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LOGISTIC SUPPORT IN THE VIETNAM ERA

AD 877957

VOLUME II

A REVIEW OF LOGISTIC SUPPORT IN THE VIETNAM ERA

- THE ENVIRONMENT
- THE LOGISTIC POSTURE: 1 JANUARY 1965
- LOGISTIC RESPONSIBILITIES AND SYSTEMS
- LOGISTIC SUPPORT IN SOUTHEAST ASIA
- IMPACT OF THE VIETNAM CONFLICT ON READINESS IN OTHER AREAS OF THE WORLD

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A REPORT
BY THE JOINT LOGISTICS REVIEW BOARD

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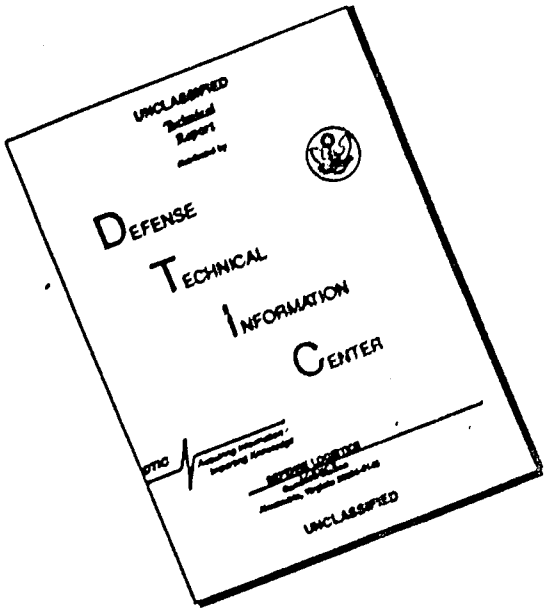

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As stated

Paul H. Riley

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

PREFACE

The Joint Logistics Review Board was directed by its Terms of Reference (Attachment to a Memorandum by the Deputy Secretary of Defense dated 17 February 1969, subject: Joint Logistic Review Board (JLRB)) to "review worldwide logistic support of the U. S. ground, naval, and air forces during the 'Vietnam era' (1 August 1965 to date) to identify strengths and weaknesses of 'logistic systems' (i. e., policies, procedures, organization, manpower, and controls) so as to make appropriate recommendations for changes that will improve the overall effectiveness of these systems. The board will examine the U. S. military logistic posture at the commencement of the Vietnam buildup, and the factors that affected (1) the responsiveness of logistic support to U. S. combat forces in Vietnam, and (2) their impact on readiness in other areas of the world. Emphasis will be given to the effectiveness and economy of current and planned logistic systems under combat conditions; and the quick reaction capabilities of these systems to meet changing situations and emergencies worldwide. The board will identify logistic lessons learned, including those of a planning nature, which may have a significant effect on readiness for and support of future combat operations."

The report of the Joint Logistics Review Board is divided into three volumes and 18 monographs. Volume I contains the major findings and recommendations of the Board. Volume II, this volume, investigates the functions of logistics and its command and management. Volume III consists of a compilation of the summary chapters of each of the monographs and an appendix containing all of the recommendations of the Board. The monographs are in-depth examinations of the following functional areas:

1. Advanced Base Facilities Maintenance
2. Ammunition
3. Automatic Data Processing Systems
4. Common Supply
5. Communications
6. Construction
7. Containerization
8. DSA/GSA Support
9. Excesses
10. Financial Management
11. Foreign Assistance
12. Logistics Planning
    - (a) Requirements Forecasting
    - (b) Contingency Planning

(c) War Reserves

(d) Industrial Mobilization Production Planning

13. Maintenance

14. Military Personnel in Operational Logistics

15. Petroleum, Oil, and Lubricants

16. Procurement and Production

17. Supply Management

18. Transportation and Movement Control

This volume contains an overview of the logistic picture of the Vietnam War, but in general does not enter into extensive discussions of details since these details are treated in the monographs. It interfaces with, draws on, and provides perspective for the separate monographs; they in turn serve to provide a more detailed level of treatment when Volume II, of necessity, cannot provide the depth of review desired.

This volume is divided into six chapters. Chapter 1, "The Environment," considers the various factors of geography, climate, terrain, and industrial development within Vietnam; the international aspects of the conflict; the basic U. S. strategy concerning the conflict; and the tactical environment. Chapter 2, "The Logistic Posture," discusses the condition of the U. S. military forces available on 1 January 1965 from a logistic point of view in terms of such items as forces, bases, munitions, and war reserves. Chapter 3, "Logistic Responsibilities and Systems," traces the statutory and regulatory responsibilities for the provision of logistic support to and within the U. S. Military Establishment. The logistic systems in joint military department and service channels are treated from a conceptual point of view. Chapter 3 also describes top-level and doctrinal changes in logistic responsibilities and systems. Chapter 4, "Logistic Support in Southeast Asia," evaluates the responsiveness and efficiency of the logistic support to the conflict and points to the changes that evolved from the problems encountered. This chapter contains the more predominant background features relating to the major issues, findings, and recommendations contained in Volume I. Chapter 5, "Impact of the Vietnam Conflict on Readiness in Other Areas of the World," summarizes the major impacts of the Vietnam conflict on the commanders of unified and specified commands, the Services, and the Defense Supply Agency that affected their capability to carry out peacetime, contingency, and general-war missions. It also includes other areas of the Pacific Command. Chapter 6 is a summary of the major lessons learned.

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CHAPTER 1

THE ENVIRONMENT

SECTION A

INTRODUCTION

1. PURPOSE AND APPROACH. This chapter discusses the total environment in which the Vietnam War is being fought. In addition to logistic factors, those features of the environment that affect logistic operations and support are considered. For example, climate and terrain influence the type and quantity of support for men and equipment. The geographic location of overseas military deployments and the tempo of military operations determine the length and size, respectively, of the logistic pipeline. The existence and condition of roads, railroads, ports, and airfields affect the movement of men and materiel. United States foreign relations and commitments to other nations, as the essence of national involvement, influence subsequent needs, including both the type and the quantity of logistic support. A decision on mobilization by national authorities affects the availability of reserve logistic forces. The imposition or absence of emergency controls over production and labor influences the timeliness of support derived from the industrial base.

2. VIETNAM IN PERSPECTIVE. Future combat operations cannot be expected to be identical with the Vietnam conflict; indeed, they may be radically different, with possibilities ranging across the spectrum from limited to general war. It is important, therefore, not to misapply the similarities and differences between the Vietnam War and the previous three wars of this century in which the United States has engaged.

a. General

(1) In Vietnam as in Korea, the United States is allied with the southern half of a politically divided country whose northern half is under communist control. In both countries, the southern half has been the victim of aggression committed by the northern half. In Vietnam, however, the enemy initially did not use his military forces in a clearly overt act of aggression, but in the infiltration of men and materiel and to support an ostensible insurgency.

(2) Unlike other wars prior to Korea, the war in Vietnam has not constituted a direct threat to the security of U. S. territory or institutions. Furthermore, the United States has not been fighting to conquer territory or to subjugate people. The purpose of the U. S. involvement has been to assist the Republic of Vietnam to remain a free nation and to follow a self-determined path of development.

(3) The United States has pursued a program of nation-building in Vietnam while fighting a major war. Although the Republic of Vietnam (RVN) has an elected government, its experience in self-government is not comparable to that of the liberated nations of Western Europe in World War II. The scope and duration of the nation-building effort has had a significant logistic impact in terms of massive military and economic assistance.

(4) The U. S. Congress has not passed a formal declaration of war for Vietnam as it did in World Wars I and II, nor has it declared a state of emergency as it did in the Korean War. It should be noted, however, that the state of emergency declared by Congress to exist during the Korean War has remained in effect during the Vietnam era, and has never been terminated. The President did receive congressional support for action in Vietnam from the Gulf of Tonkin Resolution in August 1964. However, national mobilization has not occurred as it did in the two World Wars.

(5) The President and the Secretary of Defense have exercised closer control over the details of military operations in Vietnam than was exercised in the previous three wars.

Much of the detailed management of the Vietnam War has taken place in the Office of the Secretary of Defense (OSD) rather than in the military departments. Budgeting for the war has been accomplished on an annual basis with the understanding that supplements would be requested as required. This procedure has created considerable turbulence in logistic planning.

(6) Unlike the two World Wars, U. S. military operations in Vietnam have been characterized by the limited application of military power, expressed in measured responses to North Vietnamese acts of aggression. Furthermore, in the application of force, the United States has consistently indicated an intention not to utilize the full power at its command. The gradual and limited application of power has sometimes reduced the time interval for planning and the lead time needed for materiel acquisition.

b. Land Warfare

(1) Guerrilla tactics have characterized the enemy's actions in Vietnam. The nature of the country, particularly its jungle terrain and varied densities of population, has enhanced the use of such tactics. The enemy guerrillas have also had the advantage of sanctuaries in neighboring Laos and Cambodia. Contrary to the static conditions of the World Wars or the Korean War, with their fixed front lines and relatively secure communication zones, the war in Vietnam has been porous in nature, with the enemy in the rear as well as in the front. At the onset, the U. S. ground forces were primarily prepared to fight a conventional war. In adapting to guerrilla warfare, these forces have exploited the high degree of mobility afforded by the helicopter, operating out of widely separated and isolated forward bases and conducting search and destroy operations against specific enemy bases or concentrations. With the advent of the armed helicopter, aerial gun ships, increased artillery mobility through helicopter airlift, and other aerial support, the application of massive firepower has been switched from engagement to engagement with unprecedented rapidity.

(2) The lack of adequate and secure internal land lines of communication has posed problems that were not faced in previous wars. This negative factor has led to the establishment of several large base complexes along the coast of Vietnam and the use of satellite forward support areas to ensure timely and effective logistic support of the widely dispersed and highly mobile combat forces. Aerial resupply and aerial medical evacuation have become a common rather than an occasional means of providing support. Whereas security measures for the protection of supply complexes and support bases were taken as routine precautionary measures during the World Wars and in Korea, they have been a necessity in Vietnam because of the guerrilla activity of the enemy. To defend against the frequent guerrilla and mortar attacks, extensive perimeter defenses have been constructed, and logistic personnel to an extent far greater than previously experienced have been required to man these defenses, to the detriment of their primary mission.

(3) Contrary to the experience of the World Wars and to a certain extent the Korean War, the support of nation-building in RVN has been of prime importance. U. S. ground forces have utilized a considerable portion of their personnel and materiel resources in the pacification program and in serving in an advisory capacity to the ground forces of the developing Republic.

c. Sea Warfare

(1) The war at sea during the Vietnam conflict has differed markedly from both World Wars but has closely resembled the sea warfare during the Korean War. The sea lanes have been secure. Troops and supplies have moved to Vietnam in surface ships sailing independently and without escort. Underway replenishment of warships has been uninhibited by surface, air, or submarine attack. The only challenge to U. S. seapower has occurred close to shore or in port. These attacks, however, have been small in scale, delivered principally through the use of small boats, shore batteries, mines, and swimmers.

(2) Although the supremacy of U. S. seapower has been virtually unchallenged during the Vietnam era, the enemy has tried to make maximum use of the rivers and coastal waters to infiltrate men and supplies into South Vietnam. Naval forces have responded to this

challenge by developing a coastal force with the primary objectives of surveillance and counterinfiltration. Also, river patrol and joint Army-Navy riverine operations have been instituted.

d. Air Warfare

(1) Unlike the World Wars and unlike the Korean War except for the restriction against military operations North of the Yalu River, the air war in Vietnam has been inhibited from a military standpoint. Rules of engagement imposed in the interest of confining the struggle precluded maximum utilization of both tactical and strategic air capability. Certain air operations against the North were prohibited and all were stopped completely in April 1968. The enemy's use of sanctuaries in Laos and Cambodia made the air problem of interdicting the flow of personnel and supplies into RVN more difficult. Air strikes were prohibited in Cambodia and ground action in Laos was not permitted except in hot pursuit, allowing the enemy to take maximum advantage of dispersal and cover in his deployments.

(2) The lack of a conviction of national urgency, the no-front-lines nature of guerrilla warfare, the primitive conditions, and the peculiar demands of this difficult war for new equipment have created new challenges for logisticians in supporting round-the-clock air attacks on the enemy and in maintaining extensive airlift support of the war. Like surface shipments, the movements of aircraft, troops, and supplies by air have been uninhibited by enemy action, except when landing at combat zone air strips in direct support of engaged forces.

3. SCOPE

a. This chapter forms a background for the information presented in subsequent chapters. It identifies aspects of the Vietnam War that have had a significant impact on logistics and on the means, policies, and procedures by which logistic support has been provided.

b. The following sections address the environment of the Vietnam conflict. Section B describes the physical environment and state of development and provides historical and political background information. Section C sets forth the salient features of the international environment relative to the U. S. involvement that have affected logistics directly or indirectly. Section D addresses the basic U. S. strategy, national and military objectives, and the impact on logistics of national control and guidance. Section E describes the tactical environment of the conflict. Finally, Section F summarizes the chapter.

SECTION B

VIETNAM AND ITS STATE OF DEVELOPMENT

1. GEOGRAPHICAL ASPECTS

a. Location. Vietnam flanks the eastern coast of the Southeast Asia peninsula in a long, narrow strip jutting into the South China Sea. Its 1,200-mile length curves down in a rough S-shape from Communist China in the north, pinches in at the middle to less than 50 miles, and broadens southwestward into the Gulf of Siam. Vietnam shares its western border with Laos and Cambodia, and with these two nations was known as French Indochina until after World War II.

(1) Located in the remote reaches of the Pacific (see Figure 1), the Republic of Vietnam has no land link with friendly countries. It is separated from the closest friendly country, Thailand, by Cambodia and Laos—neutral and plagued with their own problems.

(2) From a logistic viewpoint, time-distance factors are more important than location alone. For example, a cargo ship at 15 knots requires 19 days to make a voyage of about 6,900 nautical miles from San Francisco to the Republic of Vietnam and 35 days to travel 12,358 nautical miles from New York to the same destination allowing 1 day for transit of the Panama Canal. A round trip by air from the west coast requires approximately 40 hours, depending on the type of aircraft employed.

(3) The bulk of materiel support for Vietnam moves directly from continental United States (CONUS) to the military forces. However, Okinawa, by virtue of its geographical location, plays a key role in the logistic support of the Vietnam War as the home of the Army's Second Logistical Command, and the Marine Corps Third Force Service Regiment. Similarly, the Philippines plays an important role in support of the U. S. Navy and Air Force. Guam, Japan, Taiwan, and Thailand serve as operational and logistic support bases. Thus, the pipeline for stocked items and offshore procurement is shortened, as is the maintenance turnaround time for many items of equipment.

b. Climate. The Republic of Vietnam is alternately hot and humid and hot and dry; its climate is comparable to that of Guatemala and Honduras in Central America. The monthly mean temperature is 80° F; except in a few mountainous areas, the annual variation is 4-1 2° from a mean of 77 °F at Hue in the North and 81. 5° F at Saigon in the South. Rainfall is heavy in all regions, with annual averages of 128 inches at Hue and 80 inches at Saigon.

(1) The seasonal alternation of the monsoons—northeast from October to May, southwest from May to October—has profound effects on both combat and logistic operations. The northeast monsoon produces a dry season in the southern part of the RVN and in Laos and Cambodia and provides good flying conditions. In the northern part of the Republic and in North Vietnam the season is one of low visibility with heavy layers of cloud and heavy rains common. Severe logistic problems result from high seas along the coast resulting from winds blowing across the full sweep of the South China Sea. Logistic operations across the beaches are normally impossible during this season. Ship-to-shore fuel lines are broken and inoperable a large

---

[1] Geographic, topographic, demographic, climatological, social, and cultural information provided in this section is derived chiefly from Department of the Air Force, Physical and Cultural Environment of Southeast Asia, Project CORONA HARVEST, November 1968; and Department of the Army, Pamphlet No. 550-55, Area Handbook for South Vietnam, April 1967.

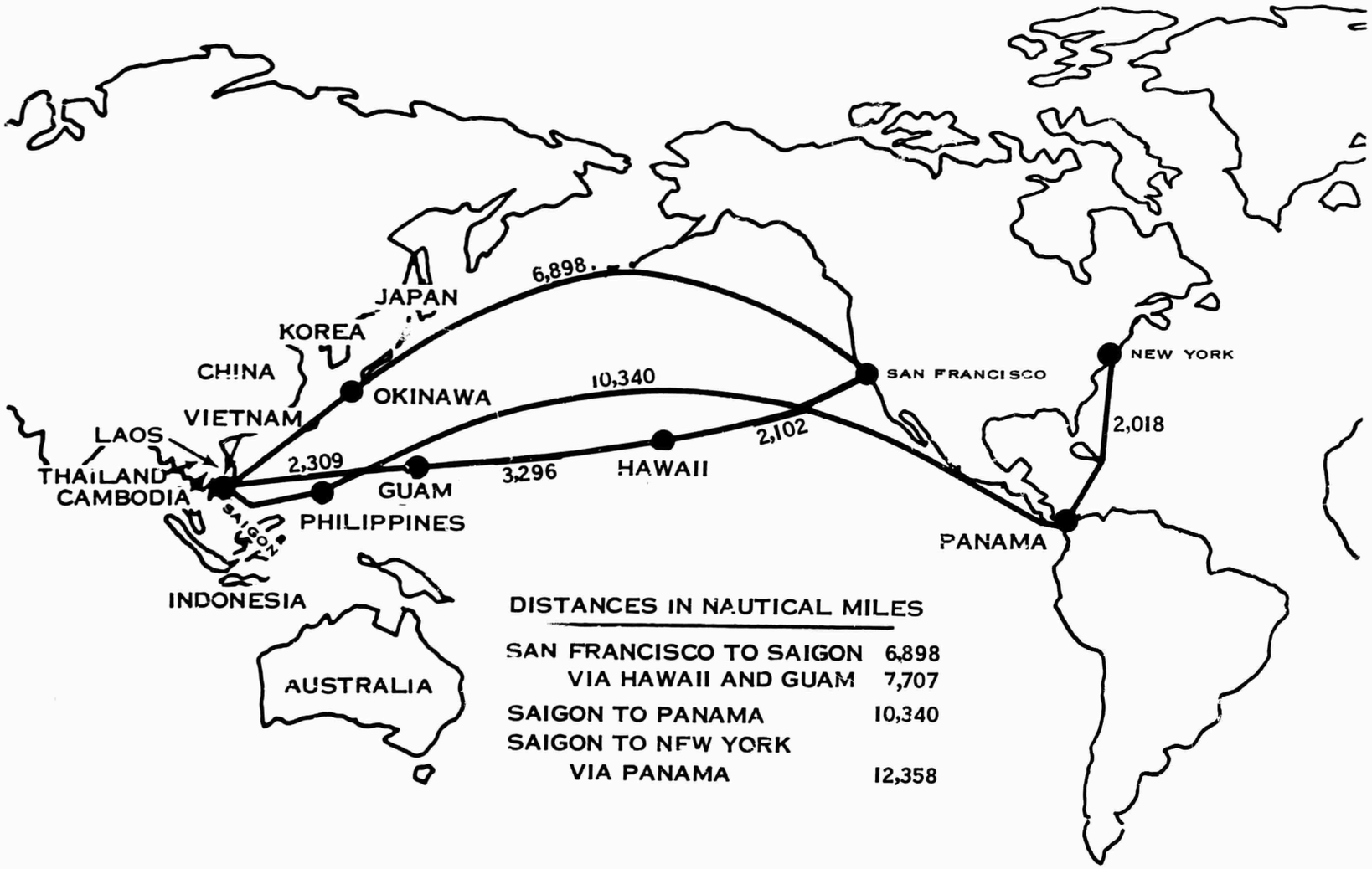

FIGURE 1. LOGISTIC LINES OF COMMUNICATION TO SOUTHEAST ASIA

Source: U.S. Naval Oceanographic Chart H.O. 1261 (28th ed.), Track Chart of the World.

percentage of the time. It is often necessary to stop the coastal transits for logistic craft. From time to time, rivers cannot be entered or traversed as a result of seas, high rates of flow, and silting. For days at a time off-loading operations in the roadstead at Da Nang must be suspended.

(2) During the southwest monsoon, the seasons are reversed with heavy rainfall in the southern part of the Republic, in Cambodia, and in Laos. This is the period of the dry season and normally good weather in the north.

(3) Logistic operations are further complicated by occasional typhoons, which strike land from the South China Sea about 10 times a year, usually between June and November.

(4) These climate extremes have a significant effect on military operations and particularly on military equipment. The dry seasons produce dust-bowl conditions in areas of logistic activity, particularly where large numbers of wheeled and tracked vehicles are used, and the dust causes serious deterioration of equipment and supplies. The periods of heavy rainfall make relatively stable soil areas so quaggy that heavy equipment and supplies can become mired. High humidity and heavy rainfall cause rust, deterioration of packages and crating, and a need for repackaging and replacement of certain items within a year. Although fog conditions are not extensive, they occasion poor visibility in the northern section of the central lowland area during the first part of October and sometimes from January to July, interfering with logistic air operations. Thunderstorms of a violent nature are fairly common during April and May, especially in parts of the highlands. Flooding in the Mekong Delta often interferes with logistic movement in the lowland areas.

c. Culture

(1) At least 85 percent of the 16.2 million people in the RVN are ethnically Vietnamese. As a group, they exert a paramount influence on the national life through their control of political and economic affairs and in their role as perpetuators of the dominant cultural tradition. There is no ethnic boundary corresponding to the political division between North and South Vietnam. A great many South Vietnamese have parents, sisters, brothers, or more distant kinsmen in the north. Among the remainder of the population, the largest minorities are the Chinese and the various highland groups collectively known as the Montagnards. In addition, there are smaller numbers of Khmers and Chams, both of whom figure prominently in the population of neighboring Cambodia. Indians, Pakistanis, Eurasians, French, other Europeans, and Americans make up the balance of the population.

(2) Vietnamese is the language of daily communication. It is spoken with varying degrees of fluency by many Chinese and by an increasing number of the non-Vietnamese minorities. There are some 20 fairly distinct Montagnard languages, little known among the Vietnamese population. Conversely, the spread of the Vietnamese language among Montagnards has been hindered by physical isolation and cultural conservatism.

(3) Four major religious beliefs have had a profound impact on the people and their culture and are reflected in behavior and customs. These are Animism, a belief in the existence of spirits, which is principally practiced by the Montagnards; Buddhism, a philosophic belief in self-denial and righteousness, and the most visible of Vietnamese religions; Confucianism, which calls for good government and harmonious relations among men; and Taoism, which teaches acceptance of things as they are rather than contending against them. In modern times Catholicism, which made a late entry into Vietnam, has become an important religious force.

(4) Underlying all religious beliefs is a prevailing ancestor veneration. The result is a blend or synthesis of beliefs in which the forms and practices are peculiarly Vietnamese. For example, Buddhism in Vietnam is unlike Buddhism in Thailand. Relatively few people can be said to be purely of one religious belief, although they may so claim. Differences in religious practices may vary also from one level of society to another. The enemy, well aware of the importance of religion in Vietnamese life but not necessarily respectful of it, has used the peoples' beliefs in every possible way to gain his objectives.

(5) Ancestor veneration has had significant logistic implications. Respect for graves has required extensive arrangements in the acquisition and military use of real estate. Graves have been found everywhere, and their transfer has had to be accompanied by the correct religious ceremonies. The conduct of U. S. personnel has had to reflect respect for the symbols and the places held sacred and to take them into account when new areas of operation have been entered.

d. Demography

(1) The Vietnamese National Institute of Statistics computed and projected demographic statistics based on a sampling of population in 1960. Best available estimates indicated that 10.6 million people live in the Southern Region, more than 5 million in the Central Lowlands, and 600,000 in the Central Highlands. The country as a whole is not densely populated (about 243 persons per square mile), but, because of uneven distribution, local concentrations create population problems in some areas. Densities vary from 2,000 per square mile in the delta region to 13 per square mile in some of the plateaus of the Central Highlands. Almost a million refugees arrived from North Vietnam at the end of the French-Indochina War in 1954, and since 1960 another million have fled areas controlled by the Vietcong. Approximately one-eighth of the country's total population is composed of recently displaced persons.

(2) When the nearly 1 million refugees entered South Vietnam from the north in 1954, 319 camps or villages were set up for shelter. These camps were established along the coast and in areas from which the refugees could be shifted to locations where they could become self-supporting. This volatile population migration imposed serious hardships on a fundamentally sedentary society and resulted in local logistic problems to provide mere subsistence for the population. In 1956 and 1957 a large-scale Government program was established to develop 3.7 million acres of uncultivated land in the highland plateaus, but the program was only partially successful because of a number of cultural reservations.

(3) The population in Vietnam is basically young, with a large, active force available for work and the armed forces. The educational level, however, has been lowered by the disruption of the educational process during previous internal conflicts. As the sole supervisory and regulatory agency of schools and curricula, the Government plays a prominent role in education. Teachers in all but a few private schools are on the Government payroll. The educational system has two direct goals: first, to train sufficient students for Government service and, second, to raise the level of literacy. Only one in five students has completed any formal educational program. In 1963, 42,577 students in remote areas were enrolled in educational courses in which only the fundamentals were taught. The nearly complete lack of technical schools and the low level of literacy have prompted an extensive effort by the U. S. military to train an adequate indigenous force of employees to aid logistic operations. The United States has participated in the educational efforts of the Vietnamese Government by providing material aid and directly supporting educational programs.

2. HISTORICAL BACKGROUND. Before World War II, all of Vietnam was part of French Indochina. During World War II, pro-Axis French authorities collaborated with the occupying Japanese, but the Vietnamese people led by Ho Chi Minh vigorously resisted. The United States supported this resistance movement against the Japanese.

a. The followers of the Vietnamese revolutionary leader were members of the Viet Minh (League for the Independence of Vietnam), a forerunner of the Vietcong. With the Japanese defeat in August 1945, Ho Chi Minh proclaimed a provisional government. Emperor Bao Dai abdicated. In March 1946, the French recognized the Vietnam Republic as a free state.

b. Subsequent differences between France and the new state led to a new conflict. Mutual accusations and rising anticolonialism in Vietnam, which was now a member of the French Union, resulted in the protracted French-Indochina War (1946-1954). France established and recognized a rival regime, the "State of Vietnam," with the former emperor, Bao Dai, as president. Which of the rival regimes should rule over all of Vietnam then became the major issue of the French-Indochina War.

c. In 1950 the United States announced that it would furnish economic aid and military equipment to The Associated States of Indochina and France to assist in the restoration of stability in Indochina.[2] Despite American aid (short of actual combat participation) and the Viet Minh loss of approximately 1 million men, the French position further deteriorated and ended in defeat at Dien Bien Phu in 1954.

d. A peace was negotiated, the terms of which were set forth in the Geneva Accords of 1954. These Accords are the truce agreement signed by the Commanders in Chief of the French Union Forces and of the Peoples Army of Vietnam. They provided for a cease-fire and established the independence of a single undivided Vietnam, but permitted the provisional military demarcation of two zones at the 17th parallel with separate civil administrations, north and south. The United States and South Vietnam were not parties to the truce agreement. Although the United States supported the general terms of the truce, it unilaterally took specific exception to the provision of the Final Declaration of the Geneva Accords for reunification of the country through general elections. The United States Representative stated, "In the case of nations now divided against their will, we shall continue to seek to achieve unity through free elections supervised by the United Nations to ensure that they are conducted fairly."[3] The industrial north, controlled by the Viet Minh, became the Democratic Republic of Vietnam, a communist state under Ho Chi Minh. The agricultural South was proclaimed the Republic of Vietnam by the premier of the Saigon regime, Ngo Dinh Diem, after the 1955 national referendum deposed Bao Dai.[4]

e. The reunification of Vietnam as envisioned by the truce agreement was not implemented. Diem considered that a fair referendum could not be conducted under the police state conditions in North Vietnam, and furthermore, South Vietnam was not bound by the election provisions of the Final Declaration, to which, in any case, it too had taken specific exception.[5] In 1957 a campaign of sabotage and murder was initiated in South Vietnam by the Vietcong (Vietnamese communists). This led to an aborted rural uprising in 1959, which was quickly put down by Diem. As a consequence of this failure, the North Vietnamese decided in 1960 to infiltrate all of the former Viet Minh forces, which had been regrouped to the north in 1954 to assist in subverting the Government of the RVN.

f. The intensity of the subversion effort was instrumental in creating the disorder that led to the fall of the Diem regime on 1 November 1963. In response to the North Vietnamese assistance to the communist forces and in consonance with the principle of self-determination, the United States increased its military and economic aid to the RVN throughout this period to assist in combating guerrilla activity.

g. By 1965 the political turmoil and government instability following the fall of Diem and the introduction by North Vietnam of regular army units into South Vietnam had resulted in a deterioration of the military situation to such an extent that U.S. military forces were necessary to preserve the independence of the RVN. Thus, in less than two decades, the Vietnamese people engaged in their second protracted conflict, and the United States entered its second major war on the Asian continent.

3. GOVERNMENT STRUCTURE. French colonial rule left South Vietnam with little preparation for self-government and the country was handicapped by a lack of mature political institutions and a scarcity of popular and capable leaders.

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[2]Department of State, American Foreign Policy, 1950-1955 (Washington, D.C.: Government Printing Office, 1957), Vol. 2, p. 2365.

[3]Statement by United States Representative on Final Declaration of Closing Session of Geneva Conference, July 21, 1954, Peter V. Curl, ed., Documents on American Foreign Relations, 1954 (New York: Published for the Council on Foreign Relations by Harper and Brothers, 1955), pp. 316-317. Also see Statements by Secretary Rusk and Gen. Maxwell D. Taylor before the Senate Committee on Foreign Relations, "The U.S. Commitment in Vietnam: Fundamental Issues," Department of State Bulletin, Vol. LIV, No. 1393, March 7, 1966, pp. 1-17.

[4]Hans J. Morgenthau, Vietnam and the United States (Washington, D.C.: Public Affairs Press, 1965), p. 94.

[5]Department of State, Memorandum of 4 March 1966, "The Legality of United States Participation in the Defense of Vietnam," Congressional Record, Vol. 112, No. 43, March 10, 1966, pp. 5274-5279.

a. From 1956 to 1963, South Vietnam was governed under a constitution based in many respects on the constitutions of the United States and the Philippines. It provided for a strong executive, a unicameral National Assembly, and a judicial system. In early 1963, guerrilla activity greatly increased, and a serious political conflict arose between the Government and the Buddhists, who were later joined by other noncommunist oppositionists to the regime. On 1 November 1963 the Diem Government was overthrown by a military coup. (Diem and his brother were killed.) A succession of military and civilian regimes, characterized by instability, ruled until June 1965 when Air Marshal Ky and General Thieu came to power. They survived a number of serious political crises until September 1967 when the new constitution was adopted and Thieu and Ky were formally elected to their offices of President and Vice President, respectively. The new constitution provides for a separation of power between the executive and legislative branches of the Government and for an independent judiciary. The central Government relies on the provincial administration to execute national policies at the local level and to maintain security and public order. Below the provincial level, the administrative subdivisions have only narrowly limited autonomy.

b. The existence of a government in South Vietnam has significantly influenced the character of the U. S. presence. At no time during the war has the United States assumed political or military control of the country. South Vietnam has been treated as a sovereign nation. Since changes in the Government in Saigon contribute to political problems and disruption, such events have been as important as the unfolding of the tactical situation on the ground. It is generally true that the U. S. efforts, both political and military, have prospered to the extent that the Government of South Vietnam has been strong, coherent, and active. The corollary is that U. S. efforts have had little, if any, chance of success during the periods when the Government has been weak, divided, and thus ineffective.[5]

4. IN-COUNTRY DEVELOPMENT

a. Transportation

(1) The highway network consists of approximately 9,000 miles of highways whose major trunks are a coastal road from Saigon to Dong Ha in the north and an inland road from Saigon to Da Nang. Tributaries of these two main highways link the country with Cambodia and Laos and provide limited access to the Central Highlands and the Mekong Delta (see Figure 2). Over-the-road transport of supplies has been severely limited because of Vietcong destruction of bridges, establishment of road blocks and ambushes, and digging of deep, wide trenches in the road beds. In addition, many of the roads are not of suitable construction for sustained military traffic. Thus, repair and maintenance of the highway network has required an extensive and continuing logistical effort.

