furnished by the reserve forces during their training periods did, however, contribute to the MAC operation by airlifting 30,000 tons of cargo and 5,790 passengers from 1 August 1965 to 30 June 1966 from CONUS to the Pacific area.

(4) Commercial Augmentation

(a) The procurement of commercial airlift is by far the greatest source of augmentation. Since 1965 commercial carriers have provided 90 percent of the total passenger lift and 28 percent of the cargo lift required to support worldwide DOD requirements. MAC procures airlift from all civil air carriers, on an equitable basis, that have registered their aircraft with the CRAF program. The use of commercial augmentation into South Vietnam during 1965 and 1966 was limited because inadequate air facilities existed and agreements with the government of RVN only authorized U.S. air carriers to land at Tan Son Nhut, Saigon. It took several months to obtain authority for MAC commercial charter flights to land at other locations. Because of the lack of adequate aerial port facilities and agreements

[108]Statement furnished JLRB by DCS/O Hq, MAC, Aircrew Training Branch during meeting, 29 September 1969.

with the Government of Vietnam to use commercial airlift in a flexible manner, congestion at Tan Son Nhut became a serious problem. Practically all inbound cargo and passenger flights had to be processed through one facility. As aerial ports were constructed and approval was obtained from the Government of South Vietnam for expanding U.S. commercial carrier operations throughout South Vietnam, the airlift operation to and within RVN became more responsive.[109] Because of the lack of enemy interdiction of airlift operations in SE Asia, a relatively permissive airlift operational environment existed, and MAC was able to make extensive use of commercial augmentation.

(b) It is necessary for MAC to have a reasonably accurate forecast of the users airlift requirements for two reasons: first, so that they can determine what airlift capability will be necessary to satisfy the total requirements, and second, how much of the requirement will be satisfied by commercial augmentation. The commercial operators need to have a basic contract upon which they can plan the utilization of their equipment. If the basic contract is capable of expansion but has been scheduled equally throughout the contract period on a prorata basis, then both MAC and the carrier can be flexible to changing requirements. If the forecast requirements are not adjusted, either up or down, in sufficient time to allow the carriers to make schedule changes or obtain other business to replace that which they had reserved for DOD, the carriers are allowed to charge the Government for those airlift services which they were unable to replace by other business. A case in point occurred during the months of May and June 1967 when MAC had obligated a large amount of commercial augmentation against stated user requirements, and then a nation-wide truck strike prevented large amounts of the cargo from reaching the aerial port of embarkation (APOEs). Thus MAC was forced to suspend 388 missions with the various airlines because the expected traffic did not generate. (See Figures 3 and 4).

3. INTRA-THEATER AIRLIFT

a. Background. When the Vietnam conflict started, MAC was serving the Pacific areas with a few long airlift channels. (See Figure 5.) The Pacific Command (PACOM) used theater tactical airlift for the intra-theater movements and had developed an intra-theater airlift system sufficient to meet peacetime requirements. The Vietnam conflict requirement for tactical airlift put a severe strain on PACOM's ability to operate an intra-theater airlift system and to meet the tactical airlift requirements in RVN. At the beginning of 1965 there were only 5 C-130 squadrons (16 aircraft per squadron) in the Pacific Command, and 1 MAC C-124 squadron in Japan to provide outsize cargo capability.. (The C-124 unit had been programmed to return to CONUS for phase-out.) These units were under operational control of the 315th Air Division with headquarters in Japan. During 1965 the demands for intra-theater airlift increased rapidly because of the rapid buildup of tactical forces in South Vietnam, continued denial of roads and railroads, and limited seaport facilities. During 1965 the Pacific Air Force (PACAF) intra-theater scheduled airlift operation within the theater dropped from 40 percent of the total intra-theater airlift capability to less than 30 percent. The airlift released from scheduled operations was directed toward tactical support missions within RVN.[110]

b. Discussion

(1) Interface of Common-User and Tactical Aircraft in Vietnam. Tactical airlift requirements in South Vietnam were met initially by the 315th Air Commando Group using the C-123 aircraft. This group, located in South Vietnam, was assigned to PACAF's 315th Air Division at Tachikawa AB, Japan. Operational control was exercised on behalf of Commander, U.S. Military Assistance Command (COMUSMACV) by the Commander, 2d Air Division, at Tan Son Nhut, Saigon. As military operations in RVN increased, airlift requirements exceeded the capability of the C-123s. To provide additional lift, C-130 aircraft were staged in South Vietnam from offshore bases within PACOM Far East. As facilities within South Vietnam became capable of supporting the C-130s, these aircraft were augmented by six more C-130 squadrons from the Tactical Air Command, including some of the newer C-130E units. These squadrons were assigned to the operational control of the 315th Air Division and were based

[109] COMUSMACV Command History, 1966, p. 293.
[110] CINCPAC Command History, 1965, Vol. II, p. 572.

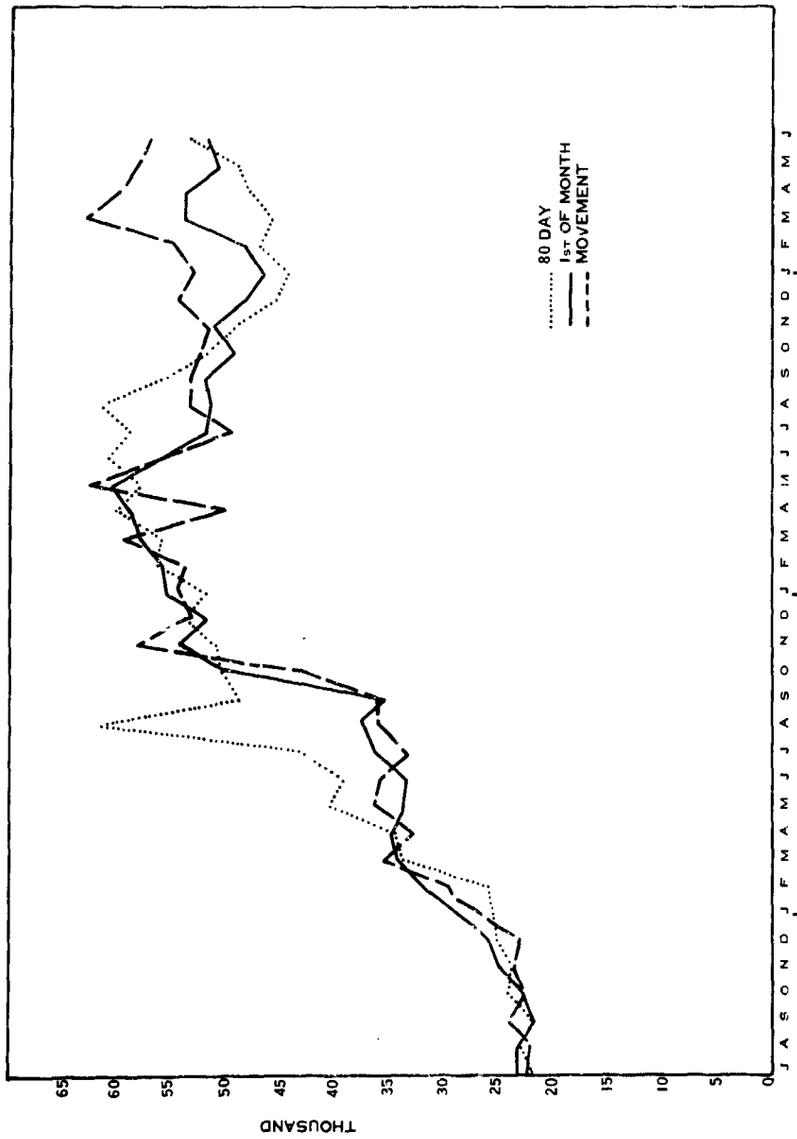

FIGURE 3. MILITARY AIRLIFT COMMAND CARGO FORECAST/ MOVEMENT WORLDWIDE

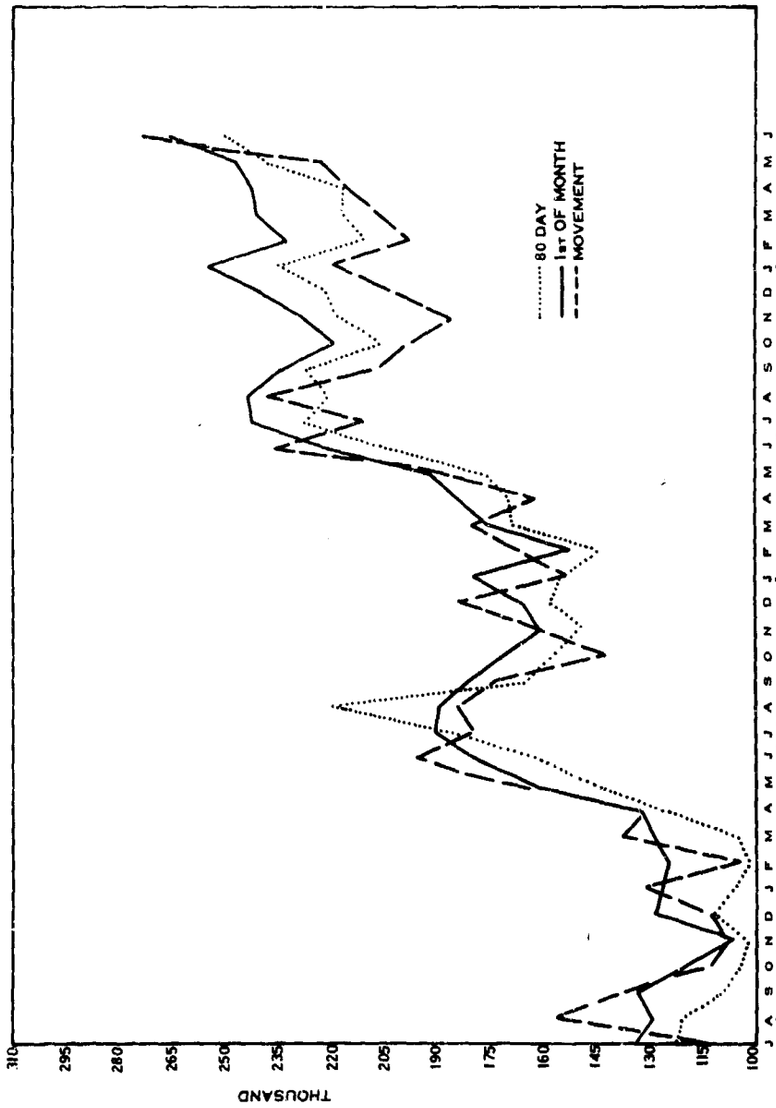

FIGURE 4. MILITARY AIRLIFT COMMAND PASSENGER FORECAST/ MOVEMENT WORLDWIDE

in Japan, Okinawa, Taiwan, and the Philippines. All units were authorized to increase their productivity by increasing flying hours per aircraft from 2.5 hours per day per aircraft to 4.5 hours.[111]

(2) Interface of Inter- and Intra-Theater Airlift Systems. To interface the inter-theater airlift system with the intra-theater airlift system, close coordination between MAC and PACAF was necessary. Through this joint action MAC assumed the responsibility for providing airlift over intra-theater routes previously supported with PACAF tactical airlift. To accomplish this task MAC took the following action: established new channels and facilities; extended routes; and provided quick response to special assignment airlift requirements by using aircraft of the inter-theater airlift force already in the theater. This permitted PACAF to use assigned tactical airlift to respond to the tactical airlift requirements in RVN.

(3) Outsized Airlift. There has been a significant and continuing requirement in SE Asia for the intra-theater movement of outsized items (which could not be moved in C-130 aircraft) such as vehicles, artillery, and helicopters. When movement of such items by air was required, MAC accomplished the mission by providing C-124 aircraft from Japan or by using C-133 aircraft after they had completed MAC inter-theater airlift missions. It is extremely important to note that following the scheduled phase-out of the C-124s and the C-133s, the C-5 will be the only airlift aircraft in the U.S. inventory (military or civilian) that will have a true outsized capability.

4. AERIAL PORTS (CONUS AND SE ASIA)

a. Background. The aerial port is a basic part of airlift operations. When the intensity and magnitude of the airlift operation in terms of passengers, tonnage, and aircraft exceed the capability of the aerial ports, aircraft and aircrews are not used to their full capability and pipeline times are increased. During the early part of the Vietnam buildup there was aerial port congestion in the CONUS and RVN. During the same period construction of airports and facilities was in progress throughout South Vietnam. Although airfields in RVN were being constructed, it was necessary to use primarily the smaller tactical transport aircraft such as the USAF C-123s and the U.S. Army and Royal Australian CV2Bs (CARIBOU).

b. Discussion

(1) CONUS Aerial Ports. Prior to the Vietnam buildup, the concept of managing worldwide resupply airlift centered on coastal oriented aerial ports of embarkation, with each of these APOEs serving only selected destinations in the adjacent oceanic area. This concept evolved primarily because of the critical shortage of airlift capability, the relatively short range of transport aircraft, and the existence of transportation systems within the United States that were capable of economically moving the cargo to the coastal ports. Thus airlift was reserved for use on the long, over-water routes. The total shipper-to-user pipeline involved extensive use of surface transportation within CONUS. Except for that small amount of cargo generated near the coastal port and destined for an overseas area serviced by that port, cargo had to be shipped over long distances to a port before it could be airlifted. This procedure required multiple handling, and extensive packing, which was excessive for air transportation and long in-transit times.[112] In the beginning of 1965, all passenger's and cargo destined for SE Asia were processed through the Travis APOE, although MAC operated other APOEs at McGuire, Dover, Charleston, and McChord. These APOEs were oriented to other specific destinations, i.e., McChord to Alsaka and Dover to Europe. Travis APOE soon became saturated as the cargo began to flow at a rate much higher than forecasted. Further, the proliferation of super priorities escalated the terminal work load by increasing the need to sort, repalletize, redocument, and adjust aircraft loading plans.

(a) On 1 April 1965, after approximately 1 year of testing, the inland APOE at Kelly AFB was opened for common-user service to Saigon, Clark, Kadena, and Kimpo. This was the first time an aerial port had been located a considerable distance away from the coastal areas. The Kelly APOE was operated by the Air Force Logistics Command (AFLC). With the

[111] CINCPAC Command History, 1965.
[112] 22d AF draft input to Project Corona Harvest on Terminal Management, 1 August 1969.

availability of modern, long-range jet cargo transport aircraft, MAC had the capability of not only making the established ports multi-directional but also of serving inland aerial ports. Additional aerial port capability was needed to meet expeditiously the demands of moving passengers and cargo to the Pacific and SE Asia areas. Studies were conducted by various commands, services, and branches of Government to determine the most appropriate locations for establishing additional APOEs to absorb this tremendous work load, which increased 300 percent between 1964 and 1966. A study originated by AFLC and the General Services Administration (GSA) recommended that McChord be established as a cargo APOE with channels to Japan and Korea, in addition to service provided to Alaska. The cargo channel was approved, and service to Tachikawa and Seoul was started on 1 July 1965 using Northwest Airlines under contract.

(b) On 1 October 1965, another step was taken to alleviate the saturation of the Travis APOE capability by designating Norton as an aerial port to provide cargo services to Kadena and Da Nang. Although some of the Travis work load was siphoned off to Kelly, McChord, and Norton during 1965, cargo and passenger requirements continued to soar. For example, in January 1965, Travis handled 42,000 passengers and 9,700 tons of cargo; whereas in January 1966, the workload increased to 73,000 passengers and 11,600 tons of cargo. West coast terminals continued to be saturated although facilities, equipment, and personnel on the east coast were not being fully utilized. The congestion at the Travis APOE continued to be a major problem during the latter part of 1965 and early 1966. The following quotes, taken from Western Area Military Traffic Management and Terminal Service (WAMTMTS) newsletters, highlight the situation. "We are diverting some high priority cargo from Travis to surface lift."[113] "Airlift space is also short, with Travis backlog going up each day, now at 1068 short tons."[114] "Airlift still short out of Travis and expected to continue until mid-February. Travis has 1430 STONS on hand."[115] "Airlift remains critical. 1586 STons at Travis. PAMPA is working with Service representatives (and us) to see if some of the items there — principally outsize and special handling — can be moved down here (meaning San Francisco water port) for movements by ship."[116] Additional aerial port capability was needed to meet expeditiously the demands of moving passengers and cargo to the Pacific and SE Asia areas. On 1 April 1966, cargo channels were established from Dover to Saigon, Dover to Clark, and Charleston to Bangkok. A passenger channel from McGuire to Saigon was also established on 1 May 1966. This radical departure from the previous unidirectional port concept was made possible by the long-range C-141 operating via the North Pacific or polar routes. In addition to dispersing the work load, these channels, originating from the middle and eastern United States, reduced passenger pipeline time and cargo in-transit times. The locating of passenger APOEs at McChord and McGuire was also of benefit to the Department of the Army, which maintains major processing centers at Fort Lewis, Washington, and Fort Dix, New Jersey.

(c) On 1 September 1966, MAC proposed additional CONUS cargo APOEs at Hill AFB, Tinker AFB, and Wright-Patterson AFB. Action to establish APOEs at these locations was suspended pending compilation and analysis of complete statistical data to justify the need and desirability of additional permanent APOEs in the CONUS. The congestion of the Travis Aerial Port was substantially relieved during the latter part of 1966 by the increase in MAC operational C-141 cargo transport aircraft.

(d) In August 1967, PACAF presented data which indicated that the majority of cargo arriving at Bangkok required transshipment to other in-country bases. PACAF desired cargo be routed to Kelly or Travis, the currently established CONUS APOEs for Thailand, and moved by MAC to the in-country Aerial Port of Debarkation (APOD) that would result in minimum redistribution. AFLC, however, wanted the cargo to be shipped to the nearest CONUS APOE and, from there, to be moved by MAC to the established APOD in proximity

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[113]Quotes from Commander, WAMTMTS, Newsletter No. 1, 23 November 1965.
[114]Quotes from Commander, WAMTMTS, Newsletter No. 5, 21 December 1965.
[115]Quotes from Commander, WAMTMTS, Newsletter No. 9, 18 January 1966.
[116]Quotes from Commander, WAMTMTS, Newsletter No. 10, 25 January 1966.

of end-country destination. It was agreed that the current APOE/APOD and channel structure would be revised as follows:

Current Structure

Charleston	Kelly	Travis
Bangkok	Bangkok	Guam
	Udorn	Bangkok
	Korat	U-Tapao

Revised Structure

Charleston	Kelly	Travis
Bangkok	Guam	Guam
	Udorn	Bangkok
	Korat	Udorn
	U-Tapao	Korat
		U-Tapao

(e) Prior to obtaining approval for this restructuring, an Assistant Secretary of Defense (Installations and Logistics) (ASD (I&L)) memorandum of 11 October 1967 approved a 1-year test use of Tinker AFB as a MAC port to provide service to Thailand. In his memorandum, the ASD (I&L) also directed a detailed analysis of DOD air cargo generation and traffic flow patterns between originating points in the CONUS and overseas destinations for the purpose of identifying those geographical areas in CONUS where MAC aerial ports could be located most advantageously. In November 1967 in compliance with the DOD directive, MAC and AFLC agreed to use Tinker as an APOE for a 1-year test period with service to Guam, Udorn, Korat, and U-Tapao, beginning 1 January 1968. These actions reduced pipeline times, and distributed the CONUS aerial port work load.

(2) SE Asia Aerial Ports

(a) The overseas reception terminal work load became saturated during the same period that the CONUS APOE problem was occurring. In May 1965, MAC transferred support personnel to Mactan Airfield on Cebu Island, the Philippines, and began operations there on 11 May 1965. The purpose of this transfer was to relieve saturated conditions at Clark AB. As the overall force levels in RVN increased, the monthly volume of air cargo correspondingly increased. Because the aerial port facilities in RVN were not adequate at this time, all passengers and cargo arriving from CONUS had to process through Tan Son Nhut, Saigon, which created a highly congested condition. The requirement to transship cargo in-country by air was far in excess of the aerial port facilities at Tan Son Nhut. The expansion of more direct service to the customers was too late to prevent the cargo backlog that developed at Tan Son Nhut. Over 90 percent of the cargo offered for shipment via intra-RVN common service airlift was Priority 1 with a short required delivery date (RDD). As a result, the priority system was for all practical purposes degraded to a first-in first-out system with inter-theater cargo competing with intra-RVN cargo for the same lift resources. Additional delays in preparing cargo for intra-RVN movement were experienced. Priority cargo arrived by inter-theater airlift unitized on 463 L pallets for Tan Son Nhut delivery rather than segregated and unitized for final destination. As a result, elements of an Army terminal transfer company were located at Tan Son Nhut to receive the Army cargo, segregate it, unitize it for final shipment, offer it to the Cargo Air Traffic Office, and return it to the 8th Aerial Port Squadron.

This process, necessitated by the lack of through unitization, caused additional delays in getting essential items to the final destination. Further delays resulted from the lack of an effective air traffic coordination operation regarding inter-theater MAC channel traffic terminating at Tan Son Nhut. The frequent lack of information on Special Airlift Missions also served to complicate the port clearance problem. Frequently, high priority cargo from CONUS was retained in the terminal because of inadequate coordination between the aerial port and the consignee. Part of this difficulty was probably the result of a lack of cargo visibility as the backlog of cargo increased. Army Audit Agency reports as late as 5 May and 30 October 1967 continued to indicate that the necessary liaison and control had not been established between the 8th Aerial Port Squadron and the Army Air Cargo element to provide effective control over the cargo flow to ensure efficient port operations and rapid service to the customer. Aircraft traffic at Tan Son Nhut increased until that base became the second busiest airport in the world. Contributing to this situation was the lack of authority to operate MAC civilian contract carriers into locations other than Tan Son Nhut for customs clearances. COMUSMACV advised the U. S. Ambassador of this matter in a memorandum of 26 September 1966. The Ambassador addressed a letter to Premier Ky in October 1966, emphasizing the need to land military contract flights at airports other than Tan Son Nhut in order to reduce the congestion.[117]

(b) On 4 January 1967, the Government of Vietnam (GVN), sent a message to all commercial carriers with instructions concerning flights into Vietnam. Contrary to the agreements received from Prime Minister Ky, this message imposed four conditions, one of which indicated that the carriers had to pay premiums (landing fees) to the Republic of Vietnam. By a message dated 11 January, MAC informed all carriers to disregard the Government of Vietnam message.

(c) Negotiations were slow and were complicated by GVN sensitivity to possible infringement on Air Vietnam Traffic rights. In June 1966 commercial contract carriers were given authority to operate into Nha Trang and Da Nang. The arrangements were not fully satisfactory to the commercial operation and MAC because of a lack of flexibility and a stipulation that forbade contract aircraft from flying between RVN bases. In addition the GVN placed heavy administrative burdens and costs on the contract carriers. The landing rights problem was never fully resolved until the latter part of 1967.[118] To further distribute the aerial port work load in RVN and provide more direct support for forces in Vietnam, Thailand, and other locations in the Pacific area, direct air channels from CONUS were established to such places as Da Nang, Cam Ranh Bay, Bien Hoa, Phu Cat, and Pleiku in Vietnam and Udorn, Korat, and U-Tapao in Thailand. Cargo channels from the CONUS to RVN were increased from 1 to more than 12, and passenger channels from 1 to 7. In addition, many interlaced channels were established from various Pacific stations to SE Asia and from the CONUS to numerous Pacific locations. (See Figures 5 and 6 for comparison.) The expansion of MAC airlift service to additional points reduced the transshipment work load on the tactical airlift forces and on the aerial port at Tan Son Nhut. (See Figures 7 and 8.) The inadequacies of air terminal facilities in RVN throughout the period has required cargo to be stored in the open, and materials handling equipment (MHE) has had to operate on improperly prepared surfaces.

(d) The only stations possessing even marginal facilities were Tan Son Nhut, Nha Trang, Cam Ranh Bay, Pleiku and Da Nang. Storage locations were not always convenient to aircraft ramp and loading areas. The entire facilities improvement program had made little progress since December 1965. It was almost impossible to provide a timely and efficient airlift service to the customers with the facilities that were available. A major program was undertaken in November 1966 to improve these essential facilities, and notable progress in new construction and renovation of existing facilities has been made. (See Table 14.) For example, 23,000 square feet of hard surface cargo storage area at Nha Trang and a badly needed 128,000 square feet at Tan Son Nhut had been acquired. At Cam Ranh Bay, 253,200 square feet of open cargo holding area has been added. New passenger terminals have been constructed at such fields as Dong Ha, Kontum, Qui Nhon, Tuy Hoa, Bien Hoa, Phu Cat, and Cam Ranh Bay. Additional facilities were being constructed at Phan Rang and other smaller

[117] COMUSMACV Command History, 1966, pp. 292 and 293.
[118] Information furnished by HQ, Military Airlift Command, 29 September 1969.

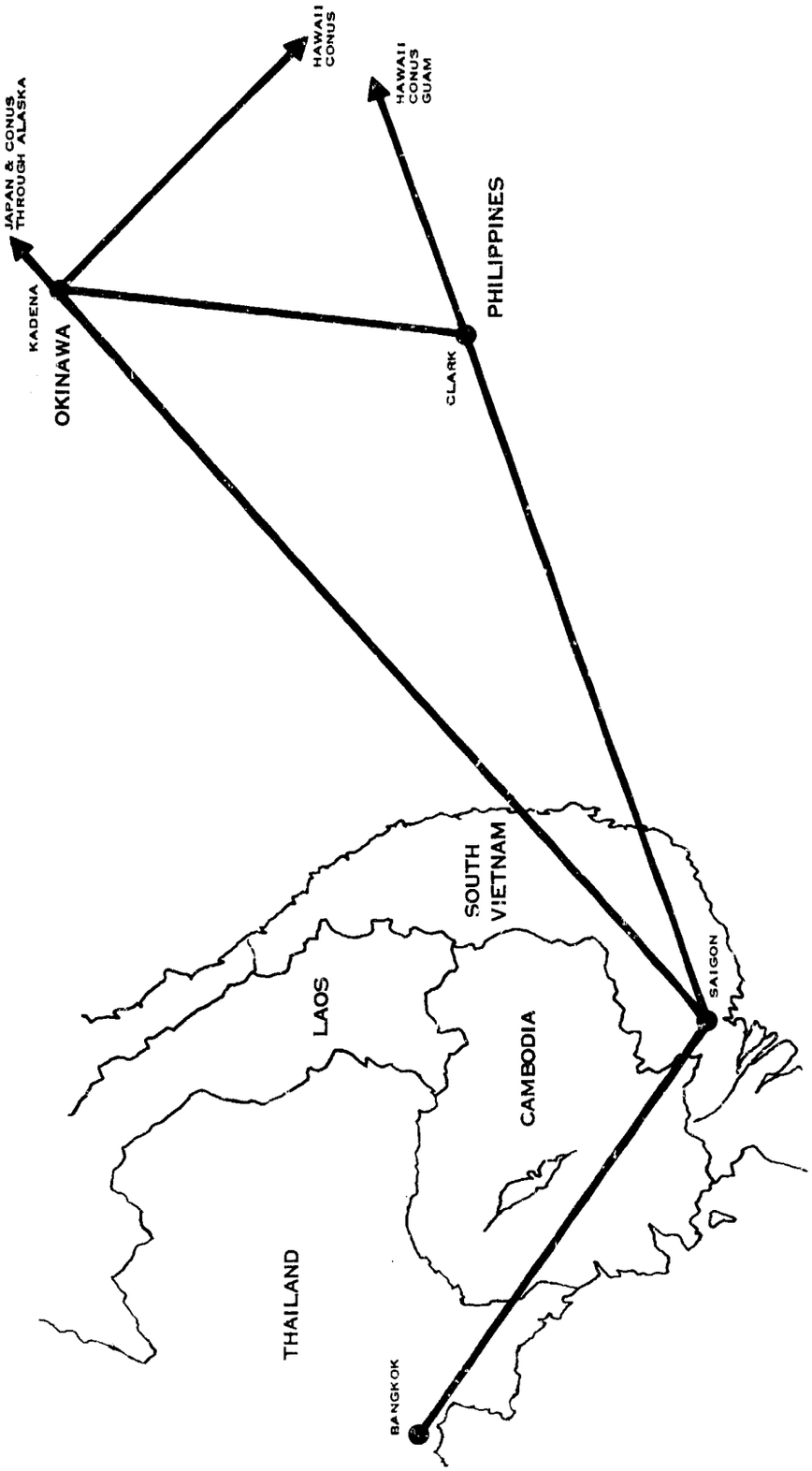

FIGURE 5. MILITARY AIRLIFT COMMAND CHANNELS TO SE ASIA AS OF 1 JANUARY 1965

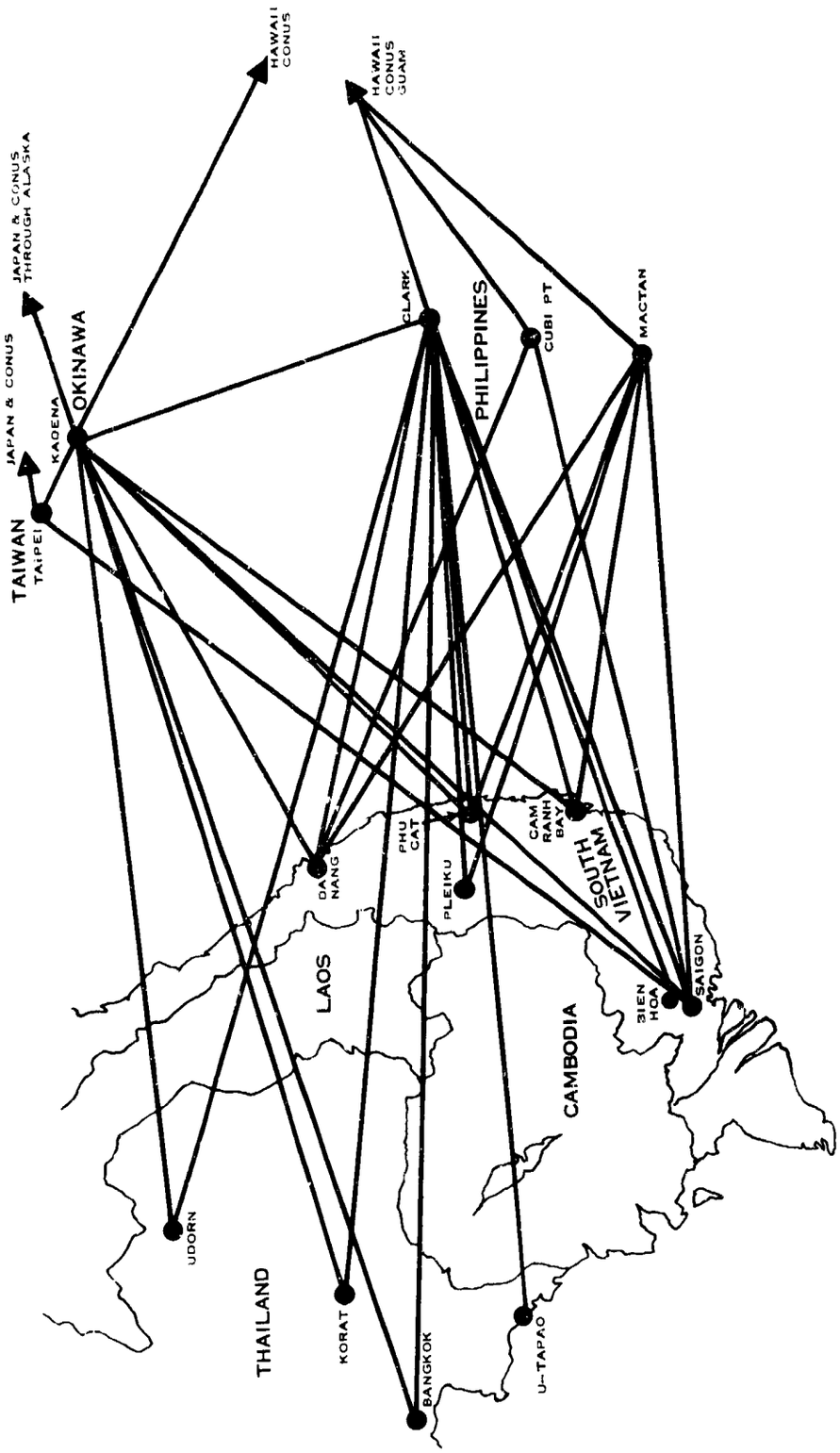

FIGURE 6. MILITARY AIRLIFT COMMAND CHANNELS TO S E ASIA AS OF DECEMBER 1968

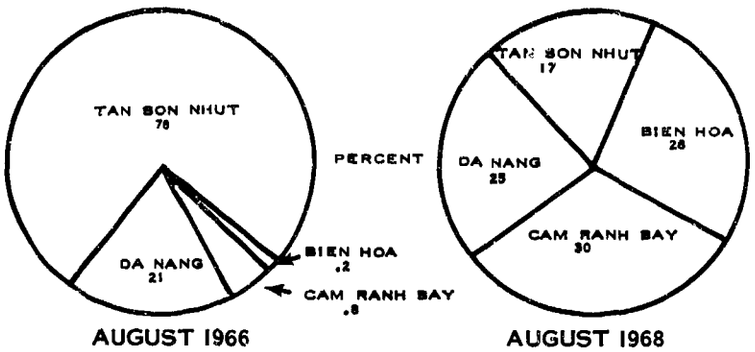

FIGURE 7. MAC PASSENGER WORKLOAD DISPERSAL

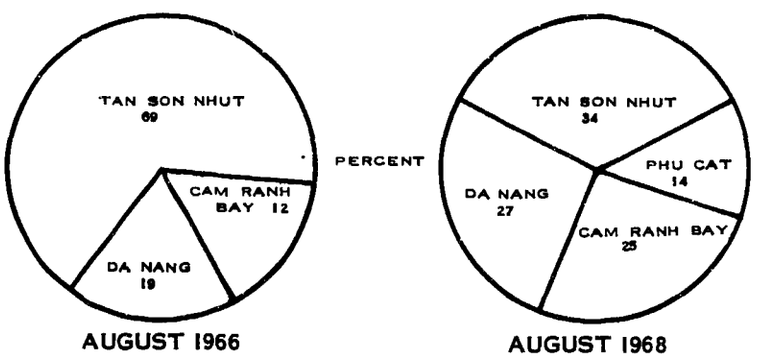

FIGURE 8. MAC CARGO WORKLOAD DISPERSAL

TABLE 14

AERIAL PORT FACILITIES IMPROVEMENTS

OCT 66 TO NOV 67

Location	Passenger Terminal*	Air Freight Terminal Covered*	Open Cargo Holding Area*	Ammo Storage*
Tan Son Nhut		2100 (mail)	128,000	
Bien Hoa	19,400			40,000
Vung Tau	2,900			
Cam Ranh Bay	30,000	15,000	253,200	
Nha Trang		19,320	75,700	
Tuy Hoa	3,360	13,700	65,250	
Hue Phu Bai	3,072			
Da Nang	300 (latrine)	4,000	26,083	2,900
Qui Nhon	3,600			45,018
Bien Thuy			12,960	
Phu Cat	14,000	14,000		
Phan Thiet	1,000	3,072		
Can Tho	1,000	500		
Lai Khe	1,000			
Phuoc Vinh	1,000			
Tay Ninh	800	3,072		
Hue	3,072			
Da Lat	1,000	4,352		
Kontum	864			
Quang Ngai	800			
Khe Sanh	360			
Dong Ha	1,800			
Soc Trang		500	5,000	
Vinh Long	1,000	1,536		
Pleiku		1,200		
Binh Thuy			12,960	
An Khe	7,400	3,240 (office)		
Duc Pho	800			
Ban Me Thout	600			
Phan Rang	384	2,400		

*All figures are in square feet.

Source: W. G. Moore, Jr., MG, End of Tour Report, October 1966-November 1967, p. 9.

stations. In addition, new construction at several bases had improved the aerial ports' capability to process and handle cargo by providing covered areas for air freight terminals. The knowledge gained in trying to meet facility requirements has, in some areas, been applicable to problems concerning equipment. What was prepared one day as a working surface in this geographical environment (not unique from areas we may have to operate from in the future) did not remotely resemble what existed the next week or month. Smooth, hard ground, thought to be adequate, proved to be extremely vulnerable to the unrelenting weather conditions that were created by half a year of monsoon and the other half of drought. Hard surface one day can be mud next week and a dust bed the following month. Emphasis on prepared working and storage areas must be continued to prevent equipment degradation.[119]

[119] W. G. Moore, Jr., MG, End of Tour Report, October 1966-November 1967.

(3) Materials Handling Equipment

(a) An integrated materials handling equipment system includes five separate but interdependent equipment groups:

1. Air cargo terminals

2. Cargo preparation

3. Cargo ground handling

4. Aircraft cargo loading

5. In-transit control.

Automated terminals were installed at Travis in February 1965 and at McChord in early 1966. For cargo ground handling, a group of special vehicles was designed that included 25,000- and 40,000-pound capacity mobile, mechanized vehicles for loading and unloading aircraft with front or side access doors, low-mast forklifts with long tines, and warehouse pallet trailers. This family of equipment, known as the 463 L Materials Handling Support System, also included a system of rollers and guide rails for use in the aircraft. The employment of the 463 L system helped to reduce successfully port handling time of the cargo, to expedite on-off loading of aircraft (reducing time required to a matter of minutes), and to reduce manpower requirements. A 463 L pallet shortage started to develop in February 1965 because of the retention of pallets in Vietnam, pallet damage through use, and an inadequate procurement program for new pallets. The pallet shortage resulted in frequent floor loading of cargo on the aircraft. This made on-off loading time unacceptable in view of the tight schedule these aircraft were expected to maintain. The pallet problem was met by the establishment of pallet repair facilities in Japan and CONUS and an expanded procurement program.

(b) Shortages of other items of MHE were experienced at various times throughout the buildup. The 40,000-pound loader did not come into the inventory in sufficient numbers to exert any influence on the loading work load until late 1966. Prior to that date the entire work load was accomplished by the use of a 25,000-pound loader and special forklifts. Because of the high utilization rate with new design items of equipment, the deadline rate was high. Therefore, equipment availability was constantly strained to meet the highs and lows of the normal day's requirements. The operational status of MHE in Vietnam became a problem as the need for regular and rapid throughput created a requirement for 24-hour port operations. Forklifts and similar items were not in use only during brief periods of mandatory maintenance. The repair parts supply for this type of equipment, however, was insufficient to sustain the high usage rates, and the situation was complicated further by a conglomeration of makes and models among which the available spare parts were not interchangeable. As the deadline of MHE increased, the operating time of the remaining MHE increased, compounding the problem. The obvious solution was threefold: introduction of new equipment; standardization of existing equipment; and increased repair parts. These answers involved procurement and then movement through an already clogged pipeline--a pipeline which, ironically, the equipment in question was needed to improve.[120]

(c) The lack of sufficient serviceable equipment affected the efficiency of the overall airlift operation. Actions were initiated, through higher commands, to increase authorizations and numbers of vehicles on hand, and to improve the overall in-commission rate of equipment through better spare parts and maintenance support. Old pieces of equipment were salvaged, and each inbound shipment was carefully monitored and often diverted from sealift to airlift, as slow and agonizing progress was made to correct the equipment deficiency. In October 1966, 423 pieces of MHE were authorized, with 279 pieces assigned. In October 1967, 442 pieces were authorized, and 418 pieces were on hand. This represented a 50 percent increase in this equipment.

[120] COMUSMACV Command History, 1966, pp. 276 and 277.

(d) The composition of the forklift fleet also caused problems. The varied types, models, and manufacturers at each base compounded the maintenance and spare parts problems. Additionally, the operational readiness rate on the MHE increased significantly. Improved spare parts support was provided; a component rebuild program was established at Clark AB; and contract overhaul was performed at Bangkok. Air Force Logistics Command has also provided qualified 463 L maintenance teams in-country, which assisted in the repair of material handling equipment.

(e) The experience factors used to develop the maintenance and supply support for MHE are not always compatible with the conditions under which operations take place. MHE that is continuously operated over rough terrain, in muddy cargo yards or in deep sand, and by newly trained personnel, will not stand up as well as that which is operated under the "stateside" environment. The remote locations into which MHE must be flown, when supporting the Army on a combat unit move, often offer the most austere working conditions imaginable. There are no repair shops or bench stock parts available in the field. The lessons learned here must be used as a guide in the development of future MHE and the programming of maintenance and supply support of this vital equipment. The experiences and data collected in Vietnam should be helpful if the United States has to equip itself for another conflict.[121]

(4) Personnel

(a) During 1965, there was a vast drain on military personnel from CONUS air terminals for assignment in SE Asia. Although an attempt was made to rectify this situation by assigning new officers and enlisted personnel to the CONUS APOEs, these personnel did not provide the experience and stability required. Therefore, civilian personnel authorizations were increased to improve the stability and effectiveness of the CONUS terminals. This action further deteriorated the MAC ratio of military in CONUS to military overseas and in some instances resulted in airmen being rotated back overseas in less than 12 months. In order to improve the CONUS to overseas ratio of military personnel, action was taken to convert military authorizations in overseas air terminals to civilian spaces and the conversion of CONUS civilian authorizations to military as they became vacant. The time between overseas tours for transportation personnel might have contributed to the poor retention rate of first-term officers and airmen. A self-defeating cycle developed whereby inexperienced supervision and lack of stabilized tours contributed to the low retention and vice versa. Manpower authorizations in support of the abnormal expansion to meet SE Asia commitments simply were not adequate. Stopgap measures such as short-term temporary duty and maximum overtime had to be used to accomplish the mission.

(b) The aerial ports in Vietnam also suffered from a chronic shortage of personnel. In November 1965, in order to handle aerial port functions in South Vietnam, 2,101 personnel were authorized. In November 1967 authorizations had been increased to 2,498 and manning had increased from 83 to 98 percent of authorized strength. However, based upon the PACAF manpower standard developed for South Vietnam after comprehensive analysis in July 1967, the aerial ports have not reached a personnel authorization equal to their work load requirements. The aerial ports capability in RVN was further constrained by the lack of qualified personnel. This generated the need for a mammoth training program in Vietnam to upgrade or cross-train inexperienced personnel. In January 1967, for example, 88.8 percent of the aerial port personnel were in upgrade or retraining status. Of all the personnel assigned, 57.2 percent were retraining from supply and administrative career fields into the transportation field and 21.4 percent were in upgrade training in their primary career fields. This resulted in only 11.2 percent of the personnel qualified in grade and reduced the usefulness of the manning document.

(c) Air terminal military personnel had become a very limited resource in stateside operations. When the qualified personnel had rotated through Vietnam, there appeared to be no other choice than to furnish personnel for cross-training and upgrading. By the time a transportation trainee becomes sufficiently skilled to perform his duty without maximum

[121] W. G. Moore, Jr., MG, End of Tour Report, op. cit.

supervision he has little time left in Vietnam. Considerable attention was placed on this personnel problem, and the training program was eventually altered to give primary emphasis to upgrade training of personnel in their primary field with minimal concern to cross-training.

5. FUTURE TRENDS

a. Reliance on Commercial Augmentation. As discussed earlier in this section, the commercial air carriers that are members of the CRAF program made their resources available to MAC under normal commercial augmentation procedures. It should be noted, however, that early in the Vietnam operation various friendly governments in SE Asia placed restrictions on the availability of their airfields to the commercial aircraft operating for MAC. In the future it is reasonable to assume that unless theater, country and overflight clearances are previously arranged for, there will be similar restrictions and congestion limiting the use of DOD airlift through major international airfields. It cannot be assumed that troops and cargo can be delivered into a permissive environment during a contingency or hostile action.

b. Programming Forces for Contingencies. The numbers and types of mobility forces required for contingency operations are very sensitive to time and distance factors, to the physical configuration of the probable objective area, and to the degree of opposition expected. The size of the required military airlift capability depends on the value of being able to deploy forces and to support them, during the early days of a contingency operation before sealift can make deliveries. During the Vietnam era, both airlift and sealift played vital but complementary roles, as discussed in earlier sections of this chapter. The Air Force has described the value of the C-5 in future contingency operations as complementing sealift. The Joint Chiefs of Staff have recommended a certain flexibility of production and procurement options regarding the ultimate numbers of C-5 squadrons pending determination of the most efficient method of meeting requirements. The Army has expressed the view that additional procurement of the C-5 should not be foreclosed until strategic mobility requirements have been refined. The planning for future operations must take particular note of the changing requirements being brought about by the imminent operational employment of the C-5 aircraft and the trend toward maximum utilization of air compatible containers. Because of the amount of lift capability of the C-5, the MHE and ground handling equipment now in the system are inadequate to support the efficient employment of aircraft. Organizations, techniques, and equipment need to be developed for employment at all aerial ports to ensure the expeditious discharge and loading of aircraft and clearance of the large volumes and varieties of cargo from both CONUS and overseas airfields. These problems are being addressed in a variety of Air Force studies including the 14 mobility support forces studies (MSF), Air Freight Terminal Design, the C-5 cargo loading system design, and the Army's study "Operational Concepts, doctrine and requirements for use of C-5A/heavy lift aircraft in the combat service support role."

c. Tactical Airlift Forces and Expansion of Intra-Theater Requirements. The use of strategic airlift in the tactical airlift role (as with the C-141/C-5s which are present in the theater on routine missions to be diverted or used over route extensions in lieu of theater assigned tactical airlift aircraft) oversimplifies the problem. During the early buildup in SE Asia, airlift requirements expanded rapidly. The military situation was very fluid, and rapid positioning and resupply became vital. As a result, the tactical aircraft assigned to PACOM became almost completely committed to direct support of in-country operations. Thus, there were no resources available to perform the rear area intra-theater tasks. Consequently, it became necessary for MAC to assume a major share of the intra-theater logistic mission in the western Pacific area, external to the actual conflict. It is reasonable to assume that a similar situation would ensue in future contingencies in other parts of the world. Therefore, some portion of the MAC force would have to be used in support of intra-theater requirements and thus not be available for sustained use in deployments.[122]

d. Impact of the C-5 Aircraft on DOD Strategic Mobility

(1) The introduction of the C-5 aircraft into the DOD heavy lift aircraft inventory will provide a considerable increase in airlift capability. The primary mission of the C-5 is

[122]MAC, Briefing, subject: Strategic Airlift Concept, March 1969.

rapid, long-range deployment of combat forces and their fighting equipment. Its secondary mission is the sustained air resupply of these deployed forces. In this role it will have a profound impact on all aspects of military logistics. The impact of the C-5 on the resupply of deployed forces and the order of magnitude of its unusual airlift capability can be drawn from the following analysis of cargo airlift to Vietnam had the C-5 been available during the period 1 January 1965 to 1 January 1969.

(a) Allowable cabin loads indicated that one C-5 aircraft equals more than 3 C-141 aircraft. Experience has shown that the restrictive cube of the C-141 has limited cabin loads to an average of 21 tons. The cabin cube of the C-5 should not be a limiting factor. Using an experience factor of 5,000 pounds per pallet one C-5 will carry the amount of cargo in one trip to Vietnam that now requires four C-141 trips.

(b) Applying a conservative 90-ton payload and an 8-hour per day utilization, the following tabulation shows the number of C-5 aircraft that would have been necessary to lift that cargo which was moved from CONUS to Vietnam by MAC during the period 1965-1968.

Total tons* of cargo actually airlifted to Vietnam	Average tons* per day	Daily C-5 sorties (90 ton per sortie)	Operational C-5 aircraft in airlift pipeline to Vietnam**
1965 38,700	106	1.18	4.95 or 5
1966 117,500	322	3.58	15.03 or 15
1967 207,400	568.2	6.31	26.5 or 27
1968 212,800	583	6.48	27.2 or 28

*Short tons
**33 hours per round trip.

Based on the above analysis, if one had to describe the impact of C-5 airlift in a single word it would probably be volume. With C-5 airlift, obscure airfields in remote areas can, overnight, rank among the highest volume air terminal operations in the world. In fact it is thought that the major limiting factor on high volume air logistics will primarily be determined by how well the packaging, handling, and flow of material into and beyond the airlift system is managed. Experience during the buildup in SE Asia gives some good insight into what happens when the distribution system is expanded from a low to high volume operation.