(2) The French-Indochina War and subsequent guerrilla actions had rendered the Government-owned railway system almost useless except for short, isolated sections. Extensive damage had been done to stations, depots, and workshops. Most of the bridges, locomotives, and rolling stock had been demolished by 1954. With large amounts of U. S. aid, some reconstruction of the railroad system was accomplished by 1962. Since that date, renewed destruction has taken place (see Figure 3) and rendered the railroads of limited value for logistic support. Although the rail situation has improved and tonnages moved by rail have progressively increased since 1965, rail movement has not played a significant role in support of military requirements.

(3) Prior to 1965 there were 12 major airports at various locations throughout the country. Only three of these were jet capable: Tan Son Nhut, Da Nang, and Bien Hoa. This limited airfield capability was a major problem at the beginning of the U. S. involvement in the conflict. It complicated not only the handling of the massive amounts of cargo delivered by air to the country but also the in-country aerial delivery of supplies, which was required, in part,

[5] Sharp and Westmoreland, Report on the War in Vietnam (Washington, D.C.: Government Printing Office, 1968), p. 71.

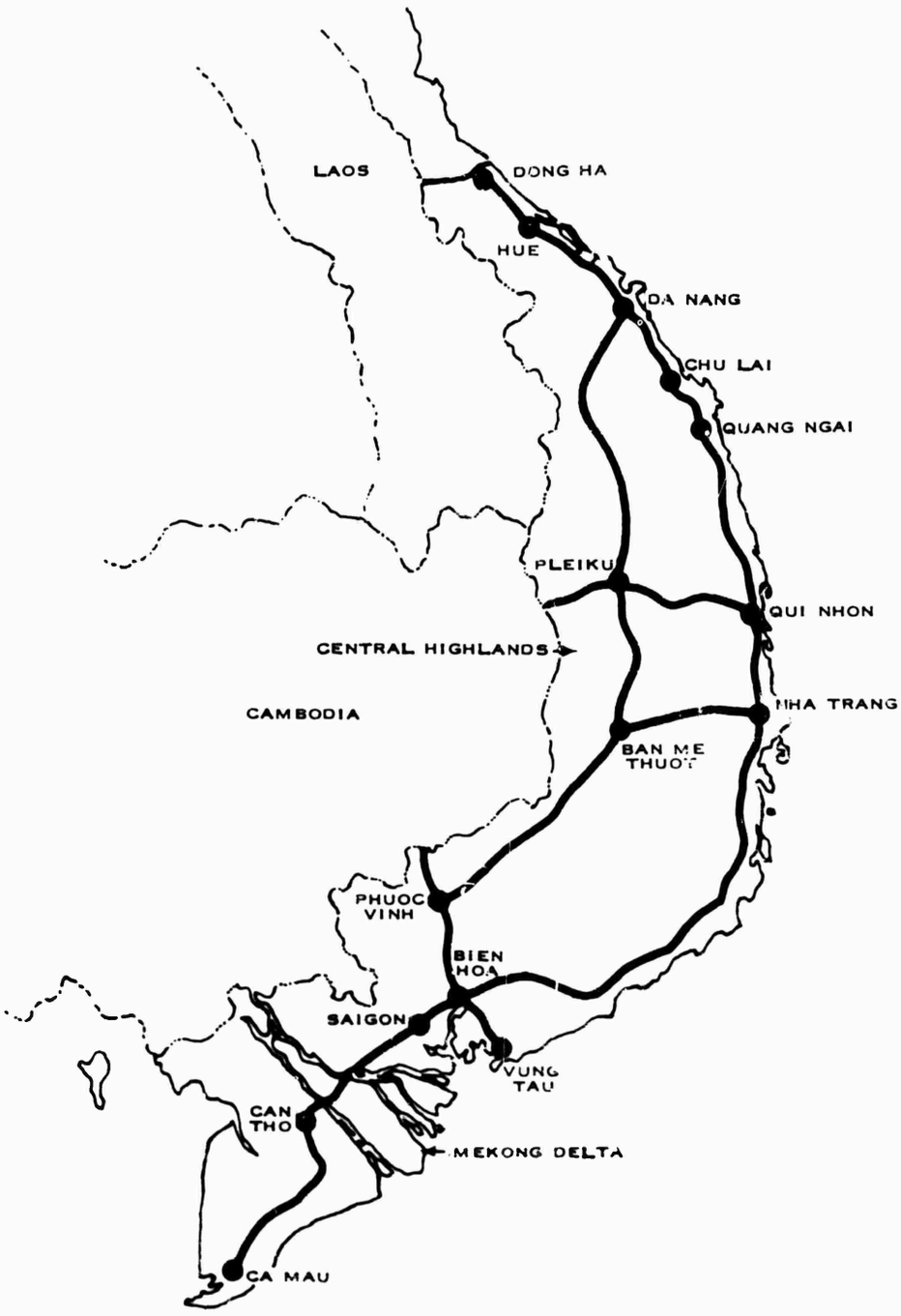

FIGURE 2. MAJOR HIGHWAYS IN SOUTH VIETNAM AS OF 1 JANUARY 1965

Source: Commander in Chief, Pacific, Command History, 1965, Annex A, U.S. Military Assistance Command, Vietnam (U), 2 May 1966, p. 304 (TOP SECRET).

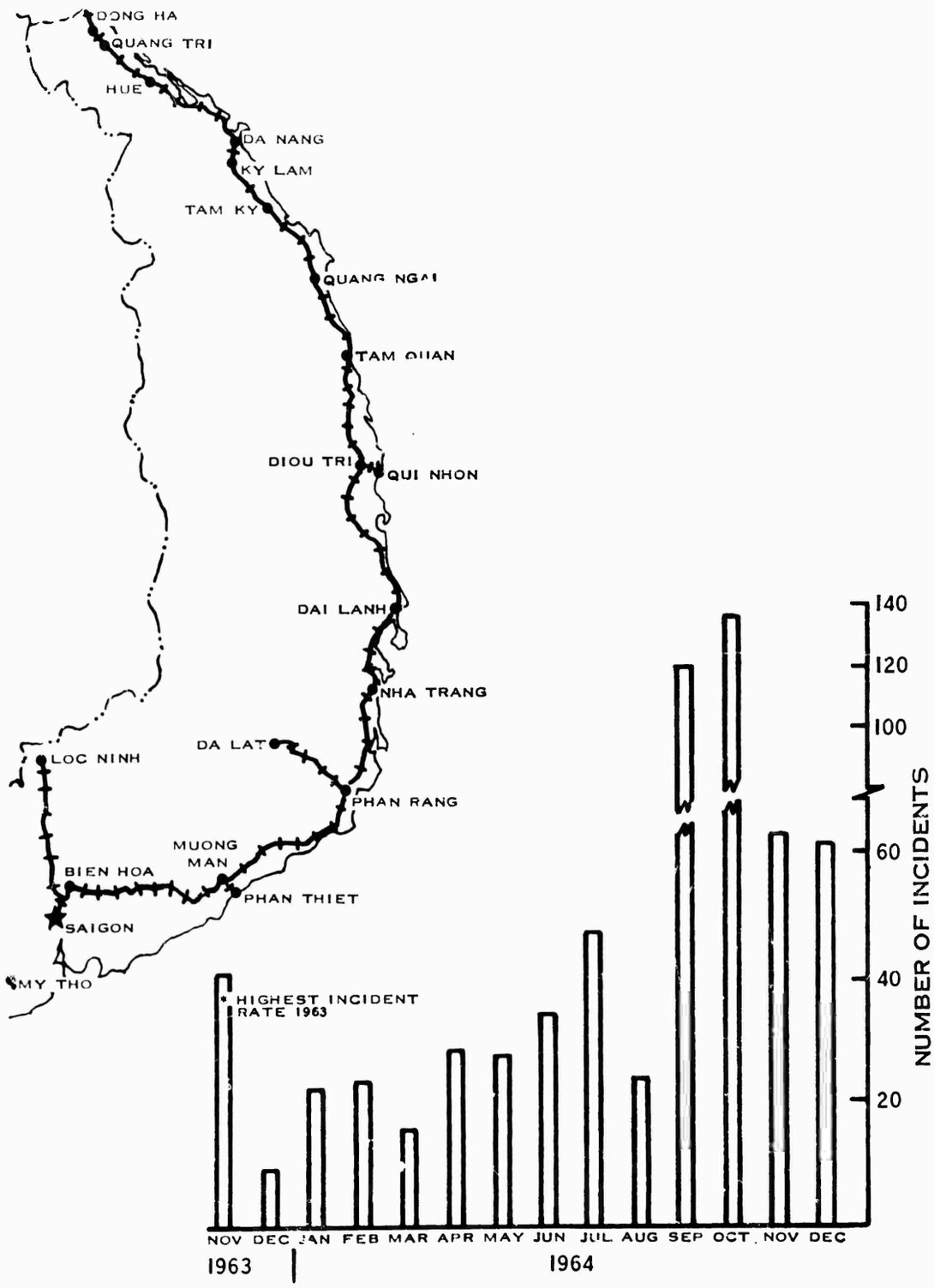

FIGURE 3. RAILROADS OF SOUTH VIETNAM

Source: U.S. Army, Pacific, Military History Division. History of U.S. Army Operations in Southeast Asia (U), 1 January - 31 December 1964, p. 39.

because of the lack of reliable land lines of communication. The overcrowded conditions that resulted were progressively relieved by the construction of five major jet air bases and 100 widely dispersed airstrips.[7]

(4) The use of water transportation was hampered by lack of port facilities in South Vietnam. There were only 12 deep-draft berths available in South Vietnam in 1965. Ten of these were in Saigon; the remaining two at Cam Ranh Bay were alongside a pier that was too narrow to permit the efficient discharge of even one ship. The receiving ports in South Vietnam were few and inferior to the shipping ports in CONUS so that congestion was inevitable.[8] The need for rapid deep-draft port development became paramount. Considering the enemy's capability to interdict land lines of communication and the need for in-country distribution of large quantities of supplies, the development of a number of coastal and river ports has been essential.

b. Communications. Under even the most ideal and stable conditions, the availability of communications lags requirements. Rarely are there sufficient lines, frequencies, facilities, and equipment in a military operation to satisfy message traffic across the board for command and control, logistics, and other ever-increasing net requirements. This has been particularly true for Vietnam. Added to these difficulties have been the extreme distances separating the unified commander, Government agencies, and the Service headquarters, especially in a highly precarious, politically oriented encounter in which rigid control of operational functions has been exercised. The requirement for communications received more than usual attention in the early stages of the buildup period. Although a basic communications capability existed in SE Asia, its overall effectiveness was significantly limited. Modern electrical communications were virtually nonexistent until significant U. S. military assistance, together with civilian air programs, began in the early 1960's. The first Army unit deployed to Vietnam was a U. S. Army signal battalion deployed in 1962.

c. Industry. The Republic of Vietnam, with a principally agricultural economy, is largely devoid of any great variety or quantity of commercially exploitable industry. Except for some light industry, an industrial base has not been developed. This is chiefly due to the long period of military confrontation and the low level of technical skills. Traditionally, it has been primarily an agricultural area because of climate and other factors. Industrial raw materials are not plentiful, and mineral resources are relatively unexplored. The underdeveloped economy has placed heavy logistic burdens on the United States. Not only are all U. S. forces supplied and equipped from outside the country, but also Vietnamese forces, third-country nationals, and other free world forces. However, a promising start has been made to overcome this industrial deficiency. The Agency for International Development (AID) tonnages for support of the Vietnamese, including materials for industrial development, at peak periods nearly equaled incoming military tonnages.

d. Health and Sanitation. Like most countries in SE Asia, the RVN faces serious health and sanitation problems that have a significant impact on logistic support of the conflict. Poor sanitation; lack of education in proper health measures; high incidence of debilitating diseases, primarily tuberculosis and malaria; and the almost total lack of trained medical personnel have created a need for public health assistance. South Vietnam had approximately 800 indigenous physicians in 1964; approximately 500 of these were in the Armed Forces, leaving a ratio of one doctor for approximately every 50,000 civilians. The lack of adequate medical facilities, the customs, and the frequent movement of people occasioned by the war have contributed greatly to the problem. The United States, interested foreign governments, United Nations organizations, and private organizations have established and staffed modest medical facilities, benefiting each of the 44 provinces. The efforts of provincial medical personnel have often been augmented by U. S. military units, which have also provided medical assistance in their areas of operation to the local populace. All of these teams have required transportation support and medical supplies, much of which has been provided by the United States. Because a Vietnamese is reluctant to

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[7] Ibid., p. 261.

[8] Commander in Chief, Pacific, Command History, 1965 (U), Annex A, U.S. Military Assistance Command, Vietnam (U), p. 118 (TOP SECRET).

travel far from his home, the United States has embarked on a program to build and staff local hospitals exclusively earmarked for treatment of civilian casualties of war. Construction of these facilities has competed with other construction requirements and has increased the logistic load. Private and public relief agencies have poured into the country ever-increasing amounts of medical supplies, which have also had to be moved over extensive distances and in competition with other goods. In emergencies the military hospitals have opened their doors to civilians.

SECTION C

INTERNATIONAL ASPECTS OF THE CONFLICT

1. U. S. ENGAGEMENT

a. In becoming a member of the Southeast Asia Treaty Organization (SEATO) in 1954, the United States indicated that it regarded international peace and security in that part of the world as vital to its national interests.[9] Consistent with its SEATO obligations, the United States sought in the early 1960's the reduction of communist aggression and subversion in South Vietnam and the restoration of peace in that area.[10] This interest in the security of Vietnam was intensified by "the implications of Chinese hostility which at that time (1963) was of unfathomable depth and uncertain duration."[11]

b. Although the long duration of the conflict was not generally anticipated in 1964, the Congress and others attempted to determine the period of time required to realize U. S. objectives in the area. Earlier in 1963[12] the U. S. Senate Committee on Foreign Relations had recommended a policy of determining the cost in men and money to stop communist aggression in SE Asia. The complexity of the U. S. effort, involving the need for a political settlement and a constantly increasing military assistance effort, precluded timely determination of such cost.

2. LIMITS ON COLLECTIVE EFFORT

a. Under the terms of the SEATO Pact, it was anticipated that a collective effort would be made to restore peace and to blunt communist subversion in SE Asia. Actually, the SEATO Pact stemmed from the U. S. involvement with the Korean War, when the United States became intensely interested in the flanks of the Asian continent.[13] The pact was initiated by the United States rather than by a group of equally interested and responsible nations. It was assumed on the international scene that if the friendly countries did not respond to a crisis, the United States would underwrite the cost of response.

b. The Republic of Vietnam made direct requests to the various SEATO nations for assistance;[14] however, the tendency to provide only limited and selected support prevailed. Accordingly, as the United States embarked on a course of action to restore peace and security in the area, it assumed the preponderance of the effort. France, the former colonial power, disenchanted after her own withdrawal from Indochina in 1954 and 1955, has not provided military aid. Neither has the United Kingdom, which has begun military withdrawal from areas of British influence east of Suez. Other nations party to the protocol simply did not have sufficient resources. For example, Pakistan and initially Thailand had national problems with respect to their own development and security, which precluded giving substantial aid, had they otherwise been willing. Thailand did provide a division of troops and other forces. Although participation of Australia and New Zealand was relatively small, it was heavy considering the population base of each country. Korea, although not a party to SEATO, provided greater military assistance than any other U. S. ally.[15]

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[9] U.S. Congress, House Committee on Foreign Affairs. Promoting the Maintenance of International Peace Security in Southeast Asia, 1964, p. 3.
[10] Ibid.
[11] U.S. Congress, Senate Committee on Foreign Relations, Vietnam and Southeast Asia, 1963, p. 19.
[12] Ibid., p. 21.
[13] Ibid., p. 2.
[14] Department of State, Memorandum of 4 March, "The Legality of United States Participation in the Defense of Vietnam," Congressional Record, Vol. 112, No. 43, March 5, 1966.
[15] Sharp and Westmoreland, op. cit., p. 223.

3. RELATIONS WITH CAMBODIA AND LAOS

a. Although Cambodia and Laos are extended protection by the SEATO Pact, neither is a party. Furthermore, each has chosen disassociation with SEATO and its proferred collective security. Cambodia sought neutrality and disassociation with SEATO in the belief that, in the event of a communist attack, the SEATO members would assist anyway and that, in the event of an attack by Thailand or any other western-oriented country, Communist China would assist.[16] Laos determined that she could not subscribe to SEATO because its provisions concerning Laos were decided without Laotian participation, and because the 1962 Geneva Conference forbade membership in SEATO.[17]

b. The declared neutrality of Laos and Cambodia has hampered allied military operations and provided sanctuaries for the enemy. The Ho Chi Minh Trail through Laos and Cambodia has provided relatively safe access for North Vietnamese forces and supplies infiltrating South Vietnam, despite the professed neutrality of these countries. Direct logistic access through and over Cambodia and Laos to the RVN, which would have simplified the support of U. S. forces in Thailand, was generally denied. Most importantly, the use of sanctuaries enabled the enemy guerrilla forces to use supply lines less vulnerable to attack than U. S. in-country supply lines. Special supply arrangements between the Vietcong and Cambodia also enhanced enemy logistic support.

4. MALAYAN EXAMPLE

a. The U. S. Government decisions and planning for the conduct of the war have been influenced by the British experience with the Malayan insurgency[18] during the years 1948 to 1957. The British had devised a successful counterinsurgency strategy against a formidable communist guerrilla force.[19] This success was the result of an extensive resettlement program, the creation of strategic hamlets, and the severing of local logistic ties to guerrilla units.[20] It was generally considered that if the successful British stategy could be emulated, the American effort could be limited and logistic support significantly reduced.[21]

b. It was soon realized, however, that the situations were dissimilar. The British exercised governmental control over Malaya, a British colony, whereas the United States has been limited to a supporting and advisory role to the sovereign RVN.[22] In Malaya, the insurgents were largely overseas Chinese, and the British had the support of the native Malays. Conversely, in Vietnam the guerrillas were initially indigenous to the area. They were supported and eventually reinforced and replaced by North Vietnamese of the same ethnic origin. In addition, unlike in Malaya, the guerrilla forces in Vietnam have available sanctuaries in Cambodia and Laos. Contrary to popular belief, a decade was required to bring success to British efforts. Although lessons learned from the Malayan example have been applied to Vietnam, the attempts to duplicate the British strategy have been influenced by environmental differences, and thus success has not been achieved.

5. BALANCE OF PAYMENTS

a. Significant to the logistic effort in Vietnam has been the need to consider the effort upon the U. S. balance of payments. Military overseas expenditures that have affected the balance of payments have included:

[16] George Modelski, ed., SEATO, Six Studies (Vancouver, B.C.: The University of British Columbia, 1967), p. 152.

[17] Modelski, op. cit., p. 148, and Michael Leifer, Cambodia, the Search for Security (Washington, D.C.; Frederick A. Praeger, 1967), p. 133.

[18] U.S. Congress, Senate Committee on Foreign Relations, Vietnam and Southeast Asia, 1963.

[19] J. J. Dougherty, "Guerrilla War in Malaya," (Newport, R.I.: Naval War College, 1963).

[20] Ibid., p. VII-36.

[21] U.S. Congress, Senate Committee on Foreign Relations, Vietnam and Southeast Asia, 1963.

[22] Ibid., p. [illegible].

(1) Expenditures by U.S. military personnel, civilians, and dependents.

(2) Procurement of equipment, materials, and supplies.

(3) Payment of construction and contractual services.

(4) Procurement under military assistant programs.

b. To offset these expenditures and to assist in achieving a favorable balance of payments, the Department of Defense (DOD) has a comprehensive program to reduce military expenditures in all areas overseas. The DOD program, as later modified during the Vietnam buildup, includes:[23]

(1) Procurement in the United States rather than overseas when costs are not more than 50 percent higher.

(2) Reduction of employment of foreign nationals at overseas bases and use of military dependents when possible.

(3) Reduction of construction overseas.

(4) Reduction of offshore procurement under military assistance.

(5) Negotiation, when possible, to offset agreements.

(6) Encouragement of additional savings through a volunteer program for military and civilian employees overseas.

(7) Prohibition of Government-paid transportation of foreign automobiles.

(8) Reduction of limitation on custom-free entry of bona fide gifts from military personnel abroad from $50 to $10.

(9) Prohibition of sale of foreign goods in post exchanges and commissaries, except for goods readily available in local markets and sold at an equivalent or higher price.

In spite of this program, military expenditures have risen significantly because of the increased military effort in Vietnam. Construction and offshore procurements have increased, as well as other foreign exchange costs. Although an extensive effort was made to prevent the rising of military expenditures despite higher costs overseas, increases in troop strength, construction, and supporting activities have limited the success of this program.

6. REPUBLIC OF VIETNAM POLICIES AND DECISIONS

a. Labor and Work Force Limitations

(1) Initially, the indigenous population did not provide an adequate source of skilled labor to meet the logistic requirements of the Vietnam buildup. Low health standards reduced work effectiveness. Security clearance for Vietnamese nationals required as long as 9 months,

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[23] Prof. William A. Dymza, "The Balance of Payments Problem, the Dollar, and United States Worldwide Responsibilities," Part II, Selected Readings in International Relations (Newport, R.I. Naval War College, 1968), p. 11-G-57. Walter S. Salant et al., The United States Balance of Payments in 1969 (Washington, D.C.; The Brookings Institution, 1963), p. 199.

causing employers to hire foreigners.[24] Nevertheless, the Government of the Republic of Vietnam and the contractors made an effort to develop a labor force consistent with occidental standards,[25] and by the peak of the buildup in 1968 they were able to provide labor as generally required.

(2) The requirement for direct hiring of foreign national civilian personnel was limited, not by any decision or policy of the RVN but by an OSD numerical ceiling imposed to assist in protecting the balance of payments. However, it should be noted that this ceiling was not applied to foreign nationals in the employment of contractors performing for the military services.

(3) The productivity of the civilian work force has been impaired on occasion by the necessity for military curfews. For example, the 24-hour curfew imposed in the Saigon area by the Government of the Republic of Vietnam for tactical reasons during the 1968 Tet Offensive adversely affected the logistic support of operations. The curfew seriously limited the amount of work that could be accomplished between 30 January 1968, when it was imposed, and 7 February, when it was partially lifted. However, inasmuch as the curfew continued to become effective daily at 1400 hours, the working day was still substantially shortened. On 17 February, working hours were extended by making the curfew effective at 1700 hours.[26] During Tet and prior to 17 February, all cargo was cleared by military drivers; after 17 February, civilian truck drivers could be used only for one full shift per day. On 22 February, the curfew was lifted completely in the Saigon area, and 24-hour operations were resumed by civilian stevedores.[27]

b. Real Estate Acquisition. Considerable construction has been required to support the deployment of U.S. forces in SE Asia, creating a concomitant requirement for real estate. Public land has not been available in many areas, and the RVN was not initially prepared for large-scale real estate acquisition. Construction programs in Vietnam were delayed for some time pending DOD policy guidance. A decision was made that U.S. funds should not be used to acquire real estate rights except as a last resort; it was considered improper to buy the battlefield. However, as an expedient in the early stages of the buildup, the United States frequently paid indemnification costs. In July 1965 the Government of the Republic of Vietnam assumed responsibility for land acquisition, including funding for payments and relocation of owners.

c. Armed Forces Modernization

(1) The Armed Forces of the Republic of Vietnam (RVNAF) have been supplied for several years with equipment through the Military Assistance Program (MAP). This program was designed to provide a deterrence posture and capacity to defend against aggression, rather than to support sustained military operations.[28] Much of this initial equipment was below U.S. standards but was of sufficient quality to enable the RVNAF to successfully engage the enemy until 1964. Then, however, the enemy began to convert to a standard family of small arms,[29] the most important of which was the AK-47 assault rifle. Other new enemy weapons included 7.62mm machine guns, and rocket launchers. These weapons greatly increased their firepower capability, placing the RVNAF at a disadvantage. In particular, the lightly armed Regional Forces and Popular Forces responsible for maintaining security of the villages and hamlets under Government control were disadvantaged by the inferiority of their weapons.

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[24] Department of the Air Force, Physical and Cultural Environment of Southeast Asia, Project CORONA HARVEST, Aerospace Studies Institute, Air University, 1968, p. 107.

[25] Ibid.

[26] Commander, U.S. Military Assistance Command, Vietnam, 1968 Command History (U), Vol. II, 30 April 1969, p. 694 (TOP SECRET).

[27] Ibid.

[28] Sharp and Westmoreland, op. cit., p. 67.

[29] Ibid., p. 57.

(2) Although the need for modernization of RVNAF weapons to confer equality in firepower was recognized, it was given a much lower priority than that assigned to other forces and programs. Accordingly, except for decision on a case-by-case basis, modernization was generally deferred; not until 1968 did it commence on a significant scale.

d. Republic of Vietnam Mobilization. The Republic of Vietnam planned to undertake national mobilization in 1964,[30] but implementation was delayed for 4 years. Although the numerical requirement for personnel was not restrictive, other factors needed substantial improvement if an adequate mobilization base was to be developed. A stable and reorganized government capable of effectively controlling the populace and natural resources was required. A program to develop a sense of national unity had to be undertaken. Since the economy was based primarily on agriculture, trained indigenous personnel were not available to support a national mobilization program. Ports, transportation, and communications were inadequate. The armed forces lacked competent and aggressive leaders. The logistic system was not responsive and was incapable of supporting operations required in a guerrilla combat environment. These factors, and the priority of equipping U. S. Armed Forces committed to the RVN to prevent a communist takeover in the crucial year of 1965, resulted in a substantial delay of national mobilization.

e. Inflation

(1) A major problem for the RVN has been inflation, to which the military construction program and the tremendous buying power[31] of U. S. troops have contributed. The construction program imposed great demands on the limited skilled labor force and available materials, and in effect significantly reduced labor and materials for civil purposes.[32] Efforts were made to divert the buying power of U. S. troops by the following measures:[33]

(a) Increasing the number of post exchanges and the range of items offered.

(b) Expanding the Rest and Recuperation (R&R) Program to outside countries.

(c) Encouraging savings through a Government-sponsored program paying 10 percent interest on deposits.

(2) The U. S. Commodity Import Program (CIP) was use to saturate the Vietnamese market with salable goods and thus reduce inflation caused by the influx of U. S. and free world forces into Vietnam.[34] The Government of the Republic of Vietnam dollar earnings from DOD piaster purchases in support of U. S. military activities in Vietnam provided for additional imports of consumer goods. Although the latter imports did not always coincide with basic needs,[35] they were essential means by which inflation was kept within tolerable limits. The measures taken, plus close coordination with Vietnamese officials at all levels, kept the problem within manageable proportions.

(3) Further compounding the problems of inflation and the RVN balance of payments has been the drastic reduction in exports caused by the interruptive and harassing action of the Vietcong against villagers. This in itself has created an increased requirement for imports.[36]

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[30] Statement by the White House, March 17, 1964, United States to Increase Economic and Military Aid to Vietnam, Department of State Bulletin, April 6, 1964, pp. 522-523.

[31] Sharp and Westmoreland, op. cit., p. 119.

[32] U.S. Congress, Senate, Supplemental Foreign Assistance, Fiscal Year 1966—Vietnam, Hearings, before the Committee on Foreign Relations, Senate on S. 2793, 89th Congress, 2d Session, 1966, p. 19.

[33] Sharp and Westmoreland, op. cit., p. 119.

[34] Commander, U.S. Military Assistance Command, Vietnam 1967 Command History (U), Vol. II, 16 September 1968, p. 811 (TOP SECRET).

[35] Department of the Air Force, Physical and Cultural Environment of Southeast Asia, Project CORONA HARVEST, Aerospace Studies Institute, Air University, 1968, p. 145.

[36] Ibid.

The Government of the Republic of Vietnam devalued its currency in 1966, liberalized imports, placed ceilings on spending, introduced tax reform, and expanded port facilities to keep within acceptable limits the rate of inflation.[37]

(4) Although the CIP, piaster ceilings, policies to increase the number and range of items stocked by post exchanges, and expansion of the R&R Program helped to combat inflation, they also increased the U.S. logistic effort in SE Asia.

[37] Ibid., p. 1-3.

SECTION D

BASIC U.S. STRATEGY

1. NATIONAL OBJECTIVES

a. Following World War II, the United States became a party to numerous multilateral and bilateral alliances. As a result of these new alliances, the nation increased its commitment of military and foreign aid around the world. In further recognition of the Sino-Soviet communist threat, the United States with its allies created centers of major military force in the European and Pacific theaters, in accordance with the policy of communist containment. In the Pacific, military forces were used in Korea in accordance with this policy of containment. At the termination of the French-Indochina War, strategic thought was directed to the southeastern flank of the Asian continent and application of the policy of containment was again considered.

b. However, U. S. assistance to the Vietnamese antedated the fall of Dien Bien Phu by almost 4 years. In 1950 the United States announced its decision to start a program of economic and military aid to France and the Associated States of Indochina to assist the new nations in the French Union, Laos, Cambodia, and Vietnam, in restoring stability and pursuing peaceful and democratic development.[38] The first U. S. military involvement had occurred on 28 October 1950, when the Military Assistance Advisory Group, consisting of 35 U. S. military personnel, became operational in Vietnam. On 7 May 1954, 43 months later, Dien Bien Phu fell to the Viet Minh forces. Some of these forces later went underground in the South and emerged in 1957 as the Vietcong.

c. The young South Vietnamese Government had been seriously weakened by a series of coups and upheavals that began with the overthrow of President Diem in 1963. These upheavals continued through the first half of 1965. The weakness of the Government stemmed in part from the terrorist tactics of the Vietcong. Since 1962 there have been more than 6,000 assassinations and 30,000 kidnappings among the civilian population. In 1964 alone, 436 Government officials were assassinated and 1,131 were kidnapped.[39]

d. From the beginning, the objective of the United States was to establish a safe environment within which the Vietnamese could form an independent government that would be freely elected and stable and would deserve and receive popular support.[40] All U. S. military and economic assistance has been directed to this end. In addition, in April 1964 the President of the United States urged all nations of the free world to come to the assistance of South Vietnam.

e. Throughout 1964 the North Vietnamese regime became more threatening, both in South Vietnam and in Laos. At the request of the latter, the United States undertook reconnaissance flights over Laotian territory.[41] Subsequently, when the communists attacked these aircraft, escort fighters were provided and instructed to fire when fired on.[42] This resulted in limited engagements of U. S. and communist forces. Finally, on 2 August 1964, deliberate attacks were made by North Vietnamese torpedo boats on the destroyer MADDOX on patrol in

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[38] Department of State, American Foreign Policy, 1950-1955, Vol. 2, p. 2365. See also Department of State U.S. Treaties and Other International Agreements, Vol. 3, Pt. 3, 1952, pp. 2756-99, and U.S. Congress, House, The Mutual Defense Assistance Act of 1949, Public Law 329-81, H.R. 5895, October 6, 1949.