1. Although air and surface cargo movement increased over an extended period of time, U.S. forces still experienced inefficiencies in the forward areas with their traditional packaging, handling, control, and receiving techniques.

2. The problems were not confined to the first destination air and water ports. Every intransit point and storage site in Vietnam experienced excessive congestion with the thousands of individual shipments that were delivered by both air and sealift. Largely because of multiple cargo handling and primitive storage conditions, there was a considerable amount of loss, delay, damage, and pilferage. Packaging and marketing deteriorated under the extreme weather and handling conditions, and the resultant loss of accountability and control tended to cause a general degradation of forward area logistic support. When one applies the much faster response at the higher volumes expected in the C-5 era, it is realized that considerable improvement in the total distribution system is required.

3. The lesson from the Vietnam experience is that there is a considerable difference between low and high volume logistics. It was learned that if the military is to get maximum benefit from the new high capacity air and surface transportation modes, it must develop fully integrated supply, packaging, handling, movement systems, and control

techniques within the context of the new transport capability. To do this there is a need for the closest coordination between all aspects of the distribution system.

(2) The introduction of the C-5 will provide a capability for movement of many additional items that have previously been moved only by ship. Logistic systems should be examined to determine how optimum use can be made of this enhanced capability for air shipments.

(3) On-going studies by the Department of the Army, which uses 45 percent of the worldwide common-user airlift, have revealed that the increased airlift capability afforded by the C-5 will require changes or modifications to the current Army combat service support systems.[123] The Chief of Staff, U. S. Army, has stated that: "The Army combat service support system can be materially affected by the introduction of the heavy lift capability. The extent and degree of this influence must be developed in anticipation of the availability of the resources. Potential impact areas include increased throughput from source of supply to depot or user, and most significantly will facilitate and support changes in maintenance and supply operations. Improved and responsive documentation, communications, and automatic data processing must be made available to provide improved visibility of shipments. In the transportation system, advances in the use of containers, pallets, mechanized terminal equipment, and improved materials handling equipment will complement the new heavy lift aircraft. Unitization will be accomplished as close as possible to the source of supply. These improvements may require revised organization and newly designed equipment as well as possible reorientation of portions of the logistics system."[124]

(4) The availability of appropriate ground handling facilities to cope with the increased tonnages is necessary for efficient C-5 operations at current peacetime APOE/Ds. Such facilities do not now exist. Use of an air line of communication (LOC) supported with C-5 aircraft for resupply envisions reductions in the need for some pre-positioned war reserves and operating stocks in overseas areas. Therefore, the balance between reduced stocks and the unknown quantity of accelerated force deployments by type cannot be addressed until contingency plans are developed that include accelerated force closure dates and the size of the forces involved. Further, the use of an assured air LOC and rapid aerial force deployments are premised on air superiority being maintained along the air routes used.

(5) Because the introduction of the C-5 is time phased over a 2 1/2-year period, corresponding changes in Service logistics would be of an evolutionary nature. The extent and degree to which the Services' logistic support systems would be materially affected and influenced must be actively pursued and studied to completion by the Services in anticipation of the availability of increased heavy airlift resources.

6. CONCLUSIONS AND RECOMMENDATIONS

a. Conclusions

(1) The increased requirements for airlift exceeded the Military Airlift Command's capability to process and move the increased flow of high priority cargo to Vietnam during 1965 and most of 1966. The situation was improved by the end of 1966 with the acquisition of 100 C-141s, the extensive procurement of commercial airlift, and the establishment of improved control of the flow of cargo into aerial ports (paragraphs 2a(2) and 2b(1)(d)).

(2) The Military Airlift Command experienced a shortage of trained air crews and aerial port personnel throughout the Vietnam conflict (paragraphs 2b(2) and 4b(4)).

(3) Air Force Reserve and Air National Guard units were not mobilized; however, they did provide limited lift during crew training periods (paragraph 2b(3)).

[123] Doctrinal Statement of U.S. Army, 12 January 1970.
[124] Congressional Record of 12 January 1970, Policy Statement by Chief of Staff, U.S. Army, Army Concept for Use of C-5/Heavy Lift Aircraft in the Combat Services Support Role.

(4) Although the Civil Reserve Air Fleet was not activated, comparable commercial augmentation was obtained through normal contractual arrangements. The use of this augmentation was constrained until mid-1967 when problems involving the issuance of country clearances were resolved with the Government of South Vietnam (paragraphs 2a(2), 2b(4), 4b(2), and 5a).

(5) There was a requirement for outsize airlift throughout the Pacific command area during the Vietnam conflict. The Military Airlift Command provided the necessary airlift with C-124 and/or C-133 aircraft on special assignment airlift missions (paragraph 3b(3)).

(6) Adequate numbers and types of materials handling equipment were not available to support port and terminal operations. This was due, in large part, to the lack of standardization and its associated supply and maintenance problems (paragraphs 4b(3) and 5b).

(7) During the period of 1965 through 1967, aerial ports of embarkation were established at Norton AFB, California, and inland CONUS locations at Kelly AFB, Texas, and Tinker AFB, Oklahoma. These additional terminals contributed to a reduction of pipeline time and assisted in reducing congestion at the Travis APOE (paragraph 4b(1)).

(8) The C-5, heavy lift aircraft, will provide an increase in airlift capability of at least three times that of the 1969 military airlift force for the movement of cargo within the Department of Defense logistic system (paragraphs 5d(1)(a) and (b)).

(9) Evolutionary changes will be required in logistic systems to make optimum use of C-5 airlift capabilities (paragraph 5d).

b. Recommendations. The Board recommends that:

(1) A military airlift clearance authority be continued to provide for positive control of the flow of air cargo into the aerial ports of embarkation to preclude saturation of airlift capability resources (TR-15) (conclusion (1)).

(2) In contingency situations in which the use of U.S. commercial augmentation airlift is anticipated, the Secretary of Defense initiate prompt action through the Department of State to obtain necessary over-flight and air landing agreements with nations concerned (TR-16) (conclusion (4)).

(3) Support the recommendation contained in Chapter VII, Section C, of the Supply Management Monograph as it pertains to materials handling equipment. The recommendation contained in the Supply Management Monograph is quoted below.

> "That the Joint Material/Logistic Commanders recommend a joint program to standardize among the Services and to reduce, to the maximum extent practicable, the number of makes and models of construction and materials handling equipment as well as other jointly-used items of major commerical equipment. In the development of this program the substantial progress achieved in the Mobile Electric Power Project should be noted. Two complementary courses of action should be considered:
>
> (a) Increased use of multi-year contracts and limited bidder competitions as well as expanded criteria for the granting of Determinations and Findings for sole source procurement.
>
> (b) Commonality of equipment within designated geographical areas." (TR-17) (conclusion (6)).

(4) Based on the experience gained from using inland Aerial Ports of Embarkation during the Vietnam era, that the Air Force, in coordination with the other Services and the Defense Supply Agency, identify Aerial Port of Embarkation locations planned to be established in large cargo generation areas in support of specific contingency operations (TR-18)(conclusion (7)).

(5) The Services actively pursue and complete on-going studies concerning the revision of Service logistic systems in order that logistic support is provided effectively and economically and consistent with the advantages provided by the C-5 airlift capability (TR-19) (conclusion (5)).

SECTION F

INTRA-RVN TRANSPORTATION

1. STATEMENT OF THE ISSUES AND THEIR SIGNIFICANCE

a. The mobility of allied forces in Vietnam has been described as being, in many instances, the principal element of advantage over the enemy, even though the land lines of communication were restricted. Effective mobility resulted primarily from a combination of three factors:

(1) Intra-coastal sealift and inland water operations

(2) Sustained operation and extensive use of the tactical airlift system

(3) The unprecedented use of helicopters for movement of troops and supplies.

b. Section F reviews the in-country transportation support including port, terminal, and lighterage operations; rail, water and highway movements; and airlift operations. (Movement by pipeline is discussed in the petroleum, oil and lubricants (POL) Monograph.) The major issues discussed in this section are:

(1) Adequacy of water ports and terminals in RVN

(2) Requirement for rapid development of deep water ports

(3) Adequacy of land transportation

(4) Adequacy of tactical and nontactical airlift in RVN

(5) Need for dedicated airlift

(6) Significance of the helicopter

(7) Importance of inland waterway transport and intra-coastal shipping.

2. BACKGROUND. Early planning for the support of the Vietnam buildup and subsequent experiences indicated that modifications needed to be made in the concept of operations for some transportation modes and that increased reliance and dependence needed to be placed on other modes far beyond that of previous conflicts. Normally, logistics planners consider the use of available transportation modes in the priority order or rail, highway, inland waterway, and air. Because of the lack of secure rail and highway lines of communication in Vietnam, the priority for movements, other than port clearance and local distribution, was reversed to the order of air, water, road, and rail.

a. Early in the Vietnam buildup it was recognized that the vertical distribution pattern of transshipping all up-country supplies through the port of Saigon would not be feasible because of the lack of north-south inter-sectional ground lines of communication. Lack of adequate ground lines of communication led to the establishment of four separate "logistical islands," each with its own tactical support mission, and the adoption of a horizontal distribution pattern, primarily supported within each enclave by assigned transportation units augmented by civilian contractors. This decentralized distribution system was different from the classic large land

mass-type, and it was recognized that this multiple-base feature would limit the flexibility of the logistic support system and increase combat service support requirements.[125]

b. The change from normal operating practice and the highly fluctuating tactical situation created a need for much closer coordination among the separate transportation operating agencies and between these agencies and the tactical units being supported.

c. In-country transportation requirements for all modes of transportation began to increase before the main troop buildup in 1965 primarily because of the following:

(1) U.S. participation reversed from phase-down to buildup, and the increase in advisory teams added substantial loads to the in-country transportation requirements.

(2) Ammunition expenditures increased greatly as Vietcong activity grew, and the dependability of land transportation was reduced.[126] Table 15 shows the relative movements by each transportation mode in January 1965 and in December 1968.[127]

TABLE 15

INTRA-RVN COMMON-USER TRANSPORTATION DATA

Mode of Transportation	Jan. 65	%	Dec. 68	%
Highway*	65,000	58.5	1,514,700	72.6
Water	35,500	32	472,300	22.6
Air	9,200	8.2	73,700	3.5
Rail	1,400	1.2	25,600	1.2
Total	111,100		2,086,300	

*An estimated 90 percent of all highway movement was local-haul.

3. WATER PORTS AND TERMINALS IN RVN

a. Background

(1) From the earliest period of U.S. involvement in Vietnam through January 1966, Saigon was the only port with deep draft pier facilities (10 berths – 5 or 6 available to the military), except for a small pier (2 berths) at Cam Ranh Bay constructed in 1964 under the Military Assistance Program (MAP). The lack of adequate land lines of communication (LOCs), due to the physical and security conditions of the railroads and highways, forced the distribution system to rely heavily on the transshipment of cargo by shallow draft vessels between Saigon and other locations. With the port work load steadily rising and serious congestion developing in the ports in late 1965, a crash construction program was initiated to help increase the port capability.

(2) Plans prepared in the 1st Quarter CY 65 called for the U.S. Army, through the 1st Logistical Command, to establish support areas at Da Nang, Qui Nhon, Nha Trang, Vung Tau, and Bien Hoa. Following the 10 April 1965 Pacific Command (PACOM) Conference, however, Commander in Chief, Pacific (CINCPAC), extended the logistical responsibility of the Naval Component Commander to include the entire I Corps Tactical Zone (CTZ). This action gave both Services parallel advanced base responsibilities – the Army for II, III and IV CTZ and the Navy for I CTZ. These responsibilities included port and beach operations, depot operations, and common-item support within the region or regions assigned. Although some 41 separate Army transportation units and numerous elements of the 7th Fleet Amphibious Logistics Support Group (CTG 76.4)

[125] CINCPAC Command History, 1966, p. 703.
[126] MACV Command History, 1964, p. 144.
[127] Special Assistant for Strategic Mobility (SASM) Statistical Reference Books for 1965 and 1966, and SASM Statistical Digest for 1968.

were deployed to Vietnam during the 2d and 3d Quarters CY 65, a joint CINCPAC-MACV study subsequently determined that additional stevedoring, lighterage, port construction effort, and intracoastal transportation by LST and barge were urgently needed to increase port throughput capability to the levels required.[128]

(3) During 1965 and 1966 there was considerable political pressure for the complete U.S. military takeover of the Saigon port. These efforts were sucessfully resisted by the Commander in Chief, United States Military Assistance Command, Vietnam (COMUSMACV), and the Ambassador to Vietnam on the grounds of the potential effect on military operations and the need to support the nation building program.[129]

(4) As each of the major ports was developed, a variety of individual strengths and weaknesses were experienced. Although some of these strengths and weaknesses were peculiar to an individual port and some were peculiar to the operations of a particular Service, most were common to port operations throughout Vietnam. As a result of the rapid buildup, the following general problem areas had surfaced by the end of CY 65.

(a) Need to establish priorities for discharge of cargo from ships due to the limited port facilities available

(b) Insufficient deep and shallow-draft piers or other discharge facilities

(c) Insufficient and obsolete lighterage

(d) Improper and insufficient packaging or unitization

(e) Shortage of materials handling equipment (MHE) spare parts and maintenance support

(f) Ship stowage at continental United States (CONUS) terminals did not always facilitate discharge of cargo under austere conditions

(g) Lack of accurate and timely shipping information to permit effective planning for discharge and port clearance

(h) Lack of input control to correlate materials shipped with reception capability

(i) Delays in the arrival of some terminal operating and support units.

b. Discussion

(1) Port Congestion. With the limited port facilities available in Vietnam and the large quantity of cargo moving into Vietnam, port congestion had been anticipated by the Joint Chiefs of Staff Joint Transportation Board (JTB) as early as June 1965. In response to a series of CINCPAC messages between 7 and 23 October 1965 concerning port congestion in Republic of Vietnam (RVN), Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV), on 9 November 1965 advised that it was considered "premature at this time to slow CONUS shipping." COMUSMACV also advised that action was being taken to improve port capability through the use of direct hire civilians and contract assistance and further indicated that the fundamental problem was the lack of facilities and the irregular flow of shipping.[130] The greatest number of ships in RVN reached a total of 122 on 26 November 1965. On 28 December 1965 the Secretary of Defense, in a message to COMUSMACV, cited that there were 45 ships in RVN harbors and another 62 in RVN waters waiting or in a hold status. The Secretary of Defense requested that necessary action be taken to eliminate the congestion by 1 February 1966. COMUSMACV responded on 3 January 1966

[128] CINCPAC Command History, 1965.
[129] Military Assistance Command, Vietnam Command History, 1966.
[130] COMUSMACV Message, DTG 091350Z November 1965, subject: Port Congestion in RVN.

stating that the backlog of ships had not affected operations and that to meet his needs it was necessary to selectively discharge cargo. COMUSMACV further pointed out the problems caused by multiple port discharge and the shortages of shallow draft shipping, materials handling equipment, and construction funds. The practice of selective discharge and shipboard warehousing may have been acceptable to MACV because of the lack of depots and storage a. as. It was necessary, however, to terminate selective discharge as early as possible because of the cost and inefficiencies involved, i.e., repeatedly opening and closing the ships hatches and rigging the ships gear for cargo operations, excessive ship turn-around time that increased the total requirements for ships, and the high cost of holding the ships for excessive periods (ship per diem costs range from a minimum of $3,000 to $7,000 per day or more depending on the circumstances and the location). Many of these same inefficiencies could be attributed to handling ships loaded for multiple port discharge.

(a) On 3 January 1966, CINCPAC recommended to COMUSMACV that he increase the resources he had allocated to ship discharge; increase the priority of port and beach improvement projects; divert ships with small lot, low priority cargo to Okinawa; stop selective discharge and unload on a priority of arrival basis; clear port areas of cargo; and use of the RED BALL priority system to get equipment and spare parts for port equipment.[131] Although some of these actions had been initiated on an individual basis, comprehensive MACV policy to this effect had not been established.

(b) By 27 January 1966 the number of ships in RVN waters had been reduced to 47. This reduction of 75 ships averaging only 875 short tons of cargo per ship for RVN indicates that the significant improvement in ship backlog was at least partially achieved through the cleanup of ships being held for use as warehouses.[132]

(c) Until activation of Naval Support Activity (NSA) Da Nang in October 1965, port operations in I Corps area had been conducted by 7th Fleet Amphibious Logistics Support Group (CTG 76.4) and Cargo Handling Battalion 2 (CHB-2) supplemented by local civilian labor as required and available. By 1 January 1966, almost all temporary assigned personnel from Amphibious Force Units had been relieved by people assigned to the NSA, DaNang. The country-wide backlog of inbound cargo improved significantly in January 1966, and on 12 February 1966 there was actually an insufficient work load at DaNang to continue operations up to full capacity.

(d) A major factor that contributed to the overall reduction of port congestion country-wide was the completion of the major portion of the port construction program in early 1967. The number of deep draft berths available to the military had risen from 8 berths in 1965 to a total of 32 berths at Saigon, Cam Ranh Bay, Qui Nhon, DaNang, Vung Tau, and Vung Ro. A comparision of port performance (see Figure 9) with shipping backlog (see Figure 10) shows that the backlog of shipping was also progressively reduced as construction projects were completed and cargo handling assets increased.

(e) The number of ships for RVN in working, waiting, and holding status reached significant proportions on two additional occasions. The buildup to near 90 ships in October and November 1966 is primarily attributable to a combination of increased work load and operational delays at Qui Nhon and Cam Ranh due to severe monsoon weather conditions combined with the relocation of terminal service companies. The backlog was rapidly brought within manageable levels. The buildup to a backlog of almost 90 ships in February 1968 was directly related to a reduction in port operations caused by the Tet Offensive. Within a month, security had been re-established and the backlog had been reduced again to an acceptable level.

(f) Through coordination between the Traffic Management Agency of the Military Assistance Command, Vietnam (MACV-TMA), Pacific Command Movements Priority Agency (PAMPA), the Military Traffic Management and Terminal Service (MTMTS), and the Service logistics agencies, shipping allocations and priorities were developed to facilitate matching cargo shipped with theater desires and ability to receive.

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[131] Joint Chiefs of Staff Fact Sheet, subject: SE Asia Shipping, 6 January 1966.

[132] USA Deputy Chief of Staff for Logistics Fact Sheet, subject: Port Status Starting November 1965, 3 March 1966.

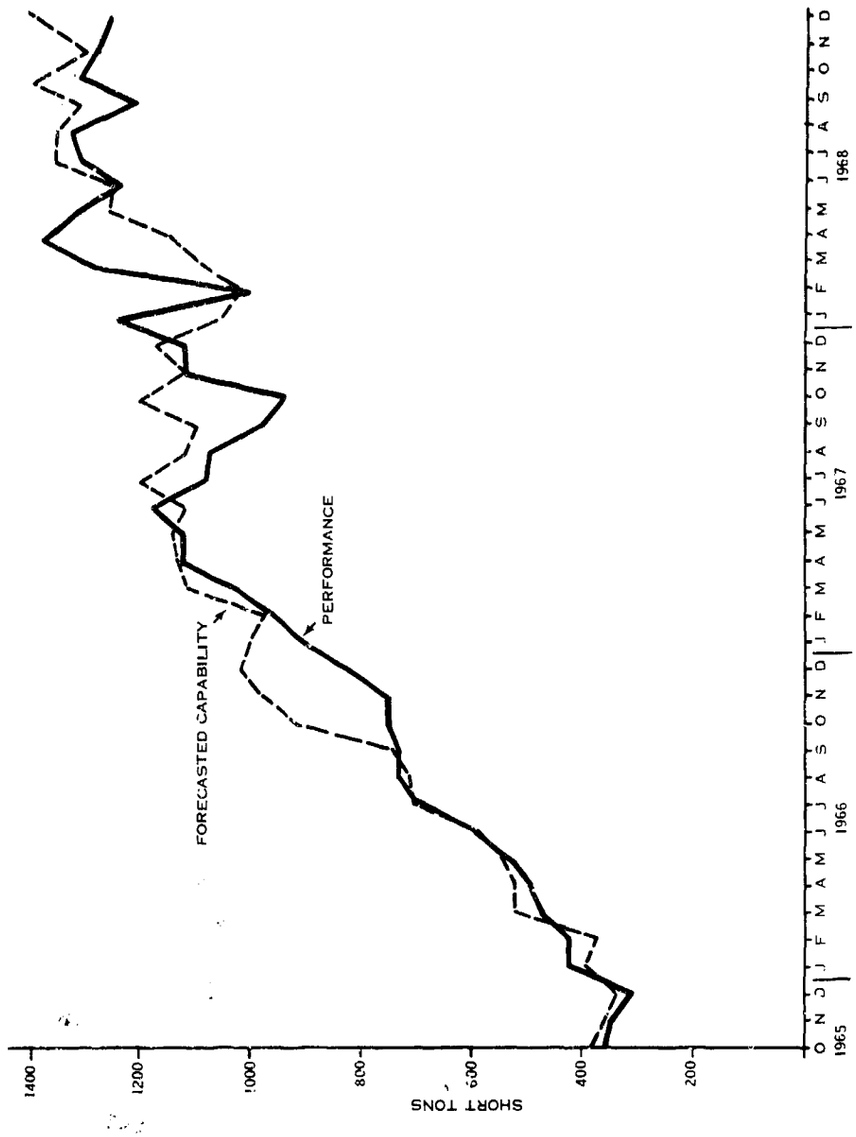

FIGURE 9. TOTAL CARGO HANDLED BY THE MILITARY FOR ALL RVN PORTS (000 SHORT TONS)

Source: Special Assistant for Strategic Mobility Statistical Digests.

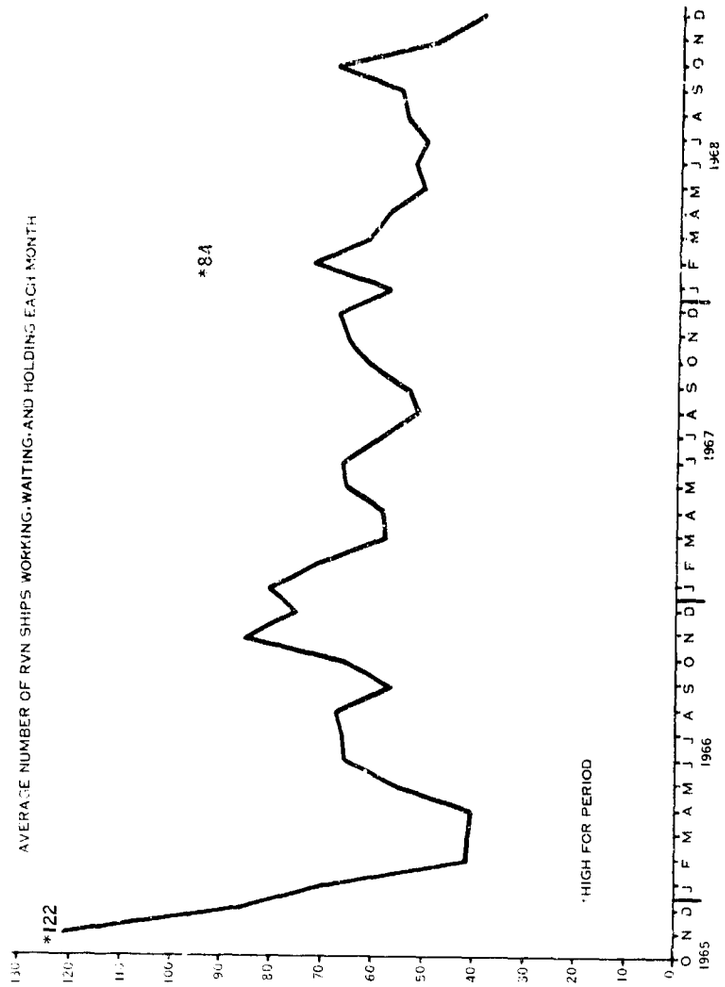

FIGURE 10. AVERAGE NUMBER OF RVN SHIPS WORKING, WAITING AND HOLDING EACH MONTH

Sources: PAMPA Briefings, 1965-1966
Special Assistant for Strategic Mobility Statistical Digest, 1967-1968.

(2) Materials Handling Equipment

(a) A number of problems concerning materials handling equipment developed early in the buildup and deserve special mention.

1. The unavailability of low-masted forklifts in the theater forced the ports to manhandle the palletized cargo in areas of restricted overhead clearance.

2. Sufficient electric fork lifts were not available to work in the ammunition ships holds. Further, there was a shortage of sufficient batteries and chargers to keep these fork lifts operational.

3. Because of a shortage of 6,000-pound and 10,000-pound capacity rough terrain (RT) fork lifts, some Army units were deployed with 50 percent RT fork lifts and 50 percent conventional pneumatic tire fork lifts.

4. A high equipment deadline rate due to a shortage of spare parts and qualified repairmen.

5. Cargo Handling Battalion (CHB-2) deployed to Da Nang as a nucleus unit (3 officers and 70 enlisted men) without equipment to perform a supervisory role in port operations; outfitting with a recently authorized allowance of organic equipment was soon found necessary.

(b) To overcome the shortage of rough terrain forklifts, procurement quotas were increased. As an interim measure, modified front-end loaders were issued as replacements for rough terrain forklifts. These front-end loaders had the advantage of having adequate repair parts available in-country.

(c) The problem of a high MHE deadline rate was attacked in a variety of ways: new equipment was shipped to Vietnam directly from production; a contract was made with local Vietnamese agencies to have repair parts fabricated and to establish sources of stock materials; because of the inadequate number and quality of trained MHE repairmen, a contract for maintenance was negotiated with Philco-Ford; and Naval Supply Systems Command instructed the Ships Parts Control Center, Mechanicsburg, Pennsylvania, to ensure that 1-year backup support of Navy managed items was positioned at the Naval Supply Center, Oakland, California, to support PACOM requirements.

(d) As the quantity of Army forklifts increased in Vietnam the variety of makes and models also increased to approximately 47. To help reduce the maintenance problem, the Army established a goal to reduce the number of makes and models of forklifts used in Vietnam to seven.

(e) All of the Services in Vietnam have similar MHE requirements differing predominantly only in magnitude. Standardization of MHE within the Services to reduce the number of makes and models of equipment used in the theater would concurrently simplify the requirements of maintenance and supply of repair parts. The standardization of items within the Services offers potential savings in procurement costs and would facilitate the pooling of requirements for multi-year buys. Joint efforts for standardization could be accomplished under the direction of the Joint Logistics Commanders, the Joint Chiefs of Staff, or the Office of the Secretary of Defense.

(3) Civilian Augmentation - Port Operations. Because of a shortfall in transportation units and equipment, and to minimize the requirements for military personnel assigned logistics responsibilities, civilian contractors were utilized to increase port handling capability. Civilian contractors were employed at each of the major and most of the minor water ports in Vietnam and performed such functions as vessel discharge, lighterage, port clearance, and intra-coastal shipping services. The civilian contractors employed both third-country nationals and local nationals separately and in combination. The use of third-country nationals brought the additional burden of providing certain logistical support that was not needed with the use of local

nationals. Although this burden was essentially that of the contractor, some of it was inevitably transmitted through to the United States Government by the nature of the relationship of the parties concerned.

(a) Although the performance of these contractors has been generally considered excellent, there were scattered incidents that illustrate the inherent limitations of contractor performance in a hostile environment. For example, port operations were seriously degraded by general strikes in Da Nang (March through June 1966) and in Saigon (November and December 1966); by riots of the Vinnel Corporation Korean employees at Cam Ranh Bay in late 1967; and by the general unavailability of employees during holidays or crises periods such as that experienced during the Tet Offensive of February 1968.

(b) The intensity of combat operations in northern I Corps necessitated a shift of numerous Army units into that area in late 1967. This change in troop concentration and the condition of the ports and roads in the area required the establishment of a logistics-over-the-shore (LOTS) operation at Than My Thuy between Hue/Tan My and Dong Ha/Cua Viet. To support these operations Army terminal units that had been slated for inactivation were brought back up to strength and moved to the operational sites. The response to this situation by the Army and the selective support provided by certain Marine and Navy units, exemplified the invaluable flexibility and responsiveness inherent in military units. Civilian contractors are not able to respond to new operational requirements as effectively as are military units.

(c) Although it would be preferable to use all military units in a combat zone, the imposition of manpower ceilings in Vietnam and the limited availability of units necessitated the use of civilian support to match port capabilities with requirements. Civilian support was obtained through direct hire civilian labor working under military supervision and through the employment of civilian contractor support.

(d) The inherent danger of becoming too reliant on the employment of contract port operators in essentially secure port areas was aptly demonstrated by the reduction in port capability during the February 1968 Tet Offensive. Security conditions in various areas and the imposition of civilian curfews throughout the country severely limited the availability of the civilian labor force used in cargo handling and port clearance. This danger was recognized by the establishment in early 1967 of a Navy manning policy for military cargo handling personnel at NSA, Da Nang. U.S. Navy personnel were to be used only in supervisory positions and in those positions which accountability requirements dictate U.S. Navy manning. If required, it was expected that any military personnel, U.S. Navy and other services, would be utilized. In April 1967, the Chief of Naval Operations approved as a goal that in support of an I Corps Area population of 135,000, a military capability for offloading 2,150 short tons per day would be maintained.

(4) Lighterage. On 12 February 1965, the Department of the Army initiated supply action to pre-position U.S. Army lighterage in South Vietnam and Thailand in support of CINCPAC contingency plans. This lighterage consisted of 12 landing craft utility (LCUs) and 52 landing craft mechanized (LCM8s). This project was completed in September 1965; however, by the end of that year all of the equipment pre-positioned in SE Asia had been diverted to South Vietnam to support the movement of divisional forces over the beaches at Vung Tau and Qui Nhon, i.e., 1st Cavalry Division (Air Mobile). Nevertheless, there remained a substantial shortage in lighterage and harbor craft in the harbors of South Vietnam.[133] Navy service Craft for use in I Corps were obtained from PACOM resources (including pre-positioned stocks) and from CONUS. Although the development of the four major deep draft ports was important to the support of forces in Vietnam, the operation of numerous shallow draft ports and special over-the-beach operations, such as that at Wunder Beach (Than My Thuy), has been vital to the support of the troops in such areas as I and IV Corps Tactical Zones. The support of these shallow draft operations has required continued dependence on and maximum use of Military Sea Transportation Service (MSTS) and available Seventh Fleet LSTs in the Western Pacific (WESTPAC), the Army and Navy's fleet of generally outmoded World War II and Korean War vintage landing craft, lighters and harbor craft, as supplemented by lighterage and harbor craft provided by such contractors as the Alaska Barge and Transport Company (AB & T) and Luzon Stevendoring, Inc. (see Figure 11).

[133] CINCPAC Command History, 1965.

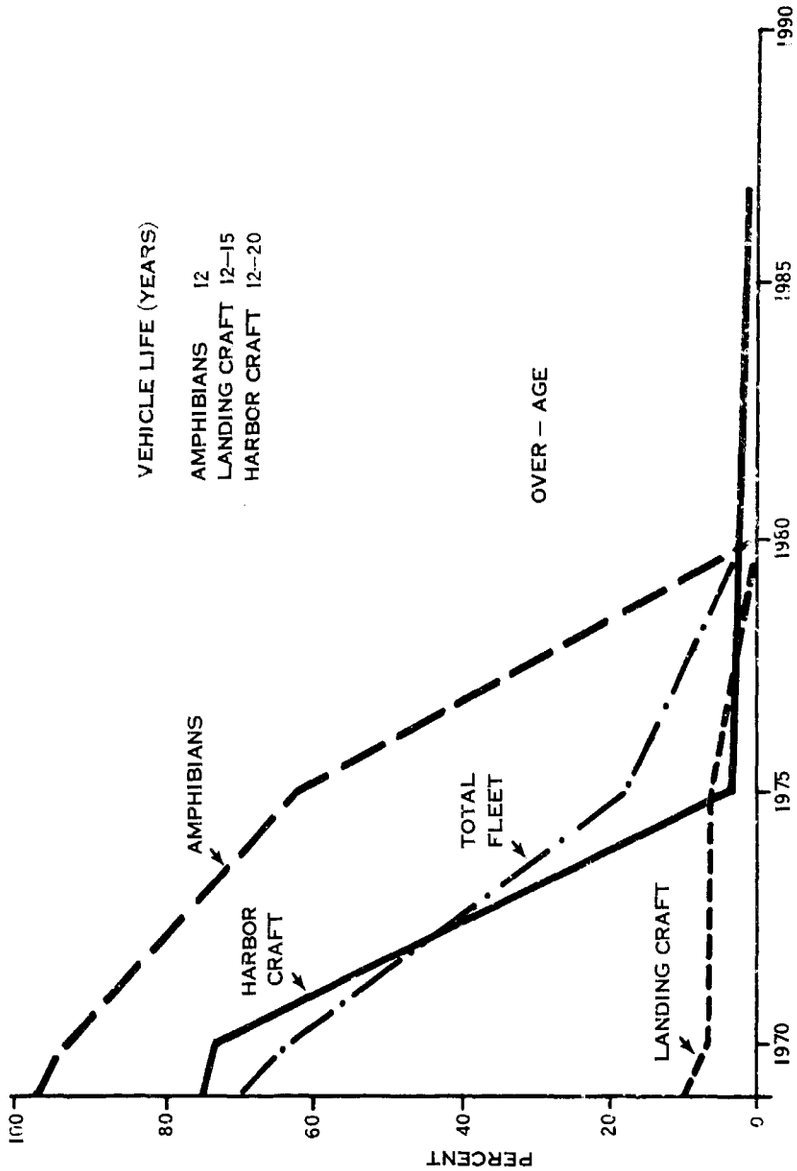

FIGURE II. PRESENT ARMY WATER CRAFT FLEET LIFE STATUS

Source: Extracted From USACDC Transportation Agency Briefing.
Subject: U.S. Army Trans-Hydro Craft 75-85, by Lt. Gen. Bankit.

(a) Prior to the Vietnam buildup the Army had been permitted to carry an inventory of marine equipment in excess of acquisition objectives, but this equipment was old and not in good repair. Most of it was built during the Korean War or earlier because any new procurements of marine equipment had been limited by Department of the Army (DA) policy to that required for peacetime operations. Because little money had been made available over the years for the maintenance and repair of floating equipment, when the Vietnam buildup began the vessels in storage had to be dry-docked and overhauled before they were ready for issue. Only limited numbers of craft had been retained in an active status to support operations in France, Korea, Okinawa and to support training at Fort Eustis, Virginia. As expected the reactivation of the bulk of this fleet with its predominantly obsolete, non-standard machinery caused serious maintenance and support problems. The Army water craft fleet life status is shown in Figure 11.

(b) During the early stage of the Vietnam buildup, major lighterage support in I Corps was provided by elements of the Seventh Fleet Amphibious Force. This capability was supported by the assignment of logistics craft, when available, to NSA, Da Nang. The NSA Da Nang fleet of service craft grew from 35 craft of 8 different types in July 1965 to 131 craft of 21 different types in June 1966.[134] Because of the severly restricted land LOCs in I Corps, the bulk of the support for U.S. forces was distributed by water from Da Nang to shallow draft ports at Chu Lai, Dong Ha/Cua Viet, and Hue/Tan My. This type operation placed heavy reliance on the LSTs, LCU/YFUs (a Navy procured civilian version of the LCU) and LCMs made available. By the end of CY 66, shallow draft traffic to Hue/Tan My had increased to almost 60 resupply trips per month, and 65 percent of the total LCU/YFU effort was devoted to the support of operations at Dong Ha. Korea Express Ltd and Alaska Barge and Transport Company were contracted to provide additional shallow draft craft and lighterage to meet expanding requirements.

(c) Two significant areas to be considered in future planning are the urgency of the need for lighterage immediately after deployments commence, and the formidable task of transporting these heavy, bulky craft.

(d) Another area highlighted by operations in RVN is that equipment requirements change as deep draft port facilities become available. For example, two LARC-V amphibian companies were deployed to Vietnam in early 1966 to conduct lighterage operations directly from the ship to storage site. After the deep draft piers were completed, these units were surplus to the theater. Their transfer to other support roles, except in very limited numbers, was precluded by their lack of worthiness in open seas and their restricted operating range.

(e) Operations in Vietnam also showed that the development of separate logistics complexes served by deep draft ports does not necessarily indicate that intra-coastal movements will be eliminated. A rapidly shifting tactical situation and an insecure land LOC required the maximum utilization of the shallow draft and lighterage assets. For example, both the Army and the Navy now use LCUs principally for intra-coastal/inland water operations (90 percent of the total effort in CY 68). The use of LCUs accounted for approximately 29 percent of the cargo moved intra-coastally during CY 68.

(f) The availability of Army amphibians and water craft was drastically cut by a rising equipment deadline rate in late 1965 and early 1966. The primary reasons for the increase were the lack of general support maintenance and spare parts. To help correct the problems with Army procured items, technical assistance was provided by the Army Material Command (AMC), spare parts were placed in the RED BALL system, and equipment maintenance floats were increased. Additional equipment and units were requested through command channels.

(g) Except for a limited Army marine maintenance capability established in-country, all shipyard level maintenance for Army craft was performed out of country under the supervision of the 2d Logistical Command at Okinawa. The actual maintenance was performed in Okinawa, the Philippines, and Singapore. Water craft availability in RVN was adversely affected by the normal 6- to 9-month (or longer) periods required for completion of this shipyard

[134] Commander, Service Forces, Pacific (COMSERVPAC) Weekly Summary of Command History, 11 through 17 December 1966.

maintenance. Additional delays could be attributed to awaiting tow to the yard and return to RVN. These delays have been significant, frequently ranging from 30 to 90 days.

(h) Maintenance of Navy craft and lighterage performed in-country was backed up by depot maintenance at Subic. Contractor assistance was relatively minor in this area.

(i) Although the Army continued to operate with the craft assigned prior to the RVN buildup, expanding requirements for LCU class vessels caused the Navy to purchase a similar commercial off-the-shelf craft called the SKILAK. The SKILAK is larger and faster than the standard LCU and has proved a highly effective substitute.

(j) The Department of the Army has directed their Combat Developments Command to conduct a Trans-Hydro Craft study to determine what craft are required to support the Army lighterage requirement (floating craft, helicopters, hydro-foils, air cushion vehicles) for the 1975-85 time frame. This study has been delayed by a requirement for $1 million for preliminary engineering designs of candidate craft. Pending completion of the study, the Army is procuring a limited number of craft primarily LCUs and LCM-8s to maintain an interim LOTS capability.[135]

(5) Personnel and Training. By the start of the buildup in 1965, the Army's personnel and training programs in the port operations and marine fields had been reduced to practically skeletal status. As early as 1956 the Army course for training basic stevedores had been terminated, and the only related course provided by the USA Transportation School was a Stevedore Officer Course, offered twice a year with 14 students in each class. The specialist courses in the marine or water craft area suffered the same fate, and the program had deteriorated to the presentation of a few courses per year in the marine engineer field.

(a) Starting 19 March 1965, the USA Transportation Center and School at Fort Eustis, deployed 47 of the original 69 units available to support training. At the same time action was initiated to activate 157 additional units of which 105 units were eventually deployed to RVN. These activations, coupled with deployments and inactivations, left a remainder of 32 units available to support individual and unit training.

(b) The loss of the large majority of the trained Officers and Non-Commissioned Officers in the original 47 units deployed, seriously compounded the problems of activating new units, predominantly with untrained fillers direct from basic training centers, as well as the problem of expanding the individual training program at the school. Heavy reliance was placed on the recruitment of experienced civilians, predominantly retired military of all services, supplemented by acceptable student output to expand the school's cargo handling and marine training programs.

(c) The unit and individual training programs were also hindered by a shortage of equipment and facilities. At one time it was necessary to use the equipment of two companies to conduct the training of ten units. There was a critical shortage of a number of items such as floating craft, rough terrain forklifts, cranes, and cargo hatch sets. These shortages continued through 1965 and 1966 and required units to deploy during 1966 with significant shortages of equipment, particularly rough terrain forklifts.[136]

(d) Naval personnel received training in cargo handling at the U. S. Navy, Transportation Management School, Oakland, California. Training in small boat operations was conducted at the U. S. Navy Amphibious Bases at Coronado, California, and Little Creek, Virginia. Cargo Handling Battalions 1 and 2 provided a nucleus of trained supervisory personnel and proved invaluable in the establishment of effective port operations in I Corps. In order to relieve CHB #2 from operations in an orderly fashion, a special 3-week basic course of instruction

[135]Director of Army Transportation to the Transportation Task Force, Briefing to the JLRB, 19 August 1969.
[136]USA Transportation School and Center for Representatives of the Transportation Task Force, Briefing to the JLRB, 22 August 1969.

was provided at the Navy Transportation Management School for those selected officers and supervisory rate personnel scheduled for assignment to NSA, Da Nang.

(e) The experiences of the Vietnam buildup indicate the need for the Services to retain a viable training program and base of trained personnel in the port operations and marine fields. Possible areas for exploration are cross-assignment with other Services and branches, incorporation of training support for other DOD agencies, modification of reserve training programs, and increased CONUS utilization of assets.

(6) Future Port Operations. The trend in commercial ship construction has been away from the break bulk ships of the immediate past and toward full containerships (self-sustaining and nonself-sustaining) or combination roll-on/roll-off (Ro/Ro) and containerships. Some consideration is also given to future construction of ships in the Lighter Aboard Ship (LASH) configuration. This concept envisions a mother ship carrying a load of prestowed barges that could be dropped-off or picked-up as required at either large deep draft or small undeveloped ports. Implementation of this concept would correspondingly reduce dependence on deep-draft facilities and would provide a capability to make direct deliveries from out of theater to destinations served by only shallow-draft ports.

(a) Because of the major trend to containerships or their combination with Ro/Ro, it is obvious that future ports should be capable of receiving and working this type of vessel. Self-sustaining containerships with their shipboard gantry cranes can be discharged across conventional deep draft piers or, if necessary, into lighterage in the stream. However, the inherent instability of the ship and lighter during the latter type of operation would cause delay in the discharge operation and would impair the rapid turn-around time required to support the system. The nonself-sustaining containership required either a pier mounted gantry crane to discharge it or the availability of some independent lifting device, either floating or flying (such as a heavy lift helicopter or crane equipped barge). A crane equipped lighter has been designed to shuttle containers between deep-draft and shallow-draft ports in-country, and the Navy is developing a conceptual container-gantry ship to shuttle containers from ship to shore.

(b) Operations in undeveloped areas or in areas where the established ports have been destroyed will initially require the use of logistics-over-the-shore techniques. This type of operation places a heavy reliance on military cargo handlers and lighterage. Even when using such advanced systems as helicopter discharge of containerships, heavy requirements are placed on support equipment, and the overall operation is significantly slower than operations at a fixed pier. Through the use of pre-positioned mobile piers such as the De Long or the prefabricated Reeves type used at Da Nang, fixed-pier operations could be facilitated. Under ideal conditions, where construction of the piers is a limiting factor, this could be accomplished in as little as 60 to 90 days, provided that sufficiently high priorities were assigned and intensive management ensured availability of ancillary support such as dredging and pile-driving capabilities. If these piers were fitted with rails and accompanied by prestocked gantry cranes, a highly efficient fixed-pier container facility could be in operation in approximately the same time period. The use of fixed piers would increase the capability of the facility and release the LOTS lighterage assets for use in other areas.

(c) The capability to establish temporary LOTS operations has been proven in Vietnam to be vital to the support of operations in areas lacking secure land LOCs and in areas not serviced by deep water ports. Temporary LOTS operations were vital to the early support of the Marines at Chu Lai and to the support of "Task Force Oregon" (the predecessor of the Americal Division) in the Duc Pho area and to the Army and Marine forces north of Da Nang at Wunder Beach.

(d) The capability of employing mobile or prefabricated piers or LOTS operations creates the need for a tool to aid the planner in determining which option is most appropriate for satisfying the forecasted requirements. Because of the multitude of variables involved, and the lack of previous demand for the information, this particular question has been generally avoided. The Mobility System Support Resources (MSSR) Study Group may

develop additional guidance in this area after appropriate simulation models and a data base are completed. Pending the development of additional data, the time required to establish or re-establish these mobile or prefabricated piers is a factor to be considered by the operational and logistics planners. A survey of the DeLong piers in SE Asia by the Army Materiel Command indicated that 8 of the piers in Vietnam and 1 in Thailand could be mobilized and withdrawn as desired. One pier at Cam Ranh Bay was classified as uneconomically salvagable. Upon the withdrawal of U.S. forces from Vietnam, those pier units not required to support the national economy or ongoing operations could be retrieved and placed in war reserve stocks to support possible future contingency operations.

(e) In looking ahead to port operations in a future contingency, many of the lessons of Vietnam have a continuing and direct applicability. Many of the early problems of port congestion were resolved by a range of control and coordination actions, both by the unified command chain and by Service operational forces. These proved necessary and effective for efficient use of the limited port throughput capabilities available, but they only serve essentially to match the rate of cargo shipments to the capabilities of the receiving ports. A fundamental lesson lies, however, also in recognition of the need for, and operational problems of, expanding port facilities and water terminal capabilities rapidly and on a scale equal to escalating requirements. This requires a readily responsive capability in Service logistic support units. Related to this is the need for interim or supplementary capability to conduct Logistics-Over-the-Shore operations without undue delays in obtaining personnel, craft and equipment.

(f) There is guidance for the future in the fact that an important limiting factor in early port development in Vietnam was the initial delay in giving this development adequate priority and allocation of resources. This necessitated the urgent reassessment and shift of emphasis early in 1966. It also introduced corresponding delays in resolving the major obstacles presented by lack of quayside staging and rampsites, storage facilities, and dredging capabilities in an area characterized by coastal shallows. The special techniques for mobile piers of the DeLong type and sectionalized deep water pier fabrication as developed by RMK served to offer substantial advantages for early installation; similar benefits accrued from prefabricated construction modules for port facilities.

(g) Equally important to development of throughput, the expansion of terminal operations highlighted the need for sufficient and reasonably standardized MHE capability, and its ready maintenance, as well as the ability to provide and maintain lighterage and specialized craft, without expensive and time-consuming rehabilitation of inactive and overage inventory. The value of civilian contract labor to expand capabilities was well demonstrated in Vietnam, as well as the absolute requirement for a military terminal operations capability, including stevedoring, deployed early as a ready nucleus and continued at a prudent minimum level, even under favorable conditions of available civilian forces.

(h) In short, recent experience has again confirmed that when major port throughput capabilities are required in an undeveloped or devastated area, expansion of capabilities can only be achieved to the extent that adequate plans have been made, long lead time equipment procured, and the Services are prepared to respond. Efficiency of operations can only be achieved to the extent that adequate control and coordination mechanisms can be instituted before major problems develop.

4. LAND

a. Highway

(1) Background

(a) At the start of the Vietnam conflict the intersectional highway lines of communication were extremely limited. During 1965, slightly over one million tons of cargo were moved by road; most of these road movements involved short-haul deliveries primarily for port clearance and local destinations. By the end of 1965, truck capabilities available to

COMUSMACV included 15 1/3 nondivisional truck companies under U.S. Army Vietnam (USARV), and five nondivisional truck companies under Commanding General (CG), III Marine Amphibious Force (MAF). This provided road transportation with an optimum daily capability of 15,360 short tons of cargo and 2,400,000 gallons of POL movement on a short-haul basis. Road transportation capability was augmented to a limited extent by divisional organic vehicles and some commercial contracts.[137]

(b) As the buildup progressed and new ports were constructed, the requirement for additional truck units for port clearance became acute. At the same time, combat operations required additional trucks for resupply support, which in many instances, had to be taken from the port clearance capability.[138] By June 1966, truck requirements and capabilities for I and II Field Force areas showed expected shortfalls existing at Cam Ranh Bay, Qui Nhon, Nha Trang, Saigon, and Vung Tau. The projected truck capability would not match the requirements until late 1966, and even this date was contingent on port and road construction, timely arrival of units, expanded truck capabilities, and meeting shipping schedules.[139]

(c) Additionally, in July 1966, the military was given the task of assisting in clearing up the congestion in the civilian sector of the Saigon port by transporting nonmilitary, commercial, and U.S. Agency for International Development (USAID) cargos to their destination.[140] This mission placed an additional burden on an already hard-pressed highway truck capability and necessitated a greater reliance on contractor assistance. With the implementation of the Combined Campaign Plans of 1967 and 1968, rehabilitation of the badly deteriorated highways throughout Vietnam was initiated. Road rehabilitation increased use of highways for longer hauls and raised the highway portion of the total intra-RVN cargo movements to a high of 1,514,700 short tons or 72.6 percent of the total cargo moved by all transportation modes in December 1968.

(d) As the tactical situation improved, the use of highway transportation continued to increase. As an example, the use of the highway line of communication resupply of the United States Marine Corps in I Corps more than doubled between 1967 and 1969, as shown in Table 16.[141]

TABLE 16

RESUPPLY INTRA-RVN, I CORPS

USMC (STONS)

Year	Water	Air	Truck (Rough Rider)
1967	702,099	81,657	34,690
1968	1,287,019	81,282	52,609
		15,858*	
1969	823,117	42,623	73,115

*Khe Sanh Airdrop (January through April 1968).

(e) Traditional planning factors for military truck units have proved inaccurate for Vietnam operations partly because of the logistical island concept that decreased the command's ability to shift truck assets from one island to another as movement requirements changed. "Lack of flexibility to rapidly shift resources from one locality to another

[137] MACV Command History, 1965, pp. 122 and 123.
[138] HQ, 11th Trans Bn (Terminal), APO 96307 - ORLL for Quarterly Period Ending 31 July 1966, 15 August 1966.
[139] HQ, MACV, Saigon, Vietnam, Transportation Resources Conferences, 11 June 1966, Tab F.
[140] HQ, 1st Log ORLL, Operational Report for Quarter Ending 31 July 1965 - October 1966.
[141] FMFPAC Transportation, Briefing to JLRB, September 1969.

largely because of insecure land lines of communication was a significant problem in the buildup."[142] To compensate for this shortfall, additional in-country transportation capability was obtained by contracting for commercial truck lift for local haul and port and beach clearance.

(2) Discussion

(a) Truck Unit Capabilities. It was recognized as early as the 2d Quarter 1965 that the planning factors and utilization rates for transportation truck companies found in Army FM 101-10 were considerably higher than the actual utilization experience in Vietnam. The 1st Logistical Command, USARV, Operational Report - Lessons Learned (ORLL) gave these utilization rate percentages for motor transport units:

46 percent for medium truck companies

50 percent for light truck companies

1. The primary causes for these low percentages, at this time, were given as weather, lack of storage facilities, lack of repair parts, and the diversions of equipment to support tactical forces.[143]

2. With the increase in the tempo of operations as a result of the buildup in 1966, greater numbers of drivers were used as "shotgunners" to protect convoys from the growing Vietcong interdictions, and more trucks were "hardened" to provide gun-platforms for protection. Local security problems also required driver personnel to man defense perimeters thereby reducing driver availability. These actions reduced the cargo handling capability of the truck units.

3. In summary, a joint study conducted by the Department of Army and U. S. Army, Pacific (USARPAC), in 1968, concluded that ". . . the decreased capabilities of motor transport units were due to personnel and equipment shortages and the excessive requirements for LOC security."[144] The substandard productivity of truck companies in Vietnam was confirmed as late as March 1969.[145]

(b) Light Trucks Versus Medium Trucks. The problem of determining an appropriate mix of light and medium truck units in Vietnam was formally addressed by an Army study in 1968. Light trucks in the Army consist of either the 2 1/2-ton or 5-ton straight body cargo trucks, whereas medium trucks are those which have a 5-ton tractor transporting a 12-ton trailer. The study concluded that 5-ton tractors with 12-ton trailers were more efficient than 2 1/2-ton or 5-ton trucks because more tonnage could be moved faster with a concurrent lowering of personnel and equipment requirements.[146] Although this study highlighted a preference for 5-ton tractor-trailer units command-wide, it also recognized the need for a lesser requirement for lighter trucks. As a result of this study a decision was made to convert five Army light truck companies to medium truck companies to increase the overall motor transport capability. This conversion was completed in early 1969 and provided the additional capability to handle large cargo containers and Air Force 463 L pallets that the light trucks could not accommodate. As an example of this conversion, 35 straight-body, 5-ton trucks were replaced by 12 tractor-trailer trucks in the ammunition shuttle clearance operation at Cogido, RVN, 1968. This action resulted in a 67 percent saving in personnel and a reduction of 40 percent in the ton-mile cost.[147]

[142] USARPAC, Briefing to JLRB, September 1969.
[143] 1st Log Cmd Report for Quarter Ending 1 December 1965, 19 February 1966, p. 22.
[144] Evaluation of the U.S. Army Transportation Management in South Vietnam, Joint DA-USARPAC Transportation Management Team, 23 February 1968.
[145] PRC R-1240, Development of Logistics Planning Factors in South Vietnam (U) (LOG PLAN-V) Vol. I, 31 March 1969, pp. I-26 and I-28 (FOUO).
[146] Evaluation, op. cit., p. G-8-9.
[147] HQ, 48th Transportation Group (Motor Transport), APO 96491, Operational Report for Quarterly Period Ending 31 July 1968, 7 August 1968, pp. 6 and 7.

(c) Depot Receiving Capability. Depot capability includes MHE, personnel, and facilities for both receiving cargo from the port and issuing supplies to the users. During the early period of the buildup, the depots could not receive quantities of cargo commensurate with the ship discharge and truck clearance capability. For instance, at Cam Ranh Bay, in November 1966, the shortage of MHE was partly the cause of degraded port discharge capability resulting in a buildup of 27 ships working, waiting, or holding.[148] The depot reception problem was particularly acute at ammunition and reefer storage areas.

1. Delivery point or depot congestion[149] increased truck turnaround time, degraded truck utilization, and inflated daily truck requirements.

2. Terminal throughput capability is determined by the most limiting of these factors: terminal reception, discharge, or clearance capacity.[150] Therefore, planners do not necessarily consider depot or consignee receiving capability as a major limiting factor in determining terminal capacity, as was proven to be the case in Vietnam.

(d) Drop-Side Trucks. Fixed-side racks on cargo beds of trucks presented problems in the loading and discharging of cargo.[151]

1. The drop-side cargo body truck was found to be superior to the fixed-bed cargo truck, and its use resulted in an increase in cargo movement capability.[152] This type truck will facilitate the handling of ammunition, 463 L pallets, other palletized cargo, containers, and permit loading and unloading from three sides with materials handling equipment.

2. The Marine Corps successfully adopted and used a modified M-series vehicle on which sides of the cargo bed were dropped converting the vehicle to a flat bed truck.

3. USARV requested expedited procurement of 660 kits for conversion of 2-1/2-ton trucks and 620 kits for conversion of 5-ton trucks. USARV also requested that trucks shipped as replacements to combat service support units be of the drop-side configuration.[153]

4. The conversion kits were not shipped; however, an equal number of drop-side trucks was provided and shipped to Vietnam. Action is currently underway by the Army to have these vehicles type-classified standard A, as the Marine Corps has already done.

(e) Heavy Lift and Outsize Trailers

1. Transportation units assigned to Vietnam were not authorized heavy-lift and outsized cargo trailers needed for the movement of outsized and/or overweight cargoes, such as 40- to 80- foot length poles, steel "I" beams, house trailers without wheels, and large generators. As a result, assistance was required from contractors and Army engineer and maintenance units to move outsized cargo. Not only was this procedure expensive and cumbersome, but it also detracted from the performance of the mission of these units.[154]

2. The need for equipment to haul outsized cargoes was highlighted in an evaluation of the U.S. Army Transportation Management during 1968, which recommended that a heavy-lift trailer platoon be assigned to each logistical island.[155]

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[148] CINCPAC Command History, November 1966, J-48 input.
[149] 4th Transportation Command ORLL-Quarter Ending 31 January 1967, pp. 10-11.
[150] HQ DA Field Manual 55-15, Transportation Reference Data, February 1968.
[151] 4th Trans Comd ORLL - Qtr Ending 31 January 1969, pp. 12-and-13.
[152] HQ 6th Transportation Battalion Letter, APO 96491, AVCA SGN AB A CO, subject: Evaluation of Drop-Side Cargo Body 2 1/2-Ton trucks, 22 October 1967 and 1st endorsement HQ, U.S. Army, Vietnam, 17 November 1967.
[153] CG, DST Message 84143, 130606Z November 1967, USARV to DA, (U) AVHOC.
[154] HQ, 1st Log Comd, ORLL, 1 November 1967 - 31 January 1968, p. 32.
[155] Evaluation, op. cit., pp. G-8 and 9; and Lessons Learned Report-of the 4th Trans Comd, 30 April 1968.

(f) Vehicles for Beach Clearance

1. Beach operations in Vietnam identified the need for a vehicle for beach clearance on sandy terrain, and one vehicle that proved highly successful was the commercially designed truck known as the Kenworth Model 552 truck with the Eidal Model 1262 trailer. This high payload tractor-trailer carrier was capable of transporting heavy and outsized cargo in deep sand and was ideally suited for beach clearance.

2. Future plans should consider the use of this or a similar vehicle for this type of mission.

(g) Commercial Motor Transport Capability

1. In 1966 CINCPAC planners realized that combat service support unit deployments would lag behind tactical unit deployments. As a result, the decision was made to use civilian contractors to augment transportation capability.[156]

a. In 1965 and early 1966, the Terminal Command at Saigon recognized the need to augment military motor transport capability if port congestion problems were to be resolved, and the Army accepted the Navy port clearance truck contract in late 1965 which provided for 250-500 Vietnamese to operate their own vehicles. These trucks provided an unreliable capability until more dependable contracts were negotiated in 1966.[157]

b. In 1966, additional contracts were negotiated to increase transportation capability. These contracts concerned local and third-country nationals who were hired to drive both Government-owned trucks and their own trucks.

c. One of the largest contracts was with Alaska Barge and Transportation Company, whose contract was controlled by the U.S. Navy through MSTS. All other contracts were processed by the 1st Logistical Command Purchasing and Contracting Office; however, the method of establishing liaison and operation varied. All firms faced problems beyond their original expectations in acquiring semiskilled labor and use of real estate.[158]

d. The principal problems encountered by these contract truck companies were physical control of trucks, security of trucks and cargo, hostile action, and offloading trucks at the depot.[159]

e. In October 1969, a 5.2 million ton-mile shortfall (out of a total requirement of 16.8 million ton-miles) in military transportation resources was being made up by contractor effort.[160]

2. Commercial motor transport capability was degraded by the tactical situation even more than the military capability because of the following conditions:

a. Trucks and drivers were particularly vulnerable to enemy action. Routes, intersections, and bridges were frequently closed to civilian vehicles but remained open to military vehicles.

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[156] CINCPAC Command History, 1966, p. 703.
[157] Interview with Commanding Officer, 11th Transportation Battalion from February 1966-February 1967, November 1969.
[158] 1st Log Comd ORLL, Command Report Ending 31 July 1966, 19 October 1966, p. 46; and 30 April 1966, 2 June 1966, p. 50.
[159] HQ, CINCPAC, Letter, Data Requested by JLRB, subject: Introduction and Phasing of Commercial Highway Contractors, 30 October 1969.
[160] Ibid.

b. Curfews imposed on the civilian populace reduced a driver's productive day to a few hours or to none at all in some cases.

c. Drivers were too frightened to report for work.

d. Strikes and other labor problems reduced productivity.

(h) GOER Vehicles. During the summer of 1966, in the central highlands of Vietnam, large-scale combat operations over unimproved roads impassable for conventional wheeled vehicles caused the introduction of the GOER vehicles into Vietnam.

1. The GOER was a large tire, rough terrain cargo and fuel carrying vehicle employed in Vietnam in three configurations – the 8-ton, 2500-gallon tanker, and the 10-ton wrecker GOER.

2. The GOER proved its versatility and cross-country capability under nearly impossible conditions and negotiated terrain that stopped tanks.

3. During the Department of the Army evaluation of the GOER vehicles in Vietnam,[161] it was found that the GOER vehicle provided the capability of negotiating roads and cross-country terrain virtually impassable for standard vehicles during the monsoon season and, as a result, accomplished missions where tactical vehicles failed. Although modifications of the cargo doors were recommended, this evaluation recommended that the GOER vehicles not be used to replace any standard vehicles but to be authorized as a special purpose vehicle in direct support of tactical forces.

b. Rail

(1) Background

(a) In a theater of operations, great quantities of supplies normally move by railway as an intersectional mode of transportation. In Vietnam, however, constant sabotage and interdiction prevented the extensive use of the railway.

(b) U. S. military cargo was moved over the Vietnamese National Railway System (VNRS) for the first time in October 1965, and only 30,200 short tons of cargo of all types were moved by this means during 1965.[162]

(c) In 1966, it became evident that continued efforts should be made to open and secure the railway and highway lines of communication in order that greater tonnages could be moved inland and laterally within Vietnam. This action could also possibly help the ports reduce congestion and deep-draft backlogs.[163]

(d) As a result of some sectional segments of the railroads being rehabilitated, transportation performance increased in 1967. Movement of military tonnage by rail increased from approximately 93,000 short tons in 1966 to over 247,000 short tons in 1967.[164]

(e) Because of security problems, progress in increasing the capability of the Vietnamese National Railway System was hindered by the Tet Offensive in 1968. The year ended with restoration goals and security status below what had been planned.[165]

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[161] DA, Army Concept Team in Vietnam, APO 96243, subject: Final Report-Evaluation of GOER Vehicles in Vietnam (ACI-90/67), 26 January 1967.
[162] MACV Command History, 1965.
[163] 1st Log Comd ORLL, Command Report Ending 31 July 1966, 19 October 1966, p. 71.
[164] MACV Command History, 1967, pp. 768 through 769.
[165] MACV Command History, 1968, p. 60.

(2) Discussion

(a) Usefulness of the Railroad in Vietnam.

1. The railroad network in Vietnam is primarily oriented along the seacoast and was of little use in the support of laterally oriented combat operations. When the decision was made in 1965 to establish an enclave logistical island concept, based on the lack of intersectional north-south ground lines of communication, it was recognized that interlogistical island movements by rail were not essential.

2. Further, it became apparent in 1966 that because of the inability to maintain overall system security, railroad network utilization would be restricted essentially to spurline and local operations in secure areas.[166]

3. In early 1966, a requirement for additional rolling stock to support U.S. military requirements developed, and on 30 January 1966 the COMUSMACV inquired as to the availability of such equipment and asked for authority to requisition 200 railroad cars from Department of Defense sources. COMUSMACV estimated that 27,000 short tons of military supplies and equipment a month would be available for movement by rail by June 1966, and that 200 cars were intended for use on available trackage, which totalled 57 miles in the Saigon area, 197 miles in the Nha Trang area, and 110 miles in the Da Nang area.[167]

(b) Narrow Gauge Railroad Equipment.

1. When the buildup in SE Asia began, the Army Materiel Command did not have an inventory of narrow gauge rail equipment or the authority to buy any for inventory purposes.[168] At the request of AMC on 16 February 1966, the Deputy Chief of Staff for Logistics, Department of the Army (DCSLOG,DA), reviewed the existing situation as regards rail equipment planning and determined that an existing project (USARYIS-GEN-38-60-OP) included narrow gauge railroad equipment. These stocks, however, were reserved for possible use in Thailand only. Items of railroad equipment included earlier in the plan for use in South Vietnam had been deleted when the project was revised in April 1965. The base development plan for SE Asia, prepared by the U.S. Army, Pacific, and dated 1 May 1965, had visualized the use of rail facilities in both Thailand and South Vietnam, but had concluded that those in Vietnam were so vulnerable to sabotage that it was impractical to develop a rail utilization plan.[169]

2. The DCSLOG, DA, also indicated that the operation of the rail system in South Vietnam was the responsibility of Government of Vietnam (GVN). Any U.S. assistance, including the provision of rolling stock, would therefore normally be provided by the USAID programs and not by Army sources.[170]

3. Action on the MACV inquiry was assigned to the DCSLOG, DA, and on 17 February 1966 the AMC was instructed to explore the possibilities of obtaining these items from third-country sources. Data were obtained concerning both Australian and Japanese resources, and early in April 1966 the DCSLOG, DA, directed the procurement of 200 railroad cars by the U.S. Army, Japan.[171]

4. In July 1967, the following items of U.S.-owned rolling stock had arrived in-country, but full utilization of this equipment was not being attained. Rolling stock inventory as of July 1967 by type and location is shown in Table 17.

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[166] MACV Command History, 1966, p. 300.
[167] COMUSMACV, Message 03005, to CINCPAC, et al., DA IN 254503, 30 January 1966, subject: Rail Car Support of MACV.
[168] AMC Historical Office, Historical Summary, FY 1966, 24 March 1967, p. 229.
[169] Ibid., p. 232.
[170] Ibid., p. 232.
[171] Ibid., p. 233.

TABLE 17

U.S.-OWNED ROLLING STOCK

Type of Rail Car	Saigon	Nha Trang	Qui Nhon	Danang
Gondola	26	10	15	10
Flat Cars	70	10	21	10
Reefer	13	12	3	0

5. The observation of the 1st Logistical Command was that, "full utilization of these assets will only be possible when both of the following are accomplished:

a. Virtually the entire rail line in RVN is open and secure.

b. Additional sidings and passing tracks are constructed."[172]

(c) Security. Beginning in 1965, constant sabotage made it impossible to rely on rail service for any massive military transport requirements.[173]

6. The perplexing problem was that the Vietnamese National Railway System passed for long distances through areas in which the enemy was operating, and the Viet-cong demolished trackage as fast as it could be repaired.[174]

7. During 1966, the enemy disrupted both restoration plans as well as military and commercial use of the railroads throughout RVN by destroying rails and bridges. Consequently, during the last 6 months of 1966, the restoration program made very little progress.[175]

8. In order to provide a better coordinated and unified RVN and U.S. effort for the restoration of the VNRS, the MACV plan was incorporated into the 1967 Combined Campaign Plan (CCP) (AB 142), providing that the U.S. and GVN effort would "eliminate Viet Cong North Vietnam Army interdiction of the VNRS . . . and restore it for uninhibited friendly use." This planning was accomplished by the Joint MACV, USAID Railroad Committee working with RVN government representatives. During the first six months of 1967, however, the lack of tactical security again caused considerable lag in railway restoration plans. Although the 1st quarter of 1968 opened on an optimistic note, railroad restoration made little progress, primarily because of the Tet Offensive. In a MACV Transportation Resources Evaluation, conducted in February 1968, it was concluded that, "the railroad was not considered militarily essential in RVN."[176] Although progress was made throughout the latter part of 1968, security continued to be a serious problem, and the year ended with restoration goals and security status below what had been planned. The security status on 31 December 1968 is shown in Table 18.

5. INTRA-RVN AIR TRANSPORTATION

a. Background. Although logistic support of forces in Vietnam was organized to provide support within logistic islands, there was a large requirement for line haul transportation between these areas.

(1) Highway and railroad transportation was used for local or short distance movements, but their use for inter-logistic island and long distance movement was extremely limited because of a lack of surface transport facilities and secure surface LOCs. Further, within each area many units requiring support were isolated at locations inaccessible to surface modes of transportation, and in many instances, did not have dependable surface LOCs.

[172] HQ, 1st Log Comd, ORLL Period Ending 31 July 1967, p. 47.
[173] MACV Command History, 1965, p. 122.
[174] MACV Command History, 1966, p. 294.
[175] MACV Command History, 1967, p. 766.
[176] HQ, MACV, MACV Transportation Resources Evaluation, 25 February 1968, p. 8.

TABLE 18
KILOMETERS OF RAILROAD BY OPERATIONAL STATUS

Corps Tactical Zone (CTZ)	Green*	Amber*	Red*	Total Kilometers
I	0	63.0	334.6	397.6
II	182.2	208.8	288.5	679.5
III	41.7	38.6	82.2	162.5
Total	223.9	310.4	705.3	1239.6
Percent	18.1	25.0	56.9	

*Green - Secure for operations during daylight hours.

Amber - Open for operations during daylight with security provided.

Red - Closed-Requires major military or engineering effort to open.

(2) Restrictions on land transport dictated the maximum use of air transportation. Because Republic of Vietnam Armed Forces (RVNAF) air transport capability was limited, major reliance was placed on U. S. air transport resources to support all military operations. U. S. capability was provided from two main sources - aircraft assigned to the Common Service Airlift System (CSAS) and organic aircraft. The CSAS airlift was provided by the Air Force, whereas each Service was assigned organic aircraft (rotary- and fixed-wing aircraft). The common service airlift fleet consisted of fixed-wing aircraft utilized in the role of tactical airlift operations. Generally, organic aircraft were an integral part of combat units and were used primarily by the combat commander for immediate battlefield mobility and support.

b. Discussion

(1) Common Service Airlift System (CSAS)

(a) Organization

1. Tactical airlift requirements in South Vietnam were met initially by the 315th Air Commando Group (now a wing) using C-123 aircraft, and C-7A aircraft assigned to the U. S. Army and Royal Australian Air Force. The 315th Air Commando Group, located in South Vietnam, was assigned to PACAF's 315th Air Division at Tachikawa, Japan. Operational control was exercised on behalf of COMUSMACV by the Commander, 2d Air Division (now the Seventh Air Force). Because of the increase in military operations, in-country airlift requirements exceeded the capability of C-123 aircraft. Commencing April 1965, C-130 aircraft were staged and operated in South Vietnam from the offshore bases of the 315th Air Division to increase airlift capability. On 15 October 1966, the 834th Air Division was activated at Tan Son Nhut Air Base and assigned the responsibilities for in-country tactical airlift operations. The 2d Aerial Port Group at Tachikawa was collocated with the 315th Air Division and served as the command element of all aerial port resources in the division, including those in RVN.

2. Prior to the activation of the 834th Air Division, the three aerial port squadrons located in RVN had been tenant organizations and were functioning under the operational control of the Command, 315th Air Commando Wing, which was under the operational control of the Seventh Air Force. It was not until the 834th Air Division was activated under the Seventh Air Force, and the 2nd Aerial Port Group relocated to Tan Son Nhut that the chain of command was firmly established under Seventh Air Force. The completion of these links in the chain of command provided an organization capable of identifying and solving tactical airlift problems rapidly. In April 1966, the Chief of Staff of the Army and Chief of Staff Air Force agreed that the C-7A aircraft assigned to the U. S. Army would be turned over to the Air Force

to be operated in support of the Army in a manner comparable to the Army system. On 1 January 1967, the C-7As were transferred to the Air Force and were organized into six troop carrier squadrons (total 87 aircraft) and assigned to the 834th Air Division.

(b) Composition of the Fleet

1. The CSAS airlift fleet consisted of the C-7As and the C-123s of the 834th Air Division, and the C-130s that were staged in-country from the 315th Air Division on temporary duty from the offshore bases.

2. The combat environment in RVN increased airlift requirements on short notice and severely disrupted the CSAS passenger and cargo capability provided in accordance with routinely forecasted requirements.[177] Therefore, a system of rapid augmentation of C-130 airlift capability was needed. COMUSMACV received approval from CINCPAC to obtain additional support from the 315th Air Division at Tachikawa, Japan, within the following time limits from initial notification: 50 percent of requirements within 12 hours, 75 percent within 24 hours, and 100 percent within 36 hours. This schedule provided a flexible airlift capability highly responsive to the changing tactical situation.

3. A study was made regarding the feasibility of basing C-130s in-country rather than rotating the fleet. The study showed that the increase in personnel, the increased facilities requirements, the aircraft maintenance work load, the problem of security, and the fact that the rotational aircraft provided excellent opportune lift between RVN and offshore supply depots would make this move impractical.[178] During 1966 through 1968 the number of C-130 aircraft available to the CSAS are shown in Table 19.

TABLE 19

C-130 AIRCRAFT IN MACV CSAS

(Highest number of aircraft operating during the month)

Year	J	F	M	A	M	J	J	A	S	O	N	D
1966							32	35	33	38	45	45
1967	45	45	45	51	46	48	50	51	57	61	64	66
1968	73	84	96	92	88	82	77	76	81			

Source: MACV J4 Briefing.

(c) Airlift Operations. All intra-RVN air transportation provided by the CSAS was within the normal definition of tactical airlift. To administer the total capability of the CSAS fleet, MACV found it necessary for management purposes to establish three different categories of airlift – tactical, nontactical and administrative, and dedicated. MACV retained tight control over the intra-RVN airlift and operated a stringent priority system for allocating airlift.

1. Tactical airlift involved the movement of troops and/or supplies into combat or directly supporting combat. The movement of combat units and their combat support to home station could be designated a tactical move by the MACV Combat Operations Center (COC), if the movement was critical to the security of the designated area. A tactical lift was normally assigned a transportation priority of one. An outstanding example of tactical airlift was the support provided the Marine Corps units during the siege of Khe Sanh. All variations of airlift were employed during this operation, including normal discharge, discharge at high taxi speeds, parachute extraction, and air drop.

[177] MACV Command History, 1967, p. 769.
[178] CINCPAC Point Paper, 1969.

2. Nontactical and administrative airlift involved the movement of troops and/or supplies for other than combat operations and was normally assigned a transportation priority of two or lower.

3. Dedicated airlift involved the daily assignment to a user of a specific number of aircraft on a recurring basis. The dedicated C-7A airlift was used to meet the specific needs of the ground commander and provided reliable, scheduled, and unscheduled service to forward operating bases and isolated elements of his force. When combat requirements dictated, COMUSMACV directed the redistribution of the capability of these assets. This system provided rapid transportation of critical resources as far forward as the tactical situation permitted. Dedicated airlift had a further advantage in that the size of the air vehicle used was normally comparable to the volume of cargo required at the aircraft's destination. In 1968 the Chief of Staff of the Army, in correspondence to the Chief of Staff of the Air Force, noted that service by dedicated airlift in RVN had been excellent and offered Army support in joint efforts to obtain additional short take-off and landing (STOL) tactical airlift. He stated, "It is my view that a requirement for a simple, rugged, easily maintained airplane will remain valid for the foreseeable future."[179]

(d) Command and Control. The success of tactical airlift operations in South Vietnam can be at least partially attributed to the development of a tactical airlift control communications network and the use of Tactical Airlift Liaison Officers (TALOs) located with ground units in the field.

1. Communications. An adequate communications system is probably the most important factor in effective command and control of aircraft. One of the most limiting factors affecting airlift operations in 1965 and 1966 was an inadequate communications network and the consequent inability to control effectively the entire airlift system. Efficient operations depend on the ability to communicate effectively between system elements. Initially, the 834th Air Division had only five high-frequency, single-side-band radios to support 10 operational locations. To compensate for the shortages of assigned equipment, very high frequency (VHF) and ultra high frequency (UHF) equipment was borrowed from other U.S. Air Force units or the Army. Frequently, airlift requests had to be made through the overcrowded Vietnamese telephone system.[180]

a. The communications problem was partially solved through the increased use of single-side-band radios that provided the capability to talk to aircraft, combat control teams at on- and off-load sites, and some of the air division's transport movement centers. Additional communication capability was provided by the introduction of dedicated teletype and "hot line" telephone circuits into the division structure.[181]

b. During November 1966, MACV and the Seventh Air Force tested the use of the existing frequencies and communications of the Direct Air Request Net for processing emergency airlift requests. During periods of intensive tactical fighter activity, access to this communications network for airlift requests was limited and difficult. Additionally, communications was not available to enable follow-up of the status of emergency airlift requests once they were submitted. The test proved that the existing communications system was too saturated to cope effectively with both fighter and airlift requests. To provide the desired communications network responsive to airlift requirements, a tactical airlift control network was established linking all of the control elements of the airlift system. This system provided the 834th Air Division with the same order of rapid airlift responsiveness achieved earlier in the close air support role.[182]

2. Tactical Airlift Liaison Officer

a. The 834th Air Division's Airlift Control Center (ALCC) accomplished the detailed planning, coordinating, and tasking for tactical airlift operations.

[179]Personal Letter, Chief of Staff, U.S. Army, to Chief of Staff, U.S. Air Force, 27 May 1968.
[180]CG, 834th Air Division, End of Tour Report, October 1966-November 1967.
[181]Ibid.
[182]Ibid.

It was the focal point for communications and the source of control and direction for the tactical airlift forces. The decentralized execution of the airlift mission at the larger airfields in Vietnam was performed through Airlift Control Elements (ALCEs) in their particular area. In addition to the ALCEs, Combat Control Teams (CCTs), which functioned as mobile advance components of the tactical airlift control network, were used at smaller airfields and drop landing or extraction zones.

b. Prior to 1 November 1966, there was very little interface between the Army units on tactical operations in the field and the airlift control network which supplied them with routine and emergency airlift support. In order to establish this important link between the user and the airlift control network, Tactical Airlift Liaison Officers were placed in the tactical air control parties where they performed the same functions for ground commanders on airlift matters as the Air Liaison Officers (ALOs) and Forward Air Controllers (FACs) did for fighter operations. The TALO and the emergency airlift request system provided the ground commander with a timely airlift support capability. Through close coordination with the users and timely information provided by the TALOs, scheduled airlift assets were frequently used to fulfill potential emergency requirements. The close coordination between the TALOs and the ground commander also provided for better customer service, better utilization of available aircraft through maximum commitment of available assets, and elimination of the use of standby aircraft to satisfy emergency requests.

(e) Management Information

1. Airlift operations reports are extremely important for determining the effectiveness of operations. During the early period of the conflict it was recognized that there was a need for an effective source of airlift management information.

2. In August 1966, the automated Airlift Reporting System "Airlift Operating Report" (ALOREP) was developed and implemented. The report provided detailed information concerning aircraft operations, mission performance, movement of cargo and passengers, and aerial port activity. The reporting system operated through the command control system and received data input from air terminal and air operations sources. The major purpose of these reports was to define the dimensions and character of the airlift effort and present an evaluation of the effectiveness of the SE Asia airlift operation. The data from this report were used primarily by TMA and the 834th Air Division to increase effectiveness of customer service.

(f) Aircraft Utilization

1. The C-7A provided a small, versatile, highly maneuverable transport ideally configured for the rapid delivery of a small number of personnel or small quantities of emergency equipment or supplies to forward operating areas. During the buildup period, the daily utilization of this aircraft increased from slightly over two hours to over three hours per day. This aircraft proved to be dependable, and in 1967 the C-7A units continuously exceeded their flying hour program.

2. The C-123 proved to be an outstanding performer in RVN. During the early part of the conflict, these aircraft were the backbone of the Common Service Airlift System fleet and consistently provided effective support to forward operating bases. The modification of the C-123 with the addition of two J-85 jet engines improved its capability. About half of the C-123s were modified to this configuration during 1967. The benefits of this modification were improved short field take-off ability, faster rate of climb, and increased allowable cabin load of 2000 pounds.

3. The C-130 was perhaps the most versatile workhorse in the CSAS airlift inventory and was equally capable in routine deliveries of supplies to marginal airfields as well as in air drop activities. When the C-130 aircraft began operations in the early RVN buildup, they carried approximately 30% of the cargo moved by the Common Service Airlift

System within RVN and this increased to approximately 70% in late 1966 and remained approximately 70% through 1969. The C-130s of the 315th Air Division were rotated into RVN on an "as required" basis and were known as the "shuttle" force. The MACV forecast of tonnage requirements was the basis upon which PACAF calculated the requirements for operational C-130s in the shuttle force.

The number of C-130s actually in RVN on the shuttle force was flexible each month but peaked out at 96 in March of 1968. Table 19 reflects the highest number of C-130 aircraft utilized during each month throughout the period.

(2) Helicopters

(a) Rotary-wing aircraft were not assigned to the CSAS fleet; however, the helicopter played an extensive and highly significant role in the movement of passengers and cargo in RVN. In 1967, it was estimated that 24,000 passengers and 3,000 tons of cargo were moved daily by U.S. Army and Marine helicopters.[183]

(b) Although no distinction is made between tonnages that were purely tactical and those that were logistical, this amount of passengers and cargo exemplify the significance of the helicopter capability used as a complementary lift for logistic support missions.

(c) The helicopter provided a highly versatile lift capability that had never been available in such great numbers in previous military operations. It greatly complemented the capability of the fixed wing aircraft and surface transport capability by operating from airfields and other areas to locations inaccessible to other forms of transport.

(d) With the advent of the C-5A and intermodal containers, there will be a requirement for heavier lift helicopters to interface with the type-loads of the C-5A and the containers in use by the Department of Defense. These loads will require a vertical takeoff and landing (VTOL) aircraft for pickup either at the aerial ports for tactical distribution to the forward employed units or for helicopter discharge of ships for movement to inland depots. The C-5A aircraft does not appear to be completely suited to tactical airlift because of high vulnerability, the expense involved, and a mammoth capability that would be largely wasted.[184]

[183]Transportation Proceedings, MTMTS, subject: Vietnam: The Buildup and War, November 1967, pp. 8 through 13.
[184]CINCPAC Briefing to JLRB, September 1969.

6. INLAND WATERWAY AND INTRA-COASTAL TRANSPORTATION

a. Background

(1) Due to the lack of an adequate or secure land transportation network in South Vietnam, particularly in the Ist and IVth Corps Tactical Zone (CTZ), heavy reliance was placed on the distribution of cargo via water transportation.

(2) The inland waterway and intra-coastal transportation systems utilized were so intertwined that one was generally an extension of the other and the assets used to perform these services were so distributed throughout the system that they could not be identified as belonging exclusively to any particular portion thereof. To preclude giving the false impression that there were two separate systems operating in Vietnam, inland waterway and intra-coastal operators will be discussed together. These operations were dependent on the following assets:

(a) Common-service deep draft ships, LSTs, barges and tugs, and container shuttleships

(b) Landing craft utility (LCU) and landing craft mechanized (LCM)

(c) Shallow draft ships

(d) Barges and tugs.

Although the modes are being discussed separately from ship-to-shore and harbor operations, they also depended on many of the same assets.

(3) Primary reliance for the long-haul movements was placed on the LSTs of MSTS and the Seventh Fleet. In Ist CTZ these ships distributed cargo from the deep water port of Da Nang to the shallow draft port of Chu Lai in the south and to the transfer points of Cua Viet and Tan My in the north. Cargo discharged at Cua Viet was shuttled inland to Dong Ha by LCU and LCM landing craft. Cargo discharged at Tan My was either trucked to Hue or shuttled there by landing craft. Prior to the establishment of LST discharge facilities at Cua Viet and Tan My, cargo was moved directly from Da Nang via landing craft, predominantly LCU/YFU, augmented periodically by fleet AKAs and their on-board landing craft.

(4) Intra-coastal shipments within the Cam Ranh Bay, Nha Trang, Phan Rang complex relied heavily on Army lighterage assets, including the BDL Page, and the barge and tug assets of AB & T.

(5) Inter-Corps coastal movements were predominantly supported by MSTS controlled LSTs augmented by deep draft ships as piers became available, and contract barges and tugs.

(6) Inland waterway operations into IV CTZ (the Delta) utilized armed fleet LSTs to move cargo generally from Saigon and Vung Tau to Dong Tam, Vinh Long and Can Tho, but also relied heavily on movements by LCU, LCM, and barge/tug combination.

(7) The total requirements for barges and tugs far exceeded the capability of the available Service assets and necessitated commercial support provided by a number of separate contractors.

(8) There was a significant diversity of control of the assets available to perform the inland-waterway and intra-coastal transportation services. Common service shipping assets were controlled by MSTS and provided through MACV-TMA. U.S. Navy assets were retained under control of the Naval Support Activity, Da Nang, for support of operations in I CTZ and under Naval Support Activity, Saigon, for support of the Navy Riverine forces and other elements in the Saigon, Vung Tau, and Delta areas. Organic U.S. Army assets were retained for operation in each port area as well as in the Saigon-Vung Tau-Delta and the Nha Trang-Cam Ranh-Phan Rang complexes.

b. Discussion

(1) Common Service. These assets, operated under the control of MSTS Vietnam and responding to requirements processed through MACV-TMA, included the MSTS nucleus fleet LSTs manned with third-country national crews. Seventh Fleet LSTs armed and U.S. Navy crewed, deep draft ships as piers became available, and the barges and tugs provided under contract by Alaska Barge and Transport Company (AB & T). Four armed fleet LSTs were routinely provided to support requirements in the Delta (IV CTZ). Periodically, fleet LSTs were also provided directly to NSA, Da Nang, to support I Corps operations. This flexibility was particularly valuable when the tactical situation threatened the security of the third-country national crewmen. The barge and tug assets provided by AB & T to the common-service fleet increased with the demand and the type of service required. In late 1967, an intra-coastal containership shuttle service was initiated between Cam Ranh Bay, Qui Nhon, and Saigon. Containers for all three ports were transported from the west coast of the United States by a C-4 nonself-sustaining containership (609 container capacity) to Cam Ranh Bay. At Cam Ranh the containers were discharged by the use of two pier mounted, contractor (Sealand) owned and operated cranes. The containers were subsequently shuttled to Saigon and Qui Nhon using a C-2 self-sustaining shuttle ship (226 container capacity).

(2) Shallow Draft Ships

(a) Riverine Force. One of the primary missions of the Naval Support Act[illegible] (NSA), Saigon, was the support of the Navy element of the Riverine Force in the Delta. [illegible]rt was accomplished by the use of a combination intra-coastal and inland waterway [illegible]m Vung Tau and Saigon to the Riverine Force base support LST on site. Navy units [illegible]plied using a combination of Service Force light cargo ships (AKL) and tank landing [illegible]. Resupply of the Army units at the Dong Tam Base was primarily through the use of Army LCUs. The support LST on-site functioned as a division or Riverine Force resupply or reserve supply point. Resupply to operating units was accomplished either by boat, helicopter, or a combination of these modes from the support LST or base camp. The AKL proved to be highly efficient as a small intra-coastal and inland waterway cargo carrier. This function was performed primarily with Service controlled assets.

One Army Medium Boat Company, having 16 LCM 8s, was assigned in direct support of the 9th Infantry Division during their engagement in Riverine Operations in the Delta. Craft were used as headquarters, fire direction centers, maintenance facilities, aid stations, supply carriers, a helicopter landing pad, and as pusher or tow boats to move barge mounted artillery batteries around the Delta.

(b) Small, Shallow Draft Tankers. Small gasoline tankers were provided regularly by the fleet Service Force to replenish the fuel supply at Cua Viet and Tan My. Loading from MSTS tankers at Da Nang, these small gasoline tankers moved to their destination port and discharged their fuel through offshore fuel lines, when available, or into fuel bladders aboard LCUs or LCMs for subsequent delivery ashore. An average of 1.6 million gallons was delivered to Hue each month and about 1.1 million gallons was delivered to Cua Viet.

(c) Beach Discharge Lighter (BDL). The U.S. Army Beach Discharge Lighter (BDL), LTC John U. D. Page, proved to be a valuable asset in supporting intra-coastal requirements within the Cam Ranh Bay logistics complex (Nha Trang-Cam Ranh-Phan Rang). Control of the operation of this craft was retained at the Cam Ranh Bay Support Command. Because of its shallow draft and unrestricted loading ramp area, it was more versatile and valuable than the LST on a ship-for-ship basis. This craft, although still a prototype and unique in the Army inventory since the late 1950s, has justified additional procurement to modernize and increase the versatility of the shallow draft fleet. Before her propulsion system was damaged in 1967, this ship moved an average of 10,000 to 15,000 short tons per month. Subsequent demand for the ship's services delayed movement to a shipyard in Japan for overhaul until almost a year later.

(3) Landing Craft. Early in the Vietnam buildup these craft, predominantly landing craft mechanized (LCM8s) and landing craft utility (LCUs), were used to perform ship

to shore discharge operations and limited inter-coastal and inland waterway operations. These craft were supported in the lighterage role by amphibians of the LARC V (5 ton) and LARC LX (60 ton) classes. As deep draft piers were made available, some of these craft were diverted to a variety of other uses.

(a) Due to the periodic shortage of tugs in the Saigon area, LCM 8s were frequently used to tow ammunition barges from the deep draft discharge sites at Nha Be (later Cat Lai), to the various barge discharge sites dispersed throughout the area.

(b) In northern I Corps, LCMs were used in an inland-water mode on the Perfume and Cua Viet Rivers to shuttle dry cargo and fuel in bladders into Hue and Dong Ha from the coastal transfer sites.

(c) In addition to their normal lighterage use, the LCMs were also employed to perform a variety of harbor service functions such as resupply, maintenance, ferry, and patrol.

(d) As deep draft piers became available, the LCUs of both the Army and the Navy were shifted to primary employment in an intra-coastal and inland-water mode (90 percent of the total LCU effort in CY 1968) and account for approximately 29 percent of the total cargo moved intra-coastally during CY 1968. Prior to the completion of the LST ramps at Cua Viet and Tan My, Navy LCUs/YFUs, with the periodic Army support, were the primary mode for resupply to northern I Corps. Extensive use of LCUs was also made for operations in the Saigon-Vung Tau-Delta complex. In late 1967, six SKILAKs, a commercial off-the-shelf LCU/YFU type craft, were procured by the Navy to support operations in I Corps.

(4) Barges and Tugs. To help alleviate the shortage of lighterage and coastal shipping capability, COMUSMACV recommended that a contract be negotiated with Alaska Barge and Transport Company (AB & T). The concept was approved by the Secretary of Defense in November 1965 and he directed MSTS to negotiate the contract. By 8 December the contract was signed with operations in RVN to begin in early 1966.[185] This intra-coastal augmentation was provided through the use of a barge-tug fleet that included two stripped LST hull barges.

(a) Because only one major port had a deep draft pier for the discharge of ammunition, a large number of the available barges were used to support the ammunition discharge program. The ammunition discharge in the Saigon-Cat Lai (Nha Be) complex, for example, was in effect a combination stream-discharge and inland waterway distribution system and placed a heavy requirement on the available barge assets. In each major port complex, contractor furnished lighterage augmented the limited military capability that was available.

(b) A new requirement was instituted in 1967 to move a minimum of 85,000 short tons per month of crushed rock into the Delta to support the highway rehabilitation program. This program increased the shallow draft barge and tug requirements and necessitated expansion of the contract support provided by AB & T and Luzon Stevedoring Company.

(5) Reporting. In 1967, the Joint Chiefs of Staff established a requirement for MACV to submit a monthly Lighterage Management Report. This report was designed as a tool to evaluate the efficiency of the operation of the military lighterage assets available in Vietnam. The volume of footnotes required to explain the entries on the report brought out the wide diversity in types and conditions of operation involving these craft and precluded the comparison of their Vietnam performance data with previously established standards.

7. CONCLUSIONS AND RECOMMENDATIONS

a. Conclusions

(1) The initial backlog of ships and port congestion in Vietnam (1965-67) was primarily due to an unrestricted flow of cargo from the continental United States to the limited

[185] MACV Command History, 1965

facilities in Vietnam. Other contributory factors included: multiple port discharge; selective discharge and warehousing aboard ship; shortage of deep draft berths; and shortage of terminal operating capability (paragraph 3b(1)).

(2) The major factors contributing to the reduction of port congestion in Vietnam were completed port construction, provision of additional cargo handling capability, and better control over input and distribution of cargo (paragraph 3b(1)).

(3) Sufficient Materials Handling Equipment capability was not available to support water port and terminal operations. This was further complicated by the large numbers of makes and models, and associated supply and maintenance problems (paragraph 3b(2)).

(4) Civilian contractor augmentation was vital to the development of the required cargo handling capability in Vietnam. However, the use of contractors did pose limitations with regard to overall reliability, availability, and flexibility to meet changing requirements (paragraph 3b(3)).

(5) Situations occurred in Vietnam that precluded the use of civilian augmentation in port operations for reasons of security and responsiveness to the tactical situation (paragraph 3b(3)).

(6) There was a serious shortage of modern lighterage and harbor craft equipment (paragraph 3b(4)).

(7) The rapid buildup of port handling capability in Vietnam was largely due to the rapid deployment of Army units to operate the ports of Saigon, Cam Ranh Bay, Qui Nhon and of Navy Amphibious Force and Service Force units to operate the port of Da Nang (paragraph 3b(5)).

(8) Prior to the Vietnam buildup, the training of military personnel in the port operations and marine fields was reduced to such a low level that the initial deployments of terminal and boat units to SE Asia seriously limited the Army's ability to support a rapidly expanding training program, and limited use was made of the military ocean terminals for on-the-job training of military personnel (paragraph 3b(5)).

(9) There is a need for the Departments of the Army and the Navy to have a capability for executing logistics-over-the-shore operations as a short term or interim type operation (paragraph 3b(6)).

(10) There is a need for the Departments of the Army and the Navy to have the capability to install mobile or prefabricated piers within the first 60 days of any operation (paragraph 3b(6)).

(11) Traditional planning factors for Army truck units proved to be inapplicable to the counterinsurgency operations in Vietnam (paragraph 4a(2)(a)).

(12) Vietnam operational experience pointed up the need for replacing Army light trucks with medium tractor-trailer units for use by all non-divisional logistical support elements to increase cargo carrying capability without increasing personnel requirements (paragraph 4(2)(b)).

(13) Inadequate receiving capability of depots assigned to the support areas had a major influence on limiting terminal throughput capability (paragraph 4a(2)(c)).

(14) The Army's current standard light trucks (2 1/2 ton and 5 ton) cannot be loaded or unloaded efficiently using forklifts (paragraph 4a(2)(d)).

(15) Trailers for moving outsized and heavy-lift cargo were not organic to transportation units in Vietnam (paragraph 4a(2)(e)).

(16) The commercially designed Kenworth truck, provided a high payload carrier capable of beach clearance of heavy and outsized cargo in deep sand (paragraph 4a(2)(f)).

(17) Contractor transport capability was used to augment the military transport capability in Vietnam but, because of curfews, strikes, fear and the tactical restriction, this capability proved to be less dependable than the military capability (paragraph 4a(2)(g)).

(18) The concept of the use of GOER vehicles for rough terrain operations was proven in Vietnam (paragraph 4a(2)(h)).

(19) Plans to utilize the Vietnamese Railroad for extensive military support were never realized. Although joint efforts were made by the Military Assistance Command, Vietnam, and the United States Agency for International Development to rehabilitate sections of the Vietnamese National Railway System, lack of security restricted the use of rail lines to local hauls (paragraphs 4b(1) through (3)).

(20) The shuttle force concept of providing C-130 airlift support in the Republic of Vietnam (RVN) from off-shore bases, provided a surge capability permitting the Common Service Airlift System to meet in-country airlift requirements in a timely and effective manner. The shuttle force concept further reduced requirements for additional personnel and facilities in-country (paragraphs 5b(1)(a) and (1)(f)3.).

(21) The operational efficiency of the Common Service Airlift System in the Republic of Vietnam was significantly increased through the establishment of a dedicated tactical airlift control communication system and the use of Tactical Airlift Liaison Officers located with the supported ground units (paragraph 5b(1)(b)).

(22) There is a need for a dedicated type short take-off and landing (STOL) aircraft that will be responsive to commanders to provide tactical mobility and other immediate airlift requirements in the forward areas. It should have a reasonable payload capacity and be small, rugged, and easy to maintain in austere field facilities (paragraphs 5b(1)(c)1. and 3.).

(23) Helicopters assigned to tactical units played a highly significant role in the logistics support of the combat forces throughout Vietnam (paragraph 5b(2)(c)).

(24) There is a need for a heavy lift helicopter to interface at aerial and water ports for distribution of material to forward tactical areas and for ship discharge of containers and heavy lift cargoes under emergency conditions (paragraph 5b(2)).

(25) In addition to their normal ship discharge role, Army boat companies were employed in line haul, barge tow, and tactical combat roles. They proved to be highly efficient and versatile and provided the commander with additional logistical and combat support options (paragraph 6b(2)(a)).

(26) Navy fleet amphibious shallow draft shipping (LSTs) and Army Beach Discharge Lighter (BDL) played an important role as sealift augmentation of MSTS in its intracoastal transport mission in the Republic of Vietnam (paragraphs 6b(2)(a) and (c)).