[39] Sharp and Westmoreland, op. cit., p. 97.

[40] Ibid., p. 6.

[41] Department of State Bulletin, August 24, 1964, pp. 261-263.

[42] Ibid.

international waters in the Gulf of Tonkin.[43] The destroyer's fire and aircraft from the carrier TICONDEROGA sank one boat and drove the others off. On 4 August, the destroyers MADDOX and C. TURNER JOY were attacked in the Gulf of Tonkin by North Vietnamese torpedo boats.[44]

f. After the Gulf of Tonkin incident, the Congress passed as a Resolution, Public Law 88-408, which was approved on August 10, 1964. This law states:

> "That the Congress approves and supports the determination of the President, as Commander in Chief, to take all necessary measures to repel any armed attack against the forces of the United States and to prevent further aggression.
>
> "Section 2. The United States regards as vital to its national interest and to world peace the maintenance of international peace and security of Southeast Asia. Consonant with the Constitution of the United States and the Charter of the United Nations and in accordance with its obligations under the Southeast Asia Collective Defense Treaty, the United States is, therefore, prepared, as the President determines, to take all necessary steps, including the use of Armed Forces, to assist any member or protocol state of the Southeast Asia Collective Defense Treaty requesting assistance in defense of its freedom.
>
> "Section 3. This resolution shall expire when the President shall determine that the peace and security of the area is reasonably assured by international conditions created by action of the United Nations or otherwise, except that it may be terminated earlier by concurrent resolution of the Congress."[45]

g. In signing Public Law 88-408, President Johnson said:

> "To any armed attack upon our forces we shall reply. To any in Southeast Asia who ask for our help in defending their freedom, we shall give it. In that region there is nothing we covet, nothing we seek—no territory, no military position, no political ambition. Our one desire—our one determination—is that the people of Southeast Asia be left in peace to work out their own way."[46]

h. In late 1964, the Vietcong launched its first division-sized attack against the South Vietnamese Army and North Vietnam made its first commitment of regular Army forces in the Central Highlands.[47] In the wake of political instability following the fall of Diem, the entry of North Vietnamese troops into South Vietnam caused the general situation to deteriorate sharply. The pacification of the countryside by the Government of South Vietnam was brought nearly to a stop, the enemy was resurgent everywhere, and additional North Vietnamese forces were on the move south through Laos. It was apparent that the existing levels of U. S. aid could not prevent the collapse of South Vietnam and that the Vietcong, aided by North Vietnam, was moving in for the kill.

i. By July 1965 a decision had been made to commit 125,000 U. S. troops as soon as possible to prevent the communist takeover. When President Johnson made this commitment, he indicated that additional troops would be sent as requested by the RVN and the Commander, United States Military Assistance Command, Vietnam. In response to an early request for

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[43] Ibid.

[44] U.S. Congress, House Committee on Foreign Affairs, Promoting the Maintenance of Peace and Security in Southeast Asia, 1964, p. 8.

[45] U.S. Congress, U.S. Statutes at Large (Washington, D.C.: Government Printing Office, 1965), Vol. 78, Statute 384.

[46] U.S. President, Public Papers of the Presidents of the United States (Washington, D.C.: Office of the Federal Register, National Archives and Records Service, 1963-64), Lyndon B. Johnson, 1965, Vol. 2, pp. 946-947.

[47] Sharp and Westmoreland, op. cit., p. 97.

assistance from nations of the free world, nonmilitary aid was provided by 39 countries. Military assistance was provided by Korea, the Philippines, Australia, New Zealand, and Thailand. Other than the United States, Korea was to supply the largest amount of military assistance to the RVN.[48]

2. MILITARY OBJECTIVES

a. Initially, the U. S. military goal was to develop strong, confident, and effective Vietnamese military forces able to defend their own country and provide security for their own people.[49] This philosophy required, in addition to material assistance, provision of an extensive advisory effort to the Vietnamese Armed Forces. During the 1962-64 period the advisory effort was expanded until, by the end of 1964, about 23,000 advisory and support personnel were in Vietnam.[50] More than 300 advisory teams, ranging in size from 5 to 40, were assigned to Vietnamese military units and to provinces and districts.

b. The early goals of the United States broadened when the RVN was facing defeat in 1964, and large contingents of U. S. forces entered the country in 1965. Economic objectives remained unchanged but military objectives now included the defeat of enemy forces, with U. S. participation. The Commander in Chief, Pacific, defined these objectives as follows:

> "The U. S. military goal was to provide a secure environment in which the South Vietnamese could live and in which all levels of legal government could function without enemy exploitation, pressure, or violence. The strategy to achieve this goal consisted of three interdependent elements: (1) The ground and air campaign in South Vietnam; (2) the nation building effort in South Vietnam; and (3) air and naval offensive against North Vietnam. Through these integrated efforts, it was hoped the regime would be convinced its aggression could not succeed and that such aggression would be too costly to sustain."[51]

c. To accomplish this strategy, the United States carried the war to North Vietnam by air, interdicted sea and land lines of communication into South Vietnam, engaged the enemy within South Vietnam, and conducted large advisory and aid programs designed to increase the effectiveness of South Vietnam's Armed Forces and to improve the welfare of the people.

d. The major effort within the RVN was to regain control of large populated areas and to expand control outward. Since this concept was based on separating the enemy from the population, control of land was important only when it was directly related to that goal. It became generally considered that the war for the hearts and minds of the people was as vital as military action against the enemy. The first step in achieving population control was the designation of priority areas in which maximum efforts were to be exerted in rooting out the enemy and intensive pacification efforts were to take place. The priority areas coincided with major population groupings and initially encompassed only large urban areas and their outlying districts. Since there were no front lines and since priority areas were widely separated, unique tactics were employed to support this strategy. Many of these tactics were to have a significant impact on the logistic support.

3. NATIONAL CONTROL AND GUIDANCE

a. Mobilization and Manpower

(1) For the first time in modern military history, U. S. Armed Forces have been engaged in a major conflict in which the Reserve components have not played a significant part. Although some Reserve units were called to active duty in April 1968, after the PUEBLO incident,

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[48] Ibid., p. 5.
[49] Ibid., 209.
[50] Ibid., p. 95.
[51] Ibid., p. 6.

their numbers were limited. The decision against activating major Reserve forces for the Vietnam War was inconsistent with contingency military planning. It had been assumed that, in a crisis such as that in SE Asia, the use of Reserve forces to round out active forces would be authorized. On 28 July 1965, the President announced that U. S. forces in Vietnam would be increased immediately to 125,000 men, resorting to draft calls and increased enlistments.[52] It was indicated that the administration planned to meet the Vietnam requirements without mobilizing the Reserves and with only limited service extension in the Navy.[53]

(2) Thus, previous contingency planning for the use of Reserves in Vietnam was invalidated. The lack of authorization to mobilize Reserves resulted in personnel shortages, especially in logistic skills. Because of the initial shortage of in-being units of the types required, the Army, for example, had to activate and train more than 60 percent of the units deployed from CONUS in 1965.[54]

(3) In all Services, the DOD civilianization program, as implemented, has been detrimental to the military requirement for a developed wartime sustaining base of logistic managers and other persons with depot-level skills. It has been difficult to justify in peacetime the requirement for logistic support units that did not contribute directly to the immediate support of forces. Consequently, the employment of civilians, in lieu of military, in noncombat positions has become widespread. This is especially true at CONUS Inventory Control Points and depots. The policy has almost eliminated the opportunity for military personnel to acquire the broad experience in logistics that is needed in Vietnam.

(4) The central authority for the generation of military force has been the Secretary of Defense under the guidance and direction of the President. The primary instrument through which control of such requirements has been exercised is the Program Deployment Plan initiated by the Secretary of Defense that places ceilings on total military manpower strengths. The program has evolved into a major control mechanism, and has expanded gradually to cover not only military manpower ceilings by Service but also program objectives and project goals. Limitations have been placed on the number of certain military units such as construction battalions and combat and support aircraft, on artillery by caliber and number of pieces, and on total numbers of combat and support ships and patrol and auxiliary craft. Troop ceilings have been imposed in the interest of reducing piaster expenditures within the Vietnamese economy. Program Deployment Plans have been periodically changed and updated. Once forces have been approved, it is the responsibility of the Service concerned to select and ready individual units for deployment. Actual deployments have been directed by the Joint Chiefs of Staff against a schedule approved in the Program Deployment Plan.

(5) The Program Deployment Plan system has been an evolutionary development. The Secretary of Defense began closely controlling deployments to South Vietnam about 1 January 1964, but stringent rules for this control were not devised or enforced until April 1965. The Services had to resubstantiate all forces in-country prior to that date. Subsequently, major deployments proposed by a Service, CINCPAC, the Joint Chiefs of Staff, or the Office of the Secretary of Defense have required extensive justification. The approved Program Deployment Plan has become the basis for Service manpower and logistic and budget planning.

b. Industrial Base. The U. S. industrial base has not been mobilized during the conflict. It has been business-as-usual for industry, with competition between military and civilian consumer requirements generating accelerating demands. In some cases, accelerated production has been initiated to meet requirements. In isolated cases such as the garment industry, pressure has been exerted to compel the allocation of production to military needs.

[52] U.S. President, op. cit., pp. 794-799.
[53] New York Times, August 5, 1965 (1:8).
[54] Continental Army Command, Troop List No. 74, January 3, 1967.

c. Military Operations. The Vietnam War expanded gradually as the President attempted to limit U. S. commitments and the impact of those commitments on other national problems. The desire to limit the war has resulted in close control of military operations by DOD and other Government agencies; consequently, conventional war capabilities for airborne operations (not air assault), mechanized warfare, air-to-air warfare, air defense, and naval warfare have been only partially exercised. Decisions were made: (1) not to neutralize Haiphong; (2) not to interdict North Vietnam's external supply lines by bombing, mining, or blockade; and (3) not to destroy North Vietnam's basic petroleum, oil, and lubricants (POL) supplies, and other resources. These decisions permitted the unobstructed flow into North Vietnam of arms, ammunition, oil, trucks, generators, machinery, spare parts, steel, and cement, as well as food and other consumables for the population. The secure continuation of external shipments to the enemy also contributed to the steady provision of arms and supplies to his forces in South Vietnam. Since DOD ruled that the material could be destroyed only after its removal from the points of entry, Haiphong and Hanoi, the U. S. Armed Forces have been required to attack supply lines to South Vietnam that are widely scattered and generally hidden from view, rather than striking primary targets in North Vietnam. This tactic was less efficient than if the United States had attacked the primary targets, and increased operational and logistic requirements significantly.

d. Graduated Military Action

(1) Logistic events have been largely shaped by the national strategy of graduated military actions. Logistic planning, decisions, and preparations tended to proceed in a fragmented fashion in response to step-by-step decisions associated with the buildup of forces. Logistic planners were confronted with continuously changing planning factor .

(2) The troop strength in South Vietnam was increased by varied increments during the period 1965-68. Equipment and supply requirements fluctuated at unusual rates. Procurement activities were faced with compressing production lead times for high priority requirements frequently with resultant higher unit prices. The clothing industry was occasionally reluctant to respond to the needs of procuring activities. Thus, the strategy of graduated military actions created turbulence and instability that have been detrimental to efficient logistic planning.

e. Inflation

(1) The inflationary trend that has prevailed in the U. S. economy from the onset of World War II has had an impact on the defense economy and logistic support of the Vietnam War. The purchasing power of the defense budget, as generally supplemented each fiscal year, has been steadily eroded by inflation.

(2) It has not been judged desirable on the national level to curb inflation at the expense of a deflationary national recession that would shrink investment, retard technological advance, slow the future growth of the gross national product, and reduce the efficiency with which resources are used.[55] A recession would also curtail the economic basis for national security planning.[56] To avoid recession, the Government has the power to counter any deflationary trend by reducing taxes, expanding the volume of money, and reducing interest rates.[57] However, these measures if not carefully controlled can result in a degree of inflation as undesirable as a recession in its effects on defense and the national economy.

(3) Although inflation has been generally felt in the increased costs of ships, aircraft, tanks, POL, munitions, provisions, general supplies, maintenance, conversion, and repair, its precise impact on the effort in Vietnam is difficult to measure. Planned procurement for new weapon systems has often been modified because of drastic increases in costs between the development and production stages. The Secretary of Defense, after the Tet Offensive early

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[55] Charles J. Hitch and Roland W. McKean, Elements of Defense Economics, (Washington, D.C.: Industrial College of the Armed Forces, 1967), p. 39.

[56] Ibid.

[57] Ibid.

in 1968, considered that the cost to the national economy of committing a requested 200,000 additional troops to Vietnam would be so great as to cause the country to face possible credit restrictions, tax increases, and wage and price controls.[58] Thus, fiscal as well as political, technological, and other considerations have influenced the formation and execution of military strategy.[59]

(4) Throughout the war, troop deployment to Vietnam with its essential logistic support has been programmed to minimize the effect on the national economy. Except for an increase in income taxes through an imposed 10 percent surcharge, an increase in interest rates, and a generally tighter money policy, the national economy has operated without significant adjustment. However, the steady and continuous effect of inflation has compounded the normal budgetary limitation upon the expenditure of resources available for defense.

[58] Clark M. Clifford, "A Vietnam Reappraisal," Foreign Affairs, July 1969, p. 610.
[59] Henry A. Kissinger, "Strategy and Organization," Foreign Affairs, April 1957, pp. 379-394.

SECTION E

TACTICAL ENVIRONMENT

1. GUERRILLA WARFARE WITH NEW DIMENSION

a. The threat of communist-inspired "wars of liberation" in the form of guerrilla warfare was recognized early in the decade. Although it was considered that the United States with its allies could meet the thermonuclear threat, the President considered it necessary to develop techniques and tactics, communications, and logistics to meet the threat of terror, subversion, propaganda, and insurgency action, especially in the newly emergent nations.[60] This development included a full spectrum of military, quasi-military, and civil actions and involved political and economic warfare.[61]

b. Although guerrilla warfare was not a new experience to the United States, the form it took throughout the Sino-Japanese War and in Vietnam during the French-Indochina War was characterized by a new dimension. The new form, often credited to Mao Tse-tung, encompassed the use of both guerrilla and conventional types of warfare. The first stage, the strategic defensive, was guerrilla in nature; the second stage was a stalemate phase; the third and final stage was a conventional counteroffensive. The conflict was a protracted war in which time was sought to defeat a foe with highly developed technology.[62] This new strategy, sometimes termed "People's Revolutionary War," was apparent in the conflict in South Vietnam as it unfolded, and thus important new parameters were introduced in the tactical environment.

c. For the first time, the American fighting man found himself not only fighting a war characterized by both guerrilla and conventional actions, but simultaneously teaching and advising an ally and helping to pacify, secure, and build a nation. Military power had to be judiciously applied so that progress of the pacification program would not be impaired. Resources had to be shared to meet both military and civilian requirements. Each military decision had to be weighed for its consequences in relation to the civilian populace and to the military forces of other nations. The fact that the United States did not control the conduct of the war but instead shared control with the RVN placed unusual tactical restraints on U. S. military forces.

d. Vietnamese culture and traditions created paradoxes in the conduct of the war. It became common practice for opposing forces to observe Vietnamese religious holidays by publicly announced cessations of hostilities. Military planning had to take into account the requirement to terminate offensive actions at specific times and dates. These respites, sometimes lasting for several days, provided an opportunity for the enemy to reinforce, resupply, and relocate units without interference from allied forces. The enemy, taking advantage of this anomaly, used the 1968 Vietnamese Tet Holiday to complete final preparations for and to launch a countrywide assault on allied forces and Vietnamese communities in violation of the announced cease-fire. This resulted in a major setback in returning control of the country to the Government of the Republic of Vietnam. In addition to observing Vietnamese holidays, the combat forces were forbidden to molest religious shrines and burial places, even though experience indicated that the enemy sometimes used these places for his own advantage.

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[60] John F. Kennedy, "Presidential Statement to the Armed Forces of the United States," The Airman, May 1962.

[61] Ibid.

[62] Mao Tse-tung, Selected Works of Mao Tse-tung, Vol. 2 (London, Lawrence & Wishart Ltd., 1954), pp. 183 et seq.

e. These changes in dimension of guerrilla warfare required new methods to combat the native guerrilla forces and the regular forces of North Vietnam in the political and cultural environment of the country. Many new techniques and tactical innovations emerged; these have had a significant impact on logistic requirements.

2. COMBAT ENVIRONMENT

a. Land

(1) In the conduct of guerrilla warfare in Vietnam, the environment has caused a wide dispersal of tactical units. Vietnam has become an area battlefield, and three broad categories of tactical operations have evolved: securing, clearing, and search and destroy.[63] The U. S. troops have been required to develop an ability to fight an elusive enemy on this area battlefield. The enemy has had to be found before he could be engaged, and his capability has been difficult to ascertain. The need for new tactics and techniques and the simultaneous need for adaptation and improvement of the logistic capability have been recognized. New equipment has been developed and introduced. The wide dispersal of tactical units has required flexibility in distribution of supplies, equipment, and men. The enemy guerrilla, on the other hand, enjoyed the logistical advantage of certain relatively short supply lines into Cambodia and Laos, as well as the tactical advantage of sanctuary in those countries.

(2) The logistic support of guerrilla warfare has proved significantly different from that employed in conventional warfare. In conventional warfare, a point of entry is established and the enemy is encountered in a well defined line of battle. Areas cleared of the enemy behind the attack force normally become a "safe" zone in which logistic facilities and installations are established. In guerrilla warfare there are no clearly defined front lines. However, in guerrilla warfare as executed in the Vietnam environment, base camp areas have evolved, requiring a 360-degree perimeter defense. Combat operations have been conducted from these base camps.

(3) Support of the Vietnamese pacification program, a new dimension within the tactical environment, has added significantly to the overall logistic effort.

(4) South Vietnam's peasant-based society has proved highly vulnerable to communist penetration. Living in self-contained isolated villages, the peasants have traditionally been antagonistic toward government, which has tended usually to make demands on them, rather than to help them. The Vietcong, in the midst of terrorist tactics, has skillfully exploited this antagonism. This type of environment and guerrilla warfare create a need for extensive pacification programs. The steps in the pacification effort include clearing an area of armed communists, weeding out the guerrilla infrastructure, denying support to the guerrillas from the population, and then commanding popular support for the Government through programs of improved administration and economic and social development. In pacified areas the population is provided with reasonable assurance of a continued physically secure environment.

(5) The pacification process depends on the strength and action of the central Government. In South Vietnam it has required a coordinated effort by the Government and free world forces to gain the full support of the Vietnamese people. Success deprives the enemy of this claim to popular backing. Although such an effort was new to the experience of American fighting men, each was involved in some elements of pacification. The U. S. Special Forces assumed a leading role in the various pacification programs. In I Corps Tactical Zone, the U. S. Marines employed Combined Action Platoons, consisting of 15 U. S. Marines and 34 Vietnamese Popular Forces soldiers. The Marines lived with their Popular Forces compatriots in the hamlet or village that they were assigned to secure. The Marines trained their counterparts in military matters and instituted many civic action projects.

(6) Defense and surveillance of the RVN border was a major effort of the U. S. Special Forces. Working with the Civilian Irregular Defense Group recruited from the Montagnard

[63] Sharp and Westmoreland, op. cit., p. 117.

highland tribes, they established fortified camps and patrol bases along infiltration routes, conducted deep reconnaissance missions, and operated as reaction forces striking into remote areas, conducting raids and interdicting enemy lines of communication. In addition, the U. S. Special Forces have been involved in civic actions in the areas where they have operated. They have provided invaluable intelligence of the enemy's movements and areas of concentration to the regular forces which has enabled them to take prompt counteraction.

(7) The concept of mass use of the helicopter emerged from the test stage into the ultimate test—combat. Although the helicopter had been introduced during the Korean War, it did not play a major role at that time except in the evacuation of casualties. The use of helicopters has given friendly forces extraordinary mobility in both tactical movement and logistic support. A large number of helicopter units have been deployed in Vietnam; some have provided logistic support and others have been used in dual missions of providing airlift and direct fire support. It is not unusual for combat units to be airlifted into an area, carry out combat operations against the enemy, and be resupplied entirely by aerial means.

(8) Although logistic requirements have been satisfied most frequently by use of the helicopter, other transportation modes have also been required. Ground forces have made extensive use of natural waterways for logistic support. These waterways have been combat areas requiring extensive effort to maintain their secure use as lines of communication. The Central Highlands area has required the use of aerial means of support, since the terrain does not lend itself to conventional land transport.

b. Water

(1) Naval action in South Vietnam has been generally in a "brown-water" environment, on the rivers and coastal waterways, because of the location of the conflict and the absence of enemy forces on the adjoining high seas. Since sea lines of communication have not been challenged, there has been greater flexibility in shipment modes and schedules than would otherwise have been possible. The normal wartime requirement for convoy escort and air cover for the protection of shipping has been inapplicable. Supplies for allied forces in the RVN have arrived in ships of the expanding Military Sea Transportation Service,[64] in commercial carriers, and in a growing number of Service Force ships of the Pacific Fleet. Replenishment operations at sea have not been subjected to enemy attack. The high seas, or "blue-water" portion of the environment, has been an extraordinarily safe haven.

(2) Within the RVN, however, the enemy has used coastal and inland waters for infiltration of men and materiel, and the water environment has therefore been less permissive. To counter the enemy's infiltration efforts on the sea and waterways, several Naval tactical force innovations have been required, each with logistic implications. These new tactical forces have participated in an unsophisticated form of warfare that has required a peculiar adaptation of modern Naval technology. They have been required to engage in guerrilla warfare in a water environment against a Mao Tse-tung type of communist guerrilla. The communist-led military operations in South Vietnam's extensive inland waterway communication systems have caused riverine warfare to rise to a high level of importance.[65]

(3) Naval task forces that the United States was required to establish in-theater were the Coastal Surveillance Force, the River Patrol Force, and the River Assault Flotilla One. The Army's 2d Brigade of the 9th Infantry Division and River Assault Flotilla One were combined to form the Joint Mobile Riverine Force.

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[64] Department of the Navy, History of U.S. Naval Operations in Vietnam, 1965-1966 (U), (Unpublished Naval History Division paper), pp. 1, 2.

[65] Department of the Navy, Riverine Warfare—The U.S. Navy's Operations on Inland Waters, rev. ed. (Washington, D.C.: Government Printing Office, 1969), p. 38.

(4) The Coastal Surveillance Force has been charged with guarding over 1,000 miles of rugged coastline and preventing the enemy from using coastal resupply routes.[66] This force had its roots in the Republic of Vietnam Navy (VNN) coastal patrol, which had been established earlier with considerable U.S. advisory assistance. The small VNN sea and paramilitary coastal forces, the latter of which included craft as paradoxical as motorized junks, were effective but insufficient in numbers to prevent coastal and estuary infiltration. Surface and long-range patrol aircraft of the Coast Surveillance Force have formed an effective screen and performed a continuous search and inspection of watercraft. In FY 67 alone, over 500,000 craft were boarded and inspected, thus making the Coastal Surveillance Force a vital factor in the campaign to stem the flow of enemy personnel and materiel into the RVN.[67] The associated logistic requirements, particularly for maintenance of surface craft and aircraft employed in patrols of long duration, became significant.

(5) The River Patrol Force, an outgrowth of a similar VNN river force, has operated in the Mekong Delta to prevent enemy troop movement and resupply.[68] Its area of operations comprises about one-fourth of South Vietnam's total area and contains one-third to one-half of the South Vietnamese population; it includes some 4,000 miles of waterways.[69] It has been the scene of continuous warfare since 1941.[70] Included in this area is the Rung Sat Special Zone, a strategic mangrove marshland, similar to the Florida Everglades, surrounding the main shipping channel from the South China Sea to Saigon. The mine threat in this channel has led to a requirement for considerable minesweeping by the River Patrol Force, inasmuch as a ship sunk in this vital waterway could block access to Saigon, seriously damaging the RVN economy and cutting a most important supply route of the U.S. and free world forces.[71] River craft of the River Patrol Force have not only conducted patrols and minesweeping but also rendered assistance to Vietnamese Regional and Popular Forces at river outposts and assisted regular South Vietnamese Army units in making group sweeps.[72] In addition, as part of the River Patrol Force, U.S. Navy counterinsurgency teams known as SEALs (sea-air-land) have been required. The SEAL units, comparable to Army Special Forces and Air Force Commandos, are trained in paramilitary operations[73] and operate with a minimum of logistic or other support. However, the overall support of the River Patrol Force has been complex and has required fulfillment by aerial and water means because of the delta environment.

(6) To engage the enemy more effectively in the delta, the U.S. Navy was required to organize and introduce River Assault Flotilla One, building upon River Assault Groups of the Vietnamese River Force. This has been the naval arm of the joint Army-Navy Mobile Riverine Force, organized for combat in a riverine environment.[74] The Mobile Riverine Force has reintroduced a type of land-water warfare similar to that developed during the Mississippi Delta Campaign of the American Civil War. Various types of river assault craft and barracks ships have carried ground troops to the area of action.

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[66] Ibid., p. 39; Department of the Navy, Chief of Information, The Navy in Vietnam (Washington, D.C.: Government Printing Office, 1968), p. 5.

[67] Department of the Navy, Riverine Warfare—The U.S. Navy's Operations on Inland Waters, rev. ed. (Washington, D.C.: Government Printing Office, 1969), p. 40.

[68] Department of the Navy, Chief of Information, The Navy in Vietnam (Washington, D.C.: Government Printing Office, 1968), p. 9.

[69] Department of the Navy, Riverine Warfare—The U.S. Navy's Operations on Inland Waters, rev. ed. (Washington, D.C.: Government Printing Office, 1969), p. 42.

[70] Ibid.

[71] Department of the Navy, Chief of Information, The Navy in Vietnam (Washington, D.C.: Government Printing Office, 1968), p. 11.

[72] Ibid., p. 10.

[73] Ibid., pp. 11, 12.

[74] Ibid., pp. 14, 15.

c. Air

(1) The objective of the air strikes in North Vietnam was to compel the Government of that country to cease its support and direction of guerrilla warfare in South Vietnam, Cambodia, and Laos.[75] The air strikes were also an integral part of U. S. application of the practice of gradualism. The Soviet Union equipped North Vietnam with surface-to-air missiles and supplied a sophisticated communications and radar network, large quantities of antiaircraft equipment, and jet aircraft.[76] Air strikes in North Vietnam were initiated under strict controls and specific guidance, and were made after the United States and its allies had made preparations for possible reaction by North Vietnam and Communist China.[77] From a military standpoint, the air war against North Vietnam has been inhibited by restrictions growing out of the limited nature of the U. S. conduct of the war. Despite these restrictions, strikes on approved targets greatly impeded the flow of war materiel and personnel to the south.[78] The bombing of North Vietnam was unilaterally suspended a number of times by the United States and in April 1968 was stopped.

(2) In South Vietnam the tactical flexibility required in adapting modern weapon systems to guerrilla warfare resulted in significant changes in the nature of ground operations. Aerial fire support for the U. S. Army and the ARVN has required the participation of aerial units of all U. S. military services. As in North Vietnam, the air war in South Vietnam was inhibited from a military standpoint by the limited nature of the war and other restrictions. The rules of engagement have required that all approved targets in South Vietnam be under the positive control of a forward air controller (FAC) with the exception of radar-controlled missions, flaregun aircraft missions, and B-52 (Arc Light) strikes. As an example of the requirement for positive control of air strikes in South Vietnam, 65 percent of all U. S. Air Force air strikes have been against enemy troop concentrations and locations, as compared to a preponderance of air strikes against structures, supply and storage areas, movement routes, and transportation targets in other wars.

(3) The air war in Vietnam has had a large dynamic range, from missiles (surface to air) to booby traps, and has included requirements for fighting at night, finding the enemy, and employing more accurate ordnance. Although the tactical jet aircraft of the Services were required for close support, interdiction and other tactical operations, they lacked the capacity to deliver the required large numbers of bombs in sudden surprise attacks and to cover large areas at one time. The B-52's could do both; accordingly, they have been employed in South Vietnam on a continuing basis since 18 June 1965, and therefore have not been affected by the bombing halt in North Vietnam.

(4) The Vietnam War has been fought in a nonnuclear environment. The United States has maintained continuous air superiority, permitting the establishment of large logistical complexes in the four combat tactical zones and the freedom of tactical mobility required to support the isolated and shifting nature of the broad securing, clearing, and search and destroy concepts of ground operations. Because of this air superiority, the helicopter has been virtually unrestricted as a gun ship, in the intra-theater movement of personnel and materiel, in the rescue role, and in a variety of special missions. Unprecedented application of modern airlift support was required of the Military Airlift Command, the single manager for airlift services, to support intertheater requirements from air evacuation of the wounded to priority of personnel and materiel.

3. KEY FEATURES OF TACTICAL CONTROL. Unlike the two World Wars, the Vietnam War has been fought with limited objectives and measured response, with central authority from the Secretary of Defense under the guidance and direction of the President. Strength ceilings by Service have been imposed on total numbers of military personnel authorized in South Vietnam and Thailand. Limitations have been placed on the numbers, types, and employment of combat

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[75] Sharp and Westmoreland, op. cit., p. 16.
[76] Ibid., p. 4.
[77] Ibid., p. 16.
[78] Ibid., p. 7.

and support aircraft and helicopters; on the numbers and types of particular military units; on artillery by caliber and number of pieces (no nuclear weapons); on combat and support ships by number and type; and on numbers of patrol and auxiliary craft. Monthly limitations have been placed on ammunition expenditures, and limitations have also been placed on the number of combat sorties that could be flown in any given month in support of ground operations. Sortie limitations have applied to close support as well as to the B-52 and to given geographical areas. As the United States became more and more involved in the Vietnam War and nation building, a review and approval process was developed that permitted a high level control over almost every aspect of military operations in SE Asia.

SECTION F

SUMMARY

1. Located in the far reaches of the Pacific theater, Vietnam is essentially an undeveloped country. The climate and terrain have influenced the conduct of the war and the means of logistic support. Lack of training on the part of the population has handicapped the effective use of indigenous personnel in support of the war effort. Many years of warfare and government instability have slowed national development and, until extensive U. S. military and economical assistance was provided, few improvements were made in Vietnam. The inadequacies of in-country facilities such as ports, depots, highways, railroads, airfields, waterways, and modern communications have compounded the logistic burden.

2. The threat of communist aggression and subversion in Vietnam led to the U. S. involvement. The relatively inexperienced South Vietnamese Government has been confronted with guerrilla warfare while broadening its base of political support. The Government has also been handicapped by fiscal problems while organizing and equipping an effective armed force. Assistance in modernization of South Vietnamese Armed Forces has been deferential to U. S. priorities.