(27) In addition to LSTs and converted LSTs, the Navy used a variety of logistic craft to transport supplies, provisions, fuel, and water to its bases afloat and ashore in the Mekong Delta and to the Army and Navy elements of the mobile riverine force (paragraph 6b(2)(a)).

b. Recommendations. The Board recommends that:

(1) See recommendation Section B, Chapter IV, concerning organizations and procedures for movement control (TR-20) (conclusion (1)).

(2) See recommendation (7) c, Section E, Chapter III, concerning standardization of materiels handling equipment (TR-21) (conclusion (3)).

(3) Planning for support of terminal operations be based on the employment of a minimum hard-core of military port operating units augmented to the maximum extent practicable with contractor support (TR-22) (conclusions (4) and (5)).

(4) The Army and Navy initiate positive programs for modernizing their deteriorating fleet of lighters, harbor craft, and other shallow draft shipping. Both Services should evaluate the results of the Army's Trans-Hydro Craft study and other related studies, with the objective of determining the optimum types and mix of craft required for logistics purposes (TR-23) (conclusion (6)).

(5) The Army maintain training programs for military personnel in the port operations and marine fields capable of rapid expansion in an emergency. Planning should take into account the anticipated loss of units which will be required in initial deployments (TR-24) (conclusions (7) and (8)).

(6) The Navy retain its cargo handling battalions and nucleus port crews, with the mission for the latter extended to include provision for operating undeveloped ports in support of the fleet and Marine forces (TR-25) (conclusion (7)).

(7) Based on the Vietnam experience, the Department of the Army review current doctrine with regard to LOTS operations and incorporate the planned use of mobile/prefabricated piers, when applicable, within the first 60 days of operations (TR-26) (conclusion (9)).

(8) The Department of the Army identify in contingency plans the number of piers required to support the plan (TR-27) (conclusion (10)).

(9) Mobile and/or prefabricated piers be procured and pre-positioned to support approved contingency plans (TR-28) (conclusion (10)).

(10) Usable De Long piers in SE Asia be retrieved as they become available and retained as part of our pre-positioned war reserve stocks (TR-29) (conclusion (10)).

(11) The Department of the Army evaluate the degraded capability of truck units in counterinsurgency operations based upon Vietnam experiences. Based upon this evaluation, the Department of the Army amend current truck units TO&Es to authorize additional personnel and equipment to offset the reduced capability or reduce the stated capabilities of such units when engaged in counterinsurgency operations (TR-30) (conclusion (11)).

(12) The Department of the Army re-evaluate the mix of light and medium non-divisional truck units in view of the increased capability provided by the medium trucks without any increase in the number of personnel or prime movers (TR-31) (conclusion (12)).

(13) The Department of the Army examine the desirability of replacing the 2 1/2-ton trucks with 5-ton trucks in both the logistical (cargo movement) and tactical (troop transporting) roles. (It is recognized that a 5-ton truck can transport twice as many tons but it cannot transport twice as many passengers. Therefore, the 2 1/2-ton truck cannot be replaced two for one across the board) (TR-32) (conclusion (12)).

(14) Appropriate Department of the Army field manuals be amended to include depot receiving capabilities as a separate factor in the formula used for the determination of terminal throughput capabilities (TR-33) (conclusion (13)).

(15) The Department of the Army equip all straight body 2 1/2-ton and 5-ton trucks with drop-sides to facilitate multiple side-loading and unloading with Materials Handling Equipment (TR-34) (conclusion (14)).

(16) The Department of the Army require all future procurements of 2 1/2-ton and 5-ton trucks be equipped with drop sides (TR-35) (conclusion (14)).

(17) The Department of the Army provide motor transport units with some heavy-lift low-bed type trailers as required for assignment to port and beach clearance in future contingency operations (TR-36) (conclusion (15)).

(18) The Department of the Army evaluate the future requirements for high payload carriers capable of transporting heavy and outsized cargo in deep sand for use in logistics-over-the-shore operations (TR-37) (conclusion (16)).

(19) When commercial augmentation of military transport is planned, the Services ensure that a proper balance of commercial and Government-owned equipment is maintained to provide for continuity of operations in emergency situations (TR-38) (conclusion (17)).

(20) Contingency plans include provisions for complete military manning of all phases of transportation operations in areas of the world where civilian hirees are not expected to be available (TR-39) (conclusion (17)).

(21) The Department of the Army adapt GOER vehicles as standard special purpose vehicles for rough terrain or cross-country operations (TR-40) (conclusion (18)).

(22) The Department of the Air Force adopt the shuttle force concept of providing tactical airlift support as a normal means of operation in future contingencies (TR-41) (conclusion (20)).

(23) The Services include in their planning the requirement to provide highly responsive communications for support of tactical airlift in future contingencies (T-42) (conclusion (21)).

(24) The Department of the Air Force support the development and procurement of transport type aircraft with short takeoff and landing capabilities as replacements for the C-7A/C-123 aircraft for future land contingency operations (TR-43) (conclusion (22)).

(25) The Office of the Secretary of Defense support the programs of the Services to provide a heavy lift helicopter capable of transporting cargo and containers from ship to shore and to isolated forward areas in future contingency operations (TR-44) (conclusion (24)).

(26) The Department of the Army incorporate the experience gained in Vietnam in the development of its modernization program for lighters and shallow draft logistical craft (TR-45) (conclusion (25)).

(27) In establishing future requirements for shallow draft vessels for logistical support, the Departments of the Army and the Navy include small landing ship tanks and beach discharge lighters (TR-46) (conclusion (26)).

(28) The requirement to fulfill tasks imposed by contingency plans be considered in the Navy's retention and modernization program for craft (TR-47) (conclusion (27)).

CHAPTER IV

MOVEMENT CONTROL OF CARGO, UNITS, AND PASSENGERS

SECTION A

INTRODUCTION

1. Chapter IV contains a review of the adequacy of the control and coordination of cargo, unit, and passenger movements as a portion of the total logistic effort in the Pacific Command that supported forces deployed in the Republic of Vietnam. Primary emphasis is placed on movements within the Defense Transportation System aboard either common-user transportation under the control of the Military Airlift Command (MAC) and the Military Sea Transportation Service (MSTS) or common-Service transportation within a unified command. The review is focused on the following basic issues:

a. Adequacy of cargo movement control procedures and organizations

b. Identification and location of supplies in the transportation system

c. Control and coordination of unit deployments

d. Control and coordination of individual passenger movements

2. Each of the above issues is discussed in this chapter, and appropriate conclusions and recommendations follow each discussion.

SECTION B

ADEQUACY OF CARGO MOVEMENT CONTROL PROCEDURES AND ORGANIZATIONS

1. STATEMENT OF THE ISSUE AND ITS SIGNIFICANCE

a. This section contains an analysis of the movement control procedures and organizations that evolved during the Vietnam era. Because the magnitude of the U. S. buildup in Vietnam was not anticipated at first, cargo movement control organizations and procedures did not provide the necessary link or interface between shippers, transportation operating agencies, and consignees in SE Asia. Adequate procedures had not been established to coordinate effectively inter- and intra-theater shipments with Vietnam receiving capability or to identify those materials that must go first in case of lift shortage or limited receiving capability.

b. Within Vietnam, prior to and during 1965 component commands and other claimants were levying intra-Vietnam transportation requirements directly on the transportation operators. Within the Commander, U. S. Military Assistance Command, Vietnam (COMUSMACV), area of responsibility there was no overall system for evaluating intra-Vietnam transportation requirements in terms of urgency, efficiency, economy of movement, or the capabilities of the transportation resources available.

c. This lack of an adequate movement control system was a contributing factor to the confusion in the coordination between the continental United States (CONUS) and overseas logistic support organizations; port congestion and shipping backlogs; and a lack of proper coordination within the transportation system itself.

2. BACKGROUND

a. At the beginning of the buildup in Vietnam, procedures used by each of the Services to effect the movement of material to SE Asia were substantially the same, varying only as to the internal processing of the movement requirement. Each CONUS supplying activity had a designated transportation officer charged with the direction, control, and supervision of all functions incident to the effective and economical procurement and use of transportation services.[1] The transportation officer, upon receipt of the movement requirement, initiated the actual movement through the Defense Transportation System.

b. For the movement of surface export cargo from CONUS, the transportation officer of the supplying activity submitted an export offer (with certain exceptions) to the Area Commands of the Military Traffic Management and Terminal Service (MTMTS). The export offer contained sufficient data to permit MTMTS to route the material to a specific water port of embarkation (WPOE), and to offer the cargo to the Military Sea Transportation Service (MSTS) for booking to a ship.

c. Procedures for the airlift of cargo underwent a significant change during the Vietnam era. Prior to April of 1968, service Air Traffic Coordinating Offices (ATCOs) located at each aerial port of embarkation received the airlift offers from their Service transportation officers. The ATCOs, in turn, interfaced with the Military Airlift Command (MAC) to obtain the required lift. In April 1968, the Military Airlift Clearance Authority (MACA) was established within the Military Traffic Management and Terminal Service. The assigned mission was to act as the single airlift clearance authority and to control cargo flow into the airlift system. With the establishment of the MACA, the transportation officer of the supplying activity submitted airlift offers to Service designated control offices that, in turn, interfaced through

[1] Department of Defense Regulation 4500.32R, Military Standard Transportation and Movement Procedures (MILSTAMP), 1 August 1966.

the MACA with the Military Airlift Command. As the single airlift clearance authority, the MACA was in a position to provide the necessary controls that could prevent saturation of air terminals and also provide MAC with operational forecasts of cargo input to the air terminals. MAC could then program work load and position assets to provide the lift capability required.

d. These preceding procedures also applied to shipments from Defense Supply Agency and General Services Administration depots. For shipments made direct from vendors, the Defense Contract Administration Service (DCAS) generally provided the traffic management support, and procedures of the sponsoring Service were followed. The U. S. Agency for International Development (USAID) initially procured its own surface transportation through commercial sources, and procedures of the sponsoring Service were followed for airlift of USAID cargo.

e. Within the Pacific Command (PACOM), shipments were cleared for movement through Commander in Chief, Pacific (CINCPAC), component designated Airlift Clearance Authorities or Water Terminal Clearance Authorities (WTCAs). These clearance authorities then interfaced with MAC or MSTS, Far East (MSTSFE), as appropriate, to obtain the required lift. Coordination was also effected with the WestPac Transportation Office (WTO) when airlift was to be performed by theater assigned airlift.

f. As noted previously, prior to and during 1965 a coordinated movement control agency did not exist within Vietnam. Each component command submitted intra-Vietnam airlift requirements to the Air Transportation Coordinating Offices (ATCOs) located at the aerial ports. For water shipments, the component commands submitted requirements directly to MSTSFE. Land transportation was provided by the designated support elements within Vietnam.

g. Procedures and organizations in existence at the outset had four basic deficiencies: (1) a coordinated movements organization did not exist within the combat zone; (2) no agency was responsible to CINCPAC to facilitate the exchange of logistic information; advise CONUS activities of immediate requirements of CINCPAC/COMUSMACV and the component commanders; or to provide CINCPAC and COMUSMACV with a projection of the cargo input to Vietnam; (3) procedures were not established to provide a means to coordinate inter- and intra-theater shipping with Vietnam reception capability; and (4) considerable cargo was moving to Vietnam external to the Defense Transportation System and without prior knowledge of any DOD movement control agency. The Foreign Assistance Monograph contains further discussion of this particular problem.

3. ANALYSIS

a. Corrective Actions Taken. Although some problems continued to exist, the following actions were taken to alleviate the deficiencies noted above: expansion of the WestPac Transportation Office; establishment of the MACV Traffic Management Agency; establishment of the Pacific Command Movements Priority Agency; and establishment of the PACOM Joint Transportation Board.

(1) WestPac Transportation Office. The WestPac Transportation Office was established by CINCPAC in March 1961 as a staff element of the Assistant Chief of Staff, Logistics, J-4, with the assigned mission of ensuring optimum and efficient utilization of theater assigned airlift. The WTO headquarters was located at Tachikawa Air Base, Japan, with the 315th Air Division, which had command and operational control of the theater-assigned common-Service tactical airlift fleet. In response to a request from Commander, MSTSFE, for an authoritative body to determine priorities for sealift movement, CINCPAC, in May 1965, expanded the WTO mission to include cognizance over the utilization of intra-theater sealift. To perform this function, a branch office was opened on 17 May 1965 at North Pier, Yokohama, and was collocated with MSTSFE. In November 1965, CINCPAC opened a branch office of the WTO in Saigon to monitor and coordinate sealift and airlift problems with the MACV Traffic Management Agency. In March 1967, A WTO Movement Control Element was established in Thailand and collocated with the PACAF Airlift Control Center. With the disestablishment of the 315th Air Division, the WTO headquarters was relocated in May 1969 to Hickham AFB,

Hawaii, in proximity to the PACAF Directorate of Airlift, which exercised the command and control of theater tactical airlift assets previously performed at Tachikawa by the 315th Air Division. The sealift office at Yokohama remained in place and continued its cognizance over the utilization of intra-theater sealift.[2]

(a) During the Vietnam era the mission of the WTO evolved from one of concern with the efficient utilization of theater assigned airlift to that of exercising centralized coordination over, and allocation of, assigned airlift and sealift resources, and for establishing priorities of movement in a manner that would provide the greatest overall benefit to PACOM forces.[3]

(b) The WTO provided a centralized point of contact on intra-theater airlift and sealift matters. In performing its duties, the WestPac Transportation Office was the means by which CINCPAC could coordinate Vietnam reception capability with intra-PACOM shippers.

(2) MACV Traffic Management Agency. In September 1965, COMUSMACV established a jointly staffed Traffic Management Agency (TMA) under the operational control of COMUSMACV and the staff supervision of the MACV J-4. The agency, which was not fully operational until early 1966, was assigned the mission to: "Direct, control and supervise all functions incident to the efficient and economical use of freight and passenger transportation service required for movement of all DOD sponsored personnel and cargo within the MACV area of responsibility; serve as a point of contact for all users of military highway, railway, inland waterway, intra-coastal and troop carrier and cargo airlift capability as made available by the component commander; arrange for movement, advise and assist shippers and receivers to insure that such transport capability is effectively utilized; prepare and maintain current plans in support of contingency plans and prepare other MACV plans as directed; operate MACV Traffic Coordination Offices; control movement of cargo and passengers into terminals through coordination with terminal operators; maintain liaison with transport agencies of the host nation, host nation military organizations and appropriate U. S. Forces required to accomplish the assigned mission; and control, manage and maintain the MACV CONEX program."[4]

(a) The mission letter established the principle of centralized direction and control of traffic management and related services at agency headquarters and decentralized traffic operations and services at field offices operating in support of the component commands. It authorized the Commander, TMA, to communicate directly with the component commands, their units, installations, and activities concerning requirements, traffic management, and use of military-owned transportation, with responsiveness to the requirements of each of the components set as the guiding principle.[5] Originally TMA was organized with a directorate staff and three traffic regions. To meet changing requirements, two additional traffic regions were established in 1968. The total strength of TMA as of July 1968 approximated 400 officers and enlisted. The regional headquarters, with their district and field traffic offices, as well as the Air Traffic Coordinating Offices (ATCOs) were located adjacent to major shipping and receiving activities and provided a point of direct contact for all transportation users.[6] The TMA command communications network operated over dedicated circuits that connected TMA headquarters with the regional headquarters – and within each region to the subordinate district and field traffic offices.

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[2]Chief WestPac Transportation Office Fact Sheet, subject: Narrative Description of WTO Activities and Organization Changes, January 1965 through July 1969. (Attachment to letter from Assistant Chief of Staff Logistics, CINCPAC, to U.S. Army members, Joint Logistics Review Board, 2 August 1969.)

[3]CINCPAC Instruction 4600.4B, subject: Establishment of WestPac Transportation Office (WTO), 8 August 1966.

[4]Headquarters, MACV MAC J4 Letter to Commanding Officer, Traffic Management Agency, MACV, subject: Mission Letter for the Traffic Management Agency, MACV, 23 September 1965.

[5]Ibid.

[6]COMUSMACV, Message, 261253Z July 1969 (C) to CINCPAC, subject: Description of Transportation Management and Movement Control Activities(U).

(b) Since its inception, TMA was authorized to coordinate directly with numerous agencies outside the MACV area of responsibility. The TMA was collocated with the MSTS Office, Saigon, and authorized direct communication with both COMSTS and COMSTSFE. To coordinate and obtain sealift capabilities to support tactical operations, which could not be supported by available resources, TMA was authorized to communicate directly with the Commander, U.S. Seventh Fleet. The ATCOs representing all of the Services requested inter-theater airlift allocations from MAC. For intra-theater airlift beyond the capability of MACV assets, TMA requested assistance through the WestPac Transportation Office. TMA provided cargo booking guidance to WTO for inter-PACOM surface movements to Vietnam ports and coordinated with the Pacific Command Movements Priority Agency regarding CONUS outbound surface shipments to Vietnam.[7]

(c) A significant point in the concept of TMA operation was that it did not exercise operational control of the transportation assets made available for common-user service. Rather, TMA operated on the basis of obtaining the optimum use of these assets. Forecasts of requirements were received from the MACV component commands, USAID, Vietnam Regional Exchange Service, Republic of Vietnam Armed Forces (RVNAF), and other authorized users. These requirements were matched against available common-user transportation capability based on priorities of movement established by the shippers. If requirements exceeded capabilities, TMA initiated action to obtain the additional capability. If additional lift capability was not available, TMA would allocate the existing capability based on the policies and guidance of COMUSMACV.

(d) The effectiveness of TMA improved as the situation stabilized, procedures were refined, operational problems recognized, and solutions developed. As recognized by PACOM, however: "The lack of centralized traffic management in RVN during the early stages of the conflict contributed to a waste of transportation resources and resulted in a lengthy transition period from general confusion to orderly control of common service transportation resources. Movement control agencies proved to be highly effective in providing support to the tactical commander after they were implemented. However, the in-being capability of the many strategically located agencies became a fact a long period of time after the condition which required their creation had developed. Hence, considerable confusion, wasted effort, and costly delays occurred."[8] There were interface problems experienced between TMA and the MACV components; however, the problems were those of execution, were at the operational level, and did not invalidate the system. Rather, these interface problems highlighted the need for the closest possible coordination.

(3) Pacific Command Movements Priority Agency (PAMPA). In mid-1965, the Joint Chiefs of Staff Joint Transportation Board (JCS JTB) expressed concern over the possibility of port congestion in Vietnam and agreed that forecasts of tonnage due to arrive by sealift should be furnished to COMUSMACV.[9] The effect on port congestion of substantial shipments by the Agency for International Development (USAID) was also foreseen.[10] Concern with the need to balance the rate of flow of inbound cargo with the through-put capacity of the Vietnam ports continued to grow throughout the remainder of 1965.[11] By December 1965, it became apparent that additional means were required to achieve control over the input into the transportation system. To provide this effective control and to interface with the CONUS shipping activities, CINCPAC formally established the Pacific Command Movements Priority Agency (PAMPA) in January 1966. The agency was collocated in Oakland, California, with Headquarters, Western Area, MTMTS (WAMTMTS), and was to coordinate with MTMTS, other CONUS agencies, and the component commanders in reviewing and controlling the priority of movement of material consigned to Vietnam in order to regulate cargo flow commensurate with Vietnam port capabilities.[12]

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[7] Ibid.
[8] Director of Transportation, CINCPAC, Briefing, to the JLRB, 8 September 1969.
[9] Joint Chiefs of Staff Document, Minutes of the Fifth JTB Meeting, 29 June 1965.
[10] Joint Chiefs of Staff Document, Minutes of the Tenth JTB Meeting, 31 August 1965.
[11] Joint Chiefs of Staff Document, Minutes of the Fourteenth JTB Meeting, 30 November 1965.
[12] CINCPAC Message, 310155Z December 1965 (S), to JCS, Subordinate Commands, and MTMTS, subject: PACOM Movements Priorities Control Board (U).

(a) The mission assigned to PAMPA was to ensure that PACOM-bound sea and air cargo was effectively moved in accordance with the recipient's need for the material, the discharge and clearance capabilities of the receiving terminals, and the availability of the sealift and airlift resources. Particular emphasis was to be placed on traffic for SE Asia. The specific functions of PAMPA were to coordinate the flow of air and surface cargo to PACOM; to revise priorities for PACOM-bound air and surface cargo and to divert from air to surface mode, as necessary; and to recommend improvements to supply and transportation policies affecting PACOM.[13]

(b) When initially established, PAMPA was manned by approximately 12 officers and enlisted from the components of CINCPAC, and this number never exceeded a total of 16.[14] Because of its rapid organization and activation early procedures developed by PAMPA were rather unsophisticated. Personnel assigned would review the cargo offerings received by WAMTMTS, and by means of telephone conferences with the MACV TMA, would advise of the pipeline input. The MACV TMA through coordination with in-country commands then provided guidance in terms of port capabilities and allocations, as well as critical items required. As experience was gained, procedures were refined, and it became possible for PAMPA to forecast 4 to 5 weeks in advance the input anticipated for the individual Vietnam ports. From its inception through the period of major port congestion in Vietnam, PAMPA regularly briefed the JCS Joint Transportation Board, assisting them in making evaluations of the situation.[15]

(4) PACOM Joint Transportation Board. The complex relationships that developed through the transportation and control systems supporting Vietnam led to problems involving the transportation single managers, the Services, and the sub-unified commands and their elements. It was determined that a CINCPAC Joint Transportation Board (PACOM JTB) was required, and it was established in August of 1966. The Chairman of the Board was the CINCPAC J-4 with members from the CINCPAC components. The Board received for resolution those problems that were unsolvable locally because of the diverse relationships involved. Working groups were formed as required, and consisted of representatives from PAMPA, MACV, WTO, and the components. JCS, MSTS, MAC, and MTMTS were invited to participate as desired.[16] The mission assigned the JTB was to make recommendations to CINCPAC concerning the optimum utilization of all PACOM transportation resources in meeting CINCPAC objectives.[17] The PACOM JTB was the last organization created to satisfy the need for an adequate movement control system in the PACOM area. A graphic presentation of this movement control system is contained in Figure 12.

b. System Deficiencies. Although the preceding actions were effective, shortfalls continued to exist in the following areas: system input control, export release time frames, and the MTMTS and MSTS cargo booking procedures.

(1) System Input Control. Following the buildup of a substantial shipping backlog in 1965 and early 1966, a procedure evolved that exercised some control over the input of DOD-sponsored cargo into the transportation system. There was never, however, sufficient intelligence to permit control (in gross terms) of the total input to the pipeline.[18] In 1965 and 1966, USAID exercised little or no central control over items shipped to Vietnam and made no attempt to match the total tonnage shipped against a projection of available port capacity.[19] In 1966, for example, over three million short tons of USAID and commercial cargo were handled in Vietnam ports. This was almost 30 percent of the total tonnage handled that year.[20]

[13]CINCPAC Instruction 5400.13A, subject: Pacific Command Movements Priority Agency (PAMPA), 24 July 1967.
[14]PAMPA Staff Study, The Pacific Command Movements Priority Agency (PAMPA), 21 July 1967.
[15]Pacific Command Movements Priority Agency, History January 1966-July 1967 (U), undated, TAB M (CONFIDENTIAL)
[16]CINCPAC, Message, 010452Z August 1969, to the JLRB, subject: Request for Transportation Management and Movement Control Activities Information.
[17]CINCPAC Instruction 4600.5, subject: PACOM Joint Transportation Board (JTB), 18 August 1966.
[18]Director of Transportation, Briefing, to CINCPAC, op. cit.
[19]Representatives, USAID, Briefing to the JLRB, subject: USAID Logistics Operations in Vietnam, 10 July 1969.
[20]JCS, J-4 SASM Statistical Reference Book, 1965 and 1966, 1 January 1968, Table No. 500.

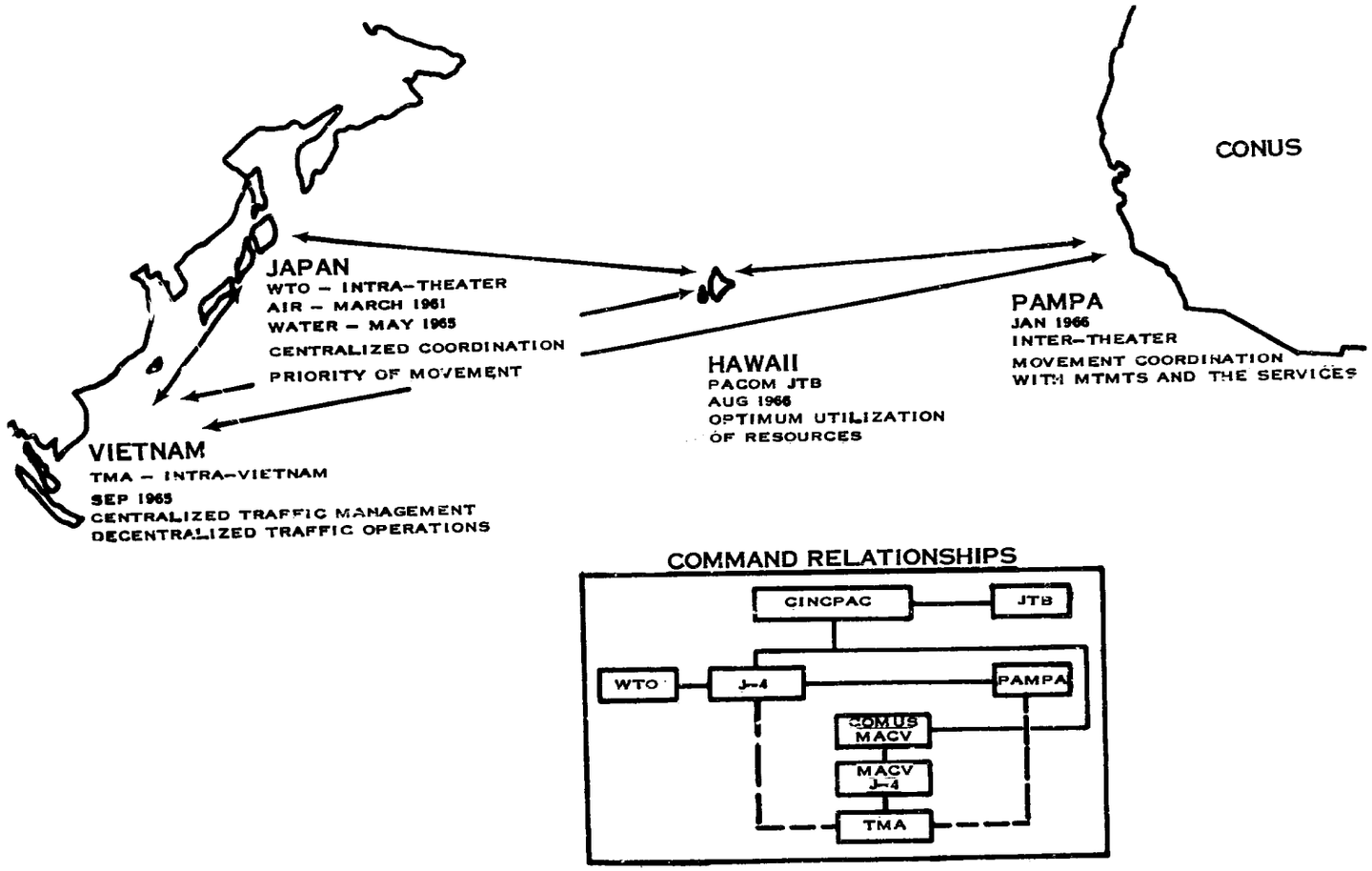

FIGURE 12. PACOM TRANSPROTATION MANAGEMENT AND CONTROL ORGANIZATIONS (LOCATION AND DATES ESTABLISHED)

(a) Procedures for solving a portion of the problem were established in August 1966, when USAID and DOD signed an agreement whereby a certain portion of the USAID sponsored shipments would be moved within the DOD transportation system. This agreement covered commodities being shipped from the U. S. Government to the Central Purchasing Authority of the Republic of Vietnam.[21] This agreement did not, however, cover shipment of goods under other USAID programs, and some USAID-sponsored cargo continued to flow uncontrolled by any DOD movement control organization.

(b) This lack of control in gross terms of total input to the transportation system did not remain an item of high level of interest primarily because of increased port throughput capacity, and this together with certain supply management actions such as Project STOP/SEE served to reduce total transportation requirements. A sudden redeployment of U. S. forces, however, could have resulted in serious port congestion if some inbound cargoes continued to flow without a mechanism available to exercise control.

(2) Export Release Time Frames. As noted previously, in order to effect movement of surface export cargo, the transportation officer of the supplying activity submitted an export offer to the Water Terminal Clearance Authority (WTCA). This export offer contained all the information required for the WTCA to determine a proper rating and routing of the cargo, selection of the port of embarkation, and booking of the cargo with MSTS. The MILSTAMP regulation stated that the offering and acceptance cycle for release unit shipments (shipments of 10,000 pounds or more) should not exceed 48 consecutive hours. If it became apparent that the release could not be furnished within 48 hours, the requesting activity was to be notified by priority message, or telephone, as appropriate, and be given the date the acceptance would be furnished. This requirement existed regardless of the transportation priority or required delivery date (RDD). As late as December 1968, Eastern Area, MTMTS, was providing the export release within 48 hours on only 31 percent of the offers received, and Western Area, MTMTS, was meeting the time standard on 66 percent of its offers.[22] The volume of export offers received, the nonavailability of shipping, the terminal capabilities, the personnel shortages, and the other transportation management considerations contributed to the difficulty experienced in providing the response required.

(a) The Deputy Assistant Secretary of Defense (Supply and Services) by memorandum dated 22 April 1969 to each of the Services and the Director, DSA, addressed this subject and requested that DSA, as System Administrator for MILSTAMP, in coordination with the Services, develop any changes considered desirable to the MILSTAMP time standards for export releases.

(b) The DSA, after coordination with the Services, forwarded to the Deputy Assistant Secretary of Defense (Supply and Services) recommended changes to the export release time standards. These proposed changes would provide a clarification of the regulation and a flexibility that recognizes the variable urgency of shipments, differences in origin and destination, as well as operational problems associated with the booking of cargo to a specific vessel, and yet retain responsiveness to the shipping activity.[23]

(3) MTMTS and MSTS Cargo Booking Procedures. As the traffic manager for DOD shipments within the United States, MTMTS was charged with determining the specific inland mode of transportation as well as the ocean terminal for release unit cargo. "Also, MTMTS is to provide or arrange for terminal service to include receipt, transit storage and marshalling of cargo, loading and discharge of ships, and preparation of required documentation. MTMTS is responsible for offering cargo to MSTS for booking and accepting satisfactory

[21] DOD/AID Procedures for Military Transportation of AID Cargoes to Vietnam, 29 August 1966.
[22] MTMTS, Briefing, to the JLRB, 10 June 1969.
[23] Assistant Director, Plans, Programs and Systems, DSA Memorandum, subject: Export Traffic Release Procedures, 3 October 1969.

bookings, providing traffic information essential to MSTS planning and operations, and with serving as the single point of contact with MSTS in regard to booking of DOD sponsored manifested export cargo."[24] MSTS among other responsibilities was to, "coordinate with MTMTS in the booking of outbound ocean cargo and to approve stowage plans and their implementation to insure seaworthiness of the ship, safety of the cargo and efficient use of ship space. (The responsibility of MSTS for cargo normally begins when finally stowed on board and accepted by the Commanding Officer of the ship and terminates when the cargo is accepted free on board at destination.)."[25] Thus, it can be seen from these extracts from the charters of MTMTS and MSTS respectively, that MSTS was in a position of reacting to requirements for shipping space.

(a) At the MTMTS and MSTS area command levels, coordination was effected through cargo offering and booking procedures. The process, as it related to booking break-bulk cargo, was laborious, performed manually, and time consuming. Generally, it involved a Monday-through-Friday series of meetings between the export traffic personnel of MTMTS and the cargo booking personnel of MSTS, during which cargo offerings were made, tentative bookings provided, required adjustments made, and final confirmation of cargo bookings accomplished.[26] The MSTS participation was generally after the fact, i.e., the cargo was already at or enroute to a water terminal, and thus MSTS had to take action to bring ships to a specified WPOE. MSTS did not, as a routine, participate in those traffic management decisions which led to cargo being destined for a given water port of embarkation.

(b) A continuing active participation by MSTS in export traffic management was implicity required by the Military Traffic Management Regulation, which stated: "Consistent with operational considerations of the interested military services and agencies, routing of export freight traffic will be such as to obtain the lowest overall transportation cost to the overseas port of discharge or to obtain the lowest delivered cost by any available type or combination of service when through transportation is available."[27] This requirement in its broadest sense contained two considerations, both of which required the closest possible coordination between MTMTS and MSTS. The first consideration was the economic one of lowest overall cost. Generally, this was satisfied simply with MSTS providing the necessary cost data to MTMTS from which MTMTS could derive logical and economical traffic management conclusions. The second consideration was operational, i.e., what was the priority, the required delivery date, ship availability, cargo characteristics, ship characteristics, etc. It was in this relationship that close coordination between MTMTS and MSTS suffered. MSTS did not routinely participate in those traffic management decisions which led to cargo being released to a specific WPOE; thus there was no assurance that all operational requirements were considered. In this latter area, problems that led to unsatisfactory operating relationships could have been minimized had there been routinely closer coordination between these two single managers. Examples of problems cited included vessel slippage, i.e., the vessel not coming on berth the date planned; and in the over or under generation of cargo that had been booked by MSTS.[28]

(c) Although the formalized procedures of meetings have been established for the offering and booking of cargo, it must be understood that there was a continuing dialogue between MTMTS and MSTS to identify changing requirements, and there were exceptions to the after-the-fact participation by MSTS. For example, MSTS participated fully in the unit deployment planning conferences held at Headquarters, U.S. Strike Command. (See Section D of this chapter for further discussion of deployment planning.) The significant point, however, is that MSTS did not routinely participate in export traffic management decision making.

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[24] DOD Instruction 5160.53, Single Manager Assignment for Military Traffic, Land Transportation and Common-User Ocean Terminals, 24 March 1967.

[25] DOD Instruction 5160.10, subject: Single Manager Assignment for Ocean Transportation, 24 March 1967.

[26] MSTSPAC, Briefing, to the Transportation Task Force, JLRB, 4 September 1969.

[27] DOD Joint Regulation, Military Traffic Management Regulation, AR 55-355/NAVSUP PUB 444 (Rev)/AFM 75-2/MCO P4600.14A/DSAR 4500.3, 15 March 1969, paragraph 102014.

[28] WAMTMTS, Briefing, to the Transportation Task Force, JLRB, 3 September 1969; and MSTSPAC Briefing, op. cit.

(d) To process export offers, MTMTS utilized the Mechanized Export Traffic System (METS) which was a mechanized procedure for processing export offers. The system contained sufficient data to permit traffic management decision-making prior to release of export cargo. If the area commands of MSTS had had the data processing capability, the data array of METS could have been concurrently provided to MSTS as well as MTMTS. Future advancements by MSTS in automatic data processing capability should incorporate the METS program. Also, the implementation of the dedicated port concept recommended by MTMTS should go far to alleviate the deficiencies noted in break-bulk cargo booking interface between MTMTS and MSTS. (See Chapter III of the Transportation Monograph for further discussion of the dedicated port concept.)

(e) Procedures and interfaces for export movement of containerized cargo are addressed in the Containerization Monograph.

4. CONCLUSIONS AND RECOMMENDATIONS

a. Conclusions

(1) The experience of the Pacific Command during the Vietnam era, which found it necessary to establish coordinated movement control organizations after the commencement of the buildup of U. S. forces in Vietnam, demonstrated the need for such agencies to be in-being in peacetime in order to provide the commanders of unified commands with the means to limit the flow of material into an area of operations to a level commensurate with area reception capability, lift capabilities, and command requirements (paragraph 3a).

(2) It was necessary to establish a jointly staffed Traffic Management Agency, in Vietnam, responsible to the Commander, U. S. Military Assistance Command, Vietnam (paragraph 3a(2)).

(3) Movement control of all shipments into Vietnam was not achieved; and no mechanism or procedures existed that would allow the Commander in Chief, Pacific, or the Commander, U. S. Military Assistance Command, Vietnam, to have knowledge (in gross terms) of the total tonnage, including non-Department of Defense sponsored cargo, shipped into the country or the ability to balance the flow of cargo against the capability of the port and depot complex to properly receive and utilize it (paragraph 3b(1)).

(4) The Military Standard Transportation and Movement Procedures requirement for the Water Terminal Clearance Authority to provide export releases within 48 hours did not recognize differences in shipment urgency, shipment origin, destination, or the mechanics associated with the offer, acceptance, and release procedures, including the actual booking of the shipment through the Military Sea Transportation Service (paragraph 3b(2)).

(5) There is a requirement for improved coordination between the Military Traffic Management and Terminal Service and the Military Sea Transportation Service in booking of export cargo (paragraph 3b(3)).

b. Recommendations. The Board recommends that:

(1) Each commander of a unified command review his organization for movement control and coordination and, where necessary, revise his organization to incorporate agencies and procedures similar to those in the Pacific Command, to limit the flow of material to a level commensurate with throughput capability, lift capabilities, and command requirements. Coordination and control procedures and a nucleus staff for these agencies should be activated and maintained in peacetime (TR-48) (conclusions (1) and (2)).

(2) The Joint Chiefs of Staff through the Office of the Secretary of Defense initiate procedures with the appropriate U. S. Government agencies to ensure that the commanders of unified commands will have gross knowledge of all programmed shipments into their areas

of responsibility; and that control procedures be developed to encompass all such shipments within and external to the Defense Transportation System (TR-49) (conclusion (3)).

(3) The export release time standards contained in the Military Standard Transportation and Movement Procedures be extended for non-urgent material in order to provide the necessary flexibility in export traffic release procedures, and still be completely responsive to shipper movement requirements (TR-50) (conclusion (4)).

(4) The Secretary of Defense ensure the adoption of joint procedures between the Military Traffic Management and Terminal Service and the Military Sea Transportation Service, which will ensure concurrent offering, acceptance, booking, and release of export surface cargo (TR-51) (conclusion (5)).

SECTION C

IDENTIFICATION AND LOCATION OF SUPPLIES IN THE TRANSPORTATION SYSTEM

1. STATEMENT OF THE ISSUE AND ITS SIGNIFICANCE. The lack of identification and location of supplies in the transportation system was one of the most frequent complaints during the Vietnam era. Specific problem areas mentioned were lack of advance information on shipments; lack of proper address markings; improper documentation of cargo; unclear description of material; and non-compliance with the Military Standard Requisitioning and Issue Procedures (MILSTRIP) and the Military Standard Transportation and Movement Procedures (MILSTAMP). This section examines the adequacy and responsiveness of the logistics system to provide such identification and location of supplies during the Vietnam era.

2. BACKGROUND

a. MILSTRIP. The Military Standard Requisitioning and Issue Procedures (MILSTRIP) were implemented by DOD Operating Manual 4140.17, effective 1 July 1962. The various requisitioning procedures formerly used by the Army, Navy, Air Force, Marine Corps, Coast Guard, Defense Atomic Support Agency, and Defense Supply Agency (DSA) were brought under one system by MILSTRIP. Thus, MILSTRIP provided the supply portion of the documentation and procedures for the logistics system.

b. MILSTAMP. The initial effort to standardize transportation documentation, data, and control procedures for the Department of Defense was stated in DOD Regulation 4500.32R, entitled Military Standard Transportation and Movement Procedures (MILSTAMP), which was implemented on 1 October 1963 (revised in August 1966). The MILSTAMP was a companion procedure to MILSTRIP and provided the transportation portion of the documentation and procedures for the logistics system.

c. Vietnam Experience. During the early phases of the Vietnam buildup (1965 through 1966), the interface between the supply (MILSTRIP) and transportation (MILSTAMP) portions of the logistics system was not completely effective, and the system needed improvement to meet the demands of emergency conditions. As will be shown in this section, improvements were made to the logistics system as problems involving identification and location of supplies developed.

3. ANALYSIS

a. Problem Areas and Corrective Actions. During the early buildup in Vietnam, great stress was placed on getting the ships offloaded as soon as possible to reduce port congestion. This was done with little regard for depot receiving capability and, as a result, the ships were discharged and the cargo moved to depots in many instances without regard to condition or identity. Port congestion was reduced, but the depot's capability to receive, identify, and further distribute the material was hindered. In addition, there were specific problem areas concerning identification of supplies and their location in the transportation system. These problems and the corrective actions taken were as follows:

(1) Army Push Packages. Many of the early comments regarding lack of identification and location of supplies in the transportation system appear to have been caused by confusion and misunderstanding of the Army's push package system of supply as implemented under the Army Materiel Command's (AMC) Operation Plan Southeast Asia (OPLAN SEA). This system did not clearly identify to all concerned whether the material "pushed" to Vietnam was for the individual units grouped under the project codes used, or whether the material was

in fact for general theater stockage for those units to draw upon. As noted by the AMC Board: "Individuals at the operating levels, both in service and combat units in SE Asia and at the AMC Inventory Control Points had a misconception of automatic supply. There was evidence of a belief that each automatic supply shipment was designed and intended for delivery to specific organizations listed in a force package."[29] Because the packages were force oriented by project code, a serious misconception of automatic supply resulted. Several of the early troop lists consisted of brigade and divisional units, and when automatic supply packages arrived they were shipped directly to these units instead of being placed in the theater inventory.[30] Nearly 600,000-measurement tons were pushed to Vietnam in FY 66, and this number represented 22 percent of the total Army-sponsored movement to Vietnam in that fiscal year.[31] The confusion or misunderstanding concerning the ultimate destination of some of this material caused problems that were erroneously blamed on the MILSTRIP and MILSTAMP system.

(2) Lack of Advance Transportation Control Movement Documents (TCMDs). The MILSTAMP required submission of TCMDs to the appropriate water terminal clearance authority (WTCA) in advance of the actual shipment. This permitted prior knowledge of all inbound shipments, permitted pre-stow planning, allowed for hold or diversion actions as required, and facilitated tracing shipments for the requisitioner. During the early buildup period, there was a high rate of shipper deficiencies in getting advance TCMDs to the water terminals. In fact, there were late or missing TCMDs on 53 percent of shipments received at the water ports. This problem was further compounded by data errors or omissions on 30 percent of the advance TCMDs that were received. In order to improve the TCMD error rate and to impress on shippers the importance of sending advance copies of TCMDs to the ports, Western Area, Military Traffic Management and Terminal Service (WAMTMTS) instituted an aggressive shipper followup program in September 1965. As a result, the TCMD non-receipt and error rate eventually improved and remained within reasonable levels.[32]

(3) Late and Piecemeal Receipt of Ocean Manifests. Ocean manifests were not being received by overseas consignees in time to plan adequately for ship discharge or to identify critically needed material in advance of vessel arrival. Also, manifests were being received in piecemeal fashion when multiple loading and unloading ports were involved. As a result of the complaints concerning late receipt of manifests by mail, MTMTS started transceiving manifests to Saigon in March 1965 in addition to mailing them.[33] In August 1965, MTMTS began sending copies of hatch lists and TCMD dock receipts to all ports of discharge in Vietnam to alleviate discharge and clearance problems.[34] To overcome the documentation problem when ships were diverted enroute to other ports, MTMTS started mailing manifests and hatch tallys to all Vietnam ports in October 1965.[35] In January 1967, MTMTS consolidated the individual manifests when a ship was loaded at more than one CONUS port and commenced sending a new sequenced multi-manifest to the port of discharge.[36]

(4) Unclear Marking and Description of Material. Many commodity descriptions on the documents were found to be too brief to allow identification of material. For example, numerous shippers were using the term GENNOS (General Cargo-Not Otherwise Specified). Identification of such cargo could not be made without considerable research. Additionally, the marking and addressing of material was not always adequate. To correct the commodity identification problem, a change to MILSTAMP was published in April 1966 that required definitive descriptive data as a second line entry on manifests for those shipment units previously

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[29] The AMC Board, Lessons Learned in Logistics Support of SEA, Project AMCB 4-66 of 30 June 1966, p. 19.
[30] AMC, Narrative Summary of Events and Experiences Incident to Automatic Supply to Support the Buildup of U.S. Forces in SEA, September 1968.
[31] Memorandum for Commanding General, AMC, Push Shipments to Vietnam, 6 December 1968.
[32] WAMTMTS, Briefing, to Transportation Task Force, JLRB, 3 September 1969.
[33] Commander, WAMTMTS, Message, 291530Z July 1965, to Commander MTMTS, subject: Documentation for Vietnam.
[34] SECDEF, Message, 242150Z November 1965, to CINCPAC, subject: Cargo Recognition and Documentation Problems in Vietnam.
[35] Personal Letter, R. C. Moot, Deputy Assistant SECDEF (Logistic Services), to Rear Admiral H. Goldberg, Chief, Navy Bureau Supplies and Accounts, 23 November 1965.
[36] Headquarters, MTMTS, Letter, to DCSLOG, DA, subject: MILSTAMP Ocean Cargo Documentation, 10 January 1967.

identified by GENNOS.[37] To facilitate identification of priority cargo, OASD (I&L), in September 1965 directed implementation of the August 1965 MILSTAMP draft proposal to mark labels and tags with a 1/4-inch red color border for transportation priority 1 and blue for transportation priority 2 materiel.[38] In an attempt to identify critical items of supply, the Army Materiel Command in July 1965 started color marking push packages by category of supply.[39] In October 1966, the Army advised all major commands that shipment address markings were not being properly applied and directed and that all activities be requested to mark the correct address on all cargo to ensure timely movement and delivery to consignee.[40]

(5) Lack of Shipment Status. Because the MILSTRIP system in effect at the start of the Vietnam conflict did not provide a means by which the requisitioner could receive shipment status of his material, it was difficult to know with certainty where the material was and when it was coming. In September 1965, MILSTRIP was revised to provide a shipment status document relating (when specified on the requisition that the information was wanted) the date of shipment, mode, transportation control number (TCN), and loading port for each line item shipped.[41] To further alleviate the problem, advance manifests were prepared in Vietnam within 72 hours after transmission of punched cards from WAMTMTS. Copies of these manifests were then furnished to consignee supply officers to allow advance planning and to facilitate identification of supplies. Such manifests showed the voyage number, date of sailing from CONUS, the estimated time of arrival in Vietnam, shipment unit identification, and stowage location.[42] To allow ready cross-reference between the TCN and related requisitions, Navy supply activities started sending requisitioners advance copies of the DD Form 1348-1 (DOD Single Line Item Release/Receipt Document) stapled together by shipment unit and accompanied by an advance copy of the Transportation Control Movement Document (TCMD).[43]

(6) Lack of Compliance with Regulations

(a) One of the basic problems regarding the MILSTRIP and MILSTAMP system was stated clearly in the following: "The great majority of the problems throughout the MILSTRIP/MILSTAMP system occur because some organization or individual fails to do what he is supposed to do. These failures result from a lack of familiarity with, or misinterpretation of provisions of, the regulations, or a blatant disregard of the established procedures."[44] The Commanding Officer, U.S. Army 4th Transportation Command, Saigon, indicated in 1966 that his command's major problems in regard to MILSTAMP were caused primarily by the failure of shippers to comply with existing regulations.[45] The Commander, MACV Traffic Management Agency, in 1966 stated that: "It has been readily evident that the majority of our transportation personnel are not well trained in all the areas of MILSTAMP. As it is now, we can attribute many documentation deficiencies to a basic lack of understanding of what MILSTAMP stipulates."[46]

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[37] DSA Message, 221234Z August 1966 to CINCPAC, subject: Cargo Recognition and Documentation Problems in Vietnam.
[38] OASD (I&L) Memorandum, to Services, JCS, and DSA, subject: Color Marking for Transportation Priority 1 and 2 Cargo, 8 September 1965.
[39] AMC Message, 092027Z August 1965, to Major Army Commands, subject: Color Marking Test of OPLAN SEA Shipments.
[40] DA, Message, 252112Z October 1966, to Major Army Commands, subject: MILSTAMP Shipment Address Markings.
[41] SECDEF Message, 242105Z November 1965, to CINCPAC, op. cit.
[42] OASD (I&L) Memorandum for Record, subject: Cargo Documentation in Vietnam, 3 February 1966.
[43] CMDR, MCTBA, Oakland, Message, 192310Z November 1965, to Headquarters Support Activity, Saigon, subject: Advance 1348s and TCMDs.
[44] Report by the Department of the Army Board of Inquiry on the Army Logistics Systems, Volume II, March 1967, p. XXV-3.
[45] Commanding Officer, U.S. Army 4th Transportation Command Letter, to Chief, Movements Division, DCSLOG, DA, 8 October 1966.
[46] Commander, MACV TMA, Letter, to Chief, Movements Division, DCSLOG, DA, 14 October 1966.