3. By early 1965 the United States had become committed to the active assistance of the free people of South Vietnam with an initial deployment of combat troops. A policy of graduated response to communist pressure began, with care taken to prevent a confrontation with communist world powers. The U. S. military commitment has been supported without either national mobilization or imposition of economic controls. As a matter of national policy, close control of combat action has been maintained at the highest level.

4. By comparison with other wars, new dimensions of warfare have evolved. The conventional form of combat has been adapted to the environment with emphasis on guerrilla tactics. Nuclear weapons have not been employed. Riverine operations have revived combat principles employed in inland waterways during the American Civil War, but the operations have differed in that in Vietnam more sophisticated equipment has been used. The greater mobility of forces, attained largely through the use of helicopters, and the lack of conventional front lines and a relatively secure communication zone have complicated the support of ground forces. The unprecedented use of the helicopter in the Vietnam conflict has contributed not only to greater tactical mobility but, together with the use of fixed-wing aircraft, has provided noteworthy tactical and logistic support. Unlike the two World Wars and the Korean War, a pacification effort has been necessary in Vietnam. It has required restraint and skill, and a most significant logistic effort. Requirements in Vietnam have varied from the normal pattern, the natural obstacles have been significant, and the support problems have seemed at times to be insurmountable; however, the American fighting man has been better supplied and equipped than ever before in history.

5. Although features of the Vietnam War such as the nonnuclear environment, the unchallenged control of the sea and the air, and the enemy's advantage of sanctuary deserve consideration in future contingency planning, caution should nevertheless be exercised in the application of lessons learned in Vietnam to future situations.

CHAPTER 2

LOGISTIC POSTURE: 1 JANUARY 1965

SECTION A
INTRODUCTION

1. The purpose of this chapter is to identify the logistic posture of the military services as of 1 January 1965. The Terms of Reference for the Joint Logistics Review Board state that: "the Board will examine the U. S. military logistic posture at the commencement of the Vietnam buildup. . . ." This chapter describes the logistic posture in major functional areas and identifies significant inadequacies where appropriate.

2. The data available to establish the logistic posture of the individual Services vary widely from Service to Service. This diversity is based partially on the different methods of recording information at that time, and also on the variable emphasis placed on the relative importance of certain items of information, stemming from the fundamental dissimilarities of the roles and missions of the Services. As a consequence of this variance, it is not feasible to compare the logistic posture of the Services on a uniform basis.

3. The logistic posture of the Services was dictated largely by the support requirements of the major forces specified by the Joint Strategic Capabilities Plan (JSCP) and the contingency plans of the commanders of the unified and specified commands responsive to JSCP.

4. An inherent limitation in the contingency planning is characterized by the inability to foresee the future with any degree of certainty. Therefore, our general purpose forces were structured with a capability to deal with a very wide range of contingencies. Diversity of missions greatly complicate the task of determining specific requirements for logistic support of these forces.

5. An assessment of the adequacy of worldwide contingency plans as they existed on 1 January 1965 is not practicable, since none of the plans was ever fully implemented as written. Significant planning deficiencies included the following:

a. All forces of all Services required to support a given contingency were not identified in the plans, e.g., combat support and combat service support units were omitted in some plans.

b. Complete identification of the transportation requirements and capability within specified closing times was consequently lacking.

c. Specific requirements for all essential major items of equipment or material, e.g., floating cranes, dredges, and rapidly deployable piers, were not identified.

6. Despite these limitations, the contingency planning process afforded an appreciation of the key elements necessary to the execution of a contingency operation and the ability to assemble an operational plan based on an immediate assessment of the situation. It provided a foundation or point of departure from which further in-depth planning could proceed.

7. The logistic posture of the Services is set forth within the framework of the conditions established by the JSCP and the force support requirements of worldwide contingency plans. Sections B, C, D, and E describe the posture of the Army, Navy, Marine Corps, and Air Force in the areas of forces, bases, materiel, and war reserves. Section F presents military posture in the functional areas of petroleum, oil, and lubricants (POL), transportation, production base, and communications. Section G summarizes the chapter.

SECTION B
ARMY LOGISTIC POSTURE

1. FORCES

a. The 1 January 1965 strength of the Army was approximately 970,000 personnel, including 112,000 officers and 855,000 enlistees. About 58 percent of these personnel were in the continental United States (CONUS), with the remaining 42 percent in various overseas locations, including 14,697 in Vietnam.[1]

b. Operating forces accounted for 62.2 percent of the strength, the remainder being engaged in special activities and support missions, including training. The operating forces were organized into 16 divisions, seven brigades, and four regiments, together with supporting artillery, armor, engineers, signal, and other support troops.

c. The CONUS operating forces, available for contingency deployment, were assigned to the Continental Army Command (CONARC) and consisted primarily of eight divisions and a cavalry regiment with supporting forces. As of 1 January 1965 CONARC strength was 404,647.[2] Logistic units within CONARC were adequate to support the combat forces in the existing environment but were relying on mobilization of the Reserve Force to provide the augmentation required to accomplish their combat mission. Substantial support was provided in-garrison by civilianized post supply and maintenance facilities. Further, the force structure was primarily oriented to the support requirements of operations on the relatively sophisticated European land mass. For example, the active structure included only one Engineer Port Construction Company, a unit urgently required in the underdeveloped area of SE Asia.

d. Although similar data are not available for enlisted personnel, Table 1 is illustrative of the shortfall that existed in logistic personnel. It shows the number of technical service officers, grades 0-1 through 0-6, and warrant officers that were onboard as of 1 January 1965 compared to the number eventually on active duty by 1 January 1969 to meet total Army requirements.[3] Thus, while the supported active Army forces increased from a 16 to an 18 division force, or 12-1/2 percent, the number of technical service officers increased 53 percent.

2. BASES. Active base facilities consisting of 135 in CONUS and 42 overseas were adequate to support the Army force deployments as of 1 January 1965 and, through application of reduced criteria, to support a planned mobilization strength of 1,785,298 personnel.[4] Bases in SE Asia were limited to military assistance funded facilities for advisory personnel in Vietnam and Thailand, plus the logistic facilities on Okinawa. Neither logistic facilities as ultimately developed in SE Asia nor the capability for their timely construction were existent or envisaged.

3. MATERIEL

a. The materiel posture of the Army was significantly less than that authorized by the logistic guidance at that time. Based on August 1964 guidance, the computed requirements for principal items was reported as $23.5 billion, with on-hand assets valued at less than $15 billion.[5] In addition, depots and activities reporting under financial inventory accounting

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[1] Department of Defense, Annual Report for Fiscal Year 1965, 1967, pp. 394-395.
[2] U.S. Continental Army Command/U.S. Army Forces Strike Command (USCONARC/USARSTRIKE), Annual Historical Summary (U), 20 January 1967, pp. 23 and 24 (SECRET).
[3] Department of the Army, Compilation of Data, Office of Personnel Directorate, STAT Report - 7, 1 January 1965 - 1 January 1969.
[4] Department of the Army Report 1709, 15 December 1964.
[5] Department of Defense, Annual Report for Fiscal Year 1965, 1967, p. 181.

TABLE 1

OFFICER STRENGTH INCREASE BY BRANCH

Logistic Personnel	1 Jan 65	1 Jan 69	Increase
Chemical	1,350	1,760	30%
Engineer	6,850	10,952	60%
Ordnance	6,998	10,065	44%
Quartermaster	4,815	7,549	57%
Signal	7,167	10,431	46%
Transportation	4,703	8,065	71%
Total	31,983	48,822	53%

procedures held $1.4 billion assets against a $1.9 billion requirement in appropriation-funded secondary items and $2.0 billion in stock-funded items.[6] A comparable stratification of stock-funded requirements is not available.

b. Further details of principal items in regard to war reserves are given in Table 2. Although this table provides data as of 30 June 1964, it reasonably approximates the 1 January 1965 posture. Actual assets reported on 30 June 1965 totaled $14.5 billion. By interpolation, it therefore appears that actual 1 January 1965 assets were nearly $14.5 billion. This amounted to a 40 percent shortage of principal items and a 26 percent shortage of appropriation-funded secondary items, based on force and support levels authorized by logistics guidance. It should further be noted that an additional $3.5 billion of materiel was funded and on order from the 1964 and prior-year budgets.

c. The Army maintenance posture was generally adequate, notwithstanding the fact that substantial numbers of overaged vehicles, generators, and materials handling equipment (MHE) were in the inventory. A General Accounting Office report issued in early 1964 had triggered the establishment of a Board of Inquiry to examine equipment readiness in CONUS units and recommended the necessary corrective actions.[7] Primary causes of low readiness posture were determined to be shortages of qualified maintenance personnel and repair parts and the amount of overage equipment in use. The Board findings resulted in the establishment of intensive management procedures at the Secretary of the Army level which, though constrained by fund availability, were beginning to improve the maintenance posture of CONUS forces. For example, in September 1964 only one of the eight CONUS divisions attained a Category 3 readiness rating in logistics on a scale of four. By December, two had attained Category 3 rating and by June 1965, four of the six reporting divisions had attained Category 2 status.[8]

4. WAR RESERVES

a. War reserve authorizations, effective 1 January 1965, provided equipment and consumables to support 22 division forces for 88 division force months of combat. Ammunition was authorized to support eight divisions for 90 days and 14 divisions on a D to P basis, that is, from D-day or the day of deployment until support could be provided from production.[9]

[6] Department of Defense, Real & Personal Property of the Department of Defense as of 30 June 1965, 1965, pp. [illegible] and 108.

[7] Harold K. Johnson, Challenge—Compendium of Army Accomplishment—1968 (U), 1 July 1968, p. 259 (SECRET).

[8] USCONARC USARSTRIKE, Annual Historical Summary (U), 20 January 1967, p. 118 (SECRET).

[9] Secretary of Defense, Memorandum, subject: Logistics Guidance (U), 28 August 1963 (SECRET).

TABLE 2

REQUIREMENTS AND ASSETS OF PRINCIPAL ITEMS
(30 June 1964)

Commodity	Requirements ($ Billions)				Assets ($ Billions)		Applicable Assets to Total Requirements (%)
	Initial Allowance		Float and War Reserves	Total	Applicable[3]	Total[4]	
	Active	Reserves					
Aircraft	1.80	0.56	0.18[1]	2.54	1.00	1.10	39
Missiles and Ground Equipment	0.83	0.04	2.50	3.37	2.00	2.30	59
Weapons and Combat Vehicles	1.90	0.68	1.72	4.30	3.30	4.10	77
Tactical and Support Vehicles	1.50	0.47	0.53	2.50	1.92	1.92	77
Communications and Electronics	2.60	0.32	0.98	3.90	1.90	1.90	49
Other Support Equipment	1.30	0.35	0.56	2.21	1.40	1.60	63
Ammunition	-	-	4.50[2]	4.50	2.30	5.00	51
Total	9.93	2.42	10.97	23.32	13.82	17.90	59

[1]Maintenance float only.
[2]Pipeline and war reserves.
[3]Includes only quantity of item applicable to requirements.
[4]Includes retention and potential excess.

Source: Department of the Army, Compilation of Data, Deputy Chief of Staff, Logistics, Statistical Budget Files, 30 June 1964.

b. Requirements and assets of principal items as of 30 June 1964 are shown in Table 2. Available statistics do not permit further breakdown of the column headed "Float and War Reserves." No war reserves in aircraft were authorized. Conversely, ammunition is basically all war reserves. For the remaining commodity groupings, maintenance float is between 5 and 10 percent of initial allowances with the balance being war reserves. The low proportion of the total missile requirement for initial allowances is for launchers and ground equipment with the bulk of the dollar requirement representing missile investment. Although total assets exceeded applicable assets by $4 billion, some of this theoretical excess proved essential to the support of forces in Vietnam. For example, the stratification indicated on-hand assets equaled 177 percent of the 81mm mortar high explosive (HE) round requirement, 399 percent of the 60mm mortar HE requirement, and 362 percent of the 105mm HE and illuminating round requirement. These quantities were accordingly excluded as applicable assets. However, by the late summer of 1966, all of these types were on the Commander in Chief, Pacific (CINCPAC), critical list.

c. Although evaluation of the requirements and assets in terms of total dollars would indicate a capability to adequately support the 35 percent of the total force ultimately deployed to Vietnam, it further reveals the degradation of readiness of the balance of forces, including the Reserves. Also, there were imbalances between commodity groups such as aircraft and electronics, which were less than the active Army initial allowance requirements, and support equipment, which barely exceeded this requirement. Imbalances also existed in specific items within a given commodity group. For example, under the category of "Other Support Equipment," only 42 percent of the total generator requirements were on hand.

d. Although similar data could not be located for appropriation- or stock-funded war reserves of secondary items, the bulk of the dollar value of the requirement for these items was for peacetime operating stocks. For example, appropriation funded requirements totaled $1.869 billion, of which about $261 million was for mobilization reserve stocks. This compares with the $1.4 billion assets cited previously.

SECTION C

NAVY LOGISTIC POSTURE

1. FORCES

a. Active Forces. On 1 January 1965, Navy active general purpose forces totaled 840 ships.[10] Naval personnel strength was about 668,000.[11] Civilian personnel totaled approximately 333,300,[12] of whom 6600 were under contract. Of the active naval forces, about 20 percent of the ships and 50 percent of the personnel could be designated as logistic support forces. However, in the case of personnel, strict delineation between logistic support and other capabilities within the fleets is impracticable, since the great majority both operate weapon systems and sensors and perform supporting logistic tasks. In addition to the Active Fleet, the Navy maintained Reserve forces in varying degrees of readiness which could be drawn on to accomplish phased augmentation of the Active Fleet. Also, certain ships in the National Defense Reserve Fleet were available to be activated for Military Sea Transportation Service (MSTS) use. When directed, ships of the U. S. Coast Guard could be assigned to the operational control of the Navy. The status of general purpose naval ships, plus those of the Coast Guard, MSTS, strategic, and other forces, and naval aircraft at the beginning of the Vietnam buildup are shown in Table 3.

b. Reserve Forces. In the event of authorized mobilization, the Navy was prepared for the phased expansion of the Active Forces by use of Reserve personnel. Mobilization plans called for the manning of advanced base facilities, if required by contingency plans, by the Naval Reserve. First priority was given to fully man the Selected Reserve ships and aircraft available for immediate fleet service. Second priority was to man the backup Naval Reserve ships and aircraft being maintained but not manned. Final priority was to augment supporting activities. The Navy Ready Reserve allocation was 252,000 personnel and included 126,765 members of the Selected Reserve, who were authorized to drill in a pay status.[13]

c. Forces in Vietnam. Approximately 500 advisors and 600 logistic personnel were on duty with the Military Assistance Command, Vietnam (MACV).

2. BASES

a. The Shore Establishment, both within CONUS and overseas, was considered adequate to support the operating forces. However, since it was Navy policy to operate relatively independent of fixed bases overseas, logistic support of combatant forces deployed overseas generally was provided by Mobile Logistic Support Forces. Overseas base construction and expansion to meet wartime requirements would make maximum use of the Navy Mobile Construction Battalions (Seabees) and the Advanced Base Functional Component System. Certain ships and craft in the Reserve Fleet were to supplement the facilities of overseas bases as well as to augment the Mobile Logistic Support Forces. These ships consisted of tenders, floating drydocks, salvage ships, and service craft.

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[10] U.S. Congress, House of Representatives Subcommittee, Hearings, Department of Defense Appropriations for 1965, Vol. II, Washington, D.C.: Government Printing Office, 1964, pp. 205-211.

[11] Chief of Naval Operations, Letter OP100C4, Ser 121S2P10, subject: Logistic Posture at the Start of the Vietnam Buildup, 12 May 1969.

[12] Chief of Naval Operations, Letter OP401E, Ser 458P401, subject: Logistic Posture at Start of the Vietnam Buildup, 22 May 1969.

[13] Chief of Naval Operations, Letter OP100C4, Ser 121S2P10, subject: Logistic Posture at the Start of the Vietnam Buildup, 12 May 1969.

TABLE 3

STATUS OF ACTIVE FLEET SHIPS AND NAVAL AIRCRAFT AT THE START OF THE VIETNAM BUILDUP (Early 1965)

Naval Ships, Active Fleet	No.
Attack Aircraft Carriers	16
ASW Support Carriers	10
Command Ships	2
Cruisers	14
Frigates	27
Destroyers	221
Submarines	150
Mine Warfare Ships	84
Destroyer Escort and Patrol Ships	53
Amphibious Warfare Ships	116
Auxiliary Ships	246
MSTS Controlled Fleet*	97
U.S. Coast Guard Ships	117
Total	1,153
Naval Aircraft	
Combat	5,127
Helicopters	2,966
Observation	20
Training	2,305
Miscellaneous	968
Total	11,386

*Includes all common-user ships controlled by MSTS (except FHIBPAC Landing Ships, Tanks, and Sea Land Contract Container Ships). Special Project and specialized cargo ships not associated with common-user sealift are excluded.

Sources: James C. Fahey, Ships and Aircraft of the U.S. Fleet, 8th ed., Washington, D.C.: U.S. Naval Institute, 1965 pp. 4-54; Department of the Navy MSTS Ship Inventory Results (3110-4) for 1965, 1965. Office of the Chief of Naval Operations, OP-05, Historical Section.

b. There were 198 shore facilities in operation on 1 January 1965, which included operational and industrial support, supply support, facility construction and maintenance support, medical centers and hospitals, research centers, training, and administrative support. Of these, 93 facilities were overseas.[14] The single facility in Vietnam was at Saigon for support of MACV.

3. MATERIEL

a. On 1 January 1965, although a large majority of the active ships were as much as 20 years old, they were in fairly good condition with regard to equipment and repair parts support. Support for ships' propulsion and auxiliary systems was complicated because many necessary items were no longer in production. This required the use of substitute, nonstandard items or the manufacture of the items by repair personnel. Repair parts support was better for installed sensors and weapon systems because of the high degree of standardization. However, the on-hand support requirements for newer and more sophisticated equipment were not at 100 percent because funding priorities favored procurement of complete items of equipment over the acquisition of repair parts. In addition, usage data for conditions that were to prevail were not available with which to compute accurate requirements.

b. Navy inventory objectives (I. O.), as compared to assets on 1 January 1965 for supplies and equipment, are shown in Table 4.

c. Two significant factors affecting maintenance contributed to materiel posture:

(1) Austere funding in the years prior to 1965 had generated a backlog of deferred maintenance.

(2) A large majority of the ships were of World War II vintage, and the deterioration of hulls, piping systems, and cabling had become an increasing problem.

d. Materiel maintenance afloat was being accomplished by the Mobile Logistic Support Force (MLSF). This force included those Active Fleet tenders, repair ships, and other ships and craft that could be shifted to the theater of operations as required, and the inactive ships and craft that could be activated for augmentation. However, the austere funding program prior to 1 January 1965 had also resulted in a reduction of Reserve Fleet maintenance personnel.

TABLE 4

INVENTORY OBJECTIVES AND ASSETS[15]
($ Millions)

Supply Category	I.O.	Assets	Fill
Ordnance Repair Parts	320.7	303.8	95%
Ships and Submarine Equipment	60.9	42.6	71%
Electronic Spare Parts	45.1	23.6	53%
Aeronautical Material	4,239.1	1,900.1	45%
Aeronautical Equipment	133.2	34.3	26%
Construction Equipment and Spare Parts	4.5	1.2	27%

[14] Chief of Naval Operations, Letter OP401E1, Ser 0478P401, subject: Logistic Installations as of January 1965 (U), 3 June 1969, Enclosure (1) (CONFIDENTIAL).

[15] Chief of Naval Operations, Letter OP41C, Ser 00171P41, subject: JLRB Input for Functional Area of Supplies and Equipment (U), 14 May 1969, Tab A (SECRET).

Repair parts support for ships of the Reserve Fleet had been marginal. Shortfalls for support of the Active Fleet had required withdrawal of parts from Reserve ships. These factors had contributed to the accelerated deterioration of the Reserve Fleet, and expeditious activation became more difficult to achieve.

e. The shorebased maintenance structure consisted primarily of ten naval shipyards in CONUS, one in Hawaii, three Ship Repair Facilities (SRF) at Subic Bay (Philippines), Guam, and Yokosuka (Japan); a Ship Repair Department, Fleet Activities, Sasebo (Japan); and contract maintenance in commercial yards both in CONUS and overseas.

f. The capability to expand both the MLSF and shorebased activities was the Navy's greatest general maintenance strength on 1 January 1965. Use of MLSF resources augmented from the Reserve Fleet permitted early establishment of mobile in-country maintenance bases pending construction of shorebased facilities.

g. The greatest strength of aviation maintenance was in the aircraft carrier with its high degree of mobile maintenance self-sufficiency. This afloat capability was backed up by seven Naval Aircraft Rework Facilities (NARFs) located in CONUS. The Naval Air Station, Cubi Point, Philippines, was available to provide additional repair capability in close proximity to the operating area.

h. Although funding was austere and the greater portion of the fleet was old, the capability of organic logistic support forces to manufacture replacement items and to perform maintenance allowed operating ships and aircraft to complete assigned missions. The Navy had adopted the concept of integrated logistic support, which required greater standardization of installed equipment and an adequate lifetime support of repair parts on initial installation of new equipment aboard ship.

4. WAR RESERVES

a. War Reserve Materiel

(1) As of 1 January 1965, the war reserve materiel acquisition funding objective requirements would have permitted combat support for approved naval ship and aviation forces through a 6-month period with two-thirds of the forces developed. This equated to an initial allowance plus 90 days of combat reserves for the Active Fleet and Selected Reserve ships[16] and for one-third of the backup Reserve Fleet available for initial fleet augmentation. A 4-month reserve was authorized for aircraft of the active forces to support a 6-month period of engagement. Although this authorization might appear inconsistent with a production base that was geared to a peacetime economy, no more than two-thirds of the fleet were envisioned as being engaged at one time. For example, the additional ammunition associated with the one-third nonengaged portion of the fleet, together with initial ship fills, was presumed to permit a minimum of 6 months of combat at the expenditure rates contemplated.

(2) On 1 January 1965, based on tonnage of ammunition available, the Navy appeared to be in a favorable position. However, much of the air munitions was old and required renovation and, because of the high-drag characteristics, would reduce the combat effectiveness of carrier jet aircraft. In recognition of this shortfall, immediately following the Gulf of Tonkin incident in August 1964, the Navy received authority to program funds to procure additional low-drag bombs.

b. Pre-positioned War Reserve Stocks. Figure 4 presents a summary of pre-positioned war reserve assets and requirements for FY 65 and FY 66. As of 1 January 1965, assets of $1,066 million accounted for 40 percent of the $2,663 million computed requirement.

[16] Secretary of Defense, Memorandum, subject: Logistics Guidance (U), 28 August 1963 (SECRET).

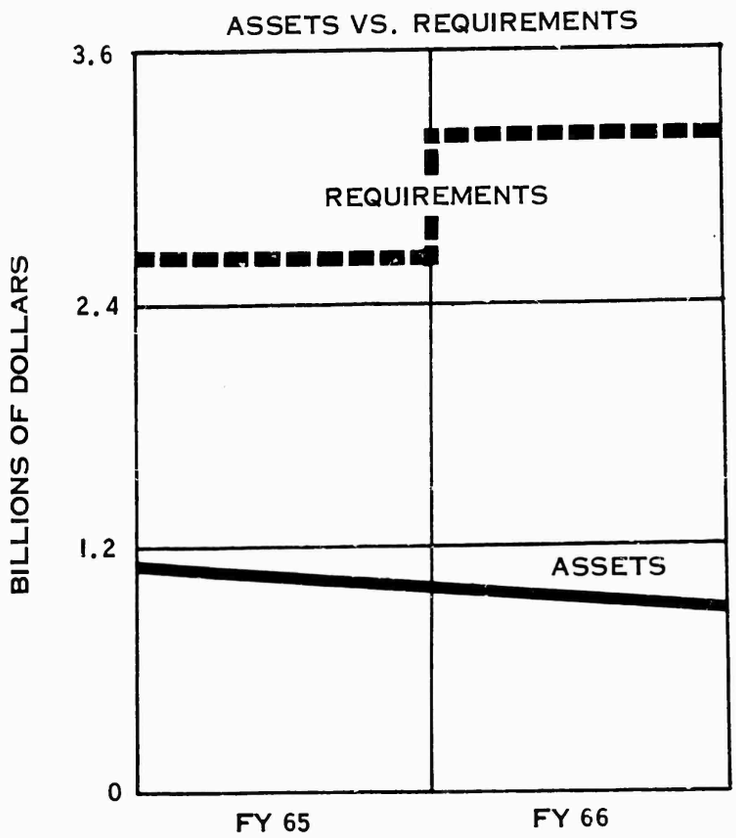

FIGURE 4. PRE-POSITIONED WAR RESERVE STOCKS SUMMARY

Source: Deputy Chief of Naval Operations (Logistics). Briefing to Secretary of the Navy, subject: Pre-positioned War Reserves. 30 April 1966.

c. In summary, the war reserve materiel 90-day requirement was not adequate to meet the 6-month sustained combat objective. However, it was possible to meet this objective, quantitatively if not qualitatively, through drawdown on initial allowances (approximately 90 days per ship), drawdown on reserves of nonengaged units, and use of old stocks from World War II and the Korean War.

SECTION D

MARINE CORPS LOGISTIC POSTURE

1. FORCES

a. Personnel. On 1 January 1965 the Marine Corps consisted of approximately 190,000 active duty personnel organized into a headquarters and two functional components, the operating forces and the supporting establishment.[17]

b. Organization

(1) The operating forces consisted of the Fleet Marine Forces, Atlantic and Pacific, organized into three divisions, three air wings, one Marine brigade, and appropriate force troops. These forces also included the various detachments on Navy ships and bases.

(2) The supporting establishment was located at bases and air stations to support the operating forces and included all personnel at training centers and supply facilities and those units or personnel that support other Services or agencies.

c. Units. Structurally, the operating forces of the Marine Corps were organized into one Marine brigade and three active Division Wing Teams (DWTs). Each DWT had a division, an air wing, and appropriate force troops. Major deployments consisted of one helicopter squadron and some security forces in South Vietnam (900 personnel); a Marine Expeditionary Unit (MEU) afloat with the Seventh Fleet in WESTPAC; two Battalion Landing Teams (BLTs), one afloat with the Sixth Fleet in the Mediterranean and the other afloat in the Caribbean, with an attack aircraft squadron ashore at Roosevelt Roads, Puerto Rico; and a reinforced rifle company at Guantanamo Bay, Cuba.

d. Reserve Establishment. The Marine Corps in 1965 had approximately 4,000 regular and 45,000 reserve personnel located at training centers throughout CONUS.[18] Actual mobilization strength of the 4th DWT (Reserve) was 39,600. This was subdivided into 32,600 for the division force troops and 7,000 for the air wing. The organized Marine Corps Reserve included most of the elements of the DWT in addition to certain elements required to augment active forces upon mobilization. Each unit was assigned regular advisors, officers, and noncommissioned officers who would accompany their Reserve units upon mobilization.

2. BASES

a. The Marine Corps facilities were primarily oriented to the U. S. east and west coasts with some advance bases located outside CONUS. These facilities were further subdivided by type: the bases for ground activity were supported by the Marine Corps and those for air activity were supported by the Navy. There were 29 ground installations in CONUS and four ground installations outside CONUS supported by the Marine Corps.[19] The major aviation installations supported by the Navy included eight air installations in CONUS and three air installations outside CONUS.[20] The ground and air installations supported by the Marine Corps and the Navy totaled 37 in CONUS and seven overseas.

[17] Department of Defense, Annual Report for Fiscal Year 1966, 1967, p. 394.
[18] Ibid., pp. 4-4, 4-
[19] U.S. Marine Corps, Memorandum, subject: Logistic Posture at the Start of the Vietnam Buildup,
[20] Ibid.

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b. All Marine Corps planning prior to 1 January 1965 was based on the premise that the Reserve DWTs would be called to active service if the world situation demanded it. Accordingly, the units of the DWTs were all preassigned to existing bases and facilities. The installation had been constructed with the capability to support the additional men and equipment generated by mobilization. The facilities and bases of the Marine Corps were adequate to support augmenting forces if mobilization occurred.

3. MATERIEL

a. The equipment posture on 1 January 1965 was at its highest peacetime level of readiness since the Korean War. Sufficient equipment and ammunition with adequate backup stocks were available to equip and support units required for mobilization and to support the Fleet Marine Forces. Procurement funds had been authorized in FY 62 and FY 63 for about $100 million, and in FY 64 about $40 million over the average amount of funds the Marine Corps had been receiving. These funds were used for the following purposes.

(1) Modernization. Where lack of funds had previously restricted modernization, the additional funds afforded an opportunity to develop a planned modernization program that would purge the bulk of over-aged equipment. The program involved planned replacement of weapon systems, ammunition, vehicles, communications equipment, materials handling equipment, and other items.

(2) Buildup of Stocks. In building up a conventional war capability it was necessary to enhance the stock position of combat consumables to sustain initial employment. This was done on a continuing basis with the funds available each year so that the supply levels of major items, ammunition, and secondary items were improved. With the delivery of long-lead-time items funded in prior years, the FY 65 funds would, with a few exceptions, provide the major items, ammunition, and secondary items authorized for the DWTs. The exceptions were planned to be eliminated in successive fiscal years, but in the immediate future the deficiencies could be met by usable but less effective substitute items.

b. The value of Marine Corps supply inventories remained nearly unchanged from the previous year at $1.5 billion. The largest categories of stocks were ammunition (including guided missiles and equipment) and ordnance-tank-automotive, which together accounted for about 70 percent of the total value of the stocks in inventory. Approximately 94 percent of the stratified stocks were classed as Approved Force Stocks.

c. Marine Corps Stock Fund inventories, which included almost 100 percent of the secondary items, amounted to $214 million, less than 14 percent of the total supply system inventories. As was true for appropriation finances inventories, Approved Force Stocks made up approximately 75 percent of Marine Corps Stock Fund inventories.

d. The acquisition objectives (A.O.) and assets are shown in Table 5. This table does not include the equipment and secondary items in the using units. On 1 January 1965 equipment assigned to Fleet Marine Force units was reported as approximately $450 million; other Marine Corps military equipment amounted to approximately $120 million. The maintenance system was functioning in a satisfactory manner. For deployed units and forces the pipeline was long and oriented to peacetime standards. The task organization of units continued to provide the most reliable means of effecting repairs in an expeditionary environment in keeping with missions assigned the operating forces. Deadline rates for combat essential equipment were not excessive. The performance of the maintenance system was adequate for the employment and environment in which the Marine Corps found itself at the time.

4. WAR RESERVES

a. War reserves in the Marine Corps are the backup for any mount-out operation plus a reserve for continuation of an operation until resupply can be effected. The resources consist of 180 days of combat support for each of the DWTs and the supplies and equipment to expand the training base upon mobilization. The reserves are designed to provide a rapid response capability. War reserves are identified in two separate categories:

(1) Reserves to support aircraft and aircraft support equipment, funded for and provided by the Navy.

(2) Reserves for the ground elements and the Marine Corps common supplies and equipment for the air wing, funded for and provided by the Marine Corps.

TABLE 5

ACQUISITION OBJECTIVES AND ASSETS[21]
($ Millions)

Supply Category	A.O.	Assets	Fill
Ammunition, Guided Missiles and Equipment	697	554	79%
Ordnance-Tank-Automotive	688	555	80%
Engineer Supplies and Construction Material	115	85	74%
Communications-Electronics	300	194	65%
General Property	24	16	67%

b. The Marine Corps war reserve budget figures for principal items, ammunition, subsistence, and secondary items on 1 January 1965 are shown in Table 6.

TABLE 6

WAR RESERVES STATUS[22]
($ Millions)

Items	Requirements	Assets	Fill	Funds Requested	Funds Received
Principal	470.40	313.20	66%	176.10	140.90
Ammunition	523.80	434.40	83%	83.20	62.50
Subsistence	4.41	3.73	85%	3.33	3.33
Secondary Appropriation Financed	15.00	12.40	83%	-	-
Stock Fund	77.80	35.60	46%	29.20	5.00

[21] Headquarters, U.S. Marine Corps, Stratification Report of Appropriation Financed Principal Items, DD 1138-1, 31 December 1964, p. 1-6.

[22] U.S. Marine Corps, Memorandum, subject: War Reserves, Code CSS, 2 December 1969 and 13 January 1970.

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c. Since Marine Corps war reserve requirements were based on support for in-being forces for a specific period of time, they were fairly well defined. Prior to 1 January 1965 these requirements were considered to be valid. It has since been established that for a protracted land combat situation, the equipage and manning of the Marine Corps was inadequate. Two specific deficiencies were high-speed tactical generators and materials handling equipment. The war reserves would have been adequate to support the committed forces if they had been employed in accordance with Marine Corps doctrine and primary mission. Since this did not occur, no meaningful assessment can be made of the adequacy of the war reserve stocks as of 1 January 1965.

SECTION E

AIR FORCE LOGISTIC POSTURE

1. FORCES. The Air Force on 1 January 1965 had three principal types of forces: strategic, defensive, and general purpose.

a. The strategic forces were those weapon systems assigned to the Strategic Air Command (SAC) having the primary role of nuclear deterrent. Of these forces, only the following are addressed in this section.

(1) The portion of the SAC B-52 fleet used in the conventional bomb configuration for aerial interdiction of enemy lines of communication and in close support of ground combat troops.

(2) The aerial refueling tanker fleet (KC-135) which, in addition to the strategic mission of supporting the B-52 fleet, has an equally important mission of providing refueling support for both deployment and employment of the tactical fighter and reconnaissance forces on a global basis.

b. The defensive forces were weapon systems (aircraft and missile) assigned to the Aerospace Defense Command and overseas major commanders for protection against enemy air attack. These forces are addressed only in Chapter 5 of this volume.

c. The general purpose forces were assigned to the Tactical Air Command (TAC), Military Airlift Command (MAC), and overseas major commanders for employment in the air superiority effort for both general and limited (contingency) war missions. Support of these forces was a major consideration. The general purpose forces were composed of tactical fighters, tactical reconnaissance, special air warfare (special operations after 1967), and airlift forces (Table 7).

TABLE 7

USAF GENERAL PURPOSE FORCES
(1 January 1965)

Type of Forces	Wings	Squadrons (RVN)*		Aircraft Assigned (RVN)*	
Tactical Fighters	22	89	(3)	1750	(45)
Tactical Recce	3	14	(1)	220	(12)
Special Air Warfare		9	(5)	210	(100)
Tactical Airlift	11	36		550	
Strategic Airlift		28		440	

* Figures in parentheses indicate units and aircraft acutally in RVN.

Source: U.S. Air Force, Statistical Digest, FY 65 (U), 1965 (SECRET).

d. Organization. The major operational commands were organized into numbered air forces, divisions, wings, and squadrons as appropriate to their individual missions and responsibilities. The Air Force Logistics Command and the Air Force Systems Command organizations are described in Chapter 3.

e. Personnel Strength. On 1 January 1965 the Air Force active duty military strength was nearly 844,000 personnel: 651,000 in CONUS and 193,000 overseas. The Pacific Air Forces (PACAF) portion was about 40,000, of which just over 10,000 were in SE Asia. Air Force civilian personnel rolls at that time listed some 260,000 employees in CONUS and 63,000 overseas (14,000 U. S. citizens and 49,000 indigenous personnel).[23] No precise reconstruction regarding the portion of these totals employed in logistic activities was made.

f. Reserve/Air National Guard. Backing up these Active Forces were about 59,000 personnel (17,000 officers, 42,000 enlistees) in the Air Force Reserves[24] and 74,000 (10,000 officers, 64,000 enlistees) in the Air National Guard.[25] These forces were organized into wings, groups, and squadrons as shown in Table 8.

2. BASES. On 1 January 1965 the Air Force owned and operated 149 major operational and logistic support installations in CONUS and 62 major bases overseas. There were also some 4,500 additional facilities, such as missile silos, air control and warning (AC&W) sites, and communications facilities satellited on major installations.[26] Of the overseas installations, PACAF had 15 major bases and 159 satellite activities. In SE Asia, operational units were using the only three jet-capable airfields in RVN and three of the five jet fields in Thailand. There were also numerous improved and unimproved landing strips in both RVN and Thailand capable of handling propeller-driven aircraft.

3. MATERIEL

a. The weapon systems assigned to general purpose forces on 1 January 1965 were generally from 10 to 15 years old, with some dating back to World War II.

TABLE 8

USAF RESERVE AND AIR NATIONAL GUARD

Forces	Wings	Groups	Squadrons	Aircraft
Reserve	13	37		C-119
	1	3		C-123
	1	5		C-124
	7	23	23	Fighter
Air National Guard	3	17	12	Recon
	2	5	5	Refueling

[23] U.S. Air Force, Statistical Digest, FY 65 (U), 1965 (SECRET).
[24] U.S. Air Force, Organization & Location Summary (Section I) RCS 6-AF-P14, 31 December 1964.
[25] Air National Guard, Annual Report Chief, National Guard Bureau, Fiscal Year 1965, 30 June 1965.
[26] U.S. Air Force Programming Supplement to PD 67-1 Installations, FDIC 67-1 (U), December 1964 (SECRET).

(1) The bulk of the tactical fighter force was made up of F-100 and F-105 aircraft of early to middle 1950's vintage. The new F-4 aircraft comprised less than one-fourth of the active inventory.

(2) Tactical reconnaissance forces were equipped primarily with RF-84's and RF-101's with only a few RF-4's.

(3) Since the C-141 system was just entering the active inventory, the airlift forces basically were made up of the aging C-124 and C-130 aircraft, with a considerable number of C-123's assigned in the tactical airlift role.

(4) Special Air Warfare forces were partially equipped with such World War II aircraft as A-1 attack bombers, modified T-28 trainers, and C-47's and C-123's for airlift support.

b. The 1 January 1965 equipment posture was very favorable. The overall operationally ready (OR) rates for aircraft, not only in SE Asia but worldwide, attest to the effectiveness of the Air Force system of "specialized maintenance." As reported in the FY 65 USAF Statistical Digest [27] the dollar value of materiel assets on hand was 93.3 percent of that authorized for all commands. However, certain shortages existed, primarily in those commands directly concerned with SE Asia, e.g., PACAF, 78.6 percent, and TAC, 79.7 percent.

(1) A typical problem involved electrical generators and repair parts. There was a great proliferation of types and models of tactical high-speed generators in the inventory, particularly in those deployed in the PACAF area. Many were of foreign and other nonstandard manufacture for which there was no ready source of repair parts, and no stock lists or parts lists. This resulted in a high incidence of improper requisitioning, unusual maintenance effort, and downtime.

(2) Prior to 1 January 1965 the Air Force had converted almost entirely to the use of commercial motor vehicles rather than the heavy-duty military type. Most spares and repair parts were locally procured, and major maintenance and overhaul was accomplished under local contract. The difficult weather and terrain environment in SE Asia, coupled with the high utilization rate, generated extraordinary maintenance requirements. Further, there were no commercial sources, either for repair parts or for contract maintenance. Consequently the SE Asia vehicle-out-of-commission rate was excessive.

(3) The military specification for purity of breathing liquid oxygen (LOX) caused reliance on Air Force-owned LOX generating plants in most overseas areas because of the lack of reliable commercial sources. In addition to an approximately 7 percent shortage of authorized LOX plants, the bulk of the plants in inventory were over-aged. The high demand of the expanding operational requirements, the adverse environment, and a shortage of repair parts combined to create a difficult situation in SE Asia. Frequently LOX had to be flown in from rear area bases.

4. WAR RESERVES. As of January 1965, the Air Force War Readiness Materiel assets were considered adequate to support any contingency, although certain equipment shortages did exist. The status of War Readiness Materiel (WRM) as of 1 January 1965[28] was as follows:

a. Munitions. The Logistics Guidance objectives for the Air Force was 90 days of nonnuclear combat with modern air munitions (this objective was not completely filled until after the FY 68 buy) and an additional 90 days using older ordnance. Significantly, both the FY 65 and FY 66 Logistics Guidance provided for attack aircraft sorties only, containing no authorization or planning factors for B-52 aircraft. The gross tonnage on hand was over three times the stated requirement; however, a qualitative analysis revealed that stocks were primarily general purpose bombs

[27] U.S. Air Force, Statistical Digest, FY 65 (U), 1965 (SECRET).
[28] Assistant Defense Communication System/Systems & Logistics, Letter, subject: Logistic Posture at Start of the Vietnam Build-up (U), 13 May 1969 (SECRET).

remaining from the Korean War. Many items of modern munitions, e.g., cluster bombs, low-drag bombs, air-to-ground and air-to-air missiles, and flares were seriously short of requirements.

b. Subsistence. Ninety days of In-Flight and Type B rations were authorized and on-hand.

c. Spares Kits. War Readiness Spares Kits (WRSKs) data for 1 January 1965 are not available. Reports were not made on a worldwide basis until 1966. However, authorizations included: PACAF, 23; USAFE, 30; CONUS, 385; and Other, 10. The percentage of fill on these WRSKs varied from time to time, but assigned requisitioning priority assured a high fill percentage.

d. Aircraft Engines. An inventory valued at $404 million in aircraft engines was authorized with $512.1 million on hand. Spare engine requirements computations are based on the greatest projected activity (peace or war); therefore, WRM is not specifically identified when computations are made.

e. Tanks, Racks, and Pylons. An inventory valued at $133.5 million was authorized, with an actual on-hand inventory of $148.6 million.

f. Other. Station sets, housekeeping sets, clothing, field equipment kits, and miscellaneous, such as chaff and film, were not reported on a worldwide basis as of 1 January 1965. Requisitioning priorities in existence at that time indicated a high degree of fill.

SECTION F

OTHER COMMODITIES AND SERVICES

1. DEFINITION. This section describes the logistic posture as of 1 January 1965 with regard to bulk petroleum, transportation, production base, and communications. These areas are treated functionally rather than by Service primarily to preclude redundancy, since in these functional areas there is considerable cross-servicing and single managership.

2. PETROLEUM, OIL, AND LUBRICANTS. The worldwide petroleum, oil, and lubricants (POL) posture of the Services on 1 January 1965 was excellent. The war reserve requirements had been met and sufficient stocks were on hand to support existing contingency plans. The high degree of effectiveness of POL logistics was made possible by the fact that, while management of POL was given specialized attention, it was done without fragmenting the responsibilities of the military departments, the Services, or the commanders of the unified commands. On 1 January 1965, U. S. forces in Vietnam had little or no organic POL support capability. Commercial supply lines established by in-country contractors were the primary means of support. Total POL storage in-country was approximately 1,672,000 barrels.[29] Notwithstanding the almost total dependence on commercial contractors in Vietnam, the POL support was adequate to support combat operations taking place at that time. The posture of the individual Services is described in the following paragraphs.

a. Army. The Army was assigned the mission of moving large volumes of POL over long distances overland in support of deployed forces. This included support of certain Air Force bases with aviation fuels and constituted a large segment of the Army POL support requirement. The Army had a POL support system and the assets capable of delivering fuel over either developed or underdeveloped land masses to accomplish its missions. This system was structured to permit a rapid transition from a peacetime to a wartime footing. Analysis of the Army POL support posture as of 1 January 1965 indicates stocks were on hand to include all pre-positioned war reserve requirements.

b. Navy. The Navy POL readiness was satisfactory. A review of the worldwide bulk fuel assets[30] indicated that, except for a 12 percent deficiency in JP-5, all pre-positioned war reserve stocks were on hand. There were malpositioned inventories due to lack of storage in some areas of anticipated usage. However, the degree of risk involved through malpositioning was minimal.

c. Marine Corps. The Marine Corps operational POL system was developed to provide support in an amphibious assault environment. All of the Marine Corps POL requirements are identified to and provided for by the Navy, including aviation requirements. The Marine Corps had on hand 42 Amphibious Assault Bulk Fuel Systems. With this system, fuel could be received directly from an offshore tanker through a sealine and pumped to an issue or storage point on or near the beach. The Third Force Service Regiment on Okinawa held eight of these systems in their stocks. Support to sustain Marine Corps operations in Vietnam was satisfactory.

d. Air Force. The Air Force pre-positioned war reserve POL authorization was 30 days for CONUS and 60 days for overseas installations. Generally, stockage met or exceeded the authorization worldwide, except that PACAF had only 78 percent of the jet fuel required.

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[29] U. S. Military Assistance Command, Vietnam, MACJ 44 Letter, subject: Petroleum Operations in the Republic of Vietnam (U), 2 December 1964 (SECRET).

[30] Chief of Naval Operations, Letter 00414P403, subject: POL Logistic Posture at Start of the Vietnam Buildup (U), 6 May 1965 (SECRET).

The prescribed war reserve levels for aviation oils were at 100 percent of authorized levels.[31] The Air Force had a total of 25 portable hydrant refueling systems at the beginning of the Vietnam era. Six of these hydrant systems were in PACAF and in use on 1 January 1965.

3. TRANSPORTATION. The capability of the transportation systems to satisfy the routine requirements of the Services on 1 January 1965, particularly as applied to PACOM, were judged to be adequate.

a. Contingency plans provided for rapid deployment of land, sea, and air forces from CONUS and PACOM to SE Asia. Initial resupply was to be airlifted until surface lines of communication could be established. Plans required augmentation for the Military Air Transportation Service (MATS) intratheater airlift and activation of selected PACOM Strategic Reserve ship resources for intratheater sealift.

b. Intertheater and intratheater transportation resources were subdivided into the following categories:

(1) Intertheater airlift was to be provided by MATS assets, which on 1 January 1965 were comprised of approximately 500 aircraft, with C-124's and C-30's representing the biggest portion of those assets. The Civil Reserve Air Fleet (CRAF) inventory had approximately 200 aircraft available to augment the MATS capability, as were the transport units of the Air Force Reserve and Air National Guard.[32] Aerial port facilities in support of SE Asia operations were at Travis AFB, California, and McChord AFB, Washington. Only two airfields in SE Asia, Tan Son Nhut in Saigon and Don Moang in Bangkok, were capable of handling MATS aircraft at this time.

(2) Intratheater airlift, particularly as applied to the Pacific area, was the responsibility of the theater commander. The PACOM used in-theater tactical assets for the short haul channels and had developed an intratheater airlift system sufficient to meet peacetime requirements. There were five C-130 squadrons totaling 80 aircraft in PACOM on 1 January 1965 with one MATS C-124 squadron in Japan to handle outsized cargo requirements.[33]

(3) On 1 January 1965, the Military Sea Transportation Service (MSTS) had 120 ships available in the controlled fleet for common service sealift to meet worldwide Department of Defense requirements: 89 ships from the DOD-owned nucleus fleet, 29 ships from the privately owned U. S. Merchant Marine, and two ships from the National Defense Reserve Fleet.[34]

c. Plans then in existence assumed that transportation beyond the capability of PACOM-assigned forces would be made available as required. Supporting MSTS plans assumed that emergency requisitioning of commercial shipping would be directed when necessary to meet sealift requirements. Estimates by MATS of airlift capability included recall of selected Air Force Reserve transportation units and augmentation by C-130 aircraft from the Strike Command; MATS plans also included the utilization of the CRAF. These assumptions by MATS and MSTS were based on guidance from the Joint Chiefs of Staff and historical precedent.

4. PRODUCTION BASE

a. The strength of the nation relates to the capability of its industrial base and industry's ability to respond to the demands of war. One element of this strength is effective industrial mobilization planning for the utilization of this production capability.

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[31] U.S. Air Force, Assistant Deputy Chief of Staff for System and Logistics, Letter, subject: Logistic Posture at Start of the Vietnam Buildup (C), 13 May 1969 (SECRET).

[32] Department of Defense, Military Air Transportation Service, Airlift Data, FY 65 Summary, 30 June 1965.

[33] U.S. Navy, Commander in Chief, Pacific, CINCPAC Command History, Vol II, 1965 (U), 13 May 1966, p. 572 (SECRET).

[34] Department of Defense, Military Sea Transportation Service, Ship Inventory Reports (3110-4) for 1965, 1965.

b. This planning, as it existed in 1965, had limited value in supporting Vietnam requirements. Plans were not prepared for the situation that developed, i.e., a war without a declaration of emergency. Plans assumed the availability of commercial plants in the event of hostilities.

c. The establishment and preservation of an adequate industrial base is dependent on realistic mobilization requirements. Without valid stable requirements, it is virtually impossible to plan with industry or maintain the production base in an acceptable state of readiness. Another factor affecting capability was the condition and age of equipment in layaway. Pressure from the Department of Defense to dispose of facilities had left few plants available in 1964 and 1965 which were prepared for SE Asia requirements. Six commodity or end product categories accounted for over 90 percent of the total inventory of active and inactive industrial facilities of DOD. The largest single category of such facilities were those involved in the production and loading of ammunition and solid propellants. Almost without exception, these plants were a legacy of the massive buildup during World War II.

d. The Army production base consisted of Government-owned facilities and private industry producers. The Army's in-house munitions production base was comprised of 26 Government-owned contractor-operated (GOCO) production facilities representing an investment of approximately $5.2 billion. The Army's private industry sector of the munitions production base consisted of approximately 240 Base Production Units (BPUs) assigned to approximately 180 private concerns. Of this total base, 12 GOCO and 51 BPUs were actively producing munitions on 1 January 1965.[35]

e. The Navy-owned production base was in relatively good condition on 1 January 1965, but the reverse was true with respect to the civilian base, which consisted mostly of past producers who had been out of production for several years. They had obsolete and deficient tooling and insufficient facilities to accelerate to mobilization rates.

f. The Air Force and Marine Corps relied on the Army and Navy in-house production capability for the majority of their conventional munitions, procuring them via Military Interdepartmental Purchase Requests (MIPRs). The procuring service was responsible for consolidating all requirements and maintaining or establishing the necessary production base. The Air Force did procure metal parts for certain munitions from commercial sources, but relied on the Army and Navy (via MIPR) for all explosive loading, assembly, and packing. The Marine Corps relied on the Army for the majority of its ground ammunition requirements. Navy production provided all Marine Corps air munitions as well as certain ground peculiar ammunition items. The condition of the ammunition production base, as well as the base for other commodities as it existed on 1 January 1965 both within the Army and the Navy, was inadequate and obsolete. The manufacturing processes and plant facilities and equipment were antiquated and neglected because of the lack of funds for maintenance and rehabilitation.

5. COMMUNICATIONS

a. The communications posture at the start of the Vietnam conflict was fortuitous in that U.S. forces were already in-country and some limited communications capability existed. Dedicated facilities for the sole support of logistics were not planned or provided. The logistic functions were dependent on common-user systems. The responsibility for Defense Communications Systems circuits was assigned to the U.S. Army in 1962 and supplemented in 1963 by an Army-Air Force agreement that called for the Air Force to supply local service at five locations and the Army to provide long-haul service. Planning in early 1964 envisioned reduction of U.S. forces in the following year, and the turnover of all existing communications systems to the South Vietnamese. Subsequent events invalidated this planning.

b. Out-of-country communications prior to 1965 consisted primarily of high frequency (HF) radio to Japan, Okinawa, Thailand, and the Philippines. There were some unique Service

[35] Department of the Army, Deputy Chief of Staff for Logistics, Memorandum, subject: Ammunition Logistics in Support of SE Asia Operations 1965-1968 (U), 5 September 1969 (SECRET).

HF systems that extended circuits outside Vietnam. Marine units operated one HF single sideband (SSB) circuit to the Naval Communications Station in the Philippines, and another to Okinawa and Japan. A 60-voice channel submarine cable, from Nha Trang, RVN, to the Philippines was completed on 31 December 1964. This system, called Wet Wash, interfaced with the commercial TRANSPAC cable for connection to Guam, Midway, Hawaii, and CONUS and tied into a 60-voice channel tropospheric scatter radio link for circuits to Phu Lam on the outskirts of Saigon. Limited out-of-country service was established by the SYNCOM satellite system in August 1964, providing one voice and one teletype channel on an emergency basis only.

c. In-country communications consisted of a 72-voice channel tropospheric scatter radio system known as Back Porch, and a commercial microwave system, Southern Toll, which provided service into the delta area. The telephone system was primarily a tactical network comprised of duplicating trunks and poor circuits.

d. Fleet communications consisted mainly of the Navy's customary fleet broadcast, shore-to-ship and ship-to-ship circuits for ships and units of the Seventh Fleet. The shore stations principally involved in the handling of Seventh Fleet traffic were the Naval Communications Stations in Guam, Japan, and the Philippines.

e. A manual data relay network, INTERIM AUTODIN, was operational in the Pacific area with one terminal in Saigon and provided a limited data link to CONUS.

SECTION G

SUMMARY

1. On 1 January 1965, the Services were structured to achieve the capability of dealing with a wide range of contingencies. This diversity of missions seriously complicated the task of determining specific requirements for logistic support of these forces. The uncertainties regarding the employment of forces caused the use of a wide range of assumptions in the development of contingency plans. Each set of these assumptions indicated a wide variation of requirements, which further complicated the logistics planning. Another limiting factor in the planning process was the simple fact that the future could not be foreseen with any degree of certainty. Nevertheless, the Services benefited from the contingency planning process in that it did afford an appreciation of the key elements necessary to execute a contingency operation and the ability to assemble an operational plan based on the immediate assessment of the contingency.

2. The active logistic forces supporting the Services were structured to meet initial requirements envisioned in contingency operations. All Services were relying on Reserve Force mobilization to provide the augmentation required to accomplish extended combat and support missions.

3. The worldwide facilities and bases in use by the military services were capable of supporting the planned mobilization. This support would be accomplished with a minimum of CONUS expansion and under relatively austere conditions.

4. In spite of the impact of obsolete and outdated equipment, the Services had attained by 1 January 1965 a satisfactory level of equipment and secondary items. The existing equipment shortages were primarily caused by funding limitations that prevailed in the prior decade. However, as a result of expanding an extraordinary maintenance effort, expediting procurement actions, and redistributing worldwide assets, all military operations were adequately supported as of 1 January 1965.

5. The maintenance capabilities of the Services were generally adequate to satisfy existing requirements. Many of the problems encountered in the maintenance field concerned the age of the equipment being supported. Funding priorities during the previous decade precluded the replacement of over-age equipment. This situation necessitated prolonging the life cycle of in-use equipment to the extent that inordinate and often uneconomical maintenance practices were required.

6. The degree of adequacy of war reserve materiel within the Services varied as of 1 January 1965. There was a lack of credible procedures concerning requirements determination, budgeting, and procurement of war reserve materiel. Within the Army and Navy, war reserve materiel stocks on hand were considered inadequate to meet their worldwide commitments. The Air Force and Marine Corps war reserve materiel stocks were adequate to support anticipated contingencies.

7. All Services experienced shortages in certain ammunition line items, overages in other line items, and a certain degree of obsolescence. The Army had approximately 80 percent by tonnage of its requirements on hand based on D-to-P concept objectives. Based on validated requirements, the other Services were considered to have been in an acceptable position despite shortages of munitions for the newer jet aircraft.

8. The worldwide POL posture of the Services on 1 January 1965 was excellent. The war reserve requirements had been met and sufficient stocks were on hand to support existing

contingency plans. Even in Vietnam, where the Services were almost totally dependent on commercial contractors, the POL support was adequate to support operations taking place as of 1 January 1965.

9. The transportation systems were judged capable of satisfying the routine requirements of the Services on 1 January 1965. The execution of any contingency plan would require the activation of Reserve assets, i. e., Civil Reserve Air Fleet, Naval Defense Reserve Fleet, Air Force Reserve, and Air National Guard.

10. The condition of the Government-owned production base to support contingency military requirements was inadequate. The facilities and equipment were obsolete, antiquated, and generally neglected owing to a lack of funds for maintenance and rehabilitation. The Department of Defense disposal efforts resulted in only a few plants remaining available to support contingency operations. Limited national industrial mobilization planning further reduced the responsiveness of the production capability.

11. Communication requirements of the Services were being met on 1 January 1965. A basic communications capability existed in SE Asia; however, its overall effectiveness was somewhat limited. Planning actions to resolve the communications problem areas in SE Asia had been initiated in 1964 when it became apparent that the U. S. effort in Vietnam would not terminate but rather would escalate.

12. Generally speaking, the logistic posture of the Services on 1 January 1965 was adequate, except for war reserves and a marginal production base.

CHAPTER 3

LOGISTIC RESPONSIBILITIES AND SYSTEMS

SECTION A

INTRODUCTION

1. PURPOSE. This chapter traces the statutory and regulatory responsibilities for the provision of logistic support to and within the U.S. Military Establishment, as specified in Title 10 (Armed Forces) and other sections of the U.S. Code. The logistic systems of the various elements of the Department of Defense (DOD) and their interactions are also described. This section provides a broad overview of logistic policies and systems and describes the organization of the chapter.

2. LOGISTIC POLICY

a. National defense objectives and policy, developed by the President of the United States and the National Security Council, include the determination of the forces required for national defense and the establishment of broad parameters of logistic needs. The Congress, through legislative action, considers these objectives and policy and provides the financial means to develop forces and procure logistic support to carry out the national objectives. Complex interrelationships exist between the executive and legislative branches requiring close coordination and cooperation between the agencies of each branch.

b. The DOD manages the largest inventory and diversity of items of any business in the world. The goal is to manage this inventory with maximum effectiveness and minimum cost in dollars and effort. The logistic policy throughout DOD is to get the necessary forces, materiel, and required logistic support to the right place at the right time and to maintain all equipment in operable condition as effectively and economically as possible in both peace and war.

3. LOGISTIC SYSTEMS

a. Within the defense establishment, logistics is defined as the science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, logistics includes those aspects of military operations that deal with (1) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; (2) movement, evacuation, and hospitalization of personnel; (3) acquisition or construction, maintenance, operation, and disposition of facilities; and (4) acquisition or furnishing of services.[1] For the purpose of this review the Board did not consider the design, development, and acquisition of major weapon systems.

b. Military logistics is the process of translating the broad statement of requirements into usable military assets and of distributing and applying the assets as well as providing a broad range of services and facilities.

c. Logistic processes are so closely related to tactical military capability that tactical decisions may dictate logistic decisions and vice versa. The highest level of planning, programming, and budgeting decisions are made at the DOD level and furnished to the Services. These decisions are then translated into tactical (operational) programs to support and execute the assigned missions of the particular Services. The missions of the Services are designed to cope with a vast spectrum of conflict and contingencies with an infinite variation of intensity and character. Each individual Service represents a specialized force capability of overall U.S. military power organized to operate in its particular environment (i.e., land, sea, amphibious

[1] Joint Chiefs of Staff, Publication 1, 1 August 1968, p. 126.

or air). The tactics developed for employment by each of the military services exploit its particular capabilities and dictate its specialized logistic requirements.

(1) Army. The Army logistic system is based on a requirement to support a large, expandable force capable of rapid deployment and flexible operations of all forms of conflict on a global basis. The Army Materiel Command, through its seven commodity commands and depots, operates the wholesale portion of the wholesale-retail system of supply support. In the continental United States (CONUS), supplies flow to posts, camps, and stations that issue direct to the user on a retail basis. Overseas, logistical commands, through their component depots, distribute supplies through direct and general support units to the user.

(2) Navy. The Navy logistic system is based on the requirement that the fleet be ready, mobile, and enduring. Both elements of the logistic system, the producer (the Chief of Naval Material) and the users (the several fleets), operate under the direct command of the Chief of Naval Operations. In general, those forces based in CONUS receive support from continental sources, whereas those deployed overseas are supported primarily by Mobile Logistic Support Forces that accompany the fleets, augmented by overseas base support as may be necessary.

(3) Marine Corps. The Marine Corps concept of logistic support was developed specifically for conducting amphibious operations under limited and general war conditions. Logistic support organizations and techniques of employment are designed to permit task-organized logistic support units to conform to existing circumstances of size and makeup of the tactical landing forces. The materiel support of the Marine Corps logistic system basically consists of two segments: the distribution or stores segment and the organic or user segment. The distribution segment consists of Headquarters, Marine Corps; one Inventory Control Point (ICP), and eight Remote Storage Activities. The organic or user segment consists of organic accounts, service units or elements, bases, camps, and installations. Within the distribution system, materiel is purchased from various sources and positioned within the eight Remote Storage Activities. The organic or users segment purchases materiel from the distribution system. In essence, the distribution system can be equated to a wholesaler operation, whereas the organic or user segment may be equated to jobber or retailer operations.

(4) Air Force. The Air Force logistic system provides units of the Air Force with the capability to deploy to any part of the world on short notice and sustain operation for an indefinite time. This system is designed to operate under the same policies and procedures in peacetime and in war. As a result, there were no major changes during the Vietnam era. The concept for supply support is to channel the requisitions for materiel directly between the user (base) and the responsible source of supply for needed items. There is no intermediate supply depot or headquarters through which requisitions must be channeled. There are five depots or Air Materiel Areas, all located in CONUS, that provide rapid and effective service to the bases. All base supplies are organized under the standard Air Force supply concept equipped with standard computers utilizing centrally controlled programs. Equipment maintenance is organized so that the maximum amount of maintenance is accomplished at the lowest level for which there is skill, equipment, and facilities. Maintenance, technical guidance, and depot maintenance support is a direct link between the base and the applicable Air Materiel Area. Base maintenance functions are performed by a standard organization at all bases and operate using the centralized maintenance concept.

(5) Defense Supply Agency. The Defense Supply Agency (DSA) operates in CONUS to provide support for items assigned for DSA management to all the military services and, by agreement with the General Services Administration, to certain civil agencies of the Federal Government. This support is rendered through a distribution system in which the depots are located as close to the consumers as possible. The DSA also administers a number of DOD programs such as the Federal Catalog Program, the Military Standards Program, and the Surplus and Excess Personal Property Disposal Program.

(6) General Services Administration. The General Services Administration (GSA) provides support to all Services for the items it manages, which include most commercial

items. The GSA also manages Federal property and records, provides for construction and operation of Federal buildings, stockpiles strategic and critical materials, and disposes of Government records and surplus Government property. The GSA Federal Supply Service is designed to interface with military supply systems.