(b) In December 1966, as a result of a MILSTAMP evaluation team report, the Army furnished the following guidance to Army major commands and the Army and Air Force Exchange Service (AAFES). They were required to develop specific procedures for monitoring their subordinate activities to ensure compliance with MILSTAMP and to eliminate the following: lack of 100 percent address marking; lack of trailer cards to identify GENNOS shipments; inadequately documented and marked consolidated shipments; delayed and piecemeal receipt of cargo documentation; void in advance data between unloading port and depots; and inadequate documentation and enforcement.[47] At the request of the Army, MTMTS started reporting Army CONUS activities that were not complying with MILSTAMP.[48]

b. MILSTAMP Performance Report. On 7 December 1966, OASD (I&L) by memorandum to DSA (the MILSTAMP System Administrator) stated: "In view of the mixed reactions that are emanating from the Vietnam theater and other off-shore areas regarding the effectiveness of the subject program, including the allegation that MILSTAMP is too sophisticated, this office plans to conduct in coordination with the System Administrator and the military services/agencies, a comprehensive review of the revised MILSTAMP for the purpose of determining whether any additional modifications to the system are indicated after implementation."[49] The final MILSTAMP performance evaluation report was published in January 1968 and contained 118 specific recommendations, most of which were implemented.[50]

c. MILSTRIP and MILSTAMP Interface. This important interface between the supply and the transportation military standard systems for material ordered for overseas shipment finally evolved during the Vietnam era as follows:

(1) The requisitioner submitted a requisition in MILSTRIP format for the needed material. The supply activity processed the item for shipment; prepared a Transportation Control Movement Document (TCMD); requested an export traffic release or an air cargo clearance; and furnished the requisitioner (or the control agency) with a shipment status card that showed the transportation control number (TCN) assigned to the requisition, the shipment date, and the loading port. An advance copy of the TCMD for the shipment was mailed or transceived to the CONUS loading port for advance planning.[51]

(2) The loading port kept track of which cargo was on hand or enroute. For ocean shipment a manifest was prepared when the vessel was loaded out, and this manifest, which shows all the shipment units aboard (identified by TCN) and their stowage location, was transceived or mailed to the port of discharge. For air shipments the procedure was similar except that the manifest was carried on board the aircraft.[52]

(3) A copy of the manifest or lift data was furnished the requisitioner (or the control agency) to allow selection of the applicable TCNs from the files and sorting of the data by requisition and/or stock number to determine what was on board the carrier.

(4) The system became more complicated when individually requisitioned line items were combined by the supply activity into larger shipment units. When this occurred, the transportation control number (TCN) identified only one of the requisitions in the shipment unit.[53] The individual shipment status cards sent to the requisitioner (or the control agency) did identify this master TCN, however, so that a cross-reference of the individual requisitions in the consolidated shipment unit was provided.[54]

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[47] DA, Message, 062212Z December 1966, to Army Major Commands and AAFES, subject: MILSTAMP Documentation and Marking Problems.
[48] MTMTS, Letter, to DCSLOG, DA, 10 January 1967, op. cit.
[49] OASD (I&L), MILSTAMP Performance Report, January 1968, p. II-4.
[50] OASD (I&L) Memorandum for Record, subject: MILSTAMP Performance Evaluation Report, 24 October 1969.
[51] DOD Regulation 4500.32R, Military Standard Transportation and Movement Procedures (MILSTAMP), para. 2-5 and 2-7.
[52] Ibid., Figures 5-10, pp. 5-27 through 5-29.
[53] Ibid., Chapter 3, p. 3-6.
[54] DOD Operating Manual 4140.17M, Military Standard Requisitioning and Issue Procedures (MILSTRIP), para 5-14, p. 5-6.

(5) The system did not, however, provide a ready means of identifying the master TCN for those requisitions consolidated into larger shipment units after the material left the supplying activity. For example, when small shipments were consolidated at a loading port into larger shipment units, there was no mechanized data transmission to the requisitioner, similar to the shipment status card, which would allow ready knowledge of where a particular requisition was located. Such data could be developed if the requisitioner traced the material, because MILSTAMP required that TCMDs/Manifests prepared by the consolidation point contain a trailer card/line entry to identify each shipment unit so consolidated. Because the master TCN of each shipment unit in the consolidated container was perpetuated in the documentation, a means was available for the requisitioner to trace individual requisitions within each shipment unit.[55] This process, however, was rather laborious.

(6) Thus the system that finally developed did provide an interface between the requisition (MILSTRIP) and the TCMD, TCN, and manifest (MILSTAMP) data. The success of the system, however, depended on everyone concerned furnishing correct, timely data and on the receiving activity's capability to assimilate and to utilize the thousands of bits of information, preferably with automatic data processing equipment. Such equipment was not always available, and even if it had been it is doubtful that the mass of data could have been efficiently utilized in a war theater under the pressures of the buildup.

d. Service Methods for Identification and Location of Supplies. Except for information that was already available under the present MILSTRIP and MILSTAMP system, there was no general system for providing identification and location of all supplies for any Service. There were, however, various methods developed by each Service to provide the necessary control in this area. Such methods were as follows:

(1) Army. The Army's method for identifying and locating supplies in the transportation system developed since the start of the Vietnam conflict. The focal point of this system was the Logistics Control Office-Pacific (LCO-P), which operated as described below:

(a) Created in December 1965 at Fort Mason, California, the LCO-P mission included control of intensively managed systems like RED BALL; the forecasting of transportation requirements; performing air cargo validations; maintaining liaison at water and air terminals; and, commencing in mid-1967, providing supply and shipment status on all but a few commodities. The LCO-P used two IBM 360-30 computers to perform their missions. One of the products of the data base, which was eventually developed from input of all SE Asia requisitions plus status and lift card information, was a logistics intelligence file for all SE Asia shipments. This file showed requisitions in process, in transit, in the terminal, and when lifted. An inquiry could be made of the LCO-P computer by any piece of information the requestor might have, such as requisition number, flight number, TCN, stock number, part number, project code, or any combination thereof. Data were available in the computer to prepare a complete supply manifest if such was desired.

(b) Commencing in 1969, the LCO-P sent a tape daily to the 1st Logistical Command, Vietnam, which provided information on any items of concern to the command.[56] As stated by the 1st Logistical Command: "One of our most useful techniques is to match a deck of cards which represents those Federal Stock Numbers in which there is intensive management interest with lift data received from the LCO-P. This listing matches MILSTRIP supply information with MILSTAMP transportation data to enable us to locate items of special supply interest within the transportation system. Currently there are over 5000 items on the list. We convert the tape to a print-out. Because of our ability to identify cargo enroute by Federal Stock Number we can divert ships or cargo to some other point with a greater need. In the event of sudden cessation of hostilities, cargo visibility would permit us to make selective frustration or diversion of cargo as required."[57]

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[55] MILSTAMP, op. cit., para. 3-8c(2), p. 3-11, and para. 5-7, p. 5-2.
[56] LCO-P Briefing to Transportation Task Force, JLRB, 5 September 1969.
[57] 1st Logistical Command Briefing to JLRB, Saigon, 11 September 1969, p. 18.

(2) Navy. The Navy established a system in September 1965 to facilitate the combining of MILSTRIP and MILSTAMP data by the consignee. Supplying activities sent the requisitioner advance copies of the DD Form 1348-1 (DOD Single Line Item/Receipt Document) stapled together by shipment unit and accompanied by an advance copy of the Transportation Control Movement Document (TCMD). This system allowed a ready cross-reference between the Transportation Control Number (TCN) and related requisitions, allowed better receipt planning, and also permitted recording the receipt under the proper requisition number if the DD Form 1348-1 was missing from the box upon arrival. Other than this system, there was no Navy program for identification or tracking of all commodities. Certain items such as special project material, specific medical supplies, ammunition, and Advanced Base Functional Components could be tracked by feeding all supply and shipment data to a specified control point, on an exception basis.[58]

(3) Marine Corps. Basically, the Marine Corps used the MILSTRIP and MILSTAMP system. As stated by their headquarters: "The ability to identify supplies and control their movement was enhanced by the establishment of the Marine Corps Unified Material Management System (MUMMS) and its subsystem, Mechanization of Warehousing and Shipment (MOWASP). The procedures provide shipment status to a requisitioner when requested. This information is provided by the Inventory Control Point who in turn receives input from shipping sources including Marine Corps storage activities, DOD supply points and GSA. These procedures were instituted in May 1967. The implementation of revised MILSTAMP in March 1967 improved tracer action procedures, and provided tracer actions to be initiated by the requisitioner to the CONUS Water Terminal Clearance Authority when the POE has been provided in the shipment status card sent by the ICP. In those cases when the POE has not been provided, the requisitioner performs tracer action in the form of a requisition follow-up to the ICP who in turn traces the shipment with the last known holder of the requisition. This procedure continues until the shipment is intercepted. The improvement in tracer action procedures through the establishment of MUMMS and revised MILSTAMP procedures has provided the Marine Corps with means for timely identification of supplies in the DOD transportation system."[59]

(4) Air Force

(a) The Air Force Logistics Command (AFLC) updated MILSTRIP supply status with an advance TCMD on all transportation priority 1 shipments and transceived the information to the consignee prior to obtaining the material from the warehouse. In addition, a block of serial numbers was set aside for Not Operationally Ready-Supply (NORS) requisitions. This number in turn was used as the TCN, and all NORS items were shipped as single line items to enable the consignee to update supply status with the advance TCMD.[60]

(b) Identification and location of supplies were also a by-product of a large computerized system that the Air Force had at the Cargo Management Division (AFCMD), Sacramento Air Materiel Area (SAMA). Since July 1966, this organization maintained identification and control of the majority of Air Force air and surface shipments to the Pacific and Alaska. On 1 July 1969, this organization became the worldwide monitor for all Air Force shipments. Through an RCA 301 computer, the AFCMD used air cargo offer cards from the shippers to establish a data base against which the computer matched receipt and lift cards from the aerial ports, thus revealing the status of shipments in the air transportation system. Because there was no offer card on water shipments, AFCMD relied on the MTMTS receipt and lift cards. AFCMD stated that air cargo receipt and lift cards were only 75 percent accurate, but by collateral research and intensive effort they were able to achieve a 93 percent responsiveness to customer requests for air shipment status information. The water shipment data were not as accurate. The AFCMD estimated they received cards from MTMTS on only about 65 percent of the shipments, and the information was so old when received that it was used mainly for a historical base for reports and analyses.[61]

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[58] CNO, Letter, OP-404 Serial 795P404, to Chairman, JLRB, p. 3 of Enclosure (1), 20 August 1969.
[59] Marine Corps Headquarters, Briefing, to the Transportation Task Force, JLRB, 12 August 1969.
[60] AFLC, Briefing, to Transportation Task Force, JLRB, 21 August 1969, p. 5.
[61] SAMA, Briefing, to Transportation Task Force, JLRB, 10 September 1969, pp. 8, 10, and 11.

4. CONCLUSIONS AND RECOMMENDATIONS

a. Conclusions

(1) Due to an early port congestion problem, the initial emphasis in Vietnam was to unload ships as rapidly as possible. This action helped relieve the backlog in ocean shipping but the identification of cargo and translation into supply assets suffered in many instances (paragraph 3a).

(2) One of the strengths of the Military Standard Systems was the ability to correct MILSTRIP/MILSTAMP procedures as the exigencies of war proved correction was necessary. Proposals that appeared to have merit in the correction of deficiencies or would improve the procedures were implemented in a timely manner (paragraphs 3a(3), (4), and (5)).

(3) Many problems throughout the MILSTRIP/MILSTAMP system occurred because some organization or individual failed to do what was supposed to have been done (paragraph 3a(6)).

(4) Each Service used different methods for obtaining information regarding the status of supplies in the transportation system. All used the principle of management by exception insofar as the overseas requisitioner was concerned by keeping the mass of data in CONUS and advising the overseas command of the status of items of interest to that command only (paragraph 3d).

(5) The Army Logistic Control Office-Pacific (LCO-P), Fort Mason, California, which was established in December 1965, eventually developed good coverage (85 percent) on Army shipments moving to SE Asia. These data were obtained as a by-product of a computerized system that performed other functions. The use of this information by the Army's 1st Logistical Command, Saigon, to better manage relatively few critical supply items was a good example of management by exception (paragraph 3d(1)).

(6) The Air Force Cargo Management Division (AFCMD) at Sacramento, California, has had since July 1966 good coverage (75 percent) on Air Force shipments moving worldwide via air and lesser degree of coverage on shipments via water. These data were obtained as a by-product of a computerized air clearance program (paragraph 3d(4)).

b. Recommendations. The Board recommends that:

(1) All Services and agencies conduct training classes of responsible transportation and supply personnel in MILSTRIP/MILSTAMP procedures in order to promote a better understanding of the systems and reduce the commission of errors throughout the system; that compliance with MILSTRIP/MILSTAMP procedures be made an item of interest in command and inspector general inspections (TR-52) (conclusion (3)).

(2) The Army Logistic Control Office-Pacific and the Air Force Cargo Management Division capability for capturing information regarding identification and location of supplies in the transportation system be retained in peacetime (TR-53) (conclusions (5) and (6)).

SECTION D

CONTROL AND COORDINATION OF UNIT DEPLOYMENTS

1. STATEMENT OF THE ISSUE AND ITS SIGNIFICANCE. This section contains an analysis of a crucial function in the deployment process — that of coordination of all organizations involved in unit movements. The rapid deployment of military units from the United States to SE Asia was one of the most effective logistic support operations of the Vietnam era. The task of rapidly moving this large force thousands of miles to a combat zone required the coordinated efforts of the units being moved, the United States Pacific Command (PACOM) and its components, the Joint Chiefs of Staff, the United States Strike Command (USSTRICOM), the Services, the Military Airlift Command (MAC), the Military Sea Transportation Service (MSTS), the Military Traffic Management and Terminal Service (MTMTS), and the U. S. commercial transportation industry.

2. BACKGROUND

a. Deployment of Army and Air Force Units

(1) Early in 1965, the Joint Chiefs of Staff concluded that a single agency or command would have to act as the focal point for the planning, coordination, and control of CONUS-based Army and Air Force units moving to SE Asia. Accordingly, on 20 April 1965, the Commander in Chief, United States Strike Command (CINCSTRIKE), was given responsibility for this task.[62] The selection of this command was a key decision, and the deployment planning and control procedures that evolved under its direction and control have been termed a major contribution to the success of the unit deployment program.[63]

(2) In its message announcing the assignment of movement planning and deployment control responsibility to CINCSTRIKE, the Joint Chiefs of Staff (JCS) described their concept of the events leading up to the deployment of a unit as follows:

(a) The unit or units would be requested by the Commander in Chief, Pacific (CINCPAC).

(b) The CINCPAC request would be approved by the Joint Chiefs of Staff.

(c) The appropriate Service would select the unit, alert it, prepare it for deployment, and establish an initial readiness date.

(d) The requirement would be approved by the Secretary of Defense.

(e) The Joint Chiefs of Staff would then issue a directive to the Service to prepare the unit for deployment.

(f) CINCSTRIKE would deploy the unit, assuming operational command of the unit if it did not already have the unit under its command.[64]

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[62] JCS, Message, 200010Z April 1965, (C), to the Services and Unified Commands, subject: Deployment Responsibility for SE Asia (U).
[63] Military Traffic Management and Terminal Service, Briefing, for the JLRB, The Vietnam Period, 10 June 1969, p. 8.
[64] JCS, Message, 200010Z April 1965, op. cit.

(3) These procedures were soon amplified by additional guidance to the effect that CINCSTRIKE would, upon development of detailed transportation requirements, forward these requirements to the appropriate Service for authorization and transmittal to MAC, MSTS, or MTMTS.[65] This additional guidance was necessary to remove any conflict between the JCS message of 20 April 1965 and a recently updated JCS document concerning transportation procedures.[66] This latter document required that all unified commanders submit their transportation requirements to the appropriate Service headquarters rather than direct to one of the single manager transportation operating agencies.

(4) At Headquarters, United States Strike Command, a Transportation Operations Center was established within the J-4 Directorate and given the mission of overall movement planning for the deployment of Army and Air Force units to SE Asia, control of unit deployments to match available transportation capabilities, and maintenance of the current status of each unit directed to deploy.[67]

(5) The major planning and coordination was accomplished at the Transportation Planning Conferences that were held after JCS Deployment Directives had been issued. With all interested parties present, it was possible to prepare a detailed transportation schedule and a transportation movement concept.[68]

(6) With USSTRICOM acting as the single focal point for control and coordination, these procedures were used to deploy more than 2,000 Army and Air Force units consisting of more than 300,000 personnel and almost 700,000 short tons of equipment between April 1965 and January 1969.[69]

b. Deployment of Navy and Marine Corps Units

(1) In most cases, deployments of Navy and Marine Corps units were handled as intra-theater movements, because the units involved were already assigned to the Commander in Chief, Pacific Fleet, or were assigned directly to his command from the components of another unified command, such as the United States Atlantic Command (LANTCOM). This was true even when the units were located in the continental United States.

(2) As the Marine Corps units in the Western Pacific area were deployed to Vietnam by the Amphibious Force, U.S. Pacific Fleet, other units were moved in the same manner from Hawaii and the continental United States to the Western Pacific and subsequently into Vietnam.[70] Some MSTS controlled shipping was utilized in moving these units. One regiment, however, was moved from the United States to Vietnam by the Military Airlift Command (MAC) during the TET Offensive in 1968.[71]

(3) Initial deployments of U.S. Navy shore based units to Vietnam were made by both fleet shipping and theater airlift. Subsequent units were also deployed from CONUS, using common user airlift and sealift resources. Following these initial deployments, Naval Mobile Construction Battalions were rotated using MAC airlift in a program designed to provide for these SEABEE units 8 months' duty in Vietnam and 6 months' duty in the United States.[72]

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65 JCS, Message, 071539Z June 1965, (C), to the Services and unified commands, subject: Transportation Planning Responsibilities (U).

66 JCS Directive SM-262-65, Procedures for the Submission of Transportation Requirements and the Determination of Space Assignments and Allocations, 20 March 1965.

67 United States Strike Command, J-4 Directorate, History of Unit Deployments to Southeast Asia (U), April 1965 to January 1969, (C), p. 7.

68 Ibid., pp. 13 through 19.

69 Ibid., p. 4.

70 United States Pacific Command, CINCPAC Command History, Volume II, 1965 (U), 13 May 1966, (TS), pp. 449 through 472.

71 Staff Visit to Headquarters, United States Marine Corps, 25 November 1969.

72 Operational Archives Branch, History Division, Office of the Chief of Naval Operations, CNO Briefing File-Southeast Asia Deployments 1965.

3. ANALYSIS

a. Planning Procedures - Post 1968

(1) Policies and procedures governing transportation planning in support of joint contingency plans were contained in SM-680-68, published by the Joint Chiefs of Staff on 2 November 1968.[73] Primary responsibility for the development of a contingency plan was vested in the appropriate unified commander. CINCPAC, for example, had primary responsibility for the development of plans concerning the operations in his area. Other unified commands were directed to prepare supporting plans when forces under their operational command were to be used to augment the supported command. Except when he functioned as the Commander in Chief, Middle East, Southern Asia, and Africa south of the Sahara (CINCMEAFSA), CINCSTRIKE participated in this planning process in the role of a supporting CINC. He was frequently the primary supporting CINC and had to develop supporting plans and specific requirements for the transportation resources needed to move the forces being provided by USSTRICOM to augment the supported unified command. These requirements were then passed to the supported CINC for review, consolidation, and transmittal to the Joint Chiefs of Staff.[74] During this process of review and approval in the planning phase, the supported CINC would chair any planning conferences that were called to resolve differences and complete coordination and staffing action.[75]

(2) Provisions for the automation of some phases of the transportation planning process were contained in the JCS Deployment Reporting System.[76] These procedures provided for the analysis of the movement phase of a plan in order to isolate rapidly deficiencies and conflicts between requirements and the availability of resources. One of the final products of the DEPREP system was a detailed movement schedule that could be used during execution if the appropriate plan were ordered executed exactly as written. Regardless of its title, the DEPREP system was basically a system for analysis during the planning phase rather than a control system to be used during execution.

b. Procedures During Actual Deployment

(1) In the execution phase, procedures were not so clearly defined. CINCSTRIKE, with the exception of two documents covering certain units or areas of the world, did not have a specific mission to act as the focal point for movement control and coordination of unit deployments from the United States to an active area of operations. It was logical, however, to derive this from the general mission given the CINCSTRIKE in the Joint Strategic Capabilities Plan[77] and in the Unified Command Plan.[78] Officials at USSTRICOM assumed that they would continue as the focal point for movement control and coordination during deployment, but they did not have specific instructions regarding this except for the messages received from the Joint Chiefs of Staff in 1965 that directed CINCSTRIKE to assume this mission for deployment of Army and Air Force units to Vietnam.[79]

(2) The advantages of using a single command or agency as a focal point for the coordination of unit deployments were dramatized by the success of USSTRICOM in controlling and coordinating Army and Air Force deployments to Vietnam. The results of this procedure were the efficient utilization of the critical common-user transportation resources of MAC and

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[73] Joint Chiefs of Staff, SM-680-68, Mobility System Planning Policies and Procedures (U), 2 November 1968 (CONFIDENTIAL).
[74] Ibid., pp. 49 through 53.
[75] Ibid.
[76] Joint Chiefs of Staff Publication 6, Joint Operations Reporting System (JOPREP), Vol. VI, Deployment Reporting System (DEPREP), May 1968 (FOUO).
[77] Joint Chiefs of Staff, Joint Strategic Capabilities Plan, FY 70 (U), Vol. I, p. 60, and Vol IIA, p. 17 (TOP SECRET)
[78] Joint Chiefs of Staff, Unified Command Plan (UCP) (U), 20 November 1963, SM-1400-63, pp. 10-11 (CONFIDENTIAL).
[79] Per J-4 Directorate, HQ USSTRICOM, 26 November 1969.

MSTS, and the timely deployment of units in Vietnam. It was logical to assign this function to the commander who had, as the primary supporting CINC for most contingency plans, the mission of maintaining combat ready Army and Air Force units for the rapid augmentation of a theater of operations. Having participated in the contingency planning process as a supporting CINC, the CINCSTRIKE was familiar with the augmentation requirements of the major contingency plans and had prepared supporting plans. His supervision and control of unit deployments to match transportation capabilities in the execution phase as a logical extension of his planning mission as a supporting CINC, and also relieved the supported CINC of the burden of coordinating all the details inherent in the movement of units to his theater.

(3) Because Navy and Marine Corps units, particularly during early deployments, relied heavily on the amphibious shipping of the Pacific Fleet for transportation to Vietnam, there was little competition between these units under the control of CINCPACFLT and Army and Air Force units under the control of USSTRICOM for the common-user airlift and sealift made available by MAC and MSTS. If Navy and Marine Corps units, however, had made extensive use of MAC and MSTS during their early deployment phase, their movements would also have had to be closely coordinated with the movements of Army and Air Force units.

4. CONCLUSIONS AND RECOMMENDATION

a. Conclusions

(1) The rapid deployment of the military units of all the Services from the United States to SE Asia was one of the most successful logistic support operations of the Vietnam era (paragraphs 2a and 2b).

(2) The rapid deployment of Army and Air Force units, under the control of the Commander in Chief, United States Strike Command, from the United States to SE Asia demonstrated the need for a single command or agency to serve as a focal point for planning and coordinating large scale deployments from the United States to an area of operations aboard common-user transportation (paragraphs 2a and 3b(2)).

b. Recommendation. The Board recommends that:

The Joint Chiefs of Staff assign to the Commander in Chief, United States Strike Command, the continuing mission of planning, controlling, and coordinating the deployment of CONUS-based Army and Air Force units during the implementation of contingency plans (TK-54) (conclusion (2)).

SECTION E

CONTROL AND COORDINATION OF INDIVIDUAL PASSENGER MOVEMENTS

1. STATEMENT OF THE ISSUE AND ITS SIGNIFICANCE. During the Vietnam era, in excess of 2.2 million individual passengers were transported to Vietnam. The majority of these passengers moved as replacements in accordance with the Department of Defense length of tour policy. This section contains an analysis of the various controls employed for the movement of individual passenger traffic in support of the Commander in Chief, Pacific (CINCPAC), and the Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV). Chapter III of this monograph contains a further discussion of the capability of the Military Sea Transportation Service (MSTS) and the Military Airlift Command (MAC) to meet the requirements.

2. BACKGROUND

a. Through mid-1967, MSTS transported most major military units and some replacements and filler personnel. This section, however, is concerned only with individual passenger movements, and primary attention is given to the control of these movements via MAC in view of the DOD decision to place the MSTS troop transports in reduced operating status. Since 1967 only a relatively small number of military personnel have traveled by surface in space procured by MSTS on U.S. flag commercial carriers. Generally, Service control procedures were the same whether travel was to be via MSTS or MAC.

b. Procedures employed for the control of individual passenger movements by airlift varied by military Service, but all procedures were contingent upon space assignments and seat allocations provided by MAC, which were based upon forecasts of requirements furnished to MAC by the military departments.

(1) Essential features for identifying passenger requirements were as follows:[80]

(a) An annual forecast of passenger requirements was made by the military departments.

(b) Three months prior to the operating month, MAC published passenger schedules based on the annual airlift requirements forecast and the fixed commercial buy.

(c) The military departments submitted to MAC consolidated airlift requirements 80 days prior to the operating month.

(d) MAC then computed military and commercial capability to meet the requirements. Supplemental commercial augmentation was procured by MAC to meet identified deficits.

(e) Fifty-six days prior to the operating month, MAC advised the military departments by message of the proposed space assignments. This was confirmed 4 days later by the passenger portion of the Air Space Assignment Document (RCS:HAF-XDD-J8) that was mailed to all users.

(f) Forty-five days prior to the operating month, passenger schedules were updated based upon the 80-day passenger requirements and the supplemental commercial capability that had been procured.

[80] DOD Joint Regulation, Military Airlift Command - Requirements Submissions, Space Assignments and Allocations, and Priorities, AFR 76-38/AR 59-8/OPNAVINST 4630.13B/MCO 4630.6A, 30 January 1968.

(2) The Service port call activities were then in a position to coordinate the arrival of passengers to meet the specific flight at the designated aerial port of embarkation. The activities functioned as follows:

(a) The Military Traffic Management and Terminal Service (MTMTS) performed the port call function for U.S. Army-sponsored outbound passengers, and Air Force passengers who were travelling via MSTS.

(b) Naval District Passenger Transportation Offices port called Navy-sponsored outbound passengers.

(c) For U.S. Marine Corps outbound passengers, Headquarters, U.S. Marine Corps, port called east-bound Marines and the West Coast Movement Coordination Center at Camp Pendleton, California, (relocated in 1969 from Treasure Island, San Francisco) port called west-bound Marines.

(d) Air Force-sponsored passengers travelling via MAC were port called by the individual Base Transportation Officer based upon reservations obtained from the MAC passenger reservation centers.

3. ANALYSIS

a. There was no indication by the Services, CINCPAC, or COMUSMACV of any major problems with procedures utilized for the control of individual passenger movements.

b. MAC, however, identified two problems of control that impacted on their ability to achieve maximum utilization of scheduled airlift.

(1) The first of these problems concerned the "no-show" passenger. This was the individual who had been port called for a specific flight but who failed to make the flight. To meet this problem, MAC instituted a practice of over-booking individual flights by a small percentage and thus was able to realize a 97 percent seat utilization.[81]

(2) The second area that impacted on MAC was the Service-generated requests for flight schedule changes. These requests for schedule changes were the result of a change in passenger availability or a change in the military commanders' requirements. In order to meet these changes, MAC worked very closely with the commercial operators and was consistently responsive to the changes in requirements.

c. To further improve control procedures, a joint directive was approved for implementation in February 1970.[82] This regulation eliminates seat allocations and allows the Service port call activities to request seat reservations directly from MAC. MAC then provides a seat to meet the stated requirement. This procedure should greatly reduce the problems related to the service-requested flight schedule changes and the no-show passengers.

4. CONCLUSIONS

a. Control and coordination procedures for the movement of individual passengers were effective and responsive to the needs of the Commander in Chief, Pacific, and the Commander, U.S. Military Assistance Command, Vietnam, and is considered a strength of the logistics system (paragraphs 2 and 3a).

b. The recently approved Department of Defense Joint Regulation for Single Passenger Reservations will further improve control procedures for travel via the Military Airlift Command (paragraph 3c).

[81] MAC Terminal Commanders Conference, 24 through 26 June 1969.
[82] DOD Joint Regulation, Policies and Procedures for Obtaining Passenger Reservations for DOD International Air Travel (Single Passenger Reservation System for Air Movement), AFR 76-5/AR 55-6/OPNAVINST 4630.23/MCO P4630.11, 1 May 1969.

CHAPTER V
SUMMARY

CHAPTER V
SUMMARY

1. OVERVIEW

a. Although the war in Vietnam was limited in scope, it produced demands for transportation that far exceeded known requirements. U.S. combat power was projected from the United States to an area that was nearly halfway around the earth and which lacked most of the infrastructure found in modern, industrialized nations. The port facilities were inadequate; there were few good roads; there were almost no usable railroads; and airfields capable of handling jets or large transport aircraft were scarce. During the buildup there were inadequate mobility system support resources — both materials handling equipment and military personnel — to load and unload ships and aircraft and to process and manage the flow of cargo. Nonetheless, logistic support of U.S. military forces in Vietnam resulted in the movement of almost 18 million short tons of supplies, excluding bulk petroleum, and 2.2 million men from the United States to Vietnam during the years 1965 through 1969. This timely movement of men and material over a 10,000-mile pipeline to SE Asia thoroughly tested the capability and responsiveness of the transportation agencies of the Department of Defense.

b. The movement of large quantities of men and material was not accomplished without difficulties. During the initial period of the buildup in Vietnam, the Military Sea Transportation Service (MSTS) nucleus fleet did not have sufficient capability to support the inter-theater requirement for movement of helicopters and light aircraft and of Army lighterage and other outsized cargo, and, as in the Korean buildup, a shortage of deep-draft cargo ships developed. To meet the transportation requirements throughout the period, escort carriers and general cargo ships were reactivated, amphibious force ships were used, both U.S. and foreign flag merchant ships were chartered, and contracts were let for long-distance towing operations. Tank landing ship (LSTs) for operations over-the-beach and in minor ports were in such critically short supply during the first 3 years of the Vietnam buildup that old LSTs were reactivated from all available U.S. sources and were borrowed from other countries.

c. With the extremely long supply line from the continental United States (CONUS) to SE Asia, the time required for surface shipments caused an increase in airlift requirements that soon exceeded the airlift capability. The competition for movement of the most urgently needed supplies resulted in the proliferation of super-priorities that, in turn, required the establishment of challenge and control procedures to control the flow of cargo into the air transportation system at a level consistent with the available airlift. The airlift system remained saturated during the first 18 to 24 months of the Vietnam conflict. By early 1967, the military Airlift Command (MAC) had received over 100 C-141s and was originating cargo for SE Asia from five coastal and two inland aerial ports of embarkation. The civil air carriers had procured new long range jet aircraft that increased both their capability and flexibility and were extremely responsive to MAC requirements. Further, the expanded facilities in SE Asia had enabled the reception of the long range inter-theater military and commercial aircraft at facilities nearer the user and reduced significantly the in-country distribution problems.

d. Port congestion in Vietnam reached such a serious stage late in 1965 that a crash construction program was initiated. Additional terminal units were deployed and were augmented by contracting for commercial capability. The construction of inland airfields that could receive MAC aircraft directly from CONUS did much to relieve the port congestion and reduced significantly the requirement for in-country shipments. A serious shortage of materials handling equipment was experienced at both aerial and water ports. As the buildup progressed and terminal reception capacity increased, there was a shortfall of truck clearance capability that necessitated augmentation by commercial contract.

e. The preceding paragraphs summarize the more important aspects of transportation operations in support of the Vietnam conflict. The major lessons learned and the most important 14 of the 54 recommendations developed within the monograph are addressed in the balance of this chapter.

2. TRANSPORTATION PLANNING FOR VIETNAM

a. Lessons Learned

(1) Detailed contingency plans for the defense of mainland SE Asia recognized that transportation facilities within SE Asia were extremely limited, that port facilities were inadequate, and that logistics-over-the-shore operations would be required in many situations. Logistic appraisals confirmed and refined these deficiencies. Transportation planning for support of these contingency plans was based on assumption that national emergency procedures would be implemented to obtain augmentation of airlift, sealift, and related mobility forces. Because these procedures were not implemented, however, it does not appear valid to assume that such procedures will necessarily be implemented in future contingencies.

(2) Although the Joint Chiefs of Staff procedures for the submission of movement requirements distinguished between those in support of routine requirements and those that would support a decision to execute a previously developed plan, these procedures did not provide for the development, support, and coordination of requirements in a rapidly changing situation involving incremental deployment decisions. Although transportation guidance was developed by the Joint Chiefs of Staff in 1965 to correct this situation, it has not been incorporated into existing procedures. The Vietnam conflict emphasizes the urgent need for updating such guidance.

b. Recommendations

(1) Mobility planning guidance of the Joint Chiefs of Staff for contingencies short of general war provide for the alternative of augmenting the lift capabilities of the Military Airlift Command and the Military Sea Transportation Service by contractual means in the event that mobilization of reserve and commercial resources is not authorized (TR-2).

(2) The Joint Chiefs of Staff revise their procedures for the submission of movement requirements (Chapter I of SM-680-68) to incorporate specific provisions for revising such requirements during periods of heightened tension (TR-1).

3. CONUS TRANSPORTATION RESOURCES

a. Lessons Learned

(1) The commercial transportation support provided by the air, highway, and railroad industries during the Vietnam era was consistently excellent. Early attempts to support the buildup primarily through the west coast ports and the shortage of available lift contributed to the congestion of the CONUS facilities; however, expansion of the use of the east and gulf coast ports to support Vietnam proved economical and contributed to the relief of this congestion.

(2) Support of the Vietnam conflict again proved the need for military ocean terminals with a capability to hold, consolidate and divert cargo to meet changing requirements as well as providing a capability for on-the-job training for military personnel. This was particularly true with regard to ammunition that was shipped almost entirely through military terminals. Due to security, safety, and other special problems inherent in the handling of ammunition, it is essential that an adequate military ammunition port handling capability be retained. In addition, experience proved that it is more responsive and cost favorable to ship ammunition from both east and west coast ports.

(3) As evidenced by the successful movement of ammunition to Vietnam by containers in January 1970, the military ocean terminals need to be capable of interfacing with the evolving intermodal transportation system. In order to keep these terminals apace with modern technology, an austere but updated capability to handle container ships is urgently required.

b. Recommendation

(1) The Secretary of Defense support modernization programs for military ocean terminals (including ammunition terminals) in order to provide necessary facilities to accommodate containerized shipping (TR-6).

4. INTER- AND INTRA-THEATER SEALIFT

a. Lessons Learned

(1) Even though the Military Sea Transportation Service (MSTS) nucleus fleet consisted of only 89 ships in January 1965, and ships later activated from the National Defense Reserve Fleet were of World War II vintage, sealift still provided most of the inter- and intra-theater lift of cargo to Vietnam. The Vietnam era emphasizes the importance of a responsive sealift capability and brings into focus the inadequacies of DOD common user sealift resources to readily move very heavy or outsized military end items and specialized cargoes, to operate in restricted waters, and to support the petroleum, oil, and lubricants (POL) requirement of land sea and air forces.

(2) The nonavailability of sufficient ships from the active U.S. merchant marine to augment the MSTS nucleus fleet required the activation of ships from the National Defense Reserve Fleet, as had been done during the Korean era. The unavailability of sufficient U.S. flag shipping required MSTS to charter significant numbers of foreign flag tankers and some foreign flag cargo ships to meet requirements.

(3) The Vietnam experience highlights the overage and obsolescence of the National Defense Reserve Fleet. This rapidly dwindling asset will not be readily available to augment the nucleus fleet beyond 1978. Difficulties encountered by MSTS in obtaining the more modern subsidized ships during Vietnam necessitated reliance both on the nonsubsidized operators and, particularly, on the owners of the so-called tramp ships who depend primarily on Government charters to remain in business. However, the increasing trend toward commercial and military use of containers means that there will be minimal peacetime business for the older break-bulk ships and that there is a good probability that these ships will be scrapped.

(4) Unless the MSTS fleet is modernized with sufficient numbers of an appropriate mix of ships there will be no peacetime capability to move containers to areas of the world not served by commercial container systems, no capability to move containerized unit equipment to contingency areas for about the first 6 months of contingency operations, no shallow-draft capability, and insufficient capability to move military end items (helicopters, wheeled and tracked vehicles, and lighterage) and ammunition.

(5) In order for the merchant marine to be a responsive source of military sealift augmentation in future contingency operations, current Maritime Administration policy must be replaced by a firm national commitment to make modern ships available to the Department of Defense when required for military purposes and there must be positive provision for the determination, incorporation, and funding of national defense features in new construction merchant ships.

b. Recommendations

(1) The Joint Chiefs of Staff determine the numbers of multi-purpose ships, medium-sized container ships, barge carrying ships, and handy-sized tankers which must be in the Military Sea Transportation Service fleet to provide peacetime sealift support to U.S.

forces and to meet surge requirements for contingency operations until such time as additional shipping support can be mobilized and made operational (TR-11).

(2) The Secretary of Defense support necessary legislation to authorize long-term build and charter commitments so that the multi-purpose ships and handy-sized tankers now in the Five Year Defense Program as the initial increment of the Military Sea Transportation Service fleet modernization program may be constructed by commercial interests and chartered to the Military Sea Transportation Service (TR-10).

(3) The Secretary of Defense seek to have the legislation stemming from the President's merchant marine program include positive provision for ensuring the responsiveness of modern U.S. flag merchant ships, with appropriate national defense features, to meet military requirements under various conditions of emergency (TR-13).

5. INTER- AND INTRA-THEATER AIRLIFT AND AERIAL PORTS

a. Lessons Learned

(1) During the Vietnam era the Military Airlift Command (MAC) met the Services' airlift requirements in a very responsive manner even though there were problems at times in matching forecasts of airlift requirements with capabilities. MAC's military air fleet lacked the capability to handle the total amount of cargo that generated for this long air line of communication. Although the Civil Reserve Air Fleet (CRAF) was not activated, comparable commercial augmentation was obtained whenever necessary through normal contractual arrangements.

(2) The use of commercial augmentation into Vietnam during 1965 and 1966 was constrained because agreements with the South Vietnamese Government authorized only U.S. civilian carriers to land at the Ton Son Nhut air terminal in Saigon. It took several months of high-level negotiation to obtain authority to land MAC commercial charter flights at other locations.

(3) The addition of the presently programmed C-5 aircraft to the DOD inventory will increase the potential military airlift capability to approximately three times that of the 1969 military airlift force. Adequate ground handling facilities to cope with the increased tonnages envisioned by the use of the C-5 must be provided, and the Services must revise their Logistics Support Systems to take maximum advantage of the increased capability.

b. Recommendations

(1) In contingency situations in which the use of U.S. commercial augmentation airlift is anticipated, the Secretary of Defense initiate prompt action through the Department of State to obtain necessary overflight and air landing agreements with nations concerned (TR-16).

(2) The Services actively pursue and complete on-going studies concerning the revision of Service logistic systems in order that logistic support is provided effectively and economically and consistent with the advantages provided by the C-5 airlift capability (TR-19).

6. INTRA-RVN TRANSPORTATION

a. Lessons Learned

(1) The nature of the Vietnam conflict and the lack of land lines of communications required new concepts of operations for some transportation modes and increased reliance on other modes far beyond that of previous conflicts. Initial deployment of forces and supplies soon over-taxed the limited reception and distribution systems. The lack of land lines of communications and deep draft ports forced the distribution system to rely heavily on intra-coastal sealift and in-country airlift until additional facilities could be constructed. Common-service short take-off and landing aircraft and helicopters assigned to tactical units played a major role in supplying combat forces in remote and forward areas.

(2) The shuttle force concept of providing C-130 airlift support in the Republic of Vietnam (RVN) from offshore bases proved extremely successful. It provided a surge capability that permitted the Common Service Airlift System to meet in-country airlift requirements in a timely and effective manner with a considerable savings in the requirement for personnel and facilities in-country.

(3) The Vietnam experience highlights that operations in undeveloped areas, or in areas where the established ports have been destroyed, will initially require the use of logistics-over-the-shore (LOTS) techniques. This type of operation will place heavy reliance on support equipment, and the overall operation will be significantly slower than operations at a fixed pier. Through the use of pre-positioned mobile piers, such as the DeLong or the prefabricated Reeves type, fixed-pier operations can be established or re-established in a relatively short time provided sufficiently high priorities are assigned.

(4) Support of riverine forces in areas such as the Mekong Delta require extensive use of combined intra-coastal and inland waterway service. The tank landing ship (LSTs), particularly the older, shallow draft craft, proved to be a most valuable asset in these operations. In addition, the Army beach discharge lighter (BDL), LTC John U. D. Page, proved to be a most valuable asset in supporting intra-coastal requirements within the Cam Ranh Bay logistics complex.

(5) The Vietnam experience also indicates that there will be a continuing need for a dedicated short takeoff and landing aircraft which will be responsive to commanders to provide tactical mobility and other immediate airlift requirements in the forward areas. This aircraft should have a reasonable payload capacity and be small, rugged, and easy to maintain in austere field facilities. Additionally, there is a need for a heavy lift helicopter to interface at aerial and water ports for the distribution of material to forward tactical areas and for the ship discharge of containers and heavy lift cargoes under emergency conditions.

b. Recommendations

(1) Based on the Vietnam experience, the Department of the Army review current doctrine with regard to logistic over the shore (LOTS) operations and incorporate the planned use of mobile/prefabricated piers, when applicable, within the first 60 days of operations (TR-26).

(2) In establishing future requirements for shallow draft vessels for logistical support, the Departments of the Army and the Navy include small tank landing ships and beach discharge lighters (TR-46).

(3) The Department of the Air Force support the development and procurement of transport type aircraft and short takeoff and landing capabilities as replacements for the C-7A/C-123 aircraft for future land contingency operations (TR-43).

(4) The Office of the Secretary of Defense support the programs of the Services to provide a heavy lift helicopter capable of transporting cargo and containers from ship to shore and to isolated forward areas in future contingency operations (TR-44).

7. MOVEMENT CONTROL OF CARGO, UNITS, AND PASSENGERS

a. Lessons Learned

(1) The Vietnam conflict demonstrated that cargo movement control organizations and procedures should be in existence prior to the start of a major buildup to provide the necessary link or interface between shippers, transportation operating agencies, and consignees in overseas areas. There were inadequate procedures to coordinate effectively inter- and intra-theater shipments with Vietnam receiving capability or to identify those materials that receive precedence in case of lift shortage or limited receiving capability. In addition, considerable non-Department of Defense (DOD) cargo was being moved to Vietnam without prior knowledge of any DOD movement control agency.

(2) The lack of an adequate movement control system was a contributing factor to the confusion in the coordination between CONUS and overseas logistic support organizations, port congestion, shipping backlogs, and to a lack of proper coordination with the transportation system itself.

(3) Coordinated Pacific Command movement control organizations were established after commencement of the Vietnam buildup in order to limit the flow of material to a level commensurate with area reception capability, lift capabilities, and command requirements. This action came too late, however, as a great volume of material had already been transported to Vietnam. Movement control of all shipments was never achieved because no mechanism or procedures existed that would allow the Commander in Chief, Pacific, or the Commander, United States Military Assistance Command, Vietnam, to have knowledge (in gross terms) of the total tonnage, including non-DOD sponsored cargo, shipped into the country or the ability to balance the flow of cargo against the capability of the port and depot complex to properly receive and utilize it.

b. Recommendations

(1) Each commander of a unified command review his organization for movement control and coordination and, where necessary, revise his organization to incorporate agencies and procedures similar to those in the Pacific Command to limit the flow of material to a level commensurate with throughput capability, lift capabilities, and command requirements. Coordination and control procedures and a nucleus staff for these agencies should be activated and maintained in peacetime (TR-48).

(2) The Joint Chiefs of Staff through the Office of the Secretary of Defense initiate procedures with the appropriate U.S. Government agencies to ensure that the commanders of unified commands will have gross knowledge of all programmed shipments into their areas of responsibility; and that control procedures be developed to encompass all such shipments within and external to the Defense Transportation System (TR-49).

APPENDIX A
TRANSPORTATION DATA BASE

INTRODUCTION

This transportation data base consists of movement data for dry cargo, bulk petroleum, oil, and lubricants (POL), and passengers for the general time period of 1965 through 1969.

Information from other selected periods is furnished when available to indicate significant trends or when considered pertinent to a better understanding of the circumstances prevailing in the world that influenced logistics in Vietnam. Each table must be evaluated on the merits of the information and time period depicted. Statistics cannot always be compared because the available data differ as to fiscal or calendar year, the period of time shown, and the incompatibility of certain information by category. The tonnages listed in this data base consist of Department of Defense cargo unless otherwise stated. Airlift and sealift data outside of the Republic of Vietnam are for common-user movements by Military Sea Transportation Service (MSTS) and Military Airlift Command (MAC).