4. SCOPE

a. This chapter will not address details of two areas having a major influence on and usually associated with logistic support: (1) force structure, and (2) overall acquisition of major weapon systems. The existing force structure (with projected or potential changes) is accepted as set forth in the DOD Five Year Defense Program. Decisions in these areas, as determined by the Secretary of Defense and by congressional actions reflected in annual appropriations, may be further constrained by subsequent financial apportionments.

b. Although the acquisition of major weapon systems normally marks the beginning of the logistic process, this chapter will discuss only one aspect of acquisition—the determination of spare and repair parts quantities for both initial and replenishment requirements and the determination of replacement end items. Treatment of this process will begin at the provisioning of the weapon systems by logisticians, and will include consideration of the logistic aspects of the weapon system as it enters the active inventory.

5. ORGANIZATION OF THE CHAPTER

a. Section B presents a description of the logistic responsibilities of the Secretary of Defense, Office of the Secretary of Defense, Joint Chiefs of Staff, departmental level of the military services, commanders of the unified and specified commands, Defense Supply Agency, and General Services Administration as defined in applicable statutes, directives, and publications. The departmental level is treated in the order of Army, Navy, and Air Force with Headquarters, Marine Corps, being addressed in this section within the context of the Department of the Navy (see Figure 5).

b. Section C addresses aspects of logistics handled in joint channels and those commodities and services common to all military departments.

c. Sections D through G describe the missions and responsibilities of the military services and the organization and processes of the logistics systems employed by each Service. Important changes during the Vietnam era are included.

d. Other defense-related governmental logistic functions are covered in Section H. A summary of the entire chapter is presented in Section I.

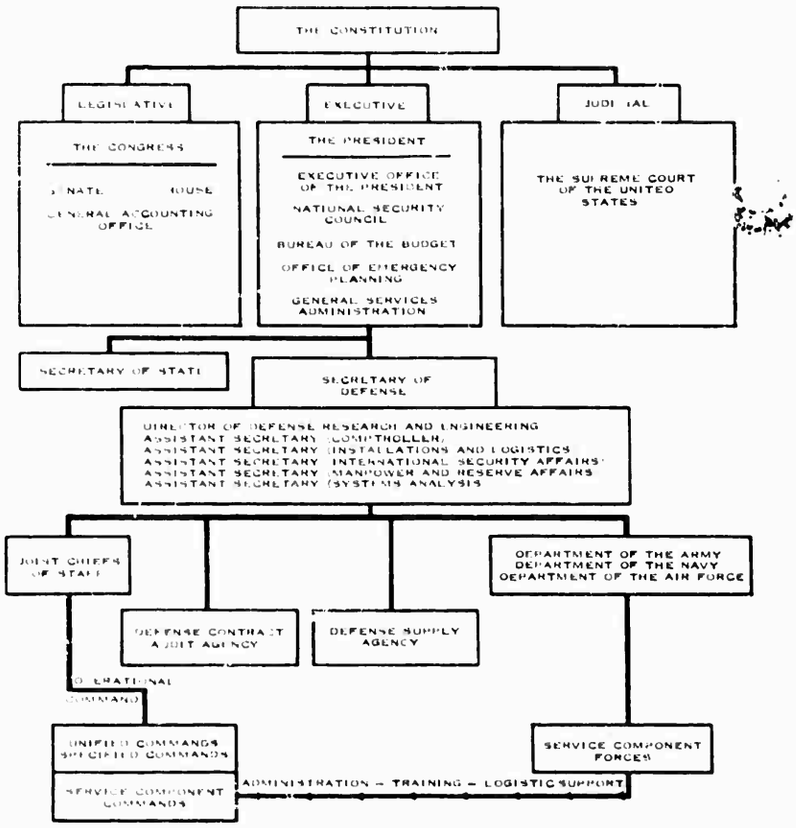

FIGURE 5. MAJOR ELEMENTS OF U.S. GOVERNMENT HAVING LOGISTIC RESPONSIBILITIES

SECTION B

MAJOR LOGISTIC RESPONSIBILITIES

1. SECRETARY OF DEFENSE

a. The logistic and other responsibilities of the Secretary of Defense stem from Section 133, Title 10, U.S. Code which, having established the position of the Secretary of Defense as the head of the Department of Defense, states in part that: "The Secretary of Defense is the principal assistant to the President in all matters relating to the Department of Defense. Subject to the direction of the President and to this Title and Section 401 of Title 50, he has authority, direction and control over the Department of Defense. . . ."

b. Section 125, Title 10, U.S. Code, which amplifies responsibilities of the Secretary of Defense, provides, in part, that the Secretary of Defense shall not, without advising the Congress, "transfer, reassign, consolidate, or abolish a major combatant function, power, or duty assigned to the Army, Navy, Air Force, or Marine Corps by section 3062(b), 5012, 5013, or 8062(c) of this Title; . . . . major combatant function, power or duty, does not include a supply or service activity common to more than one military department. The Secretary of Defense shall, wherever he determines it will be more effective, economical, or efficient, provide for the performance of such an activity by one agency or such other organization as he considers appropriate."

2. OFFICE OF THE SECRETARY OF DEFENSE

a. "II. The Assistant Secretary of Defense (Installations and Logistics) is the principal staff assistant to the Secretary of Defense in the following functional fields:

1. Materiel requirements.
2. Production planning and scheduling.
3. Acquisition, inventory management, storage, maintenance, distribution, movement and disposal of materiel, supplies, tools, and equipment.
4. Small business matters.
5. Transportation, telecommunications, petroleum and other logistical services.
6. Supply cataloging, standardization and quality control.
7. Commercial and industrial activities and facilities including fixed industrial equipment.
8. Military construction including reserve Forces Facilities.
9. Family housing.
10. Real estate and real property including general purpose space.
11. Vulnerability of resources to attack damage.

"III. FUNCTIONS

Under the direction, authority and control of the Secretary of Defense, the Assistant Secretary of Defense (Installations and Logistics) shall perform the following functions in his assigned fields of responsibility:

1. Recommend policies and guidance governing Department of Defense planning and program development.
2. Develop systems and standards for the administration and management of approved plans and programs.
3. Review programs of the military departments for carrying out approved policies.
4. Evaluate the administration and management of approved policies and programs.

5. Recommend appropriate steps (including the transfer, reassignment, abolition and consolidation of functions) which will provide in the Department of Defense for more effective, efficient and economical administration and operation, will eliminate unnecessary duplication, or will contribute to improved military preparedness.

6. Such other functions as the Secretary of Defense assigns.

"IV. RELATIONSHIPS

a. In the performance of his functions, the Assistant Secretary of Defense (Installations and Logistics) shall:

1. Coordinate actions, as appropriate, with the military departments and other Department of Defense agencies having collateral or related functions in the field of his assigned responsibility.

2. Maintain active liaison for the exchange of information and advice with the military departments and other Department of Defense agencies.

3. Make full use of established facilities in the Office of the Secretary of Defense, military departments and other Department of Defense agencies rather than unnecessarily duplicating such facilities.

b. The Secretaries of the military departments, their civilian assistants, and the military personnel in such departments shall fully cooperate with the Assistant Secretary of Defense (Installations and Logistics) and his staff in a continuous effort to achieve efficient administration of the Department of Defense and to carry out effectively the direction, authority and control of the Secretary of Defense.

"V AUTHORITIES

a. The Assistant Secretary of Defense (Installations and Logistics) in the course of exercising full staff functions, is hereby specifically delegated authority to:

1. Issue instructions and one-time directive-type memoranda, in writing, appropriate to carrying out policies approved by the Secretary of Defense for his assigned fields of responsibilities . . . . Instructions to the military departments will be issued through the Secretaries of those departments or their designees.

2. Obtain such reports and information and the assistance from the military departments and other Department of Defense agencies as may be necessary to the performance of his assigned functions."[2]

3. MILITARY DEPARTMENTS

a. The relationship of the Military Departments to the Department of Defense is set forth in the National Security Act of 1947, as amended. The "Declaration of Policy" in this act has now been codified in Title 50, U.S. Code 401, and reads as follows:

"Sec. 2 In enacting this legislation, it is the intent of Congress to provide a comprehensive program for the future security of the United States; to provide for the establishment of integrated policies and procedures for the departments, agencies, and functions of the Government relating to the national security; to provide a Department of Defense, including the three military Departments of the Army, the Navy (including naval aviation and the United States Marine Corps), and the Air Force under the direction, authority, and control of the Secretary of Defense; to provide that each military department shall be separately organized under its own Secretary and shall function under the direction, authority, and control of the Secretary of Defense; to provide for their unified direction under civilian control of the Secretary of Defense but not to merge these departments or services; to provide for the establishment of unified or specified combatant commands, and a clear and direct line of command to such commands; to eliminate unnecessary duplication in the Department of Defense, and particularly in the fields of research and engineering by vesting its overall direction and control in the Secretary of

[2] Department of Defense Directive 5126.22, January 1961.

Defense; to provide more effective, efficient, and economical administration in the Department of Defense; to provide for the unified commands, and for their integration into an efficient team of land, naval, and air forces but not to establish a single Chief of Staff over the armed forces nor an overall armed forces general staff."

b. The specific responsibilities of the military departments are set forth in various sections of Title 10, U.S. Code. With respect to the Department of the Army sections 3012 and 3062 state in part:

"3012 SECRETARY OF THE ARMY: Powers and duties.

(a) The Secretary of the Army is responsible for and has the authority necessary to conduct all affairs of the Department of the Army, including-

(1) functions necessary or appropriate for the training operations, administration, logistical support and maintenance, welfare, preparedness, and effectiveness of the Army. . . ."

"3062 Policy; composition; organized peace establishment.

(b) In general, the Army, within the Department of the Army, includes land combat and service forces and such aviation and water transport as may be organic therein. It shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations on land. It is responsible for the preparation of land forces necessary for the effective prosecution of war except as otherwise assigned and, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Army to meet the needs of war."

c. The responsibilities of the Navy Department are set forth in section 503, Title 10, U.S. Code; sections 5031, 5012, and 5013 state the responsibilities for the United States Navy and the United States Marine Corps respectively as follows:

"5031 SECRETARY OF THE NAVY: responsibilities.

(a) There is a Secretary of the Navy, who is the head of the Department of the Navy. He shall administer the Department of the Navy under the direction, authority, and control of the Secretary of Defense. The Secretary is responsible to the Secretary of Defense for the operation and efficiency of the Department. . . .

(b) The Secretary of the Navy shall execute such orders as he receives from the President relative to--

(1) the procurement of naval stores and material;

(2) the construction, armament, equipment, and employment of naval vessels; and

(3) all matters connected with the Department of the Navy. . . ."

"5012 UNITED STATES NAVY: Composition; functions.

(a) The Navy, within the Department of the Navy, includes, in general, naval combat and service forces and such aviation as may be organic therein. The Navy shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea. It is responsible for the preparation of naval forces necessary for the effective prosecution of war except as otherwise assigned and is generally responsible for naval reconnaissance, antisubmarine warfare, and protection of shipping.

(b) All naval aviation shall be integrated with the naval service as part thereof within the Department of the Navy. Naval aviation consists of combat and service and training forces, and include land-based naval aviation, air transport essential for naval operations, all air weapons and air techniques involved in the operations and activities of the Navy, and the entire remainder of the aeronautical organization of the Navy, together with the personnel necessary therefor.

(c) The Navy shall develop aircraft, weapons, tactics, techniques, organization, and equipment of naval combat and service elements. Matters of joint concern as to these functions shall be coordinated between the Army, the Air Force, and the Navy.
(d) The Navy is responsible, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Navy to meet the needs of war."

"5013 UNITED STATES MARINE CORPS: Composition; functions.
(a) The Marine Corps, within the Department of the Navy, shall be so organized as to include not less than three combat divisions and three air wings, and such other land combat, aviation, and other services as may be organic therein. The Marine Corps shall be organized, trained, and equipped to provide fleet marine forces of combined arms, together with supporting air components, for service with the fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign. In addition, the Marine Corps shall provide detachments and organizations for service on armed vessels of the Navy, shall provide security detachments for the protection of naval property at naval stations and bases, and shall perform such other duties as the President may direct. However, these additional duties may not detract from or interfere with the operations for which the Marine Corps is primarily organized.
(b) The Marine Corps shall develop, in coordination with the Army and the Air Force, those phases of amphibious operations that pertain to the tactics, techniques, and equipment used by landing forces.
(c) The Marine Corps is responsible, in accordance with integrated joint mobilization plans, for the expansion of peacetime components of the Marine Corps to meet the needs of war."

d. The responsibilities of the Department of the Air Force as set forth in sections 8012 and 8062c, read as follows:

"8012 SECRETARY OF THE AIR FORCE: Powers and duties.
(b) The Secretary of the Air Force is responsible for and has the authority necessary to conduct all affairs of the Department of the Air Force, including -
(1) functions necessary or appropriate for the training operations, administration, logistical support and maintenance, welfare, preparedness, and effectiveness of the Air Force. . . ."

"8062. c Policy; composition. In general, the Air Force includes aviation forces both combat and service not otherwise assigned. It shall be organized, trained, and equipped primarily for prompt and sustained offensive and defensive air operations It is responsible for the preparation of the air forces necessary for the effective prosecution of war except as otherwise assigned and, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Air Force to meet the needs of war."

e. As demonstrated in the foregoing excerpts from Title 10, U.S. Code (Section 3012, 5031, and 8012), the Secretaries of the military departments have the basic logistic responsibilities in the Department of Defense. This area of logistic responsibility, however, is also the area where the Secretary of Defense (Sections 125 (a) (1) and 125 (d)) has been authorized "to provide more effective efficient and economical administration and operation, and to eliminate duplication by providing for the performance of such other organization as he considers appropriate." This authority of the Secretary of Defense does not relieve the Service Secretaries of their responsibilities; in his exercise of his authority the Secretary of Defense provides means for the discharge of logistic responsibilities. It is still incumbent on the Service Secretaries to decide whether the means specified by the Secretary of Defense provide for the proper execution of logistic responsibilities within their Services.

f. In the event that a Service Secretary decides that the means specified by the Secretary of Defense do not provide for the proper execution of logistic responsibilities within his Service, he has the authority to go to the Congress. Section 3012 (b) (2) of Title 10, U. S. Code, states in part: "After first informing the Secretary of Defense, the Secretary [of the Army] may make such recommendations to the Congress relating to the Department of Defense as he may consider appropriate." Sections 5031 and 8012 contain identical phraseology pertaining to the Secretary of the Navy and the Secretary of the Air Force, respectively.

4. JOINT CHIEFS OF STAFF

a. Section 141, Title 10, U.S. Code, which provides for the composition and functions of the Joint Chiefs of Staff, reads in part as follows:

> "a. There are in the Department of Defense the Joint Chiefs of Staff consisting of-
> (1) a Chairman;
> (2) the Chief of Staff of the Army;
> (3) the Chief of Naval Operations; and
> (4) the Chief of Staff of the Air Force.
> b. The Joint Chiefs of Staff are the principal military advisers to the President, the National Security Council, and the Secretary of Defense.
> c. The Commandant of the Marine Corps shall indicate to the Chairman any matter scheduled for consideration by the Joint Chiefs that directly concerns the Marine Corps . . . . While the matter is under consideration and with respect to it the Commandant has co-equal status with members of the Joint Chiefs of Staff.
> d. Subject to the authority and direction of the President and the Secretary of Defense, the Joint Chiefs of Staff shall-
> (1) prepare strategic plans and provide for the strategic direction of the armed forces;
> (2) prepare joint logistic plans and assign logistic responsibilities to the armed forces in accordance with those plans; (This function is amplified in part IV of Department of Defense Directive 5100.1 which reads as follows: '3. To prepare joint logistic plans and assign logistic responsibilities to the military services and the Defense Supply Agency in accordance with those plans; ascertain the logistic support available to execute the general war and contingency plans of the commanders of the unified and specified commands; review and recommend to the Secretary of Defense appropriate logistic guidance for the military services which, if implemented, will result in logistic readiness consistent with the approved strategic plans.')
> (3) establish unified commands in strategic areas;
> (4) review the major material and personnel requirements of the armed forces in accordance with strategic and logistic plans;. . .
> (8) perform such other duties as the President or the Secretary of Defense may prescribe."

b. Figure 6 presents the various components of the organization of the Joint Chiefs of Staff.

5. UNIFIED AND SPECIFIED COMMANDS

a. Provision for the establishment composition, functions, and administration and support of combatant commands is contained in Section 124, Title 10, U.S. Code, which reads in part:

> "(a) With the advice and assistance of the Joint Chiefs of Staff, the President through the Secretary of Defense shall- (1) establish unified combatant commands or specified combatant commands to perform military missions . . . .
> (b) The military departments shall assign forces to combatant commands established under this section to perform the missions of those commands . . . .
> (d) Subject to the authority, direction, and control of the Secretary, each military department is responsible for the administration of forces assigned by that

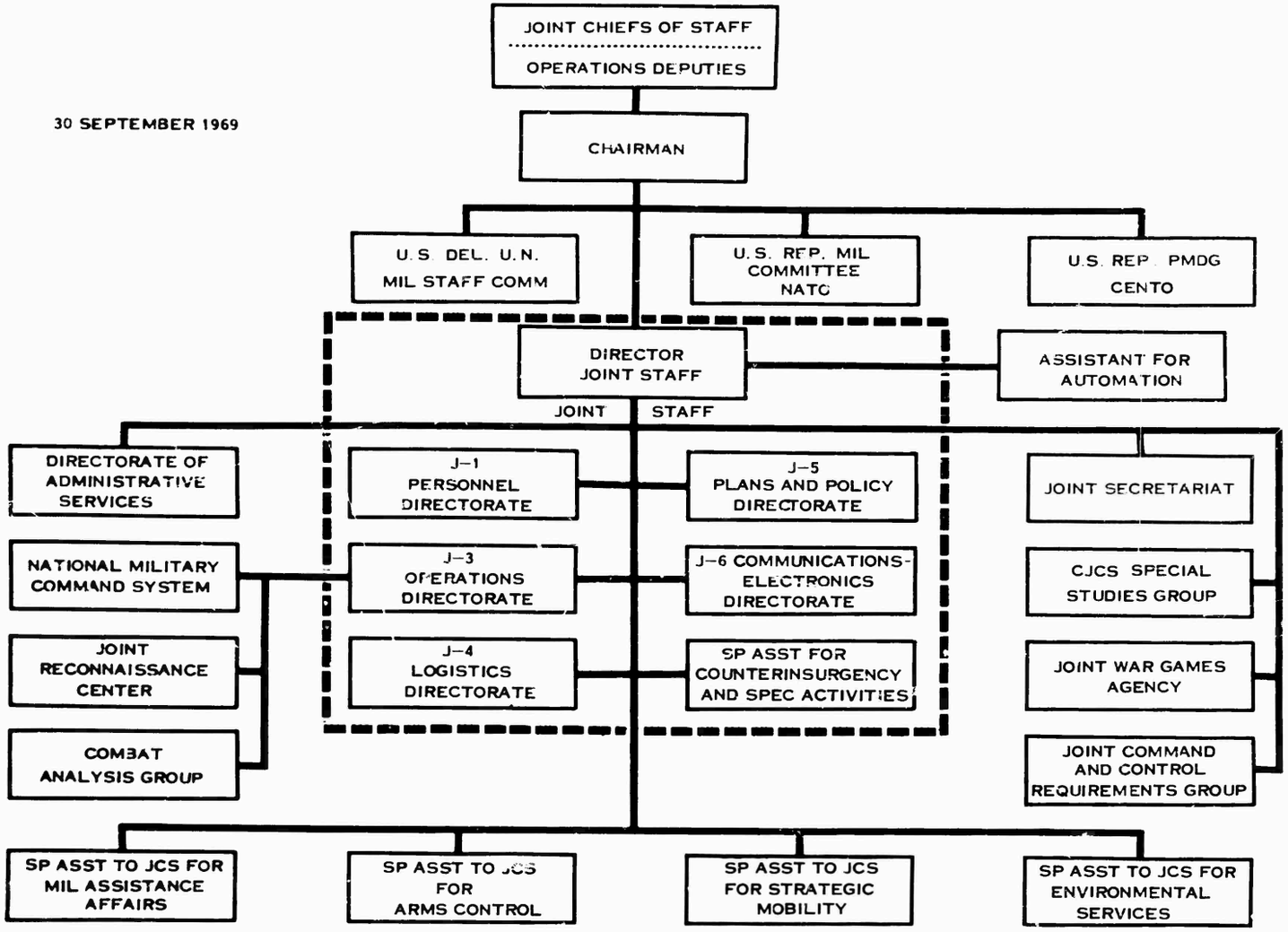

FIGURE 6. ORGANIZATION OF THE JOINT CHIEFS OF STAFF

department to combatant commands established under this section. The Secretary shall assign the responsibility for the support of forces assigned to those commands to one or more of the military departments."

b. The Joint Chiefs of Staff Publication (JCS Pub) 1 defines unified and specified commands in part as follows:

"Unified Command—A command with a broad continuing mission under a single commander and composed of significant assigned components of two or more Services. . . .
"Specified Command—A command which has a broad continuing mission and which. . . normally is composed of forces from but one service."

c. The Unified Command Plan sets forth the logistic responsibilities and authority of unified commands in paragraph 13c which reads as follows:

"The commander of a unified or specified command will assign tasks to and direct coordination among his subordinate commands to insure unity of effort in the accomplishment of his assigned missions."

d. Annex B, paragraph 3 of the Unified Command Plan has this to say on the subject of directive authority in logistics:

". . . the commander of a unified command or specified command is authorized to exercise directive authority within his command in the field of logistics in order to insure effectiveness and economy in operations and the prevention or elimination of unnecessary duplication of facilities and overlapping of functions among the Service components of his command. As previously provided, the Services will continue to have responsibility, under the direction of the Secretary of Defense, for the logistic support of component commands."

6. DEFENSE SUPPLY AGENCY

a. Department of Defense Directive 5105.22 sets forth the mission, organization and functions of the Defense Supply Agency (DSA). The Agency operates directly under the Secretary of Defense. As stipulated in Section VI of the Directive, the Agency ". . . shall be responsible for . . . Providing, as authorized and directed by the Secretary of Defense, responsive, effective, and economical support . . . ." Section III of the Directive is as follows:

"III. MISSION AND SCOPE
A. As an element of the Defense military logistics system, the effort and operations of DSA will be oriented primarily towards logistics support of the missions of the Military Services and the Unified and Specified Commands under all conditions of peace and war.
B. The DSA mission is to:
1. Provide effective, and economical support to the Military Services, other DOD Components, Federal Civil Agencies, Foreign Governments and others as authorized or assigned:
a. Materiel commodities and items of supply (hereafter referenced as "items"), which are determined, through application of approved DOD criteria, to be susceptible of integrated management by a single agency for all of the Military Services or as otherwise assigned by the Secretary of Defense.
b. Logistics services directly associated with the supply management function and other support services as directed by the Secretary of Defense.

2. Administer the operation of DOD programs assigned.

C. DSA operations will be conducted within the United States, excluding Alaska and Hawaii, except as specifically extended by the Secretary of Defense."

7. GENERAL SERVICES ADMINISTRATION

a. The General Services Administration (GSA) was established as an independent agency of the executive branch of the Federal Government by the Federal Property and Administrative Services Act of 1949 to provide an economical and efficient system for management of property and records, including construction and operation of buildings, procurement, and distribution of supplies, disposal of surplus property, traffic and communication management, stockpiling of strategic and critical materials, and preservation and disposal of records. The DOD policy is that the GSA is the primary source for items it manages, provided that these items are available from GSA sources and that delivery requirements can be met. Procedures and arrangements between DOD and GSA are arrived at in a cooperative manner, since the President is their only common superior. As a general rule, the Director of DSA is the agent of the Secretary of Defense in dealings with the GSA.

SECTION C

JOINT LOGISTICS AND COMMON COMMODITIES AND SERVICES

1. GENERAL. The term "joint" according to JCS Pub 1 "connotes activities, operations, organizations, etc., in which elements of more than one Service . . . participate." As applied to logistics, it would embrace the area of concepts as well as organizational entities where more than one Service is involved in furnishing logistic support. It also applies to the unified commands in their role in logistic guidance.

2. ROLES OF THE OFFICE OF THE SECRETARY OF DEFENSE, JOINT CHIEFS OF STAFF, UNIFIED COMMANDS, AND SERVICES IN LOGISTICS PLANNING, BUILDUP, AND INFORMATION SYSTEMS

a. The policy function of the Office of the Secretary of Defense has been discharged by the issuance of at least 410 logistic directives covering supply and resources management, organization, production, requirements determination, maintenance, personnel, planning, military assistance, medical, and financial control. These directives flow directly to the military departments and the Joint Chiefs of Staff. The military departments implement these directives within their respective Services including specific logistic direction to component commanders. The Joint Chiefs of Staff also give overall guidance to the component commanders. Specific direction by a unified commander to component commanders is normally reserved to those occasions when service direction does not cope with joint problems. In addition, the Secretary of Defense has provided for the establishment of a logistic information system for his use in order to be responsive to logistic problems.

b. Two separate and distinct chains of authority and command flow from the President to the component commanders of the unified commands (see Figure 7). The operational chain of command runs from the Secretary of Defense through the Joint Chiefs of Staff to the commanders of the unified and specified commands. In this chain, strategic and operational plans are prepared. A distinct and separate chain of command flows from the Secretary of Defense through the military departments and the Services to the component commanders of the unified commands.

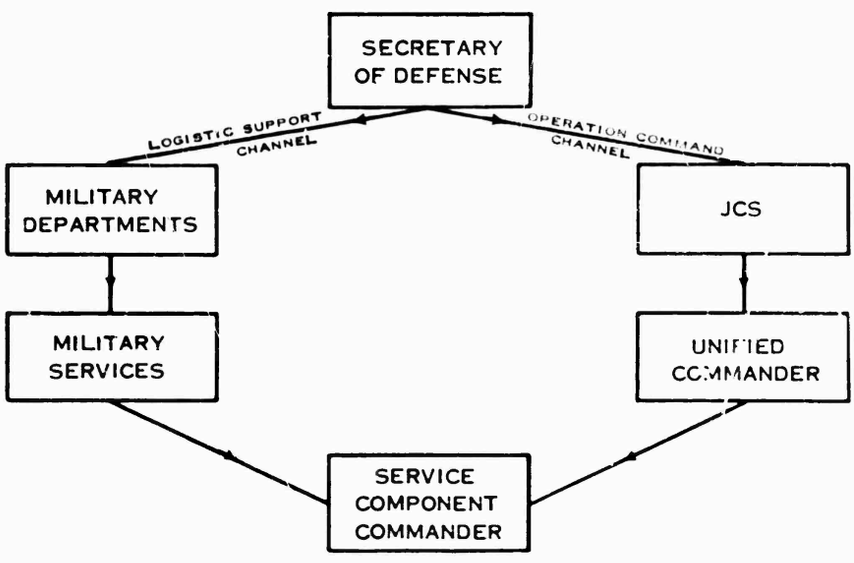

FIGURE 7. DUAL CHANNELS OF AUTHORITY

This chain provides the primary channel for the logistic and administrative support of forces used in the contingency operational roles developed in the operational command channel planning system. Although logistic support is not included in the definition of operational command, the commanders of the unified commands, and ultimately the Joint Chiefs of Staff, are authorized "directive authority" within the field of logistics. This authority is contained in JCS Publications and the specific paragraphs are as follows:

> "Specific Guidance on the Exercise of Directive Authority in the Field of Logistics
>
> a. Within unified and specified commands, the authorization of directive authority is intended to insure:
>
> (1) Effectiveness and economy of operation;
>
> (2) Prevention or elimination of unnecessary duplication of facilities and overlapping of functions among the Service components of a command.
>
> b. This authorization of directive authority is not intended to:
>
> (1) Discontinue Service responsibility for logistic support;
>
> (2) Discourage continuation of techniques of coordination by consultation and agreement;
>
> (3) Disrupt effective procedures, efficient utilization of facilities or organization.
>
> c. The military departments and Services continue to have responsibility under the direction of the Secretary of Defense for the logistic and administrative support of component commands. Under conditions short of war, the scope of the logistic and administrative responsibilities exercised by the commander of a unified command will be consistent with the peacetime limitations imposed by legislation, departmental policy or regulations, budgetary considerations, local conditions, and such other specific conditions as are prescribed by the Secretary of Defense or the Joint Chiefs of Staff . . . . Under wartime conditions and where critical situations make diversion of the normal logistic process necessary, the logistic authority and responsibility of commanders of unified commands are expanded to authorize them to utilize all facilities and supplies of all forces assigned to their commands as necessary for the accomplishment of their missions under the approved war plan being implemented. . . ."[3]
>
> "Principles Governing Assignment of Logistic Responsibilities . . . .
>
> c. Each of the Services is responsible for the logistic support of its own forces except when logistic support is otherwise provided for by agreements or assignments.
>
> d. The assignment of logistic responsibilities should be such that the combat efficiency of the armed services as a whole is the most effective which can be obtained with the limits of legislative authority and the availability of personnel, funds, and materiel. Assignments should be in accord with the principle—Prevention of unnecessary duplication or overlapping among the Services, by utilization of the personnel, intelligence, facilities, equipment, supplies, and services of any or all Services in all cases where military effectiveness and economy of resources will thereby be increased. The ends in view are not consolidation or single Service responsibility per se.
>
> e. In assigning logistic responsibilities, consideration should be given to the fact that logistic systems should be designed for expansion to meet the peak loads they must bear in an emergency. In determining the means for meeting these loads, consideration should be given to full use of all existing facilities available, whether Army, Navy, Air Force, Marine Corps, DOD agency, or other Federal agencies, or commercial.
>
> f. To the maximum extent practicable, assignment of logistic responsibilities should be the same in peace as in an emergency in order to provide for adequate training and an orderly transition in an emergency."[4]

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[3] Joint Chiefs of Staff Publication 2, November 1959, paragraph 30203.

[4] Joint Chiefs of Staff, Publication 3, 1 March 1966, paragraph 010102.

3. APPLICATION OF JOINT LOGISTICS

a. Interservice Support. In addition to the aspects of joint logistics encountered in the dual command channels, the concept of interservice support, which is somewhat broader than the more commonly used term of interservice supply support, should be considered. Under either connotation the concept covers the provision of supplies and/or services across the spectrum of logistics, such as supply, maintenance, transportation, and procurement. Interservice support is normally provided by an entity of one Service on the basis of a written agreement that sets forth the requisite details of the supplies and/or services to be furnished. On the average, as reported to the Defense Logistic Service Center in April 1969, there were in effect 208 interservice support agreements in SE Asia, of which 65 percent, or 135, of the agreements were related to supply support. The remainder covered maintenance support.[5]

b. Single Managers. Another concept of joint logistics is that of single managership, where one Service manages a whole commodity or functional area for all Services. Since the Defense Supply Agency (DSA) has taken over many commodity assignments, this concept is less prevalent than in the past. However, single managership still exists in the transportation area (Military Airlift Command, Military Sea Transportation Service, and Military Traffic Management and Terminal Service) and in various coordinated procurement assignments.

c. Unified Commands Authority. Despite the fact that unified commanders are authorized "directive authority," there was little precedent established in this regard prior to 1965. During the Vietnam era, however, the need for management by a unified commander of various areas of logistics became apparent. The former Commander in Chief, Pacific, Adm. U.S.G. Sharp, stated:

> "The war in Vietnam fostered a gradual change in the character of logistics management at the Headquarters of the Commander in Chief, Pacific. Far greater emphasis was placed upon the control of transportation assets, munitions resupply, construction programs, and critical items. It became apparent that the Unified Commander must control the allocation of limited services and materiel to those multi-Service theater needs of highest priority."[6]

The Office of the Secretary of Defense, Joint Chiefs of Staff, and the unified commanders' chain of command became increasingly involved in the management of transportation; petroleum, oil, and lubricants (POL); munitions; construction; and medical evacuation and hospitalization. All of these functions are essential elements of a complete logistic annex to any contingency plan.

d. Contingency Planning

(1) The component commanders prepare for the logistic support of contingency plans based on guidance from the commanders of the unified commands.