LIST OF TABLES AND FIGURES

		PAGE
SECTION 1.	WORLDWIDE-TO-WORLDWIDE	A- 9
A-1.	WORLDWIDE-TO-WORLDWIDE DOD DRY CARGO AIRLIFT AND SEALIFT MOVEMENTS FOR CYS 65-69	A-11
A-2.	WORLDWIDE-TO-WORLDWIDE DRY CARGO AIRLIFT AND SEALIFT MOVEMENTS BY MILITARY DEPARTMENT FOR FYS 65-68	A-12
A-3.	WORLDWIDE-TO-WORLDWIDE BULK POL SEALIFT MOVEMENTS BY MILITARY DEPARTMENT FOR FYS 65-68	A-13
A-4.	WORLDWIDE-TO-WORLDWIDE PASSENGER AIRLIFT AND SEALIFT MOVEMENTS BY MILITARY DEPARTMENT FOR FYS 65-68	A-14
SECTION 2.	WORLDWIDE-TO-RVN	A-15
A-5.	WORLDWIDE (CONUS ORIGINS AND OTHER WORLDWIDE ORIGINS) TO RVN DRY CARGO SEALIFT MOVEMENTS BY SERVICE FOR CYS 65-68	A-17
A-6.	WORLDWIDE ORIGINS TO RVN DRY CARGO AND PASSENGER AIRLIFT MOVEMENTS BY SAAM AND CHANNEL FOR CYS 65-69	A-18
SECTION 3.	CONUS TO WORLDWIDE	A-19
A-7.	CONUS-TO-WORLDWIDE DRY CARGO AIRLIFT AND SEALIFT MOVEMENTS BY SERVICE FOR CYS 65-69	A-21
A-8.	CONUS-TO-WORLDWIDE PASSENGER AIRLIFT AND SEALIFT MOVEMENTS FOR CYS 65-69	A-22
SECTION 4.	CONUS-TO-WORLDWIDE, -SE ASIA, AND -RVN	A-23
A-9.	CONUS-TO-WORLDWIDE, -SE ASIA, AND -RVN DRY CARGO AIRLIFT AND SEALIFT MOVEMENTS FOR CYS 65-69	A-25
A-10.	CONUS-TO-WORLDWIDE, -SE ASIA, AND -RVN PASSENGER AIRLIFT AND SEALIFT MOVEMENTS FOR CYS 65-69	A-26
SECTION 5.	CONUS-TO-RVN	A-27
A-11.	TEN CLASSES OF SUPPLY AND MILSTAMP WATER COMMODITY CODES (CROSS-REFERENCE)	A-29
A-12.	CONUS-TO-RVN DRY CARGO SEALIFT MOVEMENTS BY COMMODITY AND SERVICE FOR CYS 66-68	A-31
A-13.	CONUS-TO-RVN DRY CARGO SEALIFT MOVEMENTS FOR CYS 66-68	A-32
A-14.	CONUS-TO-RVN TOTAL DRY CARGO SEALIFT MOVEMENTS BY PERCENT AND SERVICE FOR CYS 66-68	A-33

PAGE

A-15. CONUS-TO-RVN TOTAL DRY CARGO SEALIFT MOVEMENTS BY PERCENT OF COMMODITY AND SERVICE FOR CYS 66-68 A-34

A-16. MILSTAMP AIR COMMODITY CODES A-35

A-17. CONUS-TO-RVN TOTAL CARGO AIRLIFT MOVEMENTS BY COMMODITY CODE FOR PERIOD 1 JULY 1967 TO 31 DECEMBER 1968 A-36

A-18. CONUS-TO-RVN TOTAL CARGO AIRLIFT MOVEMENTS OF SEVEN MAJOR COMMODITIES BY SERVICE FOR PERIOD 1 JULY 1967 TO 31 DECEMBER 1968 A-37

A-19. CONUS-TO-RVN TOTAL CARGO AIRLIFT MOVEMENTS BY SERVICE FOR PERIOD 1 JULY 1967 TO 31 DECEMBER 1968 A-38

SECTION 6. CONUS-TO-RVN A-39

A-20. CONUS-TO-RVN CARGO AND PASSENGER MILITARY AND COMMERCIAL AIRLIFT MOVEMENTS BY MILITARY DEPARTMENT FOR FYS 65-68 A-41

SECTION 7. CONUS-TO-RVN VERSUS WORLDWIDE A-43

A-21. CONUS-TO-RVN VERSUS WORLDWIDE CARGO MOVEMENTS BY SAAM AND CHANNEL AIRLIFT (PERCENT) FOR CYS 65-69 A-45

A-22. CONUS-TO-RVN VERSUS WORLDWIDE CARGO MOVEMENTS BY SAAM AND CHANNEL AIRLIFT (PERCENT OF RVN-WORLDWIDE) FOR CYS 65-69 A-45

SECTION 8. INTRA-RVN COMMON-USER TRANSPORTATION MOVEMENTS A-47

A-23. INTRA-RVN COMMON-USER AIR, WATER, AND RAIL TRANSPORTATION MOVEMENTS FOR CYS 65-69 A-49

A-24. MONTHLY INTRA-RVN COMMON-USER AIR, WATER, AND RAIL TRANSPORTATION MOVEMENTS FOR CYS 65-69 A-50

A-25. MONTHLY INTRA-RVN COMMON-USER HIGHWAY TRANSPORTATION MOVEMENTS FOR CYS 65-69 A-51

A-26. MONTHLY INTRA-RVN FIRST LOGISTICAL COMMAND MILITARY AND COMMERCIAL HIGHWAY CARGO MOVEMENTS FOR PERIOD 1 NOVEMBER 1967 TO 31 JULY 1969 A-52

A-27. MONTHLY INTRA-RVN CARGO MOVED BY ARMY AND MARINE HELICOPTERS VERSUS CSAS AIRCRAFT FOR CYS 67-69 A-53

SECTION 9. OTHER MOVEMENT DATA A-55

A-28. MONTHLY USAID AND COMMERCIAL CARGO DISCHARGED AT RVN PORTS FOR CYS 66-68 A-57

PAGE

A-29.	MONTHLY USAID, COMMERCIAL, AND MILITARY CARGO DISCHARGED AT PORT OF SAIGON FOR CYS 66-68	A-58
Figure A-1.	RMK-BRJ CONTRACTOR TONNAGES TOTAL RMK-BRJ SHIPMENTS TO RVN FOR CYS 65-69 (OCEAN AND AIR)	A-59
A-30.	TOTAL RMK-BRJ SHIPMENTS (OCEAN AND AIR) TO RVN BY MONTH FOR CYS 65-68	A-60
A-31.	MONTHLY RMK-BRJ AIR SHIPMENTS TO RVN FOR CYS 66-68	A-61
A-32.	MONTHLY RMK-BRJ SURFACE SHIPMENTS TO RVN FOR CYS 65-68	A-62
A-33.	ARMY-SPONSORED DRY CARGO SHIPPED TO RVN BY AMC FOR FY 66 - FIRST QUARTER FY 69	A-63
A-34.	ARMY PUSH SHIPMENTS TO RVN BY PROJECT AND DATE	A-64
SECTION 10.	RVN PORT ACTIVITIES	A-67
A-35.	TOTAL CARGO HANDLED AT RVN PORTS	A-69
A-36.	MACV RVN PORT THROUGHPUT SURVEY (FEBRUARY 1969)	A-70

SECTION 1

WORLDWIDE-TO-WORLDWIDE DRY CARGO MOVEMENT BY AIRLIFT AND SEALIFT

TABLE A-1
WORLDWIDE-TO-WORLDWIDE DOD DRY CARGO AIRLIFT
AND SEALIFT MOVEMENTS FOR CYS 65-69

(Shown in short tons)

Calendar Year	Airlift	Percent	Sealift	Percent	Annual Total	Percent
1965	323,500	4.44	6,975,400	95.56	7,298,900	100
1966	511,200	4.93	9,856,600	95.07	10,367,800	100
1967	717,500	5.75	11,751,300	94.25	12,468,800	100
1968	811,000	5.09	15,134,200	94.91	15,945,200	100
1969	788,800	5.09	14,722,600	94.91	15,511,400	100
Total	3,152,000	5.12*	58,440,100	94.88	61,592,100	100

*Although only approximately 5% of the total cargo tonnage is moved by air to overseas areas, the cargo moved by air accounts for a substantial amount of the value of items in the intransit pipeline. While no dollar figures are available for the total cargo moved, this conclusion is based on an estimate developed by the Requirements and Provisioning Division, Supply Management Policy Directorate, OASD (I&L). Based on the 1970 budget submission of the Military Departments and DSA it was estimated that the total dollar value of one day's overseas in-transit pipeline of secondary items alone (less ammunition, fuel, Navy and Air Force engines and major items of equipment such as vehicles, artillery pieces, aircraft and retrograde) is slightly over $13,000,000. Of this total it was further estimated that the daily air transportation pipeline accounts for approximately $5,500,000 or 42% of the total value of the secondary item in-transit pipeline.

Source: Tonnage data from SASM Statistical Digests 1965, 1966, 1967, 1968, and 1969, Table no. 100. Worldwide consists of all origins and all destinations.

TABLE A-2
WORLDWIDE-TO-WORLDWIDE DRY CARGO AIRLIFT AND SEALIFT
MOVEMENTS BY MILITARY DEPARTMENT FOR FYS 65-68

(Shown in short tons by military department)

Fiscal Year	Service	Airlift *	Percent	Sealift **	Percent	Annual Total	Percent
1965	Army	62,000	1.54	3,957,000	98.46	4,019,000	100
	Navy	35,000	2.41	1,419,000	97.59	1,454,000	100
	Air Force	156,000	11.30	1,232,000	88.70	1,390,000	100
	Total	253,000	3.70	6,608,000	96.30	6,863,000	100
1966	Army	102,000	1.63	6,146,000	98.37	6,248,000	100
	Navy	58,000	2.22	2,555,000	97.78	2,613,000	100
	Air Force	178,000	9.29	1,738,000	90.71	1,916,000	100
	Total	338,000	3.14	10,439,000	96.86	10,777,000	100
1967	Army	242,000	2.72	8,663,000	97.28	8,905,000	100
	Navy	126,000	4.47	2,695,000	95.53	2,821,000	100
	Air Force	232,000	9.52	2,205,000	90.48	2,437,000	100
	Total	600,000	4.24	13,563,000	95.76	14,163,000	100
1968	Army	288,000	2.96	9,450,000	97.04	9,738,000	100
	Navy	136,000	4.55	2,853,000	95.45	2,989,000	100
	Air Force	255,000	10.99	2,066,000	89.01	2,321,000	100
	Total	679,000	4.51	14,369,000	95.49	15,048,000	100
Total	Army	694,000	2.40	28,216,000	97.60	28,910,000	100
	Navy	355,000	3.59	9,522,000	96.41	9,877,000	100
	Air Force	821,000	10.18	7,241,000	89.82	8,062,000	100
	Total	1,870,000	3.99***	44,979,000	96.01	46,849,000	100

*Channel only.
**Measurement tons converted to short tons 2:1 (2 measurement tons to 1 short ton).
***See note at bottom of Table A-11 on preceding page.
Note: Navy tonnage figures include Marine Corps.

Source: OSD, Single Manager Transportation Data Reference Book, Chapters III and IV, FY 68.

TABLE A-3
WORLDWIDE-TO-WORLDWIDE BULK POL SEALIFT MOVEMENTS
BY MILITARY DEPARTMENTS FOR FYS 65-68

(Shown in long tons by military department)

Fiscal Year	Army	Percent	Navy	Percent	Air Force	Percent	Annual Total	Percent
1965	2,698,000	15.20	8,009,000	45.20	7,020,000	39.60	17,727,000	100
1966	2,984,000	15.00	9,659,000	48.80	7,157,000	36.20	19,800,000	100
1967	3,981,000	16.27	10,458,000	42.75	10,024,000	40.98	24,463,000	100
1968	4,773,000	16.98	10,754,000	38.27	12,575,000	44.75	28,102,000	100
Total	14,436,000	16.02	38,880,000	43.16	36,776,000	40.82	90,092,000	100

Note: Navy tonnage figures include Marine Corps.
POL is petroleum, oil, and lubricants.

Source: OSD, Single Manager Transportation Data Reference Book, Chapter IV, FY 68.

TABLE A-4
WORLDWIDE-TO-WORLDWIDE PASSENGER AIRLIFT AND SEALIFT
MOVEMENTS BY MILITARY DEPARTMENT FOR FYS 65-68
(Shown in numbers of passengers by military department)

Fiscal Year	Service	Airlift*	Percent	Sealift	Percent	Annual Total	Percent
1965	Army	447,000	59.28	307,000	40.72	754,000	100
	Navy	291,000	76.38	90,000	23.62	381,000	100
	Air Force	616,000	97.47	16,000	2.53	632,000	100
	Total	1,354,000	76.63	413,000	23.37	1,767,000	100
1966	Army	788,000	76.65	240,000	23.35	1,028,000	100
	Navy	337,000	85.32	58,000	14.68	395,000	100
	Air Force	722,000	98.50	11,000	1.50	733,000	100
	Total	1,847,000	85.67	309,000	14.33	2,156,000	100
1967	Army	1,137,000	84.98	201,000	15.02	1,338,000	100
	Navy	400,000	93.02	30,000	6.98	430,000	100
	Air Force	878,000	98.65	12,000	1.35	890,000	100
	Total	2,415,000	90.86	243,000	9.14	2,658,000	100
1968	Army	1,517,000	90.57	158,000	9.43	1,675,000	100
	Navy	513,000	97.16	15,000	2.84	528,000	100
	Air Force	1,045,000	99.24	8,000	0.76	1,053,000	100
	Total	3,075,000	94.44	181,000	5.56	3,256,000	100
Total	Army	3,889,000	81.11	906,000	18.89	4,795,000	100
	Navy	1,541,000	88.87	193,000	11.13	1,734,000	100
	Air Force	3,261,000	98.58	47,000	1.42	3,308,000	100
	Total	8,691,000	88.35	1,146,000	11.65	9,837,000	100

* Channel only.
Note: Navy tonnage figures include Marine Corps.
Source: OSD, Single Manager Transportation Data Reference Book, Chapters III and IV, FY 68.

SECTION 2

WORLDWIDE-TO-RVN DRY CARGO AND PASSENGER MOVEMENTS BY AIRLIFT AND SEALIFT

TABLE A-5
WORLDWIDE (CONUS ORIGINS AND OTHER WORLDWIDE ORIGINS)
TO RVN DRY CARGO SEALIFT MOVEMENTS
BY SERVICE FOR CYS 65-68

(Shown in thousands of measurement tons by Service)

Calendar Year		1965			1966			1967			1968			Total		
		From CONUS Origins	From other Origins	Total to RVN	From CONUS Origins	From other Origins	Total to RVN	From CONUS Origins	From other Origins	Total to RVN	From CONUS Origins	From other Origins	Total to RVN	From CONUS Origins	From other Origins	Total to RVN
Army	(M/T)	1,846.2	383.5	2,229.7	4,547.6	1,309.0	5,856.6	7,280.7	1,384.8	8,665.5	6,852.8	1,260.3	8,113.1	20,527.3	4,337.6	24,864.9
	%	82.80	17.20	100	77.71	22.29	100	84.02	15.98	100	84.46	15.54	100	82.55	17.45	100
Navy	(M/T)	826.9	88.3	915.2	1,551.3	578.3	2,129.6	1,380.7	393.5	1,774.2	1,900.8	338.5	2,239.3	5,659.7	1,398.7	7,059.4
	%	90.35	9.65	100	72.85	27.15	100	77.82	22.18	100	84.88	15.12	100	80.18	19.82	100
USMC	(M/T)	26.2	73.8	99.9	88.3	144.2	232.6	153.3	171.2	324.5	263.9	239.9	503.8	531.7	629.1	1,160.8
	%	26.13	73.87	100	37.96	62.04	100	47.25	52.75	100	52.38	47.62	100	45.80	54.20	100
USAF	(M/T)	252.7	93.8	346.6	608.3	93.7	702.0	960.4	80.8	1,041.2	1,028.2	80.9	1,109.1	2,849.7	349.4	3,199.1
	%	72.40	27.10	100	86.65	13.35	100	92.24	7.76	100	92.71	7.29	100	89.08	10.92	100
Total	(M/T)	2,952.1	639.4	3,591.5*	6,795.5	2,125.3	8,920.8	9,775.1	2,030.4	11,805.5	10,045.7	1,919.6	11,965.3	29,568.3	6,714.8	36,283.2
	%	82.20	17.80	100	76.18	23.82	100	82.80	17.19	100	83.95	16.05	100	81.49	18.51	100

*77% of this 1965 tonnage was moved during the last 6 months of 1965.

Source: MSTS Compilation for JLRB, Cargo manifested for discharge in SVN/THAILAND. By origin area, sponsor, and commodity category, break-bulk and containerization. CYS 65 - 68, by Quarter. March 1969.

TABLE A-6
WORLDWIDE ORIGINS TO RVN DRY CARGO AND PASSENGER AIRLIFT
MOVEMENTS BY SAAM AND CHANNEL FOR CYS 65-69

(Shown in short tons by SAAM and channel and numbers of passengers)

Calendar Year	Passengers SAAM	Passengers Channel	Passengers Total	Dry Cargo SAAM	Dry Cargo Channel	Dry Cargo Total
1965*	40,797	44,765	85,562	10,899	27,665	38,564
1966*	160,113	210,979	371,092	20,501	97,174	117,675
1967	98,147	432,432	530,579	20,823	257,876	278,699
1968	97,204	636,123	733,327	30,573	260,089	290,662
1969	89,809	621,122	710,931	17,433	225,180	242,616
Total	486,070	1,945,421	2,431,491	100,232	867,984	968,216

* CONUS only, worldwide origins not available for 1965 and 1966.
Source: Data taken from JCS and MAC J-8, J-11, and SAAM Requirements Report.

SECTION 3

CONUS-TO-WORLDWIDE DRY CARGO AND PASSENGER MOVEMENTS BY AIRLIFT AND SEALIFT

TABLE A-7
CONUS-TO-WORLDWIDE DRY CARGO AIRLIFT AND SEALIFT
MOVEMENTS BY SERVICE FOR CYS 65-69

(Shown in short tons by Service)

Calendar Year		Army	Percent	Navy	Percent	Air Force	Percent	USMC	Percent	Annual Total	Percent
1965	Airlift	N/A		N/A		N/A		N/A		221,700	100
	Sealift	3,837,772	61.22	1,216,982	19.41	1,098,171	17.52	116,211	1.85	6,269,136	100
1966	Airlift	N/A		N/A		N/A		N/A		284,700	100
	Sealift	5,115,154	60.10	1,683,850	19.78	1,539,366	18.09	172,513	2.03	8,510,883	100
1967	Airlift	186,635	46.44	82,796	20.60	132,441	32.96	*		401,372	100
	Sealift	6,812,736	66.71	1,546,190	15.14	1,643,045	16.09	211,090	2.06	10,213,061	100
1968	Airlift	193,219	46.14	83,753	20.00	141,793	33.86	*		418,765	100
	Sealift	6,578,573	62.43	1,850,988	17.56	1,815,657	17.23	293,109	2.78	10,538,327	100
1969	Airlift	178,031	50.00	64,780	18.19	113,281	31.81	*		356,092	100
	Sealift	5,699,658	62.97	1,589,970	17.57	1,590,671	17.58	170,582	1.88	9,050,881	100
Total	Airlift	557,885		231,329		387,515		*		1,683,129	100
Total	Sealift	28,043,893		7,887,980		7,686,910		963,505		44,582,288	100
Total		28,601,778		8,119,309		8,074,425		963,505		46,265,417	

* Navy airlift tonnage figures include Marine Corps.
Notes: Measurement tons converted to short tons 2:1 (2 measurement tons to 1 short ton).
N/A - not available.
Source: Sealift data taken from MSTS, Financial and Statistical Report for CYS 65-69.
Airlift data taken from JCS and MAC J-8, J-11, and SAAM Requirements Reports.
Tonnage figures by Service for CYS 65 and 66 not available. Airlift totals for CYS 65 and 66 taken from JCS SASM Statistical Digests for 1965 and 1966. (Totals do not balance)

TABLE A-8
CONUS-TO-WORLDWIDE PASSENGER AIRLIFT AND SEALIFT
MOVEMENTS FOR CYS 65-69

(Shown in numbers of passengers)

Calendar Year	Airlift	Percent	Sealift	Percent	Annual Total	Percent
1965	913,300	80.25	224,700	19.75	1,138,000	100
1966	1,042,500	87.99	142,400	12.01	1,184,900	100
1967	1,165,300	95.34	56,900	4.66	1,222,200	100
1968	1,446,300	98.92	15,700	1.08	1,462,000	100
1969	1,317,000	99.38	8,200	.62	1,325,200	100
Total	5,884,400	92.93	447,900	7.07	6,332,300	100

Source: SASM Statistical Digests 1965, 1966, 1967, 1968, and 1969, Table No. 111.

SECTION 4

CONUS-TO-WORLDWIDE, SE ASIA, AND RVN DRY CARGO AND PASSENGER MOVEMENTS BY AIRLIFT AND SEALIFT

TABLE A-9
CONUS-TO-WORLDWIDE, -SE ASIA, AND -RVN
DRY CARGO AIRLIFT AND SEALIFT
MOVEMENTS FOR CYS 65-69

(Shown in short tons)

Calendar Year		CONUS to Worldwide (less SE Asia and RVN)	Percent	CONUS to SE Asia (less RVN)	Percent	CONUS to RVN	Percent	CONUS to Worldwide Annual Total	Percent
1965	Airlift	126,000	56.83	57,000	25.71	38,700	17.46	221,700	100
	Sealift	2,838,000	53.81	1,204,900	22.85	1,230,700	23.34	5,273,600	100
1966	Airlift	77,700	27.29	89,500	31.44	117,500	41.27	284,700	100
	Sealift	2,429,600	33.82	1,922,700	26.76	2,831,500	39.42	7,183,800	100
1967	Airlift	78,400	19.51	116,100	28.29	207,400	51.60	401,900	100
	Sealift	2,814,300	32.61	1,700,500	19.71	4,114,000	47.68	8,628,800	100
1968	Airlift	94,000	22.53	110,400	26.46	212,800	51.01	417,200	100
	Sealift	3,413,800	32.19	2,145,100	20.23	5,046,400	47.58	10,605,300	100
1969	Airlift	94,700	26.59	85,600	24.04	175,800	49.37	356,100	100
	Sealift	3,409,200	37.06	1,848,100	20.09	3,941,200	42.85	9,198,500	100
Total	Airlift	470,800	28.00	458,600	27.27	752,200	44.73	1,681,600	100
Total	Sealift	14,904,900	36.45	8,821,300	21.57	17,163,800	41.98	40,890,000	100
	Total	15,375,700	36.12	9,279,900	21.80	17,916,000	42.08	42,571,600	100

Note: SASM airlift figures have been rounded off.
Source: SASM Statistical Digests 1965, 1966, 1967, 1968, and 1969, Tables 101, 102, and 103.

TABLE A-10

CONUS-TO-WORLDWIDE, -SE ASIA, AND -RVN
PASSENGER AIRLIFT AND SEALIFT MOVEMENTS
FOR CYS 65-69

(Shown in numbers of passengers)

Calendar Year		CONUS To Worldwide (less SE Asia and RVN)	Percent	CONUS To SE Asia (less RVN)	Percent	CONUS To RVN	Percent	CONUS To Worldwide Annual Total	Percent
1965	Airlift	648,500	70.99	179,700	19.69	85,100	9.32	913,300	100
	Sealift	117,700	52.38	24,400	10.77	82,800	36.85	224,700	100
1966	Airlift	443,400	42.53	228,000	21.87	371,100	35.60	1,042,500	100
	Sealift	46,900	32.94	4,500	3.16	91,000	63.90	142,400	100
1967	Airlift	459,800	39.46	280,200	24.05	425,300	36.49	1,165,300	100
	Sealift	6,100*		N/A		50,800		56,900	100
1968	Airlift	509,100	35.20	363,100	25.11	574,100	39.69	1,446,300	100
	Sealift	7,900*		N/A		7,800		15,700	100
1969	Airlift	479,000	36.37	318,800	24.21	519,200	39.42	1,317,000	100
	Sealift	8,200*		N/A		-0-		8,200	100
Total	Airlift	2,539,800	43.16	1,369,800	23.28	1,974,800	33.56	5,884,400	100
Total	Sealift	186,600*		N/A		232,400		447,900	100
Total		2,726,600		N/A		2,207,200		6,332,300	

* Less RVN only.

Note: CONUS to SE Asia sealift passenger figures were not available for 1967, 1968, and 1969.

Source: SASM Statistical Digests 1965, 1966, 1967, 1968, and 1969, Tables 111, 112, and 113 for sealift and Tables 311, 312, and 313 for airlift.

SECTION 5

CONUS-TO-RVN CARGO MOVEMENTS BY COMMODITY AND SERVICE

TABLE A-11
TEN CLASSES OF SUPPLY AND MILSTAMP
WATER COMMODITY CODES (CROSS-REFERENCE)

Supply Class	General Description of Classes	Commodity Breakdown by MILSTAMP Water Commodity Code (DOD 4500.32R)
Class 1 A- Dry Subsistence	Non-Refrigerated Subsistence: Bakery goods, dried vegetables and fruits, canned foods, combat rations, in flight food packets, preserves, cooking oils, cereals	500 thru 502, 507 thru 51W, 51G, 51P, 51H thru 529.
Class 1 B- Perishables	Subsistence Requiring Refrigeration: Chill, freeze, butter, cheese, eggs, fish, fruit and vegetables, milk, meats, ice cream	100 thru 130, 150 thru 194.
Class II-General	General Items Not Applicable to Other Classes: Drums, paints, insecticides, electrical equipment, small arms, containers (other than CONEX), GENNOS, clothing, furniture, hardware, refrigerators, anti-submarine equipment, steel tanks	131. 135, 195, 536, 570, 579, 606, 620 thru 631, 657 thru 659, 680, 681, 690,thru 692, 700 thru 706, 709 thru 714, 716 thru 722, 725 thru 729, 732, 734 thru 735, 737 thru 741, 743, 745 thru 748, 751. 759 thru 768, 790 thru 793, 860.
Class III - POL	Petroleum, Oil & Lubricants: Anti-freeze, oil, gasoline, cylinders, chemicals	580, 600 thru 605, 634, 635.
Class IV - Construction		
A - Lumber	Lumber: Dunnage, plywood, wallboard, logs	550 thru 561, 832, 835, 843 thru 850.
B - Metal	Metal: Matting, iron and steel bars, machinery, metal products, iron and steel items	661, 662, 822, 825, 853 thru 855, 571 thru 576.
C - Cement	Cement	660.
D - Other Class IV	Other: Asphalt, barbed wire, prefabricated houses, wire, pickets, sand bags	200 thru 220, 607, 663 thru 664, 736, 749 thru 750, 769 thru 771, 856, 857.

TABLE A-11 (Continued)

Supply Class	General Description of Classes	Commodity Breakdown by MILSTAMP Water Commodity Code (DOD 4500.32R)
Class V - Ammunition	Ammunition: Explosives, bombs, fuzes, missiles, chemical ammunition, acids	400 thru 450.
Class VI - Personal Demand Items	Personal Demand Items: Beer, beverage, gum, liquors, razor blades, toilet preparations, cigarettes, cigars, magazines, stationery, tobacco, toys, optical goods, household appliances, jewelry, luggage, radios	503 thru 506, 517, 518, 535, 539, 543, 707 thru 708, 715, 730 thru 731, 733, 744, 752 thru 758.
Class VII - Major End Items		
A - Tanks	Tanks	864.
B - Tracked Vehicles (Mil)	Tracked Vehicles: Full and half	873, 876.
C - Other Vehicles (Mil)	Other Vehicles: Lift trucks, railroad stock, vehicles not exceeding 2-1/2 ton, jeeps, sedans, vehicles over 2-1/2 ton, RORO, MHE	829, 858, 867, 870, 879, 882, 888, 891, 894.
D - Construction Vehicles	Construction Vehicles	885.
E - Aircraft.	Aircraft: Boxed and unboxed	891, 900.
F - Other Class VII	Other: Generators, boats, vehicles boxed, Guns unboxed, house trailers	590, 640 thru 642, 643, 800, 804, 807, 810, 813, 816, 819.
Class VIII - Medical Materiel	Medical Materiel: Temperature controlled, alcohol, dental goods, drugs, medicines, ether, medical supplies, serums, vaccines, penicillin, vitamins, dental and medical instruments	
Class IX - Repair Parts	Repair Parts: Tractor, vehicle parts, tires, tubes, machinery parts, motors, pumps, booms, electronic equipment parts, aircraft parts, small arm parts, radio parts, bearings	578, 581 thru 586, 591 thru 599, 65A, 670 thru 675, 682, 723 thru 724, 742, 811.
Class X - Non-Military	Non-Military: Coal, coke, fertilizer, grain, edible oils, ore	230 thru 280.
Miscellaneous.	Miscellaneous: POVs, baggage, household goods, mail, parcel post	300 thru 396, 610 thru 614.

TABLE A-12
CONUS-TO-RVN DRY CARGO SEALIFT MOVEMENTS
BY COMMODITY AND SERVICE
FOR CYS 66-68

(Shown in short tons)

Supply Class	Army 1966	Army 1967	Army 1968	Navy 1966	Navy 1967	Navy 1968	Marine Corps 1966	Marine Corps 1967	Marine Corps 1968	Air Force 1966	Air Force 1967	Air Force 1968	Other 1966	Other 1967	Other 1968
I	283,147	499,299	548,094	111,839	139,389	228,368	779	460	1,710	496	142	158	-	34	3,699
IA	(197,380)	(364,545)	(386,883)	(81,712)	(99,506)	(166,659)	(779)	(460)	(1,710)	(390)	(59)	(119)	-	(15)	(3,583)
IB	(85,761)	(135,354)	(161,211)	(30,127)	(39,883)	(61,709)	-	-	-	(106)	(83)	(39)	-	(19)	(116)
II	361,760	517,894	415,053	154,662	88,885	130,524	5,541	5,165	10,130	69,509	134,689	89,652	676	17,005	14,496
III	37,007	45,033	63,950	16,102	9,034	17,666	480	564	489	3,694	5,622	6,437	1	296	961
IV	465,657	1,231,821	1,204,436	467,409	408,452	510,208	4,561	16,153	5,863	110,499	114,943	96,110	2,565	34,955	47,788
IV A	(189,502)	(481,900)	(504,184)	(184,848)	(154,733)	(204,355)	(2,742)	(6,700)	(301)	(43,770)	(37,494)	(42,320)	-	(739)	(1,774)
IV B	(190,378)	(493,797)	(349,206)	(206,780)	(109,062)	(138,076)	(1,790)	(4,136)	(2,807)	(51,293)	(55,914)	(29,815)	(1,204)	(32,361)	(43,190)
IV C	(352)	(44,034)	(10)	(28,072)	(69,400)	(33,179)	(27)	(9)	(32)	(9,515)	(5,161)	(129)	-	-	-
IV D	(85,125)	(212,090)	(351,036)	(47,709)	(75,257)	(134,598)	(2)	(5,308)	(2,723)	(5,921	(16,374)	(23,846)	(1,361)	(1,855)	(2,824)
V	473,619	876,949	1,085,546	41,498	97,128	196,639	5,417	34,369	44,581	42,825	277,287	395,693	2	278	105
VI	223,874	429,149	476,338	9,172	1,650	2,678	88	124	6,873	131	990	1,405	-	1,285	769
VII	297,151	337,271	283,001	57,569	33,025	39,759	11,837	14,782	57,073	26,120	11,079	7,699	75	3,073	8,203
VII A	(9,948)	(15,829)	(36,069)	(55)	-	(12)	(2,994)	(2,129)	(9,066)	-	(66)	-	-	-	(191)
VII B	(24,334)	(30,660)	(35,274)	(1,011)	(100)	(225)	(1,692)	(2,650)	(3,928)	(805)	(28)	(16)	-	-	(30)
VII C	(203,389)	(215,096)	(168,612)	(21,474)	(17,173)	(18,825)	(6,343)	(9,176)	(21,790)	(20,832)	(7,537)	(5,815)	(29)	(1,689)	(5,120)
VII D	(21,236)	(44,473)	(25,028)	(24,131)	(7,348)	(9,343)	(535)	(718)	(1,894)	(1,788)	(1,788)	(254)	(24)	(30)	(83)
VII E	(2,339)	(4,902)	(2,569)	(24)	(198)	(716)	(240)	-	-	(60)	(368)	(596)	-	-	-
VII F	(35,905)	(26,311)	(15,449)	(10,874)	(8,206)	(10,638)	(33)	(109)	(395)	(2,635)	(1,292)	(1,018)	(22)	(1,354)	(2,779)
VIII	9,787	6,712	3,305	785	1,253	2,273	27	122	75	2,076	348	1,397	-	1,319	282
IX	50,543	73,160	88,359	26,843	14,548	16,485	358	1,718	4,691	5,778	4,645	5,660	105	964	2,555
X	496	186	173	-	5	113	-	-	-	-	21	5	-	-	87
Misc.	507	425	314	72	117	12	-	5	10	73	10	8	14,473	20,072	14,839
Total	2,203,548	4,018,499	4,168,569	885,951	793,486	1,144,725	29,088	73,462	111,895	261,201	559,376	604,224	17,897	79,281	93,784

Source: MTMTS special compilation of data for JLRB.

TABLE A-13
CONUS-TO-RVN DRY CARGO SEALIFT MOVEMENTS
FOR CYS 66-68

(Shown in short tons)

Supply Class	1966	1967	1968	Total	Percent
I	396,261	639,924	782,029	1,818,214	12.09
IA	(280,267)	(464,585)	(558,954)	(1,303,806)	(8.67)
IB	(115,994)	(175,339)	(223,075)	(514,408)	(3.42)
II	592,148	763,638	659,855	2,015,641	13.40
III	57,284	60,549	89,503	207,336	1.37
IV	1,050,691	1,806,324	1,864,405	4,721,420	31.38
IV A	(420,862)	(681,566)	(752,934)	(1,855,362)	(12.33)
IV B	(451,445)	(695,270)	(563,094)	(1,709,809)	(11.37)
IV C	(38,266)	(118,604)	(33,350)	(190,220)	(1.26)
IV D	(140,118)	(310,884)	(515,027)	(966,029)	(6.42)
V	563,361	1,286,011	1,722,964	3,572,336	23.75
VI	233,265	433,198	488,063	1,154,526	7.67
VII	392,752	399,230	375,735	1,167,717	7.73
VII A	(12,997)	(18,024)	(45,338)	(76,359)	(.50)
VII B	(27,842)	(33,438)	(39,473)	(100,753)	(.67)
VII C	(252,067)	(250,671)	(220,162)	(722,900)	(4.80)
VII D	(47,714)	(54,357)	(36,602)	(138,673)	(.92)
VII E	(2,663)	(5,468)	(3,881)	(12,012)	(.07)
VII F	(49,469)	(37,272)	(30,279)	(117,020)	(.77)
VIII	12,675	10,354	7,332	30,361	.20
IX	83,627	95,035	117,750	296,412	1.97
X	496	212	378	1,086	.02
Misc.	15,125	20,629	15,183	50,937	.33
Total	3,397,685	5,515,104	6,123,197	15,035,986	100.00

Source: MTMTS special compilation of data for the JLRB.

TABLE A-14
CONUS-TO-RVN TOTAL DRY CARGO SEALIFT MOVEMENTS
BY PERCENT AND SERVICE FOR CYS 66-68

(Shown in short tons)

Supply Class	Army		Navy		Marine Corps		Air Force		Other		Total	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
I	1,331,140	73.21	479,596	26.37	2,949	.16	796	.04	3,733	.22	1,818,214	100.00
IA	(948,814)	72.77	(347,877)	26.68	(2,949)	.22	(568)	.04	(3,598)	.27	(1,303,806)	100.00
IB	(382,326)	74.32	(131,719)	25.60	—	—	(228)	.04	(135)	.02	(514,408)	100.00
II	1,294,707	64.23	374,071	18.55	20,836	1.03	293,850	14.57	32,177	1.59	2,015,641	100.00
III	145,990	70.41	42,802	20.64	1,533	.73	15,753	7.59	1,258	.60	207,336	100.00
IV	2,901,914	61.46	1,386,069	29.35	26,577	.56	321,552	6.81	85,308	1.80	4,721,420	100.00
IVA	(1,175,586)	63.36	(543,936)	29.31	(9,743)	.52	(123,584)	6.66	(2,513)	.13	(1,855,362)	100.00
IVB	(1,033,381)	60.43	(453,918)	26.54	(8,733)	.51	(137,022)	8.01	(76,755)	4.48	(1,709,809)	100.00
IVC	(44,696)	23.45	(130,651)	68.68	(68)	.03	(14,805)	7.78	—	—	(190,220)	100.00
IVD	(648,251)	67.10	(257,564)	26.66	(8,033)	.83	(46,141)	4.77	(6,040)	.62	(966,029)	100.00
V	2,436,114	68.19	335,265	9.38	84,767	2.37	715,805	20.03	385	.01	3,572,336	100.00
VI	1,129,361	97.82	13,500	1.16	7,085	.61	2,526	.21	2,054	.17	1,154,526	100.00
VII	917,423	78.56	130,353	11.16	63,692	5.45	44,898	3.84	11,351	.97	1,167,717	100.00
VIIA	(61,846)	80.99	(67)	.08	(14,189)	18.58	(66)	.08	(191)	.25	(76,359)	100.00
VIIB	(90,268)	89.59	(1,336)	1.32	(8,270)	8.20	(849)	.84	(30)	.02	(100,753)	100.00
VIIC	(587,097)	81.21	(57,472)	7.95	(37,309)	5.16	(34,184)	4.72	(6,838)	.94	(722,900)	100.00
VIID	(90,737)	65.43	(40,822)	29.43	(3,147)	2.26	(3,830)	2.76	(137)	.09	(138,673)	100.00
VIIE	(9,810)	81.66	(938)	7.80	(240)	1.99	(1,024)	8.52	—	—	(12,012)	100.00
VIIF	(77,665)	66.36	(29,718)	25.39	(537)	.45	(4,945)	4.22	(4,155)	3.55	(117,020)	100.00
VIII	19,804	65.22	4,311	14.19	224	.73	4,421	14.56	1,601	5.27	30,361	100.00
IX	212,062	71.54	57,876	19.52	6,767	2.28	16,083	5.42	3,624	1.22	296,412	100.00
X	855	78.72	118	10.86	—	—	26	2.39	87	8.01	1,086	100.00
Misc.	1,246	2.44	201	.39	15	.02	91	.17	49,384	96.95	50,937	100.00
Total	10,390,616	69.10	2,824,162	18.78	214,445	1.42	1,415,801	9.41	190,962	1.27	15,035,986	100.00

Source: Compilation of data from MTMTS for JLRB, 1969.

TABLE A-15
CONUS-TO-RVN TOTAL DRY CARGO SEALIFT
MOVEMENTS BY PERCENT OF COMMODITY
AND SERVICE FOR CYS 66-68

Supply Class	Army		Navy		Marine Corps		Air Force		Other	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
I	1,331,140	12.80	479,596	17.01	2,949	1.37	796	.05	3,733	1.95
IA	(948,814)	(9.13)	(347,877)	(12.35)	(2,949)	(1.37)	(568)	(.04)	(3,598)	(1.88)
IB	(382,326)	(3.67)	(131,719)	(4.66)	—	—	(228)	(.01)	(135)	(.07)
II	1,294,707	12.46	374,071	13.24	20,836	9.71	293,850	20.75	32,177	16.84
III	145,990	1.40	42,802	1.51	1,533	.71	15,753	1.11	1,258	.65
IV	2,901,914	27.91	1,386,069	49.07	26,577	12.38	321,552	22.68	85,308	44.67
IVA	(1,175,586)	(11.31)	(543,936)	(19.26)	(9,743)	(4.54)	(123,584)	(8.72)	(2,513)	(1.31)
IVB	(1,033,381)	(9.94)	(453,918)	(16.07)	(8,733)	(4.07)	(137,022)	(9.67)	(76,755)	(40.19)
IVC	(44,696)	(.43)	(130,651)	(4.62)	(68)	(.03)	(14,805)	(1.04)	—	—
IVD	(648,251)	(6.23)	(257,564)	(9.12)	(8,033)	(3.74)	(46,141)	(3.25)	(6,040)	(3.16)
V	2,436,114	23.44	335,265	11.87	84,767	39.52	715,805	50.55	385	.20
VI	1,129,361	10.86	13,500	.47	7,085	3.30	2,526	.17	2,054	1.07
VII	917,423	8.80	130,353	4.59	63,692	29.67	44,898	3.14	11,351	5.94
VIIA	(61,846)	(.59)	(67)	—	(14,189)	(6.61)	(66)	—	(191)	(.10)
VIIB	(90,268)	(.86)	(1,336)	(.04)	(8,270)	(3.85)	(849)	(.05)	(50)	(.01)
VIIC	(587,097)	(5.65)	(57,472)	(2.03)	(37,309)	(17.39)	(34,184)	(2.41)	(6,838)	(3.58)
VIID	(90,737)	(.87)	(40,822)	(1.44)	(3,147)	(1.46)	(3,830)	(.27)	(137)	(.07)
VIIE	(9,810)	(.09)	(938)	(.03)	(240)	(.11)	(1,024)	(.07)	—	—
VIIF	(77,665)	(.74)	(29,718)	(1.05)	(537)	(.25)	(4,945)	(.34)	(4,155)	(2.17)
VIII	19,804	.19	4,311	.15	224	.10	4,421	.31	1,601	.83
IX	212,062	2.04	57,876	2.04	6,767	3.15	16,083	1.13	3,624	1.89
X	855	—	118	—	—	—	26	—	87	.04
Misc.	1,246	.01	201	—	15	—	91	—	49,384	25.86
Total	10,390,616	100.00	2,824,162	100.00	214,445	100.00	1,415,801	100.00	190,962	100.00

Source: Compilation of data from MTMTS for JLRB, 1969.

TABLE A-16
MILSTAMP AIR COMMODITY
CODES

Code	Description
A-----	Supplies and equipment for aircraft and aerial targets, including aircraft and maintenance parts, engines and maintenance parts, aircraft accessories, aircraft instruments and laboratory test equipment, aerial targets and gliders, aircraft/missile technical order compliance kits, aerial delivery equipment, tailored tarpaulins and miscellaneous aerial equipment
B-----	Construction materials: Includes paint and related materials; prefabricated building, wood and wood products, metal and composition materials and their products, commercial hardware and miscellaneous items, cement, asphalt, building maintenance materials
C-----	Chemical Corps items and all other chemicals not covered in other classifications
D-----	Animals
E-----	Engineer supplies (other than those listed in "B")
F-----	Fuels, lubricants, including gases, fuel and lubricating supplies and equipment, gas generating supplies and equipment other than noxious gases
G-----	Printed forms, publications, drawings
H-----	Signal Corps supplies and equipment, including radio equipment, and supplies, communications equipment and supplies, electrical equipment and supplies
J-----	Unaccompanied baggage authorized air movement
K-----	Clothing, parachutes, including clothing equipment except arms and chemical supplies, cordage, fabrics and leathers
L-----	Armed Forces Courier Service (ARFCOS) materiel: includes communication document, cryptologic equipment and State Department diplomatic materiel
M-----	Medical supplies
N-----	Ship's parts, Navy
P-----	Photographic supplies and equipment, including training films
Q-----	Plants, plant products, insects, mites, nematodes, mollusks, soil, meat (other than rations), animal products, vectors and cultures of animal and plant diseases
R-----	Rations and subsistence supplies
S-----	Office and school supplies and equipment, including office machines, furniture and stationery, school supplies and equipment, synthetic and special training devices other than training films
T-----	Household goods
U-----	Mail
V-----	Vehicles, machinery, shop and warehouse equipment and supplies, including special tools and equipment, ground servicing and special purpose vehicles, marine equipment and supplies, repair and maintenance parts for the above
W-----	Weapons, ordnance supplies and equipment, including ammunition
X-----	Intelligence materials including MAPS/charts, data and information vital to but not limited to, the following military functions: flight safety, escape and evasion, current offensive/defensive operations, foreign clearance requirements, targeting, NASA projects
Y-----	Personnel services
Z-----	Human remains

TABLE A-17
CONUS-TO-RVN TOTAL CARGO AIRLIFT MOVEMENTS
BY COMMODITY CODE FOR PERIOD
1 JULY 1967 TO 31 DECEMBER 1968

(Shown in percent and short tons)

Commodity Code	Total Tons	Percent
A	51,051	22.78
B	15,208	6.78
C	8,608	3.84
D	115	.05
E	2,291	1.02
F	2,580	1.15
G	288	.12
H	19,346	8.63
J	152	.06
K	10,065	4.49
L	2	.00
M	1,696	.75
N	1,874	.83
P	2,858	1.27
Q	41	.01
R	320	.14
S	1,163	.51
T	22	.00
U	208	.09
V	61,359	27.38
W	42,848	19.12
X	278	.12
Y	1,681	.73
Z	–	–
Total	224,054	100.00

Note: Channel traffic only

Source: Compilation by MAC for JLRB, 1969.

TABLE A-18
CONUS-TO-RVN TOTAL CARGO AIRLIFT
MOVEMENTS OF SEVEN MAJOR
COMMODITIES BY SERVICE FOR
PERIOD 1 JULY 1967 TO
31 DECEMBER 1968

Commodity	Army		Navy		USMC		USAF		Total	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
A Aircraft	27,470	53.80	3,982	7.80	762	1.49	18,837	36.89	51,051	100.00
B Construction	9,206	60.53	2,116	13.91	1,523	10.01	2,363	15.53	15,208	100.00
C Chemicals	5,013	58.23	2,267	26.33	246	2.85	1,082	12.56	8,608	100.00
H Signal	12,569	64.96	2,186	11.29	929	4.80	3,662	18.92	19,346	100.00
K Clothing	5,430	53.94	584	5.80	3,329	33.07	722	7.17	10,065	100.00
V Vehicles	49,190	80.16	3,445	5.61	3,009	4.90	5,715	9.31	61,359	100.00
W Weapons	33,628	78.48	4,450	10.38	3,306	7.71	1,464	3.41	42,848	100.00
Other	8,485	54.49	3,105	19.94	782	5.02	3,197	20.53	15,569	100.00
Total	150,991		22,135		13,886		37,042		224,054	

Note: Channel traffic only

Source: Compilation of data from MAC for JLRB, 1969.

TABLE A-19
CONUS-TO-RVN TOTAL CARGO AIRLIFT
MOVEMENTS BY SERVICE FOR PERIOD
1 JULY 1967 TO 31 DECEMBER 1968

(Shown in short tons)

Commodity	Army		Navy		USMC		USAF		Total	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
A Aircraft	27,470	18.19	3,982	17.98	762	5.48	18,837	50.85	51,051	22.78
B Construction	9,206	6.09	2,116	9.55	1,523	10.96	2,363	6.37	15,208	6.78
C Chemicals	5,013	3.32	2,267	10.24	246	1.77	1,082	2.92	8,608	3.84
H Signal	12,569	8.32	2,186	9.87	929	6.69	3,662	9.88	19,346	8.63
K Clothing	5,430	3.59	584	2.63	3,329	23.97	722	1.94	10,065	4.49
V Vehicles	49,190	32.57	3,445	15.56	3,009	21.66	5,715	15.42	61,359	27.38
W Weapons	33,628	22.27	4,450	20.10	3,306	23.80	1,464	3.95	42,848	19.12
Subtotal	142,506	94.35	19,030	85.93	13,104	94.33	33,848	91.33	208,485	93.02
Other*	8,485	5.65	3,105	14.07	782	5.67	3,197	8.67	15,569	6.98
Total	150,991	100.00	22,135	100.00	13,886	100.00	37,042	100.00	224,054	100.00

*Other - air commodity codes
D-G, J, L-U, X-Z

Source: Compilation of data from MAC for JLRB, 1969.

SECTION 6

CONUS-TO-RVN CARGO AND PASSENGER MOVEMENTS BY MILITARY AND COMMERCIAL AIRLIFT

TABLE A-20
CONUS-TO-RVN CARGO AND PASSENGER
MILITARY AND COMMERCIAL AIRLIFT MOVEMENTS
BY MILITARY DEPARTMENT
FOR FYS 65-68

(Shown in short tons and numbers of passengers by Service)

	Cargo- (Short Tons)						Passengers					
Airlift	1965	1966	1967	1968	Total	Percent	1965	1966	1967	1968	Total	Percent
Army												
Military	3,043	11,040	49,160	61,929	125,172	46.70	737	13,498	9,109	9,283	32,627	5.65
Commercial	5,041	15,220	56,781	65,833	142,875	53.30	13,078	80,503	93,624	357,224	544,429	94.35
Total	8,084	26,260	105,941	127,762	268,047	100.00	13,815	94,001	102,733	366,507	577,056	100.00
Navy												
Military	583	3,328	8,411	14,581	26,904	40.18	174	1,232	323	1,055	2,784	5.84
Commercial	1,116	3,024	17,094	18,826	40,060	59.82	1,753	6,429	10,848	25,834	44,864	94.16
Total	1,699	6,352	25,505	33,407	66,964	100.00	1,927	7,661	11,171	26,889	47,648	100.00
Air Force												
Military	3,510	9,851	14,714	17,134	45,209	53.48	218	3,699	3,150	851	7,918	5.56
Commercial	5,428	8,659	14,529	10,707	39,323	46.52	3,088	23,036	46,795	61,642	134,561	94.44
Total	8,938	18,510	29,243	27,841	84,532	100.00	3,306	26,735	49,945	62,493	142,479	100.00
Military	7,136	24,219	72,285	93,644	197,284	47.02	1,129	18,429	12,582	11,189	43,329	5.65
Commercial	11,585	26,903	88,404	95,366	222,258	52.98	17,919	109,968	151,267	444,700	723,854	94.35
Total	18,721	51,122	160,689	189,010	419,542	100.00	19,048	128,397	163,849	455,889	767,183	100.00

Note: Channel traffic only

Source: Compilation by MAC for JLRB, February 1970.

SECTION 7

CONUS-TO-RVN VERSUS WORLDWIDE CARGO AND PASSENGER MOVEMENTS

Table A-21
CONUS-TO-RVN VERSUS WORLDWIDE CARGO
MOVEMENTS BY SAAM AND CHANNEL
AIRLIFT (PERCENT) FOR CYS 65-68

(Shown in short tons and
percent of SAAM and channel airlift)

Calendar Year		CONUS to RVN	Percent	CONUS to Worldwide (less RVN)	Percent
1965	Channel	27,700	71.58	138,700	75.79
	SAAM	11,000	28.42	44,300	24.21
1966	Channel	97,200	82.72	137,000	81.94
	SAAM	20,300	17.28	30,200	18.06
1967	Channel	187,200	90.26	160,600	82.57
	SAAM	20,200	9.74	33,900	17.43
1968	Channel	186,400	87.59	173,400	84.83
	SAAM	26,400	12.41	31,000	15.17
1969	Channel	158,800	90.33	166,400	92.29
	SAAM	17,000	9.67	13,900	7.71
Total		752,200		929,400	

Source: SASM, Statistical Digests 1965, 1966, 1967, 1968, and 1969, Tables 301 and 303.

TABLE A-22
CONUS-TO-RVN VERSUS WORLDWIDE CARGO
MOVEMENTS BY SAAM AND CHANNEL
AIRLIFT (PERCENT OF RVN-WORLDWIDE)
FOR CYS 65-69

(Shown in short tons)

Calendar Year	Channel			SAAM		
	CONUS to Worldwide	CONUS to RVN	Percent of RVN to Worldwide	CONUS to Worldwide	CONUS to RVN	Percent of RVN to Worldwide
1965	166,400	27,700	16.65	55,300	11,000	19.89
1966	234,200	97,200	41.50	50,500	20,300	40.20
1967	347,800	187,200	53.82	54,100	20,200	37.34
1968	359,800	186,400	51.81	57,400	26,400	45.99
1969	325,200	158,800	48.83	30,900	17,000	55.01
Total	1,433,400	657,300		248,200	94,900	

Source: SASM, Statistical Digests 1965, 1966, 1967, 1968, and 1969, Tables 301 and 303.

SECTION 8

INTRA-RVN COMMON-USER TRANSPORTATION MOVEMENTS

TABLE A-23
INTRA-RVN COMMON-USER, AIR, WATER,
AND RAIL TRANSPORTATION MOVEMENTS
FOR CYS 65-69

(Shown in thousands of short tons)

Calendar Year	Air	Water	Rail	Highway
1965	219.5	768.4	29.8	1,041.0
1966	556.0	N/A	93 (E)*	N/A
1967	804.2	2,045.5	245.[illegible]	13,817.[illegible]
1968	930.6	4,401.0	291.4	15,466.5
1969	708.7	6,032.6	471.7	13,367.7
Total	3,219.0	13,247.5**	1,129.9(E)*	43,692.2**

*E=Estimate
**1966 totals not included.

Source: SASM Statistical Digests for 1965, 1966, 1967, 1968 and 1969. Table 700.

TABLE A-24
MONTHLY INTRA-RVN COMMON-USER AIR, WATER, AND RAIL TRANSPORTATION MOVEMENTS FOR CYS 65-69

(Shown in thousands of short tons)

1965	Air	Water	Rail
Jan.	9.2	35.5	1.4
Feb.	8.7	28.2	2.9
Mar.	11.0	38.0	4.0
Apr.	10.5	41.0	3.9
May	13.2	46.4	2.7
June	16.8	84.5	1.3
July	17.7	93.7	2.0
Aug.	24.2	88.0	1.2
Sep.	25.1	86.5	3.5
Oct.	25.7	81.0	2.5
Nov.	26.8	72.6	2.4
Dec.	30.6	73.0	2.0
Total	219.5	768.4	29.8

1966	Air	Water	Rail
Jan.	38.8	N/A	3(E)*
Feb.	34.0	N/A	3(E)*
Mar.	43.8	N/A	4(E)*
Apr.	44.7	N/A	4(E)*
May	44.8	N/A	4(E)*
June	48.8	76.1	5
July	49.0	90.3	5
Aug.	49.3	81.3	6
Sep.	47.9	82.0	4
Oct.	48.6	78.6	7
Nov.	54.6	94.4	8
Dec.	51.7	110.0	40
Total	556.0	N/A	93(E)*

1967	Air	Water	Rail
Jan.	58.2	108.9	50.0
Feb.	56.6	131.1	19.0
Mar.	67.1	134.0	23.0
Apr.	69.2	187.6	27.0
May	65.8	173.2	14.0
June	65.2	172.8	11.0
July	65.1	171.7	9.0
Aug.	66.0	172.9	20.0
Sep.	65.9	173.0	16.0
Oct.	76.2	171.6	20.0
Nov.	73.2	218.3	16.0
Dec.	75.7	225.5	20.0
Total	804.2	2,045.5	245.0

1968	Air	Water	Rail
Jan.	78.7	380.0	18.1
Feb.	75.0	226.6	.1
Mar.	92.5	346.4	7.5
Apr.	88.9	427.4	20.1
May	76.1	382.3	25.9
June	75.0	359.3	12.8
July	72.9	351.0	34.8
Aug.	72.5	383.8	41.1
Sep.	74.2	364.8	32.7
Oct.	74.8	348.5	40.3
Nov.	76.3	358.6	32.4
Dec.	73.7	472.3	25.6
Total	930.6	4,401.0	291.4

1969	Air	Water	Rail
Jan.	69.9	266.6	18.0
Feb.	63.1	253.7	15.6
Mar.	64.4	265.6	16.2
Apr.	61.5	559.2	30.3
May	61.6	699.9	47.1
June	51.6	677.8	51.3
July	50.5	696.1	41.0
Aug.	53.8	664.3	35.4
Sep.	56.1	612.6	32.7
Oct.	57.3	554.8	56.7
Nov.	56.8	471.2	50.9
Dec.	62.1	310.8	76.5
Total	708.7	6,032.6	471.7

*E=Estimate

Source: CINCPAC and SASM Statistical Digests.

TABLE A-25
MONTHLY INTRA-RVN COMMON-USER HIGHWAY
TRANSPORTATION MOVEMENTS
FOR CYS 65-69

(Shown in thousands of short tons)

1965	Total	1966	Total	1967	Port & Beach Clearance	Local Haul	Line Haul	Total
Jan.	65.0	Jan.	N/A	Jan.	584.0	136.0	116.0	836.0
Feb.	59.0	Feb.	N/A	Feb.	572.0	116.0	107.0	795.0
Mar.	79.0	Mar.	N/A	Mar.	654.0	349.0	161.0	1,164.0
Apr.	81.0	Apr.	N/A	Apr.	674.0	285.0	227.0	1,186.0
May	75.0	May	N/A	May	772.0	328.0	191.0	1,291.0
June	88.0	June	558	June	813.0	371.0	220.0	1,404.0
July	98.0	July	649	July	743.0	264.0	263.0	1,270.0
Aug.	101.0	Aug.	726	Aug.	785.0	346.0	232.0	1,363.0
Sep.	99.0	Sep.	728	Sep.	617.0	197.0	236.0	1,050.0
Oct.	95.0	Oct.	753	Oct.	640.0	202.0	247.0	1,089.0
Nov.	100.0	Nov.	749	Nov.	627.0	185.0	250.0	1,062.0
Dec.	101.0	Dec.	839	Dec.	688.0	364.0	255.0	1,307.0
Total	1,041.0	Total	N/A	Total	8,169.0	3,143.0	2,505.0	13,817.0

1968	Port & Beach Clearance	Local Haul	Line Haul	Total	1969	Port & Beach Clearance	Local Haul	Line Haul	Total
Jan.	606.2	322.1	225.7	1,154.0	Jan.	584.0	404.8	211.8	1,201.4
Feb.	505.3	322.9	182.9	1,011.1	Feb.	470.6	507.7	213.4	1,191.7
Mar.	646.3	379.8	208.5	1,234.6	Mar.	528.5	583.7	251.9	1,364.1
Apr.	739.7	325.1	233.6	1,298.4	Apr.	443.5	540.4	224.5	1,208.4
May	686.4	366.1	250.8	1,303.3	May	404.5	478.5	206.1	1,089.1
June	660.3	426.4	245.1	1,331.8	June	465.3	507.0	231.6	1,203.9
July	617.2	416.2	253.3	1,286.7	July	503.3	449.8	234.0	1,187.1
Aug.	596.8	548.2	206.9	1,351.9	Aug.	421.2	429.9	227.7	1,078.8
Sep.	584.5	372.6	186.0	1,143.1	Sep.	403.9	419.2	225.2	1,048.3
Oct.	683.8	412.2	298.7	1,394.7	Oct.	338.1	337.9	219.6	895.6
Nov.	765.6	469.6	207.0	1,442.2	Nov.	367.5	329.7	227.3	924.5
Dec.	692.6	593.9	228.2	1,514.7	Dec.	410.2	331.7	232.9	974.8
Total	7,784.7	4,955.1	2,726.7	15,466.5	Total	5,341.4	5,320.3	2,706.0	13,367.7

Source: CINCPAC and SASM Statistical Digests.

TABLE A-26
MONTHLY INTRA-RVN FIRST LOGISTICAL
COMMAND MILITARY AND COMMERCIAL HIGHWAY CARGO MOVEMENTS
FOR PERIOD 1 NOVEMBER 1967 TO 31 JULY 1969

(Shown in average tons per month)

Period	Military	Percent	Coml Contract	Percent
1 Nov. 67 - 31 Jan. 68	317,977	40	462,489	60
1 Feb. 68 - 30 Apr. 68	326,153	45	373,879	55
1 May 68 - 31 Jul. 68*	360,744	46	426,331	54
1 Aug. 68 - 31 Oct. 68	474,956	62	296,361	38
1 Nov. 68 - 31 Jan. 69	491,812	63	286,479	37
1 Feb. 69 - 31 Apr. 69	448,218	59	302,638	41
1 May 69 - 31 Jul. 69	427,902	59	290,468	41

*1 July 68, Vinnell trucking contract cancelled. Equipment now being operated by military personnel.

Source: 1st Logistical Command, RVN, "Operational Reports-Lessons Learned" ORLL, 1 Aug. 68 - 31 July 69.

TABLE A-27
MONTHLY INTRA-RVN CARGO MOVED
BY ARMY AND MARINE HELICOPTERS
VERSUS CSAS AIRCRAFT
FOR CYS 67-69

(Shown in short tons)

	1967		1968		1969		Monthly Total	
Month	CSAS	Helicopters	CSAS	Helicopters	CSAS	Helicopters	CSAS	Helicopters
Jan.	59,000	40,000	78,721	82,602	78,250	98,968	215,971	221,570
Feb.	55,000	41,000	75,012	77,362	70,727	95,356	200,739	213,718
Mar.	65,000	50,000	92,483	80,750	73,086	120,697	230,569	251,447
Apr.	65,400	55,000	88,948	94,387	69,382	110,353	223,730	259,740
May	64,700	66,000	85,374	98,181	69,209	111,822	219,283	276,003
June	64,800	60,500	83,967	108,176	58,620	114,407	207,387	283,083
July	64,700	65,000	82,937	110,809	57,026	103,479	204,663	279,288
Aug.	65,000	81,000	80,945	97,546	61,311	111,342	207,256	289,888
Sep.	64,700	81,500	81,703	91,421	61,686	110,564	208,089	283,485
Oct.	74,800	106,000	81,723	87,322	62,923	102,559	219,446	295,881
Nov.	64,900	68,500	83,182	89,929	62,023	98,116	210,105	256,545
Dec.	72,000	113,500	82,179	104,547	67,442	99,460	221,621	317,507
Total	780,000	828,000	997,174	1,123,032	791,685	1,277,123	2,568,859	3,228,155

Note: Helicopter tonnages are for Army and Marine Corps rotary wing aircraft. Army tonnages include air assault and tactical operations passenger and cargo movements. Marine tonnages do not include tactical operations tonnages. CSAS is Common Service Airlift System and includes C-7A dedicated movements.

Source: 1967 data taken from the 1967 Year-end Review of Vietnam (U), Study Group Organization of the JCS, 29 Jan. 1968. 1968 and 1969 data taken from HQ, MACV, Report of Intra-RVN Movement data for Jan. 1968 through Dec. 1969.

SECTION 9
OTHER MOVEMENT DATA

TABLE A-28
MONTHLY USAID AND COMMERCIAL CARGO
DISCHARGED AT RVN PORTS FOR CYS 66-68

(Shown in short tons by month)

Month, Year	Saigon	Da Nang	Nha Trang	Qui Nhon	Monthly Total
Jan. 1966	188,100	51,519	5,610	5,891	251,120
Feb.	184,800	53,137	14,520	4,157	256,614
Mar.	187,000	50,751	10,471	13,253	261,475
Apr.	191,400	31,130	3,850	27,280	253,660
May	177,100	32,010	19,580	11,110	239,800
June	198,000	37,620	20,240	10,890	266,750
July	214,170	45,045	23,859	11,286	294,360
Aug.	202,517	50,787	19,107	9,306	281,717
Sep.	214,006	43,857	11,583	10,890	280,336
Oct.	221,094	41,700	10,700	6,800	280,294
Nov.	265,700	22,000	2,800	7,900	298,400
Dec.	95,614	26,918	8,692	1,433	132,657
Total (1966)	2,339,501	486,474	151,012	120,196	3,097,183
Jan. 1967	266,655	20,646	3,475	2,928	293,704
Feb.	208,759	28,568	8,909	9,118	255,354
Mar.	283,397	29,529	21,572	19,068	353,466
Apr.	296,215	38,920	21,166	10,289	366,590
May	242,425	40,879	18,995	24,169	326,468
June	236,998	42,971	24,343	15,020	319,332
July	246,289	53,990	21,263	21,249	342,791
Aug.	211,523	52,920	16,796	22,716	303,955
Sep.	150,547	41,915	11,601	14,403	218,466
Oct.	159,419	26,189	12,868	15,671	214,147
Nov.	125,101	36,764	18,177	13,145	193,187
Dec.	230,281	31,615	10,951	4,360	277,207
Total (1967)	2,657,609	444,906	190,116	172,136	3,464,767
% Change 67 vs 66	+13.6	-8.5	+25.1	+42.5	+11.8
Jan. 1968	188,921	13,455	5,841	10,344	218,561
Feb.	81,920	24,143	17,072	11,131	134,266
Mar.	236,881	41,303	23,508	24,715	326,407
Apr.	171,232	22,505	16,419	3,520	213,676
May	99,877	34,505	24,295	11,785	170,462
June	117,518	13,915	15,612	30,760	177,805
July	92,005	29,574	28,133	10,485	160,197
Aug.	132,536	37,455	30,660	21,329	221,980
Sept.	116,822	26,525	16,891	17,071	177,309
Oct.	109,180	21,968	23,174	4,808	159,130
Nov.	155,826	26,870	7,847	0	190,543
Dec.	110,931	14,351	2,075	0	127,357
Total (1968)	1,613,649	306,569	211,527	145,948	2,277,693
% Change 68 vs 67	-40.8	-31.0	+11.6	-15.1	-34.3

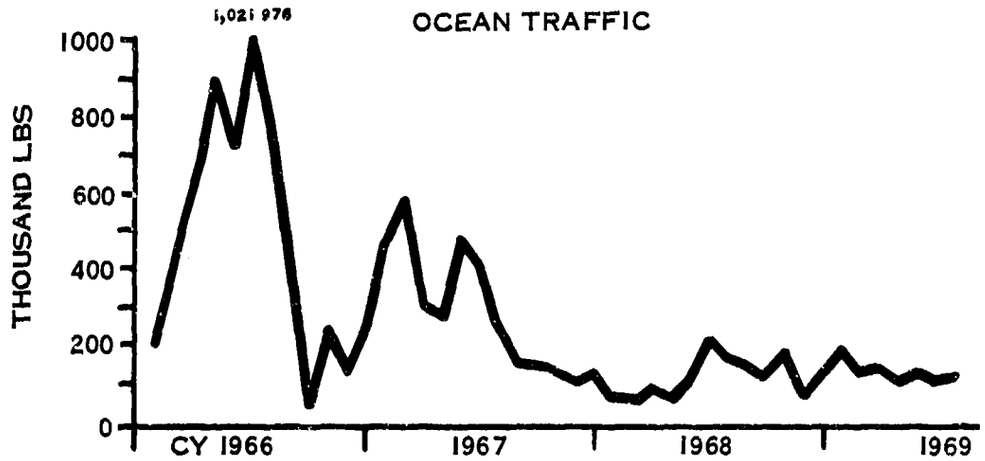
Source: USAID, Washington, D.C., 1969.

TABLE A-29
MONTHLY USAID, COMMERCIAL, AND MILITARY CARGO
DISCHARGED AT PORT OF SAIGON
FOR CYS 66-68

(Shown in short tons)

Month, Year	AID/Commercial	Military	Monthly Total
Jan. 1966	188,100	110,000	298,100
Feb.	184,800	118,000	302,800
Mar.	187,000	128,000	315,000
Apr.	191,400	136,000	327,000
May	177,100	129,000	306,000
June	198,000	132,000	330,000
July	214,170	159,000	373,170
Aug.	202,517	133,000	335,517
Sep.	214,006	128,000	342,006
Oct.	221,094	179,000	400,094
Nov.	265,700	149,000	414,700
Dec.	95,614	158,184	253,798
Total (1966)	2,339,501	1,659,184	3,998,685
Jan. 1967	266,655	188,126	454,781
Feb.	208,759	179,856	388,615
Mar.	283,397	175,189	458,586
Apr.	296,215	200,637	496,852
May	242,425	240,362	482,787
June	236,998	194,179	431,177
July	246,998	149,603	395,892
Aug.	211,523	155,351	366,874
Sep.	150,547	143,132	293,679
Oct.	159,419	152,714	312,133
Nov.	125,101	197,778	322,879
Dec.	230,281	192,357	422,638
Total (1967)	2,657,609	2,169,284	4,826,893
Jan. 1968	188,921	194,656	383,577
Feb.	81,920	148,129	230,049
Mar.	236,881	214,037	450,918
Apr.	171,232	216,947	388,179
May	99,877	183,972	283,849
June	117,518	188,714	306,232
July	92,005	197,063	289,068
Aug.	132,536	177,563	310,099
Sep.	116,822	168,883	285,705
Oct.	109,180	168,474	277,654
Nov.	155,826	192,121	347,947
Dec.	110,931	160,810	271,741
Total (1968)	1,613,649	2,211,369	3,825,018

Source: USAID, Washington, D.C.



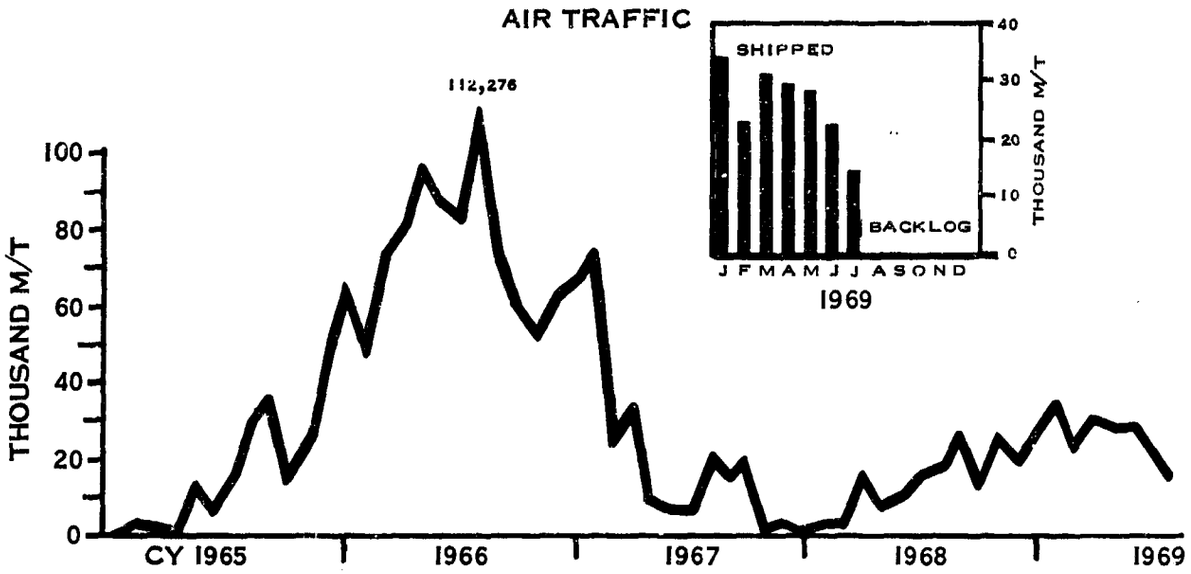


FIGURE A-1. RMK-BRJ CONTRACTOR TONNAGES TO RVN
CY 1965–1969 (OCEAN AND AIR)

TABLE A-30
TOTAL RMK-BRJ SHIPMENTS (SURFACE AND AIR)
TO RVN BY MONTH FOR CYS 65-68

(Shown in short tons)

Calendar Year	Air Commercial	Air MAC	Surface	Annual Total
1965	70	889	113,978	114,937
1966	254	2,608	378,246	381,108
1967	4	1,720	97,773	99,497
1968	.5	732	79,424	80,156.5
Total	328.5	5,949	669,421	675,698.5

Source: Department of the Navy, ROICC, San Bruno, California, Oct. 1969.

TABLE A-31
MONTHLY RMK-BRJ AIR SHIPMENTS TO RVN
FOR CYS 66-68

(Shown in pounds, commercial and MAC)

Calendar Year	Commercial	MAC	Monthly Total
1963	5,589		
1964	5,718		
1965	139,966	1,777,831	1,917,797
Total (1965)	139,966	1,777,831	1,917,797
1966 Jan.	128,000	15,535	197,535
Feb.	139,091	288,765	432,123
Mar.	129,701	493,912	624,205
Apr.	20,390	885,124	905,514
May	28,045	685,426	713,471
June	49,961	972,015	1,021,976
July	4,342	773,092	777,434
Aug.	4,239	388,198	392,437
Sep.	2,149	38,261	40,410
Oct.	1,523	249,385	250,908
Nov.	62	132,493	132,560
Dec.	984	236,068	237,052
Total (1966)	508,487	5,217,138	5,725,625
1967 Jan.	60	477,125	477,185
Feb.	1,152	579,575	580,727
Mar.	589	302,626	303,215
Apr.	1,102	278,059	279,161
May	372	478,507	478,879
June	4,237	407,118	411,355
July	1,032	265,589	266,621
Aug.	487	147,799	148,286
Sep.	45	150,417	150,462
Oct.	—	130,460	130,460
Nov.	—	101,268	101,268
Dec.	12	130,772	130,784
Total (1967)	9,088	3,440,315	3,458,403
1968 Jan.	171	62,144	62,315
Feb.	—	58,056	58,056
Mar.	482	92,092	92,574
Apr.	168	63,352	63,520
May	25	112,228	112,253
June	—	229,662	229,662
July	4	176,954	176,958
Aug.	—	157,825	157,825
Sep.	49	119,184	119,233
Oct.	57	182,135	182,192
Nov.	40	74,310	74,350
Dec.	135	137,218	137,353
Total (1968)	1,131	1,465,160	1,466,291
Total	658,672	11,909,444	12,568,116

Source: Department of the Navy, ROICC, San Bruno, California, Oct. 1969.

TABLE A-32
MONTHLY RMK-BRJ SURFACE SHIPMENTS TO RVN
FOR CYS 65-68

Surface M/T (MTMTS)

Month	1965	1966	1967	1968
Jan.	4,150	50,832	75,384	4,232
Feb.	3,884	73,049	27,518	7,278
Mar.	2,755	80,613	35,591	15,916
Apr.	14,281	99,342	11,057	9,633
May	7,995	88,280	8,123	10,652
June	16,857	83,749	8,019	12,065
July	30,011	112,276	21,753	17,007
Aug.	37,739	73,253	16,700	26,568
Sep.	17,175	60,858	21,440	15,960
Oct.	27,178	53,778	3,168	26,507
Nov.	48,341	64,002	4,537	21,126
Dec.	65,172	68,291	2,471	26,526
Total	275,538	908,323	235,761	193,470

Converted to Short Tons*

	1965	1966	1967	1968
Jan.	1,729	21,180	31,410	1,765
Feb.	1,610	30,437	11,464	1,799
Mar.	1,154	33,588	14,455	6,632
Apr.	5,117	41,391	4,524	4,014
May	3,331	36,783	3,385	4,438
June	7,074	34,895	3,341	5,027
July	12,504	46,782	9,064	7,086
Aug.	15,724	30,552	6,958	11,070
Sep.	7,156	25,191	3,933	6,692
Oct.	11,320	22,408	1,320	11,045
Nov.	20,104	26,668	1,890	8,803
Dec.	27,155	28,371	1,029	11,053
Total	113,978	378,246	97,773	79,424

*Conversion factor of 2.4 M/T equal 1 short ton, based on data by SASM, JCS.

Source: Department of the Navy, ROICC, San Bruno, California. October 1969.

TABLE A-33
ARMY-SPONSORED DRY CARGO SHIPPED
TO RVN BY AMC FOR FY 66-
FIRST QUARTER FY 69

(Shown in measurement tons)

Fiscal Year	Dry Cargo		Ammunition		Packaged POL		Total		% Push
	Push	Pull	Push	Pull	Push	Pull	Push	Pull	
1966	552,278	2,302,336	19,600	570,468	24,500	29,600	596,378	2,702,404	22%
1967	- 0 -	6,109,421	- 0 -	674,851	- 0 -	33,864	- 0 -	6,818,136	
1968	- 0 -	6,162,693	- 0 -	1,083,201	- 0 -	55,556	- 0 -	7,301,450	
1969 (1st Qtr)	- 0 -	1,561,292	- 0 -	269,286	- 0 -	22,018	- 0 -	1,852,596	
Total	552,278	16,135,742	19,600	2,397,806	24,500	141,038	596,378	18,674,586*	3%

*Includes 1,488,566 measurement tons of MAP cargo for the period.
Note: Push terminated on 7 July 1966.

Source: Letter, Army Materiel Command, U.S. Army. (Information taken from actual air and surface lift data for pull shipments and Army Ammunition Procurement and Supply Agency (AAPSA) for push and airlift of ammunition.)

TABLE A-34
ARMY PUSH SHIPMENTS TO RVN BY
PROJECT AND DATE

Force Package No.	Description of Shipment	CTAD*	S/Tons	Purpose
1A	2-15 day increments of all classes of supply to VN, plus 2 - 15 day increments to Okinawa, plus 4-15 day increments of repair parts only to VN via air	1-20 June 1965 thru 16 July 1965	6,600	Support for 11,100 LOG support troops
2	12-15 day increments of all classes of supply to VN, plus 2-15 day increments to Okinawa, plus an additional 30 days of supply to VN in Nov. 1965	1-19 June 1965 thru 10 Oct. 1965	27,000	Support for 2nd BDE, 1st Inf Div
3	12-15 day increments of all classes of supply to VN, plus 2-15 day increments to Okinawa, plus an additional 30 days of supply to VN in Dec. 1965	1-4 July 1965 thru 27 Oct. 1965	19,000	Support for 1st BDE, 101st Abn Div
4A	12-15 day increments of all classes of supply to VN, plus 2-15 day increments to Okinawa, plus an additional 30 days supply to VN in Jan. 1966	1-6 Aug. 1965 thru 29 Oct. 1965	45,000	Support for 1st Cav Div
4B	12-15 day increments of all classes of supply to VN, plus 2-15 day increments to Okinawa, plus an additional 30 days to VN in Jan. 1966	1-6 Aug. 1965 thru 29 Aug. 1965	26,000	Airmobile support
4C	12-15 day increments of all classes of supply to VN, plus 2-15 day increments to Okinawa, plus an additional 30 days of supply to VN in Jan. 1966	1-6 Aug. 1965 thru 29 Aug. 1965	26,000	Corps support
5	12-15 day increments of all classes of supply to VN, plus 2-15 day increments to Okinawa	1 Sep. 1965 thru 29 Nov. 1965	52,000	Inf Div
8	8-15 day increments of all classes of supply to VN, plus 1-15 day increments for Class I thru IV, and 60 days of Class V to VN, plus 3-15 day increments of Class I-IV to VN, plus 2-15 day increments of all classes of supply to Okinawa	1-15 Sep. 1965 thru 14 Jan. 1966	37,000	Combat Support Logistics & Adm
9	8-15 day increments of all classes of supply to VN, plus 1-15 day increment for Class I thru IV and 60 days of Class V to VN, plus 3-15 day increments of Class I-IV to VN, plus 2-15 day increments of all classes to Okinawa	1-15 Sep. 1965 thru 9 Feb. 1966	52,000	Combat Support Logistics & Adm
10	8-15 day increments of all classes of supply to VN, plus 1-60 day increment to VN, plus 2-15 day increments to Okinawa	1-26 Sep. 1965 thru 6 Dec. 1965	15,000	Combat Support Logistics & Adm
11	3-60 day increments of Class I thru IV to VN, plus 1-180 day increment of Class V to VN, plus 1-30 day increment of Class I thru IV to Okinawa	1-25 Nov. 1965 thru 9 Mar. 1966	11,000	Combat Support Logistics & Adm
12	3-60 day increments of Class I thru IV to VN, plus 1-180 day increments of Class V to VN, plus 1-30 day increment of Class I-IV to Okinawa	1-25 Nov. 1965 thru 9 Mar. 1966	5,000	Combat Support Logistics & Adm

TABLE A-34 (Continued)

Force Package No.	Description of Shipment	CTAD*	S/Tons	Purpose
15 16 17	60 day level Class II secondary Items and Repair Parts for Theater Stockage. One time shipment fill or kill.	15 Feb. 1966	11,130	Support for 25th Inf Div.

*CONUS Terminal Arrival Date

Source: HQ, Army Materiel Command, Memorandum for the Commanding General, Push Shipments to Vietnam, 6 December 1968.

TABLE A-34 (Continued)

Project Code	Description of Shipment	CTAD*	S/Tons	Purpose
ZMD ZME ZMF	180 day supply of Class II & IV repair parts to support Electronic, Automotive and Weapons items. Total 19,215 line items	2 Feb. 1966 thru 13 Apr. 1966	1,479	Depot Support
SCS YVG YVH YVI ZCP ZCQ ZCR ZKP ZKQ ZKR ZKS ZKU YWR YWS	Special Individual Shipments to satisfy shortages of repair parts to support MHE, construction equipment and UH-ID, UH-1B, OH-13 and CH-47 aircraft.	20 Aug. 1965 thru 28 Jan. 1966	*19,376 *Data obtained from Sharpe AD	
YUH YTR YVC	90 days of supply of Class II and IV repair parts for support of HAWK Missile Battalions. Total of 45,000 line items.	3 Sep. 1965 thru 24 Nov. 1965	132	
ZUA ZUB ZUC WAH VZW	Construction, Barrier and Fortification materiel shipped to Qui Nhon and Saigon. Total of 54,915 line items.	15 Feb. 1966	24,400	For support of 25th Inf Div, 69th Armor Bn, HQ II Field Forces
ZVA ZVB ZVC ZVD YZJ	180 day support for bulldozers and MHE airlifted to CamRanh Bay, NHA Trang, Qui Nhon and Saigon, plus 60 days stockage of Class II & IV supplies to Cam Ranh Bay.	21 Mar. 1966 thru 20 Apr. 1966	2,852	Depot Support
ZVN	60 days of supply of high mortality repair parts. One time shipment fill or kill. Total 8,253 line items.	7 July 1966	2,360	Support of 4th Inf Div.
ZMG ZMH ZMI ZMJ ZMK HJF	180 days of supply of Class II and IV repair parts for floating equipment, construction equipment, MHE, generators and QM items, plus 180 days of supply for non-standard items to 1st LOG Command for support of 1st Cav Div.	2 Mar. 1966 thru 15 May 1966	14,900	Depot Support

*CONUS Terminal Arrival Date

NOTE: The above summary of Push Shipments does not include automatic provisioning for new end items under AR 700-70.

SECTION 10

RVN PORT ACTIVITIES

TABLE A-35
TOTAL CARGO HANDLED AT RVN PORTS

(Shown in thousands of short tons)

Port	1966	1967		1968		1969		Port Total
Saigon	1,932.2	2,526.8	21.5%	2,726.7	18.2%	2,074.8	16.7%	9,260.5
Danang	1,466.2	2,379.8	20.2%	4,000.1	26.6%	3,515.6	28.3%	11,361.7
Cam Ranh Bay	1,349.0	2,084.1	17.7%	2,402.6	16.0%	1,898.6	15.3%	7,734.3
Qui Nhon	854.3	1,881.8	16.0%	1,767.5	11.8%	1,205.1	9.7%	5,708.7
Chu Lai	365.2	579.1	4.9%	544.1	3.6%	551.2	4.4%	2,039.6
Vung Tau	243.5	563.4	4.8%	956.4	6.4%	761.8	6.1%	2,525.1
Nha Be/Cat Lai	391.6	535.2	4.5%	577.5	3.8%	656.1	5.3%	2,160.4
Nha Trang	243.1	317.9	2.7%	306.4	2.0%	289.8	2.3%	1,157.4
Dong Ha	-	265.0	2.3%	524.9	3.5%	424.5	3.4%	1,214.4
Vung Ro	45.8	211.5	1.8%	172.7	1.2%	156.4	1.3%	586.4
Hue	44.7	178.5	1.5%	408.8	2.7%	371.3	3.0%	1,003.3
Phan Rang	121.5	136.5	1.2%	120.8	0.8%	129.2	1.0%	508.0
Can Tho	87.5	103.7	0.9%	237.0	1.6%	265.4	2.2%	693.6
Dong Tam	-	4.3	-	126.3	0.8%	79.0	0.6%	209.6
Vinh Long	-	-	-	-	-	46.3	0.4%	46.3
Thon My Thuy	-	-	-	144.0	1.0%	-	-	144.0
Totals	7,144.6	11,767.6	100.0%	15,016.0	100.0%	12,425.1	100.0%	46,353.3

Source: SASM Statistical Digests, 700 Table series.

TABLE A-36
MACV RVN PORT THROUGHPUT SURVEY
(FEBRUARY 1969)

Port	General Cargo (STON/Day)				Maximum Throughput Capability (STON/Day)				
	Reception Capability	Discharge Capability	Clearance Capability	Thru-Put Capability	Ammo	POL	RO/RO	Container	Reefer
Cam Ranh Bay*	7,120	7,120	6,546	6,546	2,400	38,000 gal.	mixed	-	-
Can Tho**	1,300	1,300	500	500	500	none	none	-	10
Cat Lai**†	2,160	2,000	2,550	2,000	2,000	none	none	none	none
NSA Da Nang**†	18,000	15,500	12,000	12,000	2,000	192,000 gal.	1 ship	476/15 days	532,000 cu. ft space
Dong Tam†‡	1,400	1,000	550	550	550	12,000 gal.	none	-	-
Newport**	5,800	4,200	4,200	4,200	none	none	none	-	none
Nha Trang** †‡	13,500	2,700	900	900	900	38,000 gal.	none	none	300
Phan Rang** ‡	1,300	1,300	450	450	450	30,000 gal.	none	none	none
Qui Nhon* †‡	6,400	6,400	6,000	6,000	3,094	450-550 BPH	stern only	-	1,000
Saigon (MM-K12)** †	3,600	3,600	3,600	3,600	none	none	1 ship	-	-
Vinh Long** ‡	800	600	500	500	500	none	none	none	none
Vung Ro** ‡	3,040	3,040	720	720	720	43,000 gal.	none	-	none by water
Vung Tau** ‡	3,640	3,640	3,300	3,300	650	-	-	-	200

*Rail facilities available

**No rail available

† Lighter operation

‡ over the beach opn.

Source: MACV Port Throughput Survey Report, 1 Feb. 1969.

APPENDIX B
LIST OF ACRONYMS AND ABBREVIATIONS

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	air base
AB and T	Alaska Barge and Transport, Inc.
AF	Air Force
AFB	Air Force Base
AFCMD	Air Force Cargo Management Division
AFLC	Air Force Logistics Command
AFM	U.S. Air Force Manual
AFR	U.S. Air Force Regulation
AMC	Army Materiel Command
APOD	Aerial Port of Debarkation
APOE	Aerial Port of Embarkation
AR	U.S. Army Regulation
ASD	Assistant Secretary of Defense
ASD (I&L)	Assistant Secretary of Defense (Installations and Logistics)
ASD (SA)	Assistant Secretary of Defense (Systems Analysis)
ATCO	Air Traffic Coordinating Office
CHB	Cargo Handling Battalion
CINC	commander in chief; commander of a unified or specified command
CINCLANT	Commander in Chief, Atlantic
CINCPAC	Commander in Chief, Pacific
CINCPACFLT	Commander in Chief, U.S. Pacific Fleet
CINCPACINST	Commander in Chief, Pacific, Instruction
CINCSTRIKE	Commander in Chief, U.S. Strike Command
CNO	Chief of Naval Operations
COMSTS	Commander, Military Sea Transportation Service
COMSTSFE	Commander, Military Sea Transportation Service, Far East
COMUSMACV	Commander, U.S. Military Assistance Command, Vietnam
CONEX	Container Express
CONUS	continental United States
CRAF	Civil Reserve Air Fleet
CSAS	Common Service Airlift System
CTZ	Corps Tactical Zone
DA	Department of the Army
DCSLOG	Deputy Chief of Staff for Logistics
DEPREP	Deployment Reporting System
DOD	Department of Defense
DOT	Department of Transportation
DSA	Defense Supply Agency
DSAR	Defense Supply Agency Regulation
DWT	Dead Weight Tons
FDL	Fast Deployment Logistic Ship
FFD	Forward Floating Depot
FYDP	Five-Year Defense Program
GAA	General Agency Agreement
GENNOS	General Cargo - Not Otherwise Specified
GOER	Family of Mobile Rough Terrain Vehicles
GSA	General Services Administration
GVN	Government of Vietnam
ICAF	Industrial College of the Armed Forces

JCS	Joint Chiefs of Staff
JLRB	Joint Logistics Review Board
JTB	Joint Transportation Board
Kts	knots
LASH	Lighter Aboard Ship
LCO-P	Logistics Control Office, Pacific
LOC	Line of Communication
LOTS	Logistics Over The Shore
MAC	Military Airlift Command
MACA	Military Airlift Clearance Authority
MACV	Military Assistance Command, Vietnam
MARAD	Maritime Administration
MATS	Military Air Transport Service
MCO	Marine Corps Order
MDRAF	Mekong Delta Riverine Assault Forces
METS	Mechanized Export Traffic System
MHE	Materials Handling Equipment
MPS	Multi Purpose Ship
MSSR	Mobility System Support Resources
MSTS	Military Sea Transportation Service
MSTSFE	Military Sea Transportation Service, Far East
MSTSLANT	Military Sea Transportation Service, Atlantic
MSTSPAC	Military Sea Transportation Service, Pacific
M/T	Measurement Ton
MTMTS	Military Traffic Management and Terminal Service
NAVSUP PUB	Naval Supply Systems Command Publication
NDRF	National Defense Reserve Fleet
NSA	Naval Support Activity
O and M	Operations and Maintenance
OASD (I and L)	Office of the Assistant Secretary of Defense (Installations and Logistics)
OASD (SA)	Office of the Assistant Secretary of Defense (Systems Analysis)
OJCS	Organization of the Joint Chiefs of Staff
OPNAV INST	Chief of Naval Operations Instruction
ORLL	Operational Report - Lessons Learned
OSD	Office of the Secretary of Defense
PACAF	Pacific Air Force
PACFLT	U.S. Pacific Fleet
PACOM	Pacific Command
PAMPA	Pacific Command Movements Priority Agency
PHIBPAC	Amphibious Force, U.S. Pacific Fleet
POD	Port of Discharge
POE	Port of Embarkation
POL	petroleum, oils, and lubricants
ROK	Republic of Korea
RO/RO	roll-on/roll-off
RVN	Republic of Vietnam
SAAM	Special Assignment Airlift Mission
SASM	Special Assistant for Strategic Mobility
MILSTRIP	Military Standard Requisitioning and Issue Procedures
MILSTAMP	Military Standard Transportation and Movement Procedures
MOTBA	Military Ocean Terminal Bay Area
MOTBY	Military Ocean Terminal Bayonne
SECDEF	Secretary of Defense
STOL	Short Take-off and Landing
STONS	short tons
STRICOM	U.S. Strike Command
TAC	Tactical Air Command
TALO	Tactical Airlift Liaison Officer

TCMD	Transportation Control Movement Document, DD Form 1384
TCN	Transportation Control Number
TMA	Traffic Management Agency
TOA	Transportation Operating Agency
UCP	Unified Command Plan
USA	U.S. Army
USAF	U.S. Air Force
USAID	U.S. Agency for International Development
USARPAC	U.S. Army, Pacific
USARV	U.S. Army, Vietnam
U.S.C./USC	U.S. Code
USMC	U.S. Marine Corps
USNS	U.S. Naval Ship
USSTRICOM	U.S. Strike Command
VNRS	Vietnamese National Railway Service
WAMTMTS	Western Area, Military Traffic Management and Terminal Service
WASP	War Air Service Program
WestPac/WESTPAC	Western Pacific
WPOE	Water Port of Embarkation
WSEG	Weapons System Evaluation Group
WTCA	Water Terminal Clearance Authority
WTO	Westpac Transportation Office

APPENDIX C
BIBLIOGRAPHY

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BIBLIOGRAPHY

BOOKS

Sharp, U. S. G., Admiral, U. S. N., and Westmoreland, W. C., General, U. S. A., Report On The War in Vietnam, Washington, D. C.: U. S. Government Printing Office, 1969.

UNPUBLISHED ARTICLES AND THESES

Chambers, Walter B., Jr., Determination of the Basic Mobilization Requirements for Ocean Shipping, Washington, D. C.: Industrial College of the Armed Forces, November 1958.

Ingle, Jack C., Major, USAF and Burden, Dan B., Captain, USAF, Department of Defense Transportation: Evolution, Status, and Problems, Wright-Patterson Air Force Base, Ohio: Air Force Institute of Technology, August 1968.

Jones, Gordon D., Lieutenant Colonel, USA, Use of Shallow Draft Water Craft in Logistical Support of Counterinsurgency Operations, Fort Leavenworth: United States Army Command and General Staff College, 1969.

Kenyon, Eugene C., Captain, USN, Desirability of a Single Integrated Military Transportation System, Washington, D. C.: Industrial College of the Armed Forces, 1969.

Locke, Ralph F., Captain, USN, Transportation Management, Washington, D. C.: Industrial College of the Armed Forces, June 1967.

Sterling, John E., Lieutenant Colonel, USA, The Growing Importance of Strategic Airlift, Carlisle Barracks, Pennsylvania: United States Army War College, April 1967.

LETTERS AND MEMORANDUMS OTHER THAN DOD

Anthony, Robert N., Personal Letter to the Chairman, JLRB, 15 April 1969.

Bannerman, Graeme C., Personal Letter to the Chairman, JLRB, 25 March 1969.

Beach, Dwight E., General, USA (Ret.), Personal Letter to the Chairman, JLRB, 18 March 1969.

Bellican, Charles P., Personal Letter to the Chairman, JLRB, with enclosures, 24 September 1969.

Bonny, J. B., Personal Letter to the Chairman, JLRB, 19 March 1969.

Bowles, Alvin H., Colonel, USA, Personal Letter to the Chairman, JLRB, 27 June 1969.

Bradley, Mark E., General, USAF (Ret.), Personal Letter to the Chairman, JLRB, 28 April 1969.

Brooks, Robert A., Personal Letter to the Chairman, JLRB, 11 July 1969.

Caputo, V. F., Personal Letter to the Chairman, JLRB, with enclosures, 13 March 1969.

Chernowitz, George, Personal Letter to the Chairman, JLRB, 25 March 1969.

Di Bona, Charles F., Personal Letter to the Chairman, JLRB, 24 March 1969.

Donaho, Glynn R., Vice Admiral, USN (Ret.), Personal Letter to the Chairman, JLRB, 15 March 1969.

Finan, William F., Personal Letter to the Chairman, JLRB, with enclosures, 1 April 1969.

Fischer, Henry, Lieutenant General, USA (Ret.), Personal Letter to the Chairman, JLRB, 26 March 1969.

Freeman, Paul L., General, USA. (Ret.), Personal Letter to the Chairman, JLRB, with enclosures, 19 March 1969.

Fuson, Jack C., Colonel, USA, Personal Letter to the Chief, Movements Division Directorate of Army Transportation, Office of the Deputy Chief of Staff for Logistics, Department of the Army, 8 October 1966.

Fuson, Jack C., Colonel, USA, Saigon Port Operations, 15 June 1967 (FOUO).

Goldberg, H., Rear Admiral, USN, Chief Navy Bureau of Supplies and Accounts, Personal Letter to R. C. Moot, Deputy Assistant Secretary of Defense (Logistics Services), 9 November 1965.

Goodell, R. H. Colonel, USA, End of Tour Report, CO, 507th Transportation Group (MOVCON), 12 July 1967 through 2 July 1968 (U), 2 July 1968 (CONFIDENTIAL).

Goodpaster, A. J. General, USA, Personal Letter to the Chairman, JLRB, with enclosures, 19 March 1969 (CONFIDENTIAL).

Hedlund, Earl C., Lieutenant General, USAF, Personal Letter to the Chairman, JLRB, with enclosures, 11 March 1969.

Heiser, Joseph M., Jr., Major General, USA, Personal Letter to the Chairman, JLRB, with enclosures, 20 March 1969.

Lincoln, L. J., Lieutenant General, USA (Ret.), Personal Letter to the Chairman, JLRB, 17 March 1969.

Meyer, Richard D., Lieutenant General, USA, Personal Letter to Brigadier General John D. Crowley, J-4, United States Military Assistance Command, Vietnam, 1 March 1965.

Meyer, Richard D., Lieutenant General, USA (Ret.), Personal Letter to the Chairman, JLRB, 29 March 1969.

Ramme, Ernest L., Brigadier General, USAF, Personal Letter to the Chairman, JLRB, 22 April 1969.

Zaretzky, H. L., Personal Letter to the Chairman, JLRB, 3 April 1969.

Zengerle, Joseph C., Jr., Personal Letter to the Chairman, JLRB, 21 March 1969.

DEPARTMENT OF DEFENSE PUBLICATIONS

Department of Defense, Annual Report for Fiscal Year 1965, Washington, D.C.: U.S. Government Printing Office, 1967.

Department of Defense, Annual Report for Fiscal Year 1966, Washington, D.C.: U.S. Government Printing Office, 1967.

Department of Defense, DOD/AID Procedures for Military Transportation of AID Cargoes to Vietnam, 29 August 1966.

Department of Defense, OASD (I&L), OSD Contract Survey Team, Report of Survey of Contract Services in the Pacific Ocean Area, with enclosures, December 1968.

Department of Defense Directive 3005.7, Emergency Requirements, Allocations, Priorities, and Permits for DOD Use of Domestic Civil Transportation, 7 May 1968.

Department of Defense Instruction 4000.23, Military Supply and Transportation Evaluation Procedures (MILSTEP), 12 June 1967.

Department of Defense Directive 4100.31, Reports on Single Manager Operations, 2 September 1960.

Department of Defense Directive 4140.17, Military Standard Requisitioning and Issue Procedures (MILSTRIP), 2 April 1968.

Department of Defense Instruction 4410.6, Uniform Materiel Movement and Issue Priority System (UMMIPS), 24 August 1966.

Department of Defense Instruction 4500.2, Land Transportation in Overseas Areas, 17 August 1954.

Department of Defense Directive 4500.9, Transportation and Traffic Management, 27 September 1968.

Department of Defense Directive 4500.32, Military Standard Transportation and Movement Procedures (MILSTAMP), 7 July 1966.

Department of Defense Directive 5100.1, Functions of the Department of Defense and Its Major Components, 17 June 1969.

Department of Defense Directive 5126.22, Assistant Secretary of Defense (Installations and Logistics), 30 January 1961.

Department of Defense Directive 5141.1, Assistant Secretary of Defense (Systems Analysis), 17 September 1965.

Department of Defense Directive 5158.1, Organization of the Joint Chiefs of Staff and Relationships with the Office of the Secretary of Defense, 31 December 1958.