(2) The Joint Chiefs of Staff review all contingency operations plans prepared and submitted by the unified and specified commands to fulfill the tasks derived from the Joint Strategic Capabilities Plan or as assigned by the Joint Chiefs of Staff.

(3) The Joint Chiefs of Staff Deployment Reporting System (DEP REP) includes reporting requirements for planning and analysis. Specifically, it provides for an integrated reporting system formatted for automatic data processing to facilitate the development, review, coordination, revision, and approval of plans.

e. War Reserves. Each Service has a functioning management information system encompassing part or all of its war reserves. There is no interfacing system at the unified commands, Joint Chiefs of Staff, or DOD levels. A management information system is required at

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[5] Defense Logistic Service Center Annual List, April 1969.

[6] Adm. U.S.G. Sharp, Report on Air and Naval Campaigns against North Vietnam and Pacific Command-wide Support of the War, June 1964-July 1969.

these levels to better manage this materiel. As a prerequisite for establishing this system, uniform definitions of the terminology must be prescribed so that all echelons will understand each particular concept. The derived management information will assist in the decisionmaking process of the Joint Chiefs of Staff and the commanders of the unified commands with regard to the pre-positioning and other logistic concepts associated with operations plans.

f. Procurement

(1) Background

(a) The procurement function is an indispensable element of logistics. Procurement and Production's responsiveness to military supply needs is basic to the success of any military campaign. The magnitude of this function is illustrated by the following figures: The Department of Defense Procurement program escalated from $28 billion in FY 65 to $38.2 billion in FY 66 to a peak of $44.6 billion in FY 67, then declined to $43.8 billion in FY 68 and $42.0 billion in FY 69. At the peak, DOD employed approximately 46,000 military and civilian procurement personnel with 88 percent in the professional-managerial category. There were 15.2 million contracts awarded during FY 67, the peak year.

(b) Two basic elements are required to satisfy a supply or service need: First, the requirements activity is responsible for determining what it wants, how much it wants, and when and where it wants it; and, second, the procurement activity is responsible for fulfilling this need through the application of the laws, regulations, and procedures governing military procurement. The objective is to buy what is needed at reasonable prices for delivery when and where it is needed.

(2) Procurement Organization and Functional Responsibilities. The Armed Services Procurement Regulation (ASPR) is the basic procurement regulation within DOD. It prescribes uniform policies and procedures for the military departments and DSA and provides direction and guidance for complying with pertinent statutes and Executive orders. The organizational structure and functional responsibilities of the Defense procurement organization, within the Office of the Secretary of Defense, the military departments, and DSA is reviewed in the following paragraphs.

(a) DOD Organization. The procurement organization of DOD is established under the Assistant Secretary of Defense (Installations and Logistics)(I&L). This office does no purchasing but does establish procurement policies and procedures for the entire department. Within the military departments, the Service Secretaries delegate procurement responsibility to their Assistant Secretaries (I&L).

(b) Army Organization. Within the Department of the Army, the procurement channel flows directly from the Assistant Secretary (I&L) to the Head of Procuring Activity (HPA) of the Army major commands which have a procurement mission.

1. The Army Materiel Command (AMC) is the Army's primary procuring activity. The command operates through eight subordinate commands, each of which acts as an HPA. Seven are commodity commands, which exercise integrated commodity management of assigned materiel; the other is the U.S. Army Test and Evaluation Command, a functional command.

2. Also within AMC, five procurement agencies that report directly to Headquarters, AMC, have been established outside the commodity commands. They perform specialized procurement functions, such as backup for overseas procurement agencies.

3. The Army Chief of Engineers, as an HPA, procures the Army's requirements for real property and construction. The Continental Army Command (CONARC), its five subordinate zones of Interior Army Headquarters, and the Military District of Washington act as HPAs controlling the procurement operations for CONUS posts, camps, and stations. The Army's overseas commands have similar missions involving base support and are also HPAs.

(c) Navy Organization. Within the Department of the Navy, the Chief of Naval Material through the Deputy Chief of Naval Material (Procurement and Production) is responsible for procurement management and review and for providing procurement policy and procedures to the subordinate Navy Systems Commands.

1. The procurement channel flows from the Assistant Secretary of the Navy (I&L) to the Chief of Naval Material, then to the Deputy Chief of Navy Material (Procurement and Production) and on to the Navy Systems Commands. The commander of each systems command has been designed as an HPA. The Aviation Supply Office under the Supply Systems Command has also been designated an HPA. The Naval Facilities Engineering Command also an HPA, is responsible for the procurement of all shore activities of public utilities and construction.

2. The Supply Systems Command delegates contracting authority to field activities and is responsible for the management of the Navy Field Purchase System that performs the following types of procurements: system support—the purchase of supply system stocks to support existing weapons systems; area support—the purchase of nonstandard supplies and services; and station support—the purchase of the requirements of a particular station.

3. The Marine Corps is a separate and distinct procuring activity under the Department of the Navy and has been delegated procurement authority by the Assistant Secretary of the Navy (I&L). The Commandant, a designated HPA, has established 12 Field Purchasing Activities (FPAs). Each FPA is managed by the Director of the Procurement Division, a staff member of the Quartermaster General (the Marine Corps Supply Manager). In addition to management, the Procurement Division at Headquarters, Marine Corps, is also an active contracting officer.

(d) Air Force Organization. Within the Air Force the procurement channel flows from the Assistant Secretary of the Air Force (I&L) to the Deputy Chief of Staff (Systems and Logistics), then to the Director of Procurement Policy, to the major commands, and on to subordinate elements. Each major command has been designated an HPA.

1. Air Force Procurement is reflected in two broad categories: central procurement and base procurement. Central procurement embraces weapon systems, ancillary equipment, and bulk or wholesale logistic support. Base procurement covers supplies and services required to operate the bases and to support tenant organizations. Central procurement is primarily the responsibility of the Air Force Systems Command (AFSC) and the Air Force Logistics Command (AFLC).

2. The AFSC handles research, development, and production contracts for weapon systems and related equipment. The subordinate buying organizations of AFSC include the Aeronautical Systems Office Divisions, the Electronics Systems Division, and the Space and Missile Systems Office. The AFLC is responsible for logistics support of weapon systems after they enter the operational inventory. They also are responsible for bulk procurement of supplies and services required to support the Air Force mission. The AFLC operates through five subordinate Air Materiel Areas within CONUS and two overseas organizations.

(e) Defense Supply Agency Organization. Within DSA, the Director is in charge of procurement assigned to the Agency. The Executive Director, Procurement and Production, has been designated as principal staff advisor and assistant to the Director for the development and application of policy, plans, programs, and systems relating to DSA procurement function. The procurement channel flows from the Director to the Executive Director (Procurement and Production) and then to the six supply centers. The procurement mission of DSA is that of wholesale supply support to the military services in the area of secondary items of supply. The DSA provides commonly used material and repair parts for a large segment of the operating forces' arsenal. The procurement function is accomplished at six Defense Supply Centers.

g. Petroleum, Oil, and Lubricants

(1) Packaged petroleum products ordinarily do not require special transportation or storage and are handled like other consumable items within the general supply system. Bulk petroleum products, however, are highly critical to military operations, require unique carriers and storage facilities, and are subject to distinctive controls. For this reason, only bulk products are considered here.

(2) Although POL supply is basically a Service responsibility, there are two major variations. The Defense Fuel Supply Center (DFSC) under DSA exercises centralized procurement and contracting responsibilities, including contracting for commercial transportation and storage. Also, the Joint Chiefs of Staff assign POL planning responsibility overseas to the appropriate unified commands that accomplish this responsibility through their Joint Petroleum Offices (JPOs). In the Pacific, management was further subordinated through Sub-Area Petroleum Offices (SAPOs), including the Sub-Area Petroleum Office, Vietnam (SAPOV), under Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV).

(3) The determination of requirements, together with the funding therefor, is the responsibility of the using department or agency. Requirements are consolidated by Service Inventory Control Points (ICPs) based on CONUS installation requirements and Service segments of overseas requirements provided through unified command channels. These Service inventory control functions are performed by the Army Petroleum Center, the Navy Fuel Supply Office, and the Air Force Aerospace Fuels Supply Office, all of which are collocated with the DFSC at Cameron Station, Virginia.

(4) Basically the resupply of bulk POL conforms to the Service and unified command lines and is accompained by close interrelationship of the Service ICPs, the unified commander's JPOs, SAPOs, the DFSC, the Military Sea Transportation Service (MSTS), and the commercial resources in and out of the petroleum industry, including foreign flag shipping (see Figure 8).

(5) The POL supply system in Vietnam was based on the predominant user concept and characterized by extensive cross-servicing and use of contractor facilities and resources. The Army provided diesel and mo-gas to all users on a reimbursable basis, the Navy provided JP-5 and Navy special fuel oil, and the Air Force was responsible for JP-4 and aviation gasoline. Storage in-country was provided by a combination of contractor and military tankage. The distribution systems included both contractor and military trucks and watercraft as well as military aircraft and pipeline.

h. Munitions. Because of significant differences among the Services in the system used to provide munitions to combat forces, those systems are treated in subsequent Service sections. However, munitions management information systems are now handled in joint channels. Initially the Service systems were not compatible and could not accommodate a high volume of interservice transactions. To accommodate such transactions and to provide the Joint Chiefs of Staff and the commanders of unified commands the means to manage munitions in controlled and/or allocated status, it was necessary to obtain detailed asset information including planned and actual expenditure data.

i. Transportation. The logistic subsystem of transportation is responsible for the movement of military forces and materiel by whatever mode, and with either organic military capability or by contracted commercial resources. The process encompasses the forecasting of movement requirements, evaluating available facilities and services, moving the men and materiel, and analyzing the complete results.

(1) DOD Transportation Policy. "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 . . . . DOD

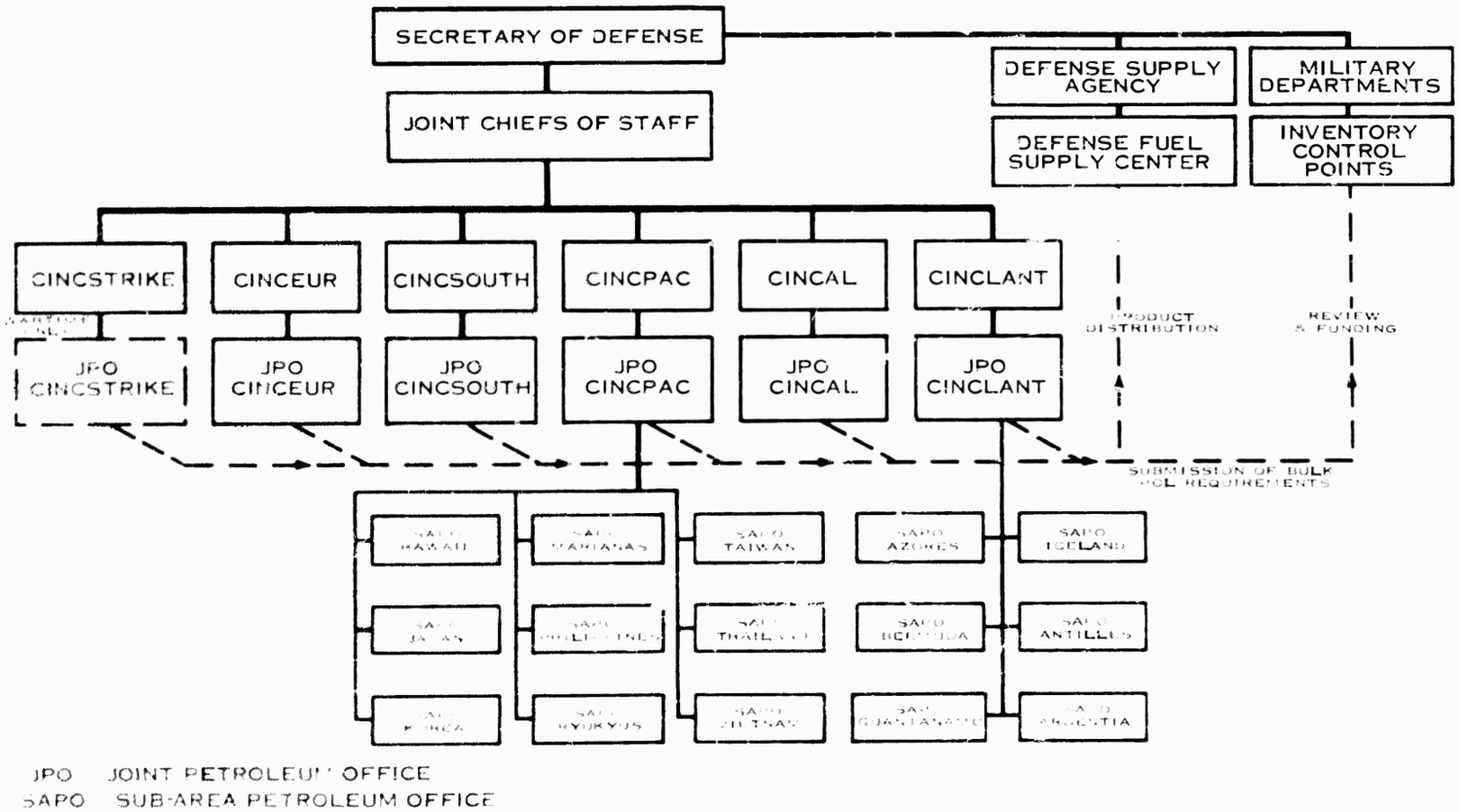

FIGURE 8. OVERSEAS ORGANIZATION FOR BULK PETROLEUM RESUPPLY OF U.S. FORCES

transportation resources shall be so organized and managed as to assure optimum responsiveness, efficiency, and economy in support of the defense mission . . . ."[7]

(2) DOD Transportation Organizations and Missions

(a) The Assistant Secretary of Defense (I&L) has principal responsibility for transportation matters within OSD; however, the Assistant Secretary of Defense (SA) is responsible for certain planning aspects and coordination of DOD transportation matters with other Government agencies, e.g., the Department of Transportation. The Joint Chiefs of Staff is charged (DOD Directive 5100.1, 31 December 58, as amended 17 June 69) to maintain cognizance over movement requirements and capabilities submitted by the commanders of unified commands, and to ensure the most efficient and economical use of transportation resources. Within the Office of the Joint Chiefs of Staff (OJCS) two interrelated agencies are primarily concerned with the transportation functions, the Special Assistant for Strategic Mobility (SASM) and the Joint Transportation Board (JTB). The SASM is charged with joint transportation planning, policy, and guidance, and the administration and support of the JTB. The JTB, chaired by the SASM, consists of a senior representative of the JCS (J-3 and J-4) and the Service Chiefs of Transportation or equivalent. The JTB maintains cognizance over the existing and forecast balance between transportation requirements and capabilities. Managing essentially by exception, it recommends or directs, as appropriate, courses of action to resolve transportation and/or strategic movement problems.

(b) Management information systems have been established by each of the agencies to ensure the availability of timely and accurate information for making management decisions. Provisions for the automation of some phases of the transportation planning process are contained in the JCS Deployment Reporting System.

(3) The Transportation Operating Agencies. There are three transportation operating agencies governed basically by separate single manager assignments, promulgated by the Deputy Secretary of Defense on 24 March 1967.

(a) DOD Directive 5160.53 for Military Traffic, Land Transportation, and Common User Ocean Terminals assigned to the Secretary of the Army the responsibility to provide effective, responsive, and economical support to the military services, the OJCS, and other DOD agencies with respect to military traffic management, land transportation, and common-user ocean terminals within CONUS. The Military Traffic Management and Terminal Service (MTMTS) is the Army's organization for performing these functions. The MTMTS also provides related services including receipt, consolidation, and analysis of the total overseas passenger and cargo requirements, the development and forecasting of CONUS transportation requirements of mode and rate; and quoting for and routing of military traffic for movement to air and ocean terminals. It functions as a passenger control activity for the airlift and sealift clearance authority to control the flow of traffic to air and ocean terminals. It commands and operates or arranges for the use of common-user ocean terminals and obtains use of commercial ocean terminal capabilities when required, and controls the military-owned rolling stock that is registered and available for general military uses in continental commercial service.

(b) DOD Directive 5160.10 for Ocean Transportation assigned to the Secretary of the Navy the responsibility to provide immediate sealift capability in emergencies plans for expansion in emergencies ocean transportation for the Armed Forces in nonwar periods and ships for oceanographic exploration, range instrumentation, and missile tracking. This responsibility is exercised through the Chief of Naval Operations by the Military Sea Transportation Service (MSTS), a major component of the Navy that operates from all principal tidewater ports. The MSTS serves as a carrier only and does not operate terminals. With an active fleet of ships owned and operated by the United States and augmented by contracts and charters with commercial steamship lines, the MSTS transports or arranges for the transport of the bulk of the material moved overseas for the military services.

[7] Department of Defense Directive 4500.9, September 1968.

(c) DOD Directive 5160.2 for Air Lift Services assigned to the Secretary of the Air Force the responsibility to maintain and operate the DOD strategic airlift system and the operation of aerial ports and air terminals. The Military Airlift Command (MAC) is assigned the single manager responsibility for airlift for all Services. The MAC comprises an operating nucleus of strategic air transportation in being, which is capable of providing a large volume of sustained airlift in a national emergency. It uses organic airlift, which can be augmented by other Air Force long-range aircraft and with units from the Air National Guard, the Air Force Reserve, Civil Reserve Air Fleet, and civil carriers. It provides immediate airlift for deployment and resupply to fight the decisive phase of either a total or limited war, and is capable of expanding and accelerating operations to meet the military airlift requirement of any foreseeable emergency. Special assignment airlift continues to be predominantly a military operation. This is due mainly to the nature and classification of the missions, and often the remoteness of the destinations. Commercial aircraft are used only if the military airlift force is unable to meet its commitments.

(d) There are transportation resources within DOD that are not within the purview of the single manager agencies.

1. The Navy has some organic lift capability in a secondary role for some ships such as Mobile Logistic Support Force ships and amphibious types. For example, amphibious ships have the primary mission of transporting troops, equipment, and supplies in support of amphibious operations. However, on a not-to-interfere, space-available basis, they may be used to transport routine cargo. Carrier onboard delivery aircraft provide the support link between carrier groups and land bases.

2. In addition to the MAC strategic (intertheater) airlift system, the Air Force maintains and operates tactical (intratheater) airlift forces. Each unified command air component commander is assigned organic airlift units to satisfy the peacetime in-theater needs of the unified command. The Tactical Air Command (TAC) is assigned the mission of maintaining and operating tactical airlift forces in support of CINCSTRIKE deployment requirements and to provide augmentation to the unified commands' air components under emergency conditions. Most of the TAC airlift aircraft have intercontinental capability and can be used to augment MAC if the need arises.

3. Both the Navy (QUICK TRANS) and the Air Force (LOGAIR) logistic commands utilize commercial cargo airlift service within CONUS to provide fast, flexible, and responsive transportation for high priority cargo moving between points of manufacture, storage, overhaul, and consumption and for the rapid delivery of other air eligible cargo between points of generation and the MAC aerial ports of embarkation for further movement overseas.

j. Medical Evacuation and Hospitalization

(1) The role of the unified commander in medical evacuation and hospitalization was established before the buildup in Vietnam. The Commander in Chief, Pacific, had tasked his Army component commander to establish in Japan a Joint Medical Regulation Office (JMRO) for the Far East to regulate the movement of all patients within and from the Pacific Command. Coincident with the buildup, this office was expanded in size and mission with a branch in Saigon to regulate movement within and from Vietnam.

(2) The JMRO is tied into several information systems, particularly medical and transportation, in CONUS and overseas. Policy guidance is provided by a jointly staffed Medical Regulating Office in Washington that reports to the Surgeons General of the military services.

(3) Although oriented primarily to support their respective Services, the systems established in Vietnam were complementary and permitted helicopter recovery and prompt definitive treatment on an area basis with further evacuation if required to Pacific or CONUS hospitals using MAC aircraft.

k. Construction of Advanced Base Facilities

(1) Although the responsibilities for detailed planning, funding, and execution of construction programs to provide advanced base facilities flow through Service channels, there has been increasing awareness of the role to be played through joint logistic channels.

(2) Broad planning guidance for the preparation of contingency base development plans is provided through joint planning channels. Detailed component implementing plans are similarly coordinated to eliminate overlaps and omissions and to ensure feasibility. In the execution phase, joint controls are established to validate requirements, establish priorities, and allocate resources.

(3) Actual construction of contingency requirements is normally accomplished by the various engineer elements of the military departments. In Vietnam, however, some 60 percent of the Military Construction Program was accomplished by contract, with the greater portion thereof being vested in a single Cost Plus Award Fee (CPAF) contract under Navy control and responsibility. This assignment to the Navy was in accordance with the DOD policy that, in essence, assigns such responsibilities to the respective engineers of the military departments by geographical areas and which are not necessarily mission oriented.

(4) In the Republic of Vietnam, unprecedented control of the construction program by the unified commander resulted from a directive from the Secretary of Defense establishing a Director of Construction on the staff of COMUSMACV to "exercise direct supervision and directive authority over all DOD construction commands and agencies, both military and civilian, in the RVN except to those construction/engineer units organic to or assigned to major combat units."

(5) The Army has the basic responsibility for construction in support of both Army and Air Force requirements that are to be realized through troop engineer units. During the Vietnam conflict, however, eight Civil Engineer Red Horse Squadrons were organized by the Air Force to provide an organic capability for limited construction and heavy repair. The Navy, besides satisfying its own requirements, is also responsible for troop construction and engineer support of Marine forces. In addition, the organization of Marine forces includes an organic engineer and construction capability oriented but not limited to the direct support of combat landing forces.

l. Communications. Two distinctly different communications systems provide support to logistic elements in any theater of operations. These are the Defense Communications System (DCS) and the Services' tactical communications systems.

(1) The DCS is the single worldwide complex comprising all long-haul point-to-point communications facilities, personnel, and materiel within DOD (with certain specific exceptions). The DCS is composed of transmission subsystems, switched networks, and certain dedicated networks. The transmission media used include cable, point-to-point radio, and satellite. It is essentially composed of fixed-plant facilities owned and operated by the individual Services under direction of the Defense Communications Agency (DCA). Some of these links are provided through lease arrangement with commercial carriers. This melding of service-owned and -leased facilities has resulted for the most part in high quality communications links trunking CONUS with overseas areas.

(2) Of prime importance to logistic elements are two common-user switched networks, the Automatic Digital Network (AUTODIN) and the Automatic Voice Network (AUTOVON), which are provided as part of DCS.

(a) AUTODIN is a high-speed, secure, data, and teletypewriter message switching subsystem. It consists of Automatic Switching Centers and a variety of subscriber terminals to meet specific requirements in such forms as page copy, punched machine cards, and magnetic tape. AUTODIN provides a high order of accuracy through an automatic error detection and retransmission capability. There are eight operational Automatic Switching Centers within CONUS and twelve overseas. All of these are trunked together and are capable

of secure information transfer at the rate of 2400 bits per second (approximately 200 cards per minute).

(b) AUTOVON is an automatic circuit-switched network that provides voice communications. It consists of Automatic Switching Centers that provide rapid switching of voice circuits on a direct basis, with features for data transmission, multilevel preemption, conferencing, operator assistance, and graphic communications.

(3) Tactical communications consisting primarily of mobile/transportable equipment provide the second major resources and are designed for use within a theater of operations. These mobile/transportable elements are normally required to provide communications to support the employment of tactical forces. This equipment is not designed to provide high capacity, high quality communications comparable to that provided by fixed-plant facilities, but is designed primarily to support voice and teletype operation in a tactical situation. These include mobile/transportable radio sets, field wire, cable, telephone switchboards message centers, and limited technical control facilities.

m. Special Management. During the Vietnam era, considerable management attention was devoted by the Services to the items designated as critical. In addition, a special reporting and action system called FLAG POLE was instituted by the Secretary of Defense. In this system, especially critical subjects that had not been resolved in normal management channels were brought to the attention of the commanders of the unified commands, the Joint Chiefs of Staff, and the Secretary of Defense. The system proved to be an effective means for focusing top-level management attentio It was retained by the unified commanders even after it was no longer required by higher levels.

4. JOINT LOGISTICS IN ACTION

a. Joint AMC/NMC/AFLC/AFSC Commanders

(1) Background. On 28 March 1966, the Commanding General, Army Materiel Command; the Chief of Naval Material; the Commander, Air Force Logistics Command; and the Commander, Air Force Systems Command (hereafter referred to as the Joint Commanders), met in formal session to discuss matters of mutual interest, arrive at a common understanding of each other's positions, and decide on courses of action to be jointly pursued.

(2) Purpose. The Joint Commanders meeting was held in recognition of the continuing need to resolve interagency problems, facilitate the exchange of information, and accomplish significant joint studies and tasks pertinent to two or more of the commands. Two broad objectives served as a guide to activities engaged in as a result of the joint meetings:

(a) To prevent duplication among the commands by joint utilization of personnel, intelligence, facilities, equipment, supplies, and services in all cases where military effectiveness and economy of resources would be increased.

(b) To conform to uniform policies and standardize on material and logistics concepts, systems design, forms terminology, and criteria for the procurement, requisition, storage, transportation, distribution, issue, and maintenance of weapon systems, supplies, and equipment consistent with the specialized needs essential to the effective functioning of each Service.

(3) Organization. The Joint Commanders' meetings are normally attended by the Joint Commanders, the Quartermaster General of the Marine Corps, the Director of DSA, and members of the Joint Secretariat. The Joint Secretariat is composed of personal representatives of the Commanders. The Secretariat utilizes joint panels that have been specifically authorized by the Joint Commanders or the Secretariat to develop detailed joint studies. The Secretariat directs the operations of these panels, issues appropriate operational instructions, and schedules appropriate meetings to review and approve panel activities. Each panel is governed by a charter approved by the Joint Commanders and is required to prepare a study plan

itemizing tasks and setting forth required milestones and resources. In addition to panels that cover management problems, Joint Technical Coordinating Groups and Joint Tasks Groups are used. The Technical Coordinating Groups specialize in technical problems and the Task Groups handle long-range problems.

(4) Accomplishments. The Joint Commanders held 15 meetings between March 1966 and early 1970 completing approximately 40 formal actions. The exchange of information and attitude of cooperation displayed in these formal meetings resulted in about 300 interservice agreements on a service level. As an example of these actions, the Joint Commanders recommended and have had approved two steps to initiate a more effective and dynamic standardization program and ensure an optimum balance between the program's objectives and the Commanders' responsibilities for overall operational effectiveness and material readiness of weapon systems and equipment. Briefly, they required:

(a) Modification of DOD Directive 4120.3 and the Defense Standardization Manual to specifically state responsibilities of the military departments.

(b) Realignment of current Standardization Assignee responsibilities.

A Standard Integrated Support Management System (SISMS) was approved on 19 March 1969 for selected multiservice aeronautical systems and covers 20 disciplines, e.g., data management, facilities, ground support equipment, technical manuals. The system is contained in two documents: the SISMS Manual and the SISMS Contract and Data Requirements. By integrating logistic support disciplines, enhancing support responsiveness through standard planning and management, and reducing duplication in and among the Services by the use of common logistical procedures, costs were avoided that heretofore had been unavoidable.

b. CINCPAC Joint Logistics Council. Indicative of joint logistics in action is the recent (18 October 1969) establishment by the Commander in Chief, Pacific, of the CINCPAC Joint Logistics Council The mission of this Council, as defined in CINCPAC Instruction 4600.1, is to "review joint aspects of PACOM logistical matters and recommend to CINCPAC necessary action to ensure the most effective, efficient, and economical utilization of available assets." The Council is chaired by the Assistant Chief of Staff for Logistics (J-4) and includes as members the principal logistics officers of the CINCPAC component commands as well as of the Fleet Marine Force, Pacific.

SECTION D

ARMY LOGISTIC SYSTEM

1. BASIC RESPONSIBILITIES

a. "The Department of the Army is responsible for the preparation of land forces necessary for the effective prosecution of war except as otherwise assigned, and in accordance with integrated mobilization plans, for the expansion of the peacetime components of the Army to meet the needs of war."[8]

b. "The Department of the Army is charged with the responsibility of providing support for national and international policy and the security of the United States by planning, directing, and reviewing the military and civil operations of the Department of the Army, to include the organization, training, and equipping of land forces of the United States for the conduct of prompt and sustained combat operations on land in accordance with plans for national security."[9]

2. ORGANIZATION FOR LOGISTICS

a. Introduction

(1) The organization for logistics within the Department of the Army is established based on traditional command and staff organizational relationships with basic responsibilities vested in the Secretary of the Army for all aspects of logistics operations.

(2) The principal assistant for logistics at the departmental level is the Assistant Secretary of the Army (Installations and Logistics). In addition to exercising normal staff responsibilities for logistics he has been delegated and has retained full authority for procurement through the point of production validation.

(3) The Army Chief of Staff is the principal military advisor and assistant to the Secretary of the Army, is a member of the Joint Chiefs of Staff, and is directly responsible for the effectiveness of the Army and its preparedness for military operations.

(4) The Deputy Chief of Staff for Logistics has Army General Staff responsibility for the management of all Army logistic activities except for procurement processes through the point of production validation.

(5) Special staff agencies that perform significant logistic activities are the Chief of Engineers, Surgeon General, and Chief of Support Services. The latter is responsible for staff supervision of logistic services in the areas of subsistence, clothing, laundry and dry cleaning, fumigation, bath, cemeteries, and surplus disposal.

(6) The Commanding General, U.S. Army Materiel Command (AMC), performs those materiel functions specifically assigned by Department of Army. This excludes medical materiel responsibilities assigned to the Surgeon General, cryptographic materiel responsibilities assigned to the Army Security Agency, and nontactical communications materiel responsibilities in support of the Defense Communications System assigned to the Army Strategic Communications Command.

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[8] Joint Chiefs of Staff Publication 2, November 1959, paragraph 20201.
[9] United States Government Organization Manual, 1969-70.

b. Responsibilities of Major Logistic Commands

As the principal wholesale supplier for the Army, the AMC is responsible for developing, testing, cataloging direction, determining quantitative requirements, procuring, producing, storing, distributing, controlling supplies and inventory, providing maintenance policy, and disposing of supplies and equipment.

c. Responsibilities of Subordinate Logistic Commands

(1) The AMC accomplishes its mission through its nine major subordinate commands (seven commodity commands, one test and evaluation command and one logistic support command). Each of the seven commodity commands is responsible for integrated materiel management in a specific commodity area (Figure 9).