Department of Defense Directive 5160.2, Single Manager Assignment for Airlift Service, 24 March 1967.

Department of Defense Directive 5160.10, Single Manager Assignment for Ocean Transportation, 24 March 1967.

Department of Defense Directive 5160.53, Single Manager Assignment for Military Traffic, Land Transportation, and Common-User Ocean Terminals, 24 March 1967.

Department of Defense Directive 5160.60, Highways For National Defense, 19 February 1968.

Department of Defense Directive 7410.4, Regulations Governing Industrial Fund Operations, 20 May 1968.

Department of Defense Instruction 5030.3, Memorandum of Agreement Between the Department of Defense and the Department of Commerce Dealing With the Utilization, Transfer, and Allocation of Merchant Ships - 1 July 1954, 20 October 1954.

Department of Defense Joint Regulation AR 55-355/ NAVSUP Pub 444 (Rev)/AFM 75-2/MCO P4600.14A/DSAR 4500.3, Military Traffic Management Regulation, March 1969.

Department of Defense Joint Regulation AFR 76-5/AR 55-6/OPNAVINST 4630.23/MCO P4630.11, Policies and Procedures for Obtaining Passenger Reservations for DOD Air Travel (Single Passenger) Reservation System for Air Movement, 1 May 1969.

Department of Defense Joint Regulation AR 59-8/OPNAVINST 4630.18B/AFR 76-38/MCO 4630.6A, Military Airlift Command - Requirements, Submissions, Space Assignments, and Allocations and Priorities, 30 January 1968.

Department of Defense Operating Manual 4140.17, Military Standard Requisitioning and Issue Procedures (MILSTRIP), 1 July 1962.

Department of Defense Regulation 4500.32R, Military Standard Transportation and Movement Procedures (MILSTAMP), 1 October 1963.

Department of Defense Regulation 4500.32R, Military Standard Transportation and Movement Procedures (MILSTAMP), 1 August 1966.

Joint Chiefs of Staff, SM-1400-63, Unified Command Plan (UCP) (U), 20 November 1963 (CONFIDENTIAL).

Joint Chiefs of Staff, 1967 Year-End Review of Vietnam (U), 29 January 1968 (TOP SECRET Sensitive NOFORN).

Joint Chiefs of Staff, 1968 Year-End Review of Vietnam (U), two volumes, 15 January 1969 (TOP SECRET NOFORN).

Joint Chiefs of Staff, Briefing for the Secretary of Defense and the Joint Chiefs by Lt. Col. Burger, USA, Office of the Chief of Staff, U.S. Army, and Capt. Bush, USNR, Logistics Directorate, Joint Staff, Movements Capabilities Associated with Contingency Plans for Vietnam, (U), 13 July 1964.

Joint Chiefs of Staff, JCS Directive SM-262-65, Procedures for the Submission of Transportation Requirements and the Determination of Space Assignments and Allocations, 20 March 1965.

Joint Chiefs of Staff, JCS Publication 2, Unified Action Armed Forces (UNAAF), November 1959.

Joint Chiefs of Staff, JCS Publication 6, Joint Operations Reporting System (JOPREP), Vol VI, Deployment Reporting System (DEPREP), May 1968 (FOUO).

Joint Chiefs of Staff, JCS Publication 15, Mobility System Planning Compendium Glossary of Terms (U), 1 October 1968 (CONFIDENTIAL).

Joint Chiefs of Staff, Joint Strategic Capabilities Plan, FY 70, (U), Vol. 1 and Vol. IIA (Undated), (TOP SECRET).

Joint Chiefs of Staff, SM-680-68, Mobility System Planning Policies and Procedures (U), 2 November 1968 (CONFIDENTIAL).

Joint Chiefs of Staff, Report of Joint Logistic Team's Visit to Southeast Asia (U), 5 November 1965 (SECRET).

Joint Chiefs of Staff, SASM Fact Sheet, Plan for Takeover of Saigon Port (U), 29 December 1966 (SECRET).

Joint Chiefs of Staff, SASM Fact Sheet, Saigon Port (U), 15 March 1967 (SECRET).

Joint Chiefs of Staff, SASM Fact Sheet, Saigon Port Status (U), 15 August 1967 (CONFIDENTIAL).

Joint Chiefs of Staff, Special Assistant for Strategic Mobility, End-of-Tour Report, March 1966-May 1968 (U), May 1968 (SECRET).

Joint Chiefs of Staff, SASM Statistical Digest (Statistical Reference Book), FOUO, Monthly Publication, Digests as follows:

1965-1966 1 January 1968

1967 1 January 1969

1968-1969 1 May 1969 (1968 to May 1969)

Joint Chiefs of Staff, JTB Agenda Item 8, Port Congestion in Vietnam (U), 7 May 1966 (CONFIDENTIAL).

Joint Chiefs of Staff, JTB Secretariat, File of Minutes of Meetings of the Joint Transportation Board.

Department of the Army, Report by the Department of the Army Board of Inquiry on the Army Logistics Systems (The Brown Board), Vol. II, March 1967.

Department of the Army, United States Army Combat Development Command, U.S. Army Trans-Hydro Craft 75-85 (Undated Briefing).

Department of the Army, United States Army Logistic Control Office - Pacific, Information Handbook, 18 August 1969.

Department of the Army, United States Army Logistic Control Office - Pacific, Briefing Paper, Logistics Intelligence Program, 3 February 1969.

Department of the Army, United States Army Logistics Doctrine Systems, and Readiness Agency, Project Plan, Operational Concepts, Doctrine and Requirements for Use of C-5A Heavy Lift Aircraft in the Combat Service Support Role, Project 69-020, Undated.

Department of the Army, United States Army Materiel Command Board, Lessons Learned in Logistics Support of Southeast Asia, 30 June 1966, Project AMCB 4-66, Aberdeen Proving Ground, Maryland (FOUO).

Department of the Army, United States Army Materiel Command, Historical Summary, FY 1966, 24 March 1967 (SECRET).

Department of the Army, Office of the Chief of Military History, Compendium on Army Port Operations in the Republic of Vietnam, Undated.

Department of the Army, Office of the Chief of Military History, The Sinews of War: Army Logistics 1775-1953, Washington, D.C.: U.S. Government Printing Office, 1966.

Department of the Army, Office of the Deputy Chief of Staff for Logistics, Annual Historical Summary, 1 Jul 64 - 30 June 65 (Undated), (SECRET).

Department of the Army, Office of the Deputy Chief of Staff for Logistics, Annual Historical Summary, 1 Jul 65-30 Jun 66 (Undated), (SECRET).

Department of the Army, Office of the Deputy Chief of Staff for Logistics, Annual Historical Summary, 1 Jul 66-30 Jun 67 (Undated), (SECRET).

Department of the Army, Office of the Deputy Chief of Staff for Logistics, Annual Historical Summary, 1 Jul 67-30 Jun 68 (Undated), (SECRET).

Department of the Army, Office of the Deputy Chief of Staff for Logistics, Critique of SEA Logistics Support, September 1968 (SECRET).

Department of the Army, United States Army Materiel Command, Narrative Summary of Events and Experiences Incident to Automatic Supply to Support the Buildup of U. S. Forces in SEA, September 1968.

Department of the Army, United States Army Materiel Command, Office of the Product Manager, Amphibians and Watercraft, Floating, Equipment to Meet Contingency and Peacetime Plans, June 1969.

Department of the Army, United States Army Materiel Command, The Early Years, Washington, D. C., U. S. Government Printing Office, December 1968.

Department of the Army, United States Army Transportation School, U. S. Army Transportation Corps in the Republic of Vietnam, Fort Eustis, Virginia, January 1969.

Department of the Army, DA PAM No. 550-40, Area Handbook for Vietnam, Washington, D. C.: U. S. Government Printing Office, 1962.

Department of the Army, FM 55-30, Motor Transportation Operations, October 1963.

Department of the Army, Institute of Combined Arms and Support, U. S. Army Combat Development Command, Operational Concepts for C-5A Aircraft, Fort Leavenworth, Kansas, June 1967, plus Study Directive (CONFIDENTIAL).

Department of the Army, Joint DA-USARPAC Transportation Management Team, Evaluation of U. S. Army Transportation Management in South Vietnam (U), 23 February 1968 (SECRET).

Department of the Army, Military Traffic Management and Terminal Service, Four Years of Progress, 15 Feb 1965 - 15 Feb 1969, 27 January 1969.

Department of the Army, Military Traffic Management and Terminal Service, Headquarters, Eastern Area, Military Traffic Management and Terminal Service, Mechanized Export Traffic System (METS), June 1969.

Department of the Army, Military Traffic Management and Terminal Service, MTMTS Pamphlet 55-2, Transportation and Travel -- Guidelines for Stuffing Containers, Washington, D. C., 1 August 1968.

Department of the Army, Military Traffic Management and Terminal Service, MTMTS Pamphlet 870-1, Chronology of the MTMTS, 24 February 1969.

Department of the Army, Office of the Deputy Chief of Staff for Logistics, RVN Port Congestion (Fact Sheet), 3 March 1966.

Department of the Army, Military Traffic Management and Terminal Service, Western Area (WAMTMTS), Newsletter Numbers 1, 5, 9 and 10, 1965 and 1966.

Department of the Army Regulation 59-10, DOD Use of Commercial Air Transportation Under the WASP, 12 December 1967.

Department of the Navy, Military Sea Transportation Service, MSTS Compilation for JLRB, Cargo Manifested for Discharge in South Vietnam/Thailand By Origin Area Sponsor, and Commodity Category, Breakbulk and Containerized, Calendar Years 1965-1968, By Quarter, March 1969.

Department of the Army, Office of the Deputy Chief of Staff for Logistics, Study on Logistics Control Offices, 1 September 1969.

Department of the Army, Special Assistant to the Chief of Staff, Trip Report Southeast Asia Supply and Maintenance (U), 17 December 1965 (CONFIDENTIAL).

Department of the Navy, Military Sea Transportation Service, Contract with the Alaska Barge and Transport, Inc. for Shallow Draft Shipping and Allied Services in the Republic of Vietnam (RVN), 8 December 1965.

Department of the Navy, Military Sea Transportation Service, MSTS P504, Merchant Ship Register, October 1969.

Department of the Navy, Military Sea Transportation Service, MSTS Fleet Study, Strategic Sealift Ships, Part I: Inter-Theater Dry Cargo, 8 December 1969.

Department of the Navy, Office of the Chief of Naval Operations, History Division, Operational Archives Branch, CNO Briefing File -- Southeast Asia Deployments 1965 (Undated), (SECRET).

Department of the Navy, Office of the Chief of Naval Operations, History Division, Operational Archives Branch (File) Marine Replacement of Forces - EASTPAC to WESTPAC, May 1965 to September 1965 (SECRET).

Department of the Navy, Office of the Chief of Naval Operations, Integrated Sealift Study, Alternative Sealift Programs for the Mobility Forces MPM (U), 1 October 1969 (SECRET).

Department of the Navy, Office of the Secretary of the Navy, Memorandum for the Secretary of Defense, "For Comment" Draft Major Program Memorandum on Mobility Forces (U), 10 July 1969 (SECRET).

Department of the Navy, OPNAVINST 03450.14A, Control of MSTS Ships and Merchant Ships Under MSTS Authority During Contingency Situations, 29 April 1966.

Department of the Navy, OPNAVINST 4700.13A, National Defense Features for New Construction Merchant Ships, 21 July 1967.

Department of the Navy, OPNAVINST 5440.20c, Single Manager Assignment for Ocean Transportation, 1 June 1967.

Department of the Navy, SECNAVINST 5430.11C, MSTS; Establishing as a Major Component of the U. S. Navy and Prescribing Channels of Responsibility, 21 July 1967.

Department of the Air Force, Report on Cargo Airlift System, October 1966.

Department of the Air Force, Short Airfield Utilization in SVN, August 1969 (CONFIDENTIAL).

Department of the Air Force, Study, AFGOA 334 68, Analysis of C-123 and C-130 Airframe Utilization in RVN (U), (SECRET).

Department of the Air Force, Study, AFGOA 4685 66, C-130 Shuttle vs C-130 PCS Opns in SEA (SECRET).

Department of the Air Force, Study, AFGOA 1146 67, C-130 Util. ACL in SEA (SECRET).

Department of the Air Force, Study, AFGOA 4519 66, Integration of Army CV-2 Aircraft in USAF Inventory (SECRET).

Department of the Air Force Study, AFGOA 1765 68, Transport A/C Util. in RVN (SECRET).

Department of the Air Force, Military Airlift Command, MAC Manual 55-8, Civil Reserve Air Fleet, 16 April 1969.

Department of the Air Force, Military Airlift Command, Command Histories, 1965 - 1968 (U), (SECRET).

Department of the Air Force, Military Airlift Command, Headquarters 22nd Air Force, Activity Input to Project "Corona Harvest" on Terminal Management 1 Jan 65-31 Mar 68, 1 August 1969.

United States Pacific Command, CINCPAC Command History, Volume II, 1965 (U), 13 May 1966 (TOP SECRET).

United States Pacific Command, CINCPAC Command History, 1966, Volume II, (U), (TOP SECRET).

United States Pacific Command, CINCPAC Command History, Volume II, 1967 (U), (TOP SECRET).

United States Pacific Command, CINCPAC Command History, Volume II, 1968 (U), (TOP SECRET).

United States Pacific Command, CINCPAC Instruction 4600.3B, Common User Transportation in PACOM, 3 April 1967.

United States Pacific Command, CINCPAC Instruction 4600.4B, Establishment of WestPac Transportation Office (WTO), 8 August 1966.

United States Pacific Command, CINCPAC Instruction 4600.5, PACOM Joint Transportation Board (JTB), 18 August 1966.

United States Pacific Command, CINCPAC Instruction 4600.6, Transportation Priorities and Criteria for PACOM Intra-Theater Traffic, 28 January 1967.

United States Pacific Command, CINCPAC Instruction 4600.7, Military Standard Transportation and Movement Procedures (MILSTAMP) in the Pacific Command, 7 June 1967.

United States Pacific Command, CINCPAC Instruction 4600.8, Promulgation of PACOM Ship Inventory and Port Status Reporting System (PACSHIPS) Manual, Volumes I and II, 8 July 1969.

United States Pacific Command, WestPac Transportation Office, CHWTO Instruction 4620.1A, Common User Intra-Theater Water Transportation, 1967.

United States Pacific Command, WestPac Transportation Office, CHWTO Instruction 4630.1B, Common Service Intra-Theater Air Transportation, 20 December 1968.

United States Pacific Command, CINCPAC Instruction 5400.13A, Pacific Command Movements Priority Agency (PAMPA), 24 July 1967.

United States Pacific Command, CINCPAC Point Paper, Logistic Support Responsibilities in the RVN, 29 July 1969.

United States Pacific Command, CINCPAC Point Paper, Shallow Draft Shipping Support of RVN, 5 January 1967.

United States Pacific Command, CINCPAC Point Paper, Size and Structure of the Unified Command Transportation Management Organization, 26 July 1969.

United States Pacific Command, Report of Conference, Report of Conference on Control of Ocean Shipments, 12-13 May 1966.

United States Pacific Command, WestPac Transportation Office, Fact Sheet, Narrative Description of the WestPac Transportation Office Activities and Organizational Changes January 1965 through July 1969.

United States Pacific Fleet, CINCPACFLT Instruction 4600.3B, Fleet Lift Capability; Policy for Using, 12 May 1967.

United States Pacific Fleet, COMNAVAIRPAC Instruction 4630.7C, Pacific Fleet Tactical and Direct Support Airlift; Utilization and Procedures for Obtaining, 24 October 1968.

United States Pacific Fleet, COMNAVFORJAPAN Instruction 4600.1G, Transportation Instructions, 17 November 1967.

United States Military Assistance Command, Vietnam, MACV Port Throughput Survey Report, 1 February 1969.

United States Military Assistance Command, Vietnam, MACV Transportation Resources Evaluation (U), 25 February 1968 (SECRET).

United States Military Assistance Command, Vietnam, Traffic Management Agency, Traffic Management Agency Briefing, 31 July 1966.

United States Military Assistance Command, Vietnam, Transportation Resources Conference Notes (U), 11 June 1966 (CONFIDENTIAL).

United States Military Assistance Command, Vietnam, Command History 1964 (U), (TOP SECRET).

United States Military Assistance Command, Vietnam, Command History 1965 (U), (TOP SECRET).

United States Military Assistance Command, Vietnam, Command History, 1966 (U), (TOP SECRET).

United States Military Assistance Command, Vietnam, Command History, 1967 (U), (TOP SECRET).

United States Military Assistance Command, Vietnam, Command History, 1968 (U), (TOP SECRET).

United States Pacific Air Force, PACAF Regulation 75-2, Transportation and Traffic Management, Traffic Management Data (RCS: PAF-U63), 1 December 1967.

United States Pacific Air Force, PACAF Regulation 76-4, Military Airlift-Request for Other Than Scheduled Airlift, 25 July 1968.

United States Pacific Air Force, PACAF Regulation 76-11, Military Airlift - Airlift Clearance Authority (ACA), 27 February 1968.

United States Pacific Air Force, Tactical Airlift Summaries, 1966-1969 (SECRET).

United States Pacific Air Force, Transportation Review in PACAF (FOUO) as follows:

PACAFRP 75-1, dtd. 1 July 1968 (CY 67 to May 68)

PACAFRP 75-1, dtd. 1 February 1969 (CY 68)

PACAFRP 75-1, dtd. 1 May 1969 (Jan.-Mar. 69)

United States Strike Command, J-4 Directorate, History of Unit Deployments to Southeast Asia, April 1965 to January 1969.

United States Seventh FLT, 1965 History of Amphibious Group One and Amphibious Force, U. S. Seventh FLT (U), (CONFIDENTIAL).

United States Seventh FLT, Monthly Reports - 1965 (U), (SECRET).

Headquarters, 11th Transportation Bn, APO 96307, Operational Report - Lessons Learned for Quarterly Periods Ending:

30 Sep 1965, dtd. 12 November 1965

30 Apr 1966, dtd. 10 May 1966

31 Jul 1966, dtd. 15 August 1966

31 Jul 1969, dtd. 31 July 1969

Headquarters, 48th Transportation Group, APO 96491, Operational Report - Lessons Learned:

31 July 1966	31 January 1968
31 October 1966	30 April 1968
31 January 1967	31 July 1968
30 April 1967	31 October 1968
31 July 1967	31 January 1969
31 October 1967	30 April 1969

Headquarters, 315th Air Division, Airlift Accomplishments, Calendar Years 1965, 1966, and 1967 (SECRET).

Headquarters, 834th Air Division, Commanding Generals' End of Tour Report Oct 1966 - Nov 1967.

Headquarters, 834 Air Division, Tactical Airlift Performance Analysis - SEA (U), (SECRET) as follows:

CY 1967, December 1967

CY 1968, December 1968

Jan.-Aug. 1969, August 1969

Pacific Command Movements Priority Agency, Staff Study, The Pacific Command Movements Priority Agency (PAMPA), 21 July 1967.

United States Army, Pacific, Annual Historical Summary (U), 1 Jan-31 Dec 1967 (TOP SECRET).

Pacific Command Movements Priority Agency, History January 1966-July 1969 (U), undated, Tab M (CONFIDENTIAL).

Fleet Marine Force, Pacific, Order 4620.1A, Common User Intra-Theater Water Transportation in the Western Pacific (WestPac); procedures concerning, 18 January 1968.

Headquarters, 1st Logistical Command, Command Report for Quarterly Period Ending as Follows:

Apr.-Jun. 1965	Aug.-Oct. 1967
Jul.-Sep. 1965	Nov.-Jan. 1968
Oct.-Dec. 1965	Feb.-Apr. 1968
Jan.-Apr. 1966	May-Jul. 1968
May-Jul. 1966	Aug.-Oct. 1968
Aug.-Oct. 1966	Nov.-Jan. 1969
Nov.-Jan. 1967	Feb.-Apr. 1969
Feb.-Apr. 1967	May-Jul. 1969
May-Jul. 1967	

Headquarters, 2nd Logistical Command, Automation of MILSTAMP, 21 October 1968.

Headquarters, 4th Transportation Command, APO 96307, Operational Report on Lessons Learned for the Periods:

1965	1968
1966	1969
1967	

Headquarters, 8th Transportation Group, APO 96238, Operational Report for Quarterly Period Ending as follows:

31 January 1967	30 April 1968
30 April 1967	31 July 1968
31 July 1967	31 October 1968
31 October 1967	31 January 1969
31 January 1968	30 April 1969

DOD LETTERS, MEMORANDUMS. MESSAGES, AND BRIEFINGS

Department of Defense, Office of the Assistant Secretary of Defense for Systems Analysis, Intra-Theater Airlift Analysis, with appendix, 30 January 1969 (CONFIDENTIAL).

Department of Defense, Office of the Deputy Secretary of Defense, Memorandum, Need for a Unified Strategic Movements Command, 1 March 1965.

Department of Defense, Office of the Secretary of Defense, Memorandum, Major Program Memorandum on Mobility Forces (U), ("For Comment" Draft), 11 June 1969 (SECRET).

Department of Defense, Official Proceedings, DOD Containerization Usage Briefing for the National Defense Transportation Association, Washington, D.C.: U.S. Government Printing Office, 23 September 1968.

Department of Defense, Secretary of Defense, Message 242105Z Nov 1965 to CINCPAC, Cargo Recognition and Documentation Problems in Vietnam.

Department of Defense, Secretary of Defense, Message 042255Z Feb 1966 to CINCPAC, Cargo Recognition and Documentation Problems in Vietnam.

Department of Defense, Memorandum from the Deputy Assistant Secretary of Defense (Supply and Services), Export Traffic Release Procedures, 22 April 1969.

Department of Defense, OASD, Memorandum for Record, Cargo Documentation in Vietnam, 3 February 1966.

Department of Defense, OASD (I&L), Memorandum for Record, Cargo Recognition and Documentation Problems in Vietnam, 19 January 1966.

Department of Defense, OASD (I&L), Memorandum, Evaluation of SEA Express Procedures, 9 February 1968.

Department of Defense, OASD (I&L), Memorandum for Record, MILSTAMP Performance Evaluation Report, 24 October 1969.

Department of Defense, OASD (I&L), Memorandum for the Secretary of Defense, Far East Sealift, 12 November 1965.

Department of Defense, OASD (I&L), Memorandum to Services, JCS, and DSA, Color Marking for Transportation Priority 1 and 2 Cargo, 8 September 1965.

Department of Defense, OASD (I&L), Memorandum, MILSTAMP Performance Report, January 1968.

Department of Defense, DASD (Logistics Services), Memorandum to Ass't Secretaries of the Services, Port Clearance and Cargo Recognition Problems - COMUSMACV, 7 September 1965.

Defense Supply Agency, Letter to Chief, Bureau of Supplies and Accounts, Cargo Documentation, 15 March 1966.

Defense Supply Agency, Memorandum for the Record, Cargo Documentation in Vietnam, 3 February 1966.

Defense Supply Agency, Memorandum (DSAH-LSD), Export Traffic Release Procedures, 3 October 1969.

Defense Supply Agency, Memorandum (DSAH-LSD) to SASM and JCS, Military Standard Transportation and Movement Procedures, 23 October 1968.

Defense Supply Agency, Message 221234 Z Aug 1966, to CINCPAC, Cargo Recognition and Documentation Problems in Vietnam.

Defense Supply Agency, Message 111834Z Oct 1966 to CINCPAC, Cargo Recognition and Documentation Problems in Vietnam.

Joint Chiefs of Staff, Memorandum, Courses of Action in Southeast Asia (U), JCSM-982-64, 23 November 1964 (TOP SECRET).

Joint Chiefs of Staff, Memorandum, Logistic Studies with Respect to CINCPAC OPLANS, JCSM-177-65, 12 March 1965 (TOP SECRET).

Joint Chiefs of Staff, Memorandum, Procedures for the Submission of Transportation Requirements and the Determination of Space Assignments and Allocations, JCSM-203-65, 20 March 1965.

Joint Chiefs of Staff, Memorandum for Record, 43rd (Special) Meeting of The Military Logistic Council, 12 August 1965.

Joint Chiefs of Staff, Memorandum for the Secretary of Defense, Courses of Action - SE Asia - First Eight Weeks (U), JCSM-100-65, 11 February 1965 (TOP SECRET).

Joint Chiefs of Staff, Memorandum for the Secretary of Defense, Joint Transportation Board Charter, JCSM-435-65, 5 June 1965.

Joint Chiefs of Staff, Memorandum for the Secretary of Defense, Joint Transportation Board Charter, JCSM-281-66, 2 May 1966.

Joint Chiefs of Staff, Memorandum for the Secretary of Defense, Major Program Memorandum on Mobility Forces (U), JCSM-426-69, 9 July 1969 (SECRET).

Joint Chiefs of Staff, Message, 022307Z July 1965, Concept for Deployment (U), (SECRET).

Joint Chiefs of Staff, Message, 152250Z July 1965, Concept for Deployment (U), (SECRET).

Joint Chiefs of Staff, Message, 200010Z April 1965, Deployment Responsibility for SE Asia (U), (CONFIDENTIAL).

Joint Chiefs of Staff, Message, 011456Z October 1965, Movement Planning Guidance (U), (SECRET).

Joint Chiefs of Staff, Message, 042138Z January 1966, PACOM Movements Priorities Control Board (U), (CONFIDENTIAL).

Joint Chiefs of Staff, Message, 142051Z October 1968, Saigon Port Advisory Plan.

Joint Chiefs of Staff, Message, 240059Z December 1965, South Vietnam Support Requirements (U), (CONFIDENTIAL).

Joint Chiefs of Staff, Message, 201625Z July 1965, Transportation Guidance (U), (CONFIDENTIAL).

Joint Chiefs of Staff, Message, 071539Z June 1965, Transportation Planning Responsibilities (U), (CONFIDENTIAL).

Joint Chiefs of Staff, Message, 1219/271751Z August 1966, Airlift of Army Personnel.

Joint Chiefs of Staff, Message, 151449Z July 1965, Transportation Planning Responsibilities (U), (CONFIDENTIAL).

Joint Chiefs of Staff, Memorandum for Task Force Echo, JLRB, Chronology of Major Joint Transportation Board Actions, 1965 (CONFIDENTIAL).

Joint Chiefs of Staff, Special Assistant for Strategic Mobility, SASM 492-68, Memorandum for the Director DSA, Problem Areas Associated with MILSTAMP Procedures, 4 October 1968.

Joint Chiefs of Staff, SASM Memorandum, Saigon Port Operations (U), 10 September 1968 (SECRET).

Department of the Army, Letter, AGAM-P (M) (2 May 1968) LOG/TR-ATMB, Army Transportation Objectives and Organizational Patterns for Subordinate Commands, 31 May 1968.

Department of the Army, Letter, DCSLOG to MTMTS, MILSTAMP Ocean Cargo Documentation, 13 December 1966.

Department of the Army, Message, 062212Z Dec 1966 to Army Major Commands and AAFES, MILSTAMP Documentation and Marking Problems.

Department of the Army, United States Army Materiel Command, Memorandum for Commanding General, AMC, Push Shipments to Vietnam, 6 December 1968.

Department of the Army, United States Army Materiel Command, Message, 042104Z June 1965 to Major Army Commands, Color Marking for OPLAN SEA Shipments.

Department of the Army, United States Army Materiel Command, Message 092027Z Aug 1965 to Major Army Commands, Color Marking Test of OPLAN SEA Shipments.

Department of the Army, United States Army Materiel Command, Message 081750Z June 1965 to WAMTMTS, CONARC, DSA, EAMTMTS, AMC OPLAN SEA.

Department of the Army, Message, 182112Z Oct 1966 to DSA, Evaluation of MILSTAMP System, USARPAC.

Department of the Army, Message, 252112Z Oct 1966 to Major Army Commands, MILSTAMP Shipment Address Markings.

Department of the Army, Message, 122333Z Nov 1965 to DSA, MILSTAMP Water Commodity Code.

Department of the Army, Military Traffic Management and Terminal Service, Letter, MTMTS to DCSLOG, DA, MILSTAMP Ocean Cargo Documentation, 13 December 1966.

Department of the Army, Military Traffic Management and Terminal Service, Letter, MTMTS to DCSLOG, DA, MILSTAMP Ocean Cargo Documentation, 10 Jan 1967.

Department of the Army, United States Army Materiel Command, Letter, to DCSLOG, DA, Narrative Summary of Events and Experiences Incident to Automatic Supply to Support the Buildup of U. S. Forces in SEA, 23 September 1968.

Department of the Army, United States Army Materiel Command, Letter, Automatic Supply Support for Southeast Asia, 23 September 1968.

Department of the Army, Office of the Secretary of the Army, Memorandum for the Secretary of Defense, Major Program Memorandum on Mobility Forces (U), 15 July 1969 (SECRET).

Department of the Army, Military Traffic Management and Terminal Service, Cmdr MOTBA, Oakland, Message, 192310Z Nov 1965 to Headquarters Support Activity, Saigon, Advance 1348s and TCMDs.

Department of the Army, Office of the Deputy Chief of Staff for Logistics, Memorandum for Record, Chief, Policy & Procedures Branch Transportation Movements Division, Visit to Machinato Depot, Okinawa, 20 December 1966.

Department of the Army, Military Traffic Management and Terminal Service, WAMTMTS Message 291530Z July 1965 to Commander, MTMTS, Documentation for Vietnam.

Department of the Navy, Office of the Chief of Naval Operations, Letter to Chairman, JLRB OP-404 Serial 795P404, 20 August 1969.

Department of the Navy, Office of the Chief of Naval Operations, Memorandum for the Senior Navy Member, JLRB, MSTS Ship Replacement Program, 22 October 1969.

Department of the Navy, Under Secretary of the Navy, Memorandum, serial 00137, Fiscal Year 1971 Response Determination and Findings, 17 November 1969.

Department of the Air Force, Military Airlift Command, MAC Manual 76-1, Military Airlift Transportation Manual, 16 June 1969.

Department of the Air Force, Military Airlift Command, Briefing for JLRB, Materiel Concepts, 13 June 1969.

Department of the Air Force, Military Airlift Command, Briefing for JLRB, Materials Handling, 13 June 1969.

Department of the Air Force, Military Airlift Command, Briefing for JLRB, Mobility Support Forces Study, 13 June 1969 (SECRET).

Department of the Air Force, Military Airlift Command, Briefing for JLRB, Strategic Airlift Concepts for Europe, 13 June 1969 (SECRET).

Department of the Air Force, Military Airlift Command, Briefing for JLRB, Strategic Airlift Missions and Operational Concepts, 13 June 1969 (SECRET).

Department of the Air Force, Military Airlift Command, Command Policy and Posture (U), Briefing and Fact Sheets Furnished Members of JLRB on 29 September 1969 (SECRET).

Department of the Air Force, Military Airlift Command, Briefing for JLRB, European Forces/Strategic Airlift Interface (U), 13 June 1969 (SECRET).

Department of the Air Force, Military Air Transport Service, Memorandum, MATS Support of CINCPAC OPLAN, Phase IV (U), 18 December 1964 (SECRET).

Department of the Air Force, Office of the Secretary of the Air Force, Memorandum for the Secretary of Defense, Major Program Memorandum on Mobility Forces (U), 21 July 1969 (SECRET).

Department of the Air Force, Military Airlift Command, Briefing for JLRB, Long Range Planning, 13 June 1969 (SECRET).

Department of the Air Force, Memorandum, Joint Planning Conference on CONUS Augmentation Forces, Phase IV, CINCPAC OPLAN, 13 July 1964 (SECRET).

Department of the Air Force, Message, 171803Z Sept 1965 to Major Commands, Port Clearance and Cargo Recognition Problems.

United States Pacific Command, Message, 141922Z Jan 1966 to DASD (I&L), Cargo Recognition and Documentation Problems in Vietnam.

United States Pacific Command, Message, 110535Z March 1966 to OASD (I&L), Cargo Recognition and Documentation Problems in Vietnam.

United States Pacific Command, Message, 300042Z Sept 1966 to DSA, Cargo Recognition and Documentation Problems in Vietnam.

United States Pacific Command, Message, 190527Z October 1966 to CINCUSARPAC, Cargo Recognition and Documentation Problems in Vietnam.

United States Pacific Command, Message, 310155Z December 1965, PACOM Movements Priorities Control Board (U), (CONFIDENTIAL).

United States Pacific Command, Message, 010452Z August 1969, Request for Transportation Management and Movement Control Activities Information.

United States Military Assistance Command, Vietnam, Message, 121414Z Oct 1965 to Cmdr MTMTS, MILSTAMP Cargo Documentation.

United States Military Assistance Command, Vietnam, Message, 270634Z, Oct 1966 to MTMTS, WAMTMTS, EAMTMTS, CHWTO, PAMPA, MILSTAMP Cargo Documentation.

United States Military Assistance Command, Vietnam, Message, 140510Z Sept 1966 to CINCPAC, Cargo Recognition and Documentation Problems in Vietnam.

United States Military Assistance Command, Vietnam, Traffic Management Agency, Commander, MACV - TMA, Letter to Chief, Movements Division, DCSLOG, DA, 14 October 1966.

United States Military Assistance Command, Vietnam, Traffic Management Agency, Minutes of Meeting, MILSTAMP Problem Areas, 14 November 1966.

United States Military Assistance Command, Vietnam, Message, 261253Z July 1969, Description of Transportation Management and Movement Control Activities (U), (CONFIDENTIAL).

United States Military Assistance Command, Letter, MACJ4, Mission Letter for the Traffic Management Agency, MACV, 23 September 1965.

U. S. Military Assistance Command, Thailand, Message, 240431Z July 1969, Transportation Management Data for JLRB.

United States Army, Pacific, Message, 270046Z Dec 68 to Dept of the Army, Status of Supply Manifest Test.

United States Army, Pacific, Message, 250542Z July 1969, Request for Transportation Management and Movement Control Activities Information.

United States Pacific Air Force, Message, 262041Z July 1969, Transportation Management and Movement Control Activities Information.

United States Pacific Fleet, Message, 262318Z July 1969, Transportation Management and Movement Control Activities Information.

Fleet Marine Force Pacific, Message, 230234Z July 1969, Transportation Management and Movement Control Activities Information.

U. S. Forces, Japan, Message, 250730Z July 1969, Request for Transportation Management and Movement Control Activities Information.

U. S. Forces, Korea, Message, 241256Z July 1969, Request for Transportation Management and Movement Control Activities Information (U), (SECRET).

United States Taiwan Defense Command, Message, 300758Z July 1969, Transportation Management and Movement Control Activities Information.

Besson, F.S., Jr., General, USA, Memorandum for Record, Discussion with Secretary Ignatius on Logistics Lessons of the Vietnam era - 17 Mar 69, 2 April 1969.

Coberly, James E., Colonel, USA, Senior Officer Debriefing Report (U), 1 July 1969 (CONFIDENTIAL).

PUBLICATIONS OF OTHER GOVERNMENT AGENCIES

White House, Press Release, 23 October 1969

United States Congress, House of Representatives, Hearings before a Subcommittee of the Committee on Government Operations, Military Supply System, June 24, 25, 26, 27, July 1, 2, and 18, 1968. Washington: U.S. Government Printing Office, 1968.

United States Congress, United States Senate, Preparedness Investigating Subcommittee of the Committee on Armed Forces (90th Congress), Status and Combat Readiness of the US Atlantic Fleet, Washington: U.S. Government Printing Office, 1967.

United States Congress, United States Senate, Subcommittee of the Committee on Armed Forces (89th Congress), USAF Tactical Air Operations and Readiness, Washington: U.S. Government Printing Office, 1966.

United States Congress, United States Senate, Subcommittee of the Committee on Armed Forces (90th Congress), Airlift and Sealift to South Vietnam, Washington: U.S. Government Printing Office, 1967.

United States Congress, United States Senate, Subcommittee of the Committee on Armed Forces (90th Congress), Situation in South Vietnam, Washington: U.S. Government Printing Office, 1967.

United States Congress, United States Senate, Subcommittee of the Committee on Armed Forces (90th Congress), USAF Tactical Air Operations in Southeast Asia, Washington: U.S. Government Printing Office, 1967.

United States Congress, United States Senate, Subcommittee of the Committee on Armed Forces (90th Congress), US Navy and US Marine Corps in Southeast Asia, Washington: U.S. Government Printing Office, 1967.

United States Congress, U.S. Statutes at Large, Merchant Marine Act of 1936 and Wilson-Weeks Agreement, Volume 49, Article 1985.

United States Congress, Public Law 85-726, title I, 102, 72 Statute 740, 23 August 1958.

United States General Accounting Office, Comptroller General's Report to Congress, B-157476, Need for Improvement in Airlift to Southeast Asia, May 14, 1968.

United States General Accounting Office, Comptroller General's Report to Congress, DOD B-168583, Overall Observations of Transportation and Traffic Management Activities in the Far East and Southeast Asia, 1969.

Maritime Administration, News Release, MA NR 69-70, 13 November 1969.

Maritime Administration, Circular letter No. 1-70, 2 January 1970.

MISCELLANEOUS PUBLICATIONS AND DOCUMENTS

"A Simulated Port Facility in a Theater of Operations," Naval Research Logistics Quarterly, Vol. 16, No. 2, June 1965.

"A Status Report on the U. S. Army," Army, November 1964.

"A Status Report on the U. S. Army," Army, November 1965.

"A Status Report on the U. S. Army," Army, October 1966.

"A Status Report on the U. S. Army," Army, October 1967.

"A Status Report on the U. S. Army," Army, November 1968.

"A Status Report on the U. S. Army," Army, October 1969.

"Barge and LCU Tow," Sealift Magazine, December 1966.

Bayless, Glenn, "A New Era in Shipbuilding," Armed Forces Journal, 27 July 1968.

Bentley, Helen D., "Fight Over Building Ships Abroad Chief Barriers to New Maritime Policy," Navy Magazine, June 1967.

Besson, Jr., Frank S., General, USA, "From Factory to Foxhole - a 10,000 Mile Pipeline to War," US News and World Report, 20 November 1967.

Bien, Jr., B. H., Rear Admiral, USN, "Quicktrans — Today and Tomorrow," Navy Supply Corps Newsletter, May 1 1968.

Butz, Jr., J. S., "Intra-Theater Airlift in Vietnam - A Question of Quality and Control,", Air Force Magazine, 1 July 1966.

"Civil Reserve Air Fleet Program," Federal Register, No. 168, Document 63-9248, 28 August 1963.

"Civil Reserve Air Fleet," The U. S. Air Force JAG Law Review, Vol. X, No. 3, May-June 1968 (Special Issue).

Cook, Davidson E., "Massive Sealift to Southeast Asia," National Defense Transportation Journal, July-August 1966.

DeLong Corporation, Proposal for Leasing DeLong Piers, 30 April 1969.

Homer, Frank, "Vietnam Strains MSTS Resources," Navy Magazine, June 1967.

"How the Army provides the unforeseen and the unforeseeable in supplying the U. S. fighting forces in Vietnam," National Defense Transportation Journal, July-August 1966.

Hughes Tool Company, The Impact of Hot Cycle Flying Cranes on Logistic Support.

Ignatius, Paul R., "From the Speaker's Rostrum," Defense Industry Bulletin, Vol. 2, No. 11, November 1966.

Industrial College of the Armed Forces, Transportation: The National Lifeline, Washington, 1968.

Institute for Defense Analyses, Research Paper p-552, A Simulation Technique for Measuring the Utility of an Intransit Shipment Locator System for Supply Items, 13 October 1969.

Institute for Defense Analyses, WSEG Staff Study 150, A Simulation Technique for Measuring the Utility of An Intransit Shipment Locator System for Supply Items, October 1969.

Kowgh, Larry, "Military Ocean Terminal, Sunny Point," Transportation Proceedings, July 1968.

Lynn, L.E., Jr., Doctor, DASD (SA), Interview, "Sealift - Obscured by a Smokescreen of Myths," Armed Forces Management, December 1968.

North Atlantic Treaty Organization, ATP2 (A), Allied Naval Control of Shipping Manual.

Planning Research Corporation, Development of Logistics Planning Factors in SVN, (LOG PLAN-V) PRC R-1240, Contract DA-AHO1-67-C-0403, Los Angeles, Calif., Washington, D.C., 31 March 1969, 3 volumes.

Redling, William N., Major General, USA, "Contribution of Transportation to the Army's Efforts," Army Management Views, Vol. XIII, Book 1, 1968.

Research Analysis Corporation, An Evaluation of a Heavy-Lift Helicopter in the Logistical Role, August 1968, AD 839900, RAC-R-4S (USAMC).

"Sealift of Barges," Sealift Magazine, April 1967.

Sharpe, U.S.G., Admiral, USN, "Vietnam: The Buildup and The War," Transportation Proceedings, Vol. I, No. 10, November 1967.

Shipley, Ralph, L., Vice Admiral, USN, "Deep Draft Ports and Instant Piers," Transportation Proceedings, June 1968.

Schuster, Tom, Lieutenant Junior Grade, USN, "Navy Ashore in Vietnam," Navy Supply Corps Newsletter, May 1968.

"Special Report, The Other End of the Pipeline," Transportation Proceedings, August 1967.

Transportation Consultants, Inc., Vietnam Transportation Study, Washington, June 1966.

"USNS Kula Gulf," Sealift Magazine, November-December 1965.

LIST OF BRIEFINGS ATTENDED

In the course of their research and data collection efforts, members of the Transportation Monograph Team attended several briefings given to board members. A list of those considered relevant is as follows:

Defense Supply Agency, Introduction to the Defense Supply Agency, 17 July 1969.

Department of the Army, Office of the Deputy Chief of Staff for Logistics, Future Logistic Systems of the Army, 2 May 1969.

Department of the Army, Office of the Deputy Chief of Staff for Logistics, The Army's Red Ball Program, 11 June 1969.

Department of the Army, Office of the Deputy Chief of Staff for Logistics, U.S. Army Requisition Flow and Supply Movement, 9 April 1969.

Duke, Robert W., Brigadier General, USA, Military Logistics - Vietnam, 30 June 1969.

Joint Chiefs of Staff, Office of the Special Assistant for Strategic Mobility, SASM Mission and Functions, 11 June 1969.

Commanding General, 1st Logistical Command, U.S. Army Logistics in Vietnam, 21 May 1969.

1st Logistical Command, U.S. Army Inventory Control Center, Vietnam, 13 September 1969.

Morrison-Knudson Company, Inc., A Major Contractor's Experiences and Lessons Learned in Vietnam, 24 April 1969.

Page Communications, Inc., Page Operations in Vietnam, 1 May 1969.

Philco-Ford, Inc., Philco-Ford in Vietnam, 4 June 1969.

Research Analysis Corporation, Logistics Studies, 30 April 1969.

Scott, Thomas H., Jr., Major General, USA, First Logistics Command - FY 1968, 7 July 1969.

Stanford Research Institute, A Proposed Management Information System for Army Transportation, 23 January 1970.

United States Agency for International Development, AID Logistics Operations in Vietnam, 10 July 1969.

United States Air Force, Air Force Logistics Command, Briefing to Transportation Task Force, JLRB, 21 August 1969.

United States Air Force, Air Force Logistics Command, New USAF Logistics System, 5 June 1969.

United States Army Ammunition Procurement and Supply Agency, Ammunition Movements, 11 July 1969.

United States Army, Military Traffic Management and Terminal Service, The Vietnam Period, 10 June 1969.

United States Marine Corps, Marine Corps Headquarters Briefing to Transportation Task Force, JLRB, 12 August 1969.

United States Marine Corps, USMC Requisition and Supply Movement Control, 4 April 1969.

United States Navy, Military Sea Transportation Service, Presentation for the Joint Logistics Review Board, 19 June 1969.

United States Navy, Review of Navy Transportation by the JLRB, 15 August 1969.

United States Navy, U.S. Navy Requisition Flow and Material Movement, SEA, 7 April 1969.

LIST OF PERTINENT STAFF AND RESEARCH VISITS

In the course of their research and data collection efforts, members of the Transportation Monograph team conducted staff visits to the following headquarters, installations, and activities.

Defense Contract Administration Service, San Francisco Regional Office, 4 September 1969.

Headquarters, 13th Air Force, Clark Air Base, Philippines, 11 September 1969.

Headquarters, Commander in Chief, Pacific Air Forces, Hickam Air Force Base, Hawaii, 9 September 1969.

Headquarters, Commander in Chief, Pacific Fleet, Makalapa, Hawaii, 9 September 1969.

Headquarters, Eastern Area, Military Traffic Management and Terminal Service, Brooklyn, New York, 27 August 1969.

Headquarters, Fleet Marine Force, Pacific, Camp H.M. Smith, Hawaii, 8 September 1969.

Headquarters, Military Airlift Command, Scott Air Force Base, Illinois, 30 September 1969.

Headquarters, Military Sea Transportation Service, Atlantic, Brooklyn, New York, 26 August 1969.

Headquarters, United States Army 2nd Logistical Command, Okinawa, Ryukyu Islands, 18 September 1969.

Headquarters, United States Army 9th Logistical Command, Sattahip, Thailand, 13 September 1969.

Headquarters, United States Army Pacific, Fort Shafter, Hawaii, 9 September 1969.

Headquarters, United States Army Support, Thailand, Korat, Thailand, 15 September 1969.

Headquarters, United States Forces Korea, Seoul, Korea, 17 September 1969.

Headquarters, United States Marine Corps, Washington, D.C., 24 November 1969.

Headquarters, United States Military Assistance Command, Thailand, 12 September 1969.

Headquarters, United States Pacific Command, Camp H.M. Smith, Hawaii, 8 September 1969.

Headquarters, United States Strike Command, McDill AFB, Fla., 25-26 November 1969.

Headquarters, Western Area, Military Traffic Managements and Terminal Service, Oakland, California, 3 September 1969.

Military Airlift Command, MAC Terminal Commanders Conference, Travis AFB, Calif., 24-26 June 1969.

Military Ocean Terminal, Bay Area, Oakland, California, 4 September 1969.

Military Ocean Terminal, Bayonne, New Jersey, 27 August 1969.

Office of the Special Assistant for Strategic Mobility, Joint Chiefs of Staff, 4 September 1969.

Pacific Command Movements Priority Agency, Oakland, California, 5 September 1969.

Sharpe Army Depot, Lathrop, California, 8 September 1969.

St. Louis Field Office, Eastern Area, Military Traffic Management and Terminal Service, St. Louis, Missouri, 29 September 1969.

Sunny Point Army Terminal, Wilmington, North Carolina, 2 October 1969.

Tracy Defense Depot, Tracy, California, 8 September 1969.

Travis Air Force Base, Fairfield, California, 9 September 1969.

United States Air Force, Sacramento Air Materiel Area, McClellan Air Force Base, California, 10 September 1969.

United States Army Materiel Command, Logistics Control Office – Pacific, Fort Mason, California, 5 September 1969.

United States Army Transportation Center, Fort Eustis, Virginia, 25 August 1969.

United States Marine Corps, 3d Force Service Regiment, Okinawa, Ryukyu Islands, 18 September 1969.

United States Marine Corps Supply Center, Albany, Georgia, 16 September 1969.

United States Naval Weapons Station, Concord, California, 8 September 1969.

United States Navy Ship Repair Facility, Subic Bay, Philippines, 11 September 1969.

United States Navy Supply Center, Oakland, California, 4 September 1969.

United States Navy Transportation Coordinating Office, Alameda, California, 5 September 1969.

Briefings were held for members of the transportation monograph team by staff members of the following headquarters at Camp H. M. Smith, Hawaii, during the period 19-23 September 1969.

Headquarters, Commander in Chief, Pacific Air Forces.

Headquarters, Commander in Chief, Pacific Fleet.

Headquarters, Fleet Marine Force, Pacific.

Headquarters, United States Army, Pacific.

Headquarters, United States Army, Ryukyu Islands.

Headquarters, United States Forces, Japan.

Headquarters, United States Forces, Korea.

Headquarters, United States Military Assistance Command, Thailand.

Headquarters, United States Military Assistance Command, Vietnam.

Headquarters, United States Pacific Command.

Headquarters, United States Taiwan Defense Command.