(2) The National Inventory Control Points (NICPs) located in each commodity command are responsible for the worldwide management of items assigned. As a result all the wholesale functions of inventory management of an item are centralized in one individual and at one place.

(3) National Maintenance Points, also located in the commodity commands, are responsible for materiel development production, maintenance engineering, and management of appropriate maintenance services. The National Maintenance Points work closely with the NICPs to coordinate rebuild activities in CONUS and overseas commands.

(4) The AMC depots are the primary storage and distribution points for the Army wholesale supply system. They handle the receipt, storage, care and preservation, distribution, and maintenance of assigned items with the stock control functions and computation of requirements centralized at the NICPs.

(5) The principal overseas commands involved in logistic management and planning are the U.S. Army, Europe (USAREUR), and the U.S. Army, Pacific (USARPAC), each having several relatively autonomous major subordinate organizational elements. As component commanders each is responsible both to his respective unified commander and to the Chief of Staff of the Army.

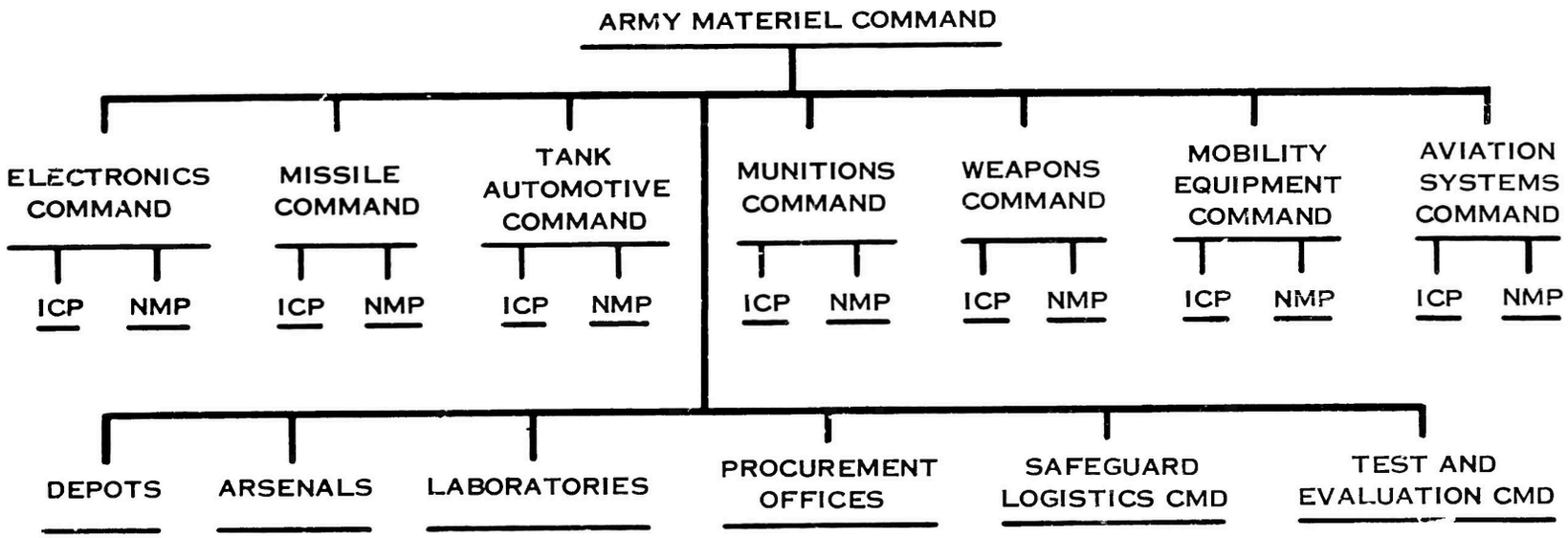
(6) The general organizational pattern for Army logistic activities overseas outlines a flexible structure that may be modified as necessary to suit any given situation in varying combat environments. Pending the establishment of a Communications Zone, a logistic command may be attached to a field army to control logistic operations. Combat service support units, organized into brigades, groups, or battalions, are responsible through the logistics command to the field army commander for providing adequate support to the field army. Each combat service support unit is individually structured to be responsive to field army requirements for its particular items and services. A fixed organization is not prescribed for the field army; hence, numbers and types of logistic support units are determined by the mission, forces to be supported, availability of nuclear weapons, terrain and weather within the area of operations, and composition and capability of the probable hostile forces.

(7) Supply, maintenance, and services installations are located throughout the Army service area, the corps rear areas, and in some cases, division areas. They are dispersed to minimize the effect of nuclear attack and, at the same time, are located so as to facilitate rear area security.

3. MAJOR LOGISTIC SUBSYSTEMS

a. General

In viewing the entire scope of Army logistics, there are several ways the system can be stratified into manageable segments. For the purpose of this review, this stratification will be made in terms of the functional subsystems relating to supply, maintenance, procurement,



ICP -- INVENTORY CONTROL POINT
NMP -- NATIONAL MAINTENANCE POINT

FIGURE 9. U.S. ARMY MATERIEL COMMAND ORGANIZATION

transportation, construction, evacuation and hospitalization, and communications. Although directly related to other functional subsystems, POL is treated separately because of its special characteristics. The supply, maintenance, and munitions subsystems are discussed in the following paragraphs. The remaining subsystems have been consolidated in a separate section of this chapter because of the commonality or interdependence among the Services in these areas.

b. Supply. The organization for supply in the U.S. Army consists of a wholesale level and a retail level.

(1) Wholesale. The AMC is the principal wholesale supplier for the Army; it controls assets to the depot level in CONUS. Supplies of stock items are stored in the CONUS depot system until required by a customer. These wholesale supplies are issued to forces both in CONUS and overseas and after issue are considered to be retail supplies.

(2) Retail. Retail supply operations in the Army are responsibilities primarily of the major commanders, such as the Continental Army Command (CONARC) and the major overseas commands.

(a) CONUS. The principal CONUS customer of AMC is CONARC. Within CONARC, post, camps, and stations requisition from the wholesale system the supplies required to support designated forces. A level of inventory is maintained at station level for issue to direct support units or activities, which, in turn, issue to or use in support of specific using units or organizations. A small appropriation-financed inventory is maintained by each unit to provide minimum operating stocks.

(b) Overseas. The principal overseas customers of AMC are the U.S. Army, Europe (USAREUR), and the U.S. Army, Pacific (USARPAC). The U.S. Army, Alaska (USARAL), and the U.S. Army, Southern Command (USARSO), operate as a post supply operates in CONUS.

1. USAREUR has a single inventory control center that requisitions wholesale system supplies from AMC required to support designated forces and maintains stocks in various depots in Europe. These supplies are then issued to direct support units and acitivities for further issue to using units.

2. In 1965, USARPAC had inventory control centers in Okinawa, Japan, Korea, and Hawaii. Each of these centers dealt directly with CONUS ICPs and bought supplies from the wholesale system required to support designated forces within assigned areas of responsibility. Depot stocks, maintained in all areas except Hawaii, were issued to support units for further issue to using units and activities. Except for the support of forces in Vietnam, these activities have been relatively unchanged.

3. When the buildup of U.S. Army forces in Vietnam and Thailand commenced in early 1965, units were deployed with equipment and accompanying supplies necessary to sustain themselves until resupply was established. Three major complexes were established to provide logistic support for the forces in Vietnam. The Saigon complex supported forces in the III and IV Corps Tactical Zones (CTZ), and Cam Ranh Bay and Qui Nhon complexes supported the forces in the II CTZ. The 9th Logistical Command was deployed to support forces in Thailand. The logistic base on Okinawa functioned as the principal offshore base in support of these logistic complexes. Additional logistic units were deployed to Okinawa to accommodate this increased mission, including the 2d Logistical Command Headquarters in September 1965.

4. Follow-on supply was provided initially using automatic resupply procedures, or "push" packages, consisting of twelve 15-day increments for support of forces deployed through D+180 days. Initially, the first two increments were shipped to the using unit while the remaining 10 packages were shipped to the in-country depot responsible for support of the area in which the tactical unit was employed. Eventually all packages were shipped to the depots. In addition, 30 days of supply was shipped to Okinawa. Automatic resupply was terminated in June 1966 and all further supply was provided based on replenishment requisitions routed through Okinawa. (For detailed information on push packages, see the Supply Management Monograph.)

5. Based on increasing resources and capabilities in Vietnam, initial steps began in December 1966 to remove Okinawa from the Vietnam supply pipeline, thereby decreasing the length of the pipeline and improving the supply response. In 1967, all subsistence requisitions began bypassing Okinawa and going direct to CONUS. In April 1967, the "stovepipe" system for aircraft repair parts was initiated direct between Vietnam and the CONUS ICP. (This system is presented in some detail in Chapter 4 as a part of the consideration of the response.) Direct requisitioning of ammunition had commenced earlier, in 1966. Although Okinawa discontinued stockage of general supplies and repair parts based on Vietnam demands in December 1966, requisitions continued to pass through Okinawa through 1968 to dry up the stocks and on-hand excesses in Okinawa. By February 1969, a direct requisitioning channel had been established from Vietnam to the CONUS ICPs. Only an information copy was provided USARPAC for billing purposes. Okinawa was providing visibility of on-hand excesses to Vietnam, but these items were requisitioned using exception procedures.

6. Figures 10 and 11 depict schematically the flow of requisitions and movement for general supplies as they existed in 1965 and 1969, respectively. (More specific details regarding in-country procedures are presented in Chapter 4 as part of the consideration of the response.)

c. Maintenance

(1) "The Army maintenance system is based on the following general philosophy:

(a) Maintenance is a command responsibility beginning at the unit level.

(b) Maintenance is to be accomplished at the lowest level consistent with the tactical situation and the skills, tools, time and repair parts available.

(c) The unit commander must have a reliable and responsive maintenance source upon which he can depend when equipment repair is beyond the scope of his responsibility."[10]

(2) The Army uses and maintains a wide variety of equipment which, together with wide difference in size, application, and mission essentiality, is the basis for different management consideration at all levels of maintenance operations. This maintenance requires unique facilities, tools, and personal skills.

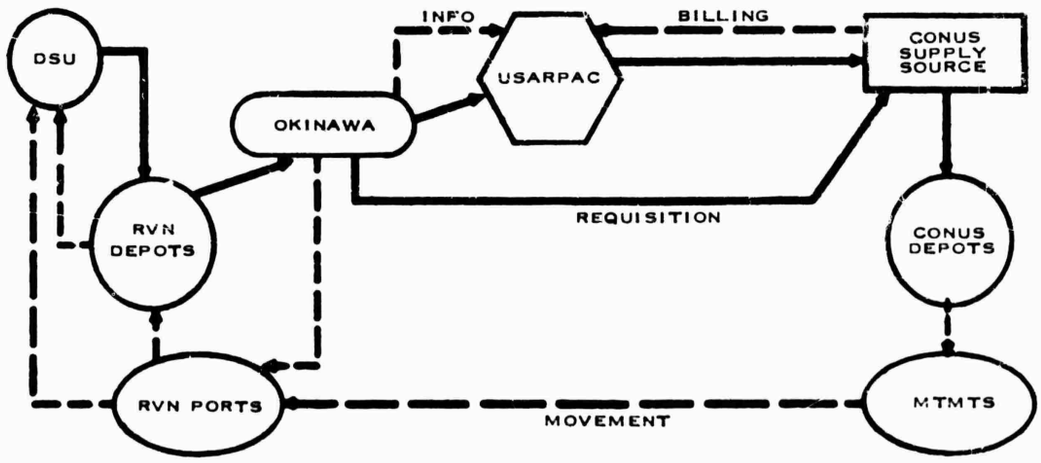


FIGURE 10. GENERAL SUPPLY FLOW—1965

[10] Department of the Army Pamphlet 700-1, January 1965, Chap. 19.

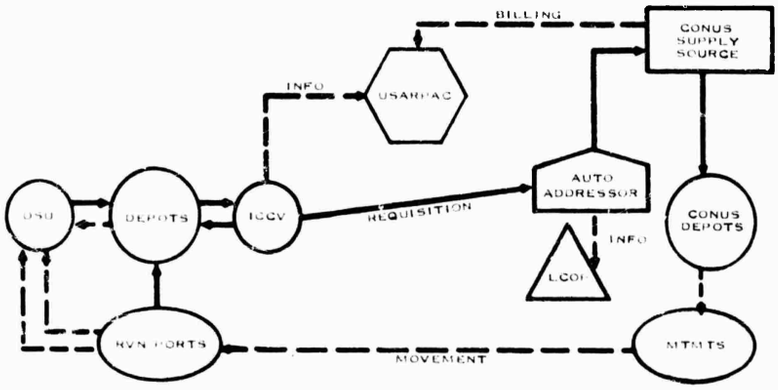


FIGURE 11. GENERAL SUPPLY FLOW—1969

(3) With such a variety of equipment in the field, elements assigned to general and direct support battalions often specialize in heavy or light equipment, aircraft maintenance, or communications gear. Similarly, certain depots specialize in aircraft, medical items, clothing, tentage, or ammunition storage.

(4) All maintenance policies in the Army are aimed at three primary goals: maximizing materiel readiness, achieving high standards of workmanship, and eliminating unnecessary costs.

(5) The maintenance function has been stratified into the following categories to facilitate management control.

(a) Organizational

(b) Field (Direct and General Support)

(c) Depot or Overhaul

(6) Basically, repairs are made at the lowest echelon possible based on the nature of the repair, authorized repair parts, tools and support equipment, and the skill level of authorized personnel.

(7) Organizational maintenance is performed by the using organization. The work performed by the man or crew using the equipment is the heart of preventive maintenance and is the critical link in the entire Army maintenance system. Preventive maintenance must be regular and systematic. The work performed by the trained organizational mechanic requires the use of tools, test equipment, and repair parts involving replacement of minor parts and subassemblies as well as the performance of periodic inspections and lubrications that are the vital second half of preventive maintenance. Organizational maintenance consists of inspecting, cleaning, servicing, preserving, lubricating, adjusting, and replacing such minor parts as spark plugs or radio tubes.

(8) Direct support (DS) maintenance is performed by maintenance activities in direct support of using organizations. This work requires more skill and special tools and is performed by trained maintenance units or by mobile repair crews in direct support of the using organizations. It includes repair and replacement of subassemblies and assemblies. The DS

maintenance consists primarily of repair and replacement of unserviceable parts. Equipment repaired is usually returned to the user.

(9) General support (GS) maintenance is performed by maintenance activities in general support of using organizations. This work requires tools and skills not available in direct support units (DSUs) and is performed by general support units (GSUs) that combine DS and GS capabilities. It involves repairing major assemblies and subassemblies for return to supply channels. This work consists primarily of repair and replacement of unserviceable parts beyond the scope of DS. Equipment repaired is usually returned to stock.

(10) Depot maintenance is performed by fixed or semifixed shops with extensive equipment. Work of a major overhaul nature is performed in fixed installations. Output is normally returned to stock. Production and assembly line methods are employed where possible. Some depot-level support is provided by the Navy and the Air Force through interservice support agreements. At present there are 35 Army depot facilities within the United States that possess a capability of maintaining (by repair, overhaul, or rebuild) most Army equipment. In addition, the Army has depot capability (limited to selected types of equipment) in Germany, Japan, Korea, Taiwan, and Okinawa. Even though these overseas depot facilities are under the overseas commanders, the scheduling of work is coordinated through the Major Item Data Agency in CONUS.

d. Munitions

(1) Whereas the supply of ammunition to overseas commands generally follows the same command lines as other supplies, the limited availability of some critical rounds led to some significant innovations for support of Vietnam in the summer of 1966.

(2) Class V Supply to SE Asia was provided using U.S. Army, Pacific, as a focal point for redistribution with the Pacific Command.

(3) The supply and movement control procedures provided for redistribution of assets within USARPAC before CONUS supply services took action to fill requisitions and provided for flexibility in the management of the ammunition pipeline. CINCUSARPAC could effect vessel diversion when consumption levels in SE Asia fluctuated.

(4) The U.S. Army Ammunition and Procurement Supply Agency (USAAPSA) furnished the 1st Logistical Command shipment information and predicted delivery dates 120 days in advance. The 1st Logistical Command prepared monthly requisitions that were submitted concurrently to USAAPSA and the U.S. Army, Pacific (USARPAC), Materiel Management Agency (MMA) by air mail. The USAAPSA determined item availability by location and lift requirements. However, affirmative supply decisions were delayed for approximately 5 days pending advice from the USARPAC MMA as to what redistribution actions had been taken to fill requisitions. The USAAPSA directed shipments from its supply sources and meanwhile developed a movement plan that considered lowest landed costs within CONUS, and vessel availabilities.

(5) The movement plan was furnished to CONUS supply sources and Military Traffic Management and Terminal Service to permit the coordinated movement of the monthly lift requirements. Arrival of stocks in the U.S. Army, Vietnam (USARV), storage facility was planned to occur within 90 days from the date of the requisition. Figure 12 shows this flow of requisition and movement.

(6) Ammunition supply for the Vietnamese Army followed the same system with the exception that MACV submitted requirements by priority teletype to USARPAC MMA with information to USAAPSA (see Figure 13).

4. INTEGRATION OF SUBSYSTEMS

a. General. The complex interrelationship and interdependence of various logistic subsystems, e.g., the dependence of supply on procurement, of maintenance on supply, and of both on transportation, place a premium on overall logistic management. Not only is it essential that

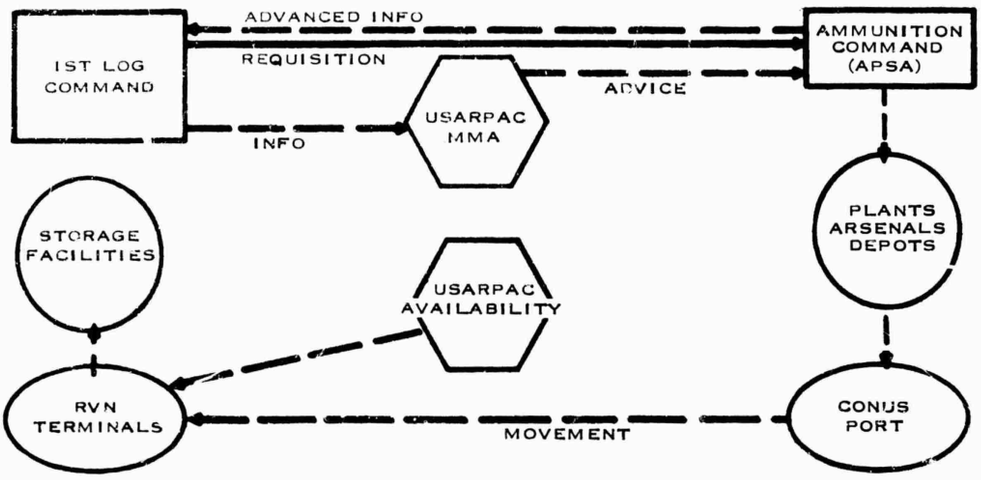


FIGURE 12. CLASS V AMMUNITION SUPPLY

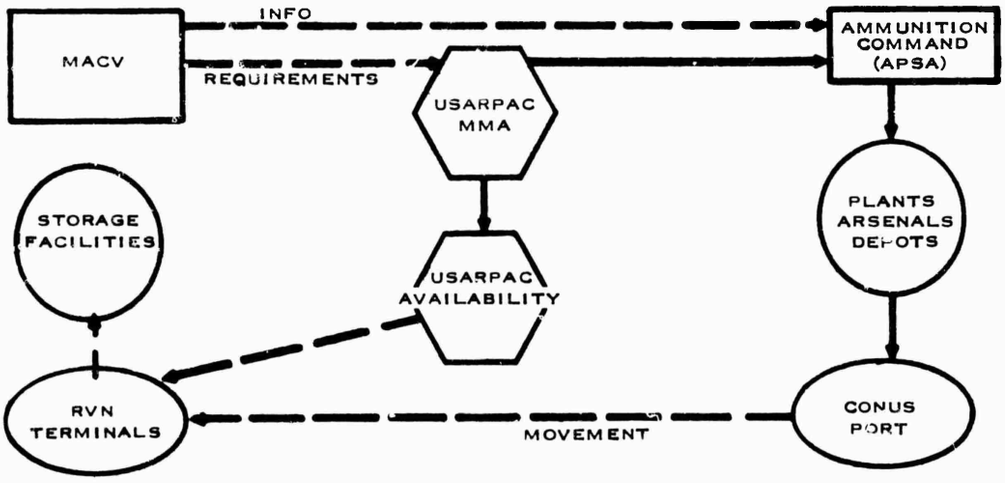


FIGURE 13. CLASS V AMMO REPLENISHMENT, MACV

each functional subsystem operate properly but these delicate interfaces should be maintained in their proper balance.

b. Relationship Between Subsystems

(1) At no point in the overall framework of logistics can any one of the subsystems stand alone. Each must function as designed to avoid a breakdown or crisis in the overall mission of logistics.

(2) Overall policy governing supply management is developed in the offices of the Secretary of Defense, the Secretary of the Army, and Army General Staff. Each of these offices also controls expenditures and exercises selective management over critical items of materiel. Operating policy and additional controls over the flow of supplies are applied by Headquarters, AMC; Headquarters, Strategic Communications Command; Office of the Surgeon General; and Headquarters, Army Security Agency. The principal inventory management activities in the organization that performs the functions of cataloging, determining requirements, directing procurement, managing distribution, directing overall rebuild, and directing disposal are the NICPs of the AMC, the DSA, the Strategic Communications Command, and the GSA. Worldwide inventory management focuses at these points.

(3) Army Class Manager Activities serve as the points of exchange of information between the Army and DSA for those items managed for the Army by DSA and GSA.

(4) In overseas theaters, policy direction is provided by unified command headquarters (under the directive authority of unified commanders over logistics) and theater Army headquarters. The organization for supply management depends on the theater and the mission at this level of organization. Inventory manager functions include determination of requisitioning objectives, managing requisitions, replenishing depot stocks, directing offshore procurement, and managing the distribution of supplies. Rebuild and overhaul is coordinated with the applicable maintenance management center in the CONUS. Similar functions may also be accomplished by field army support commands and their inventory control centers. Forward of this point, inventory management functions are usually limited to maintaining authorized stockage lists (lists of items authorized to be stocked at each supply point), establishing stock reorder points and managing requisitions.

5. FUTURE TRENDS

a. General. The Army has a number of logistics improvement programs currently in progress, many of which have been influenced and stimulated by experience gained during the past 5 years in the support of operations in Vietnam. In general, these programs are designed to improve responsiveness while concurrently reducing materiel and personnel costs through systems standardization and simplification, and the application of current and expected technological advances. The latter include optimum utilization of the C-5 aircraft, improved containerization techniques, and automation and communications advances.

b. Approved Programs

(1) The Computer Systems Command was established in March 1969 to design, integrate, program, test, and maintain all multicommand automatic data processing systems. These include a number of retail logistic systems applicable down to division and separate unit level.

(2) The Combat Service Support System (CS_3) provides for automation of logistics, financial, personnel, and administrative functions for the field army. CS_3 is currently a corps and division level program and will ultimately provide appropriate interface at the theater level with the CONUS wholesale systems.

(3) The direct and general support units automation program provides standardization of equipment and procedures for nondivisional maintenance and supply units.

(4) The National Automatic Data Processing Program for AMC Logistics Management (NAPALM) is a standard supply management system internal to the AMC.

(5) Two systems are undergoing test for application within CONUS. One of these systems, Centralization of Supply Management Operations (COSMOS), would provide standardized logistic management at the Army area level. The other, CONARC Class One Automated System (COCOAS), would provide a standardized system at the Class 1 installation level. A determination between these systems for full CONUS implementation is pending test results.

(6) DA Circular 700-18, published on 28 November 1969, provided guidance and direction for a number of specific logistic improvement programs. These include reduction of the range of items stocked at each supply echelon, recovery of excess items generated, reduction of order and ship times, improved reconciliation and validation of records at all echelons, control and return of unserviceable repairables, establishment in CONUS of theater-oriented depots, and the application of inventory-in-motion principles with an ultimate goal of nonstop supply support direct from CONUS theater-oriented depots to the GSU level.

SECTION E

NAVY LOGISTIC SYSTEM

1. MISSION. The Navy Logistic System is designed to fulfill the following objectives: "The fundamental objectives of the Department of the Navy within the Department of Defense, are (a) to organize, train, equip, prepare, and maintain the readiness of Navy and Marine Corps forces for the performance of military missions as directed by the President or the Secretary of Defense, and (b) to support Navy and Marine Corps forces, including the support of such forces of other military departments, as directed by the Secretary of Defense, which are assigned to unified or specified commands."[11]

2. ORGANIZATION FOR LOGISTICS

a. Introduction

(1) Basically, the Navy uses the same logistic support system in time of war as in time of peace. The basic logistic system for support of the fleet has remained essentially unchanged and was extended to accommodate unanticipated support roles in Vietnam. However, there have been some changes in the organizational structure in the higher echelons and in operating procedures of the logistic support system itself. The changes in the system have evolved not because of the Vietnam conflict, but as a result of the more complex and intricate requirements of modern weapon systems.

(2) The Navy logistic support system is predicated on the requirement to satisfy such fleet characteristics as readiness, mobility, and endurance. Navy ships and aircraft must be maintained in a degree of readiness appropriate for current and contingency situations. These forces must have the ability to deploy and operate over the seven seas and must be provided the necessary support to remain in assigned areas for extended periods of time. The system also provides some support to the Marines.

(3) The Navy is organized into two basic segments: (a) the operating forces, which include the several fleets, seagoing forces, sea frontier forces, district forces, Fleet Marine Forces and other assigned Marine Corps forces, the Military Sea Transportation Service, and assigned shore (field) activities and commands; and (b) the supporting establishment, which includes the Naval Material Command and the Bureaus and Offices of the Navy Department Under the Secretary of the Navy, the Chief of Naval Operations (CNO) commands the operating forces (see Figure 14).

b. Responsibilities of Major Logistic Commands

(1) Under the CNO the Chief of Naval Material (CNM) commands the Naval Material Command. This command is comprised of the Naval Systems Commands: Ship, Ordnance, Electronics, Supply, and Facilities Engineering (formerly Bureaus). The CNM is responsible for meeting the material support needs of the Operating Forces. His specific responsibilities include:

> "a. To meet material support needs of the Operating Forces of the Navy for equipment, weapons or weapons systems, materials, supplies, facilities, maintenance, and services, including the development, acquisition, construction, maintenance,

[11] U.S. Government Organization Manual, 1969-70.

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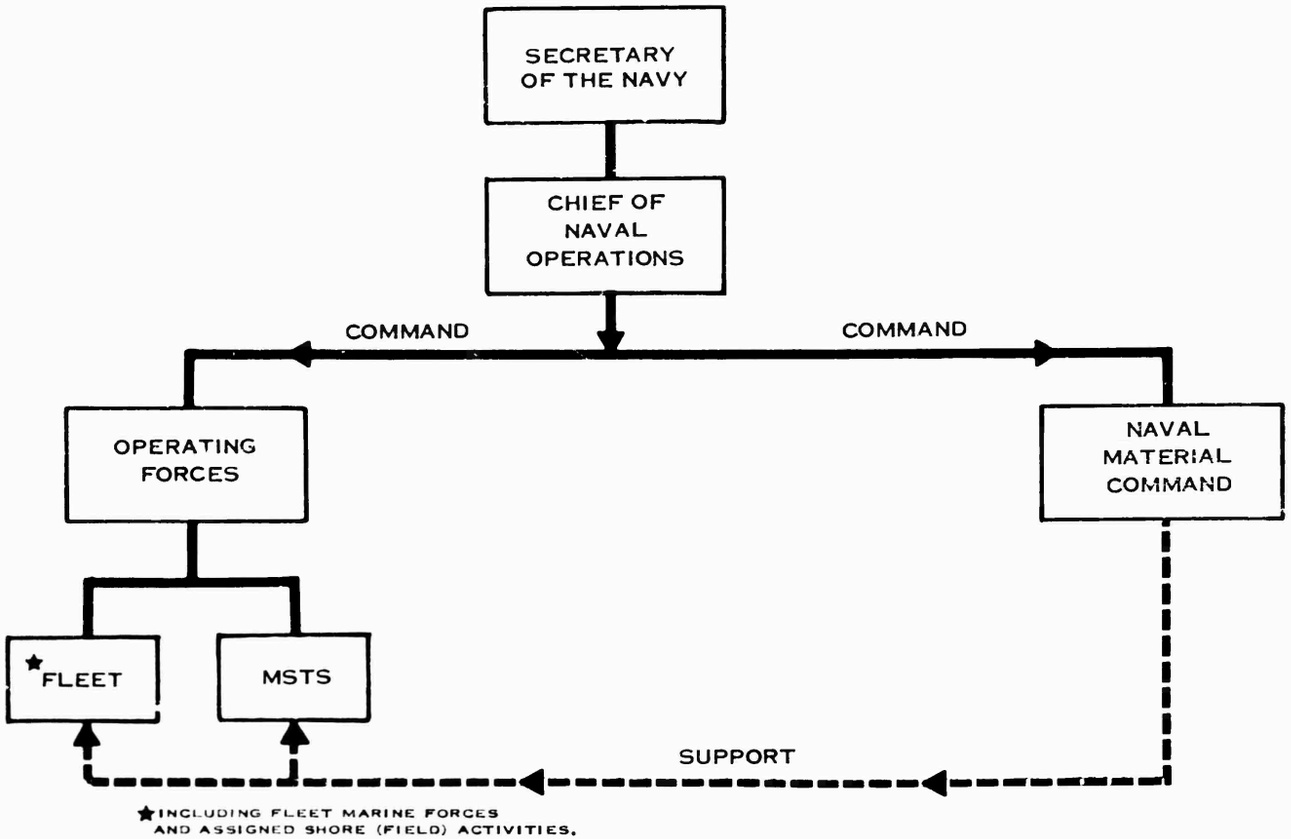

FIGURE 14. PRIMARY RESPONSIBILITIES RELATED TO NAVAL LOGISTICS (AFTER 1 MAY 1966)

alteration, repair, and overhaul of ships, aircraft, surface craft, weapons or weapons systems, materials, and facilities; all consistent with approved programs. . . .
"b. To be responsive directly to the Commandant of the Marine Corps in meeting those particular material support needs of the United States Marine Corps which are required to be provided by the Naval Material Command.
"c. To plan for the utilization of resources in the performance of the work of meeting those material support needs of the Operating Forces of the Navy and of the Marine Corps which are provided by the Naval Material Command; and to distribute, direct, and supervise the performance of such work. Such work includes the development, procurement, acquisition, contracting, production, supply, maintenance, alteration, repair, overhaul, and disposal of naval material; it includes responsibilities for the development and operation of the Navy Supply System; and, it includes the acquisition, design, construction, maintenance, and disposal of naval facilities, including real estate and all improvements thereon and the operation of public utilities, except that this does not include the maintenance of Marine Corps facilities or the operation of their public utilities.
"d. To provide the Chief of Naval Operations, and the Commandant of the Marine Corps, as appropriate, with timely advice concerning training and technical requirements essential for the operation and maintenance by naval personnel of new equipment under development; and, as appropriate, to provide the Operating Forces of the Navy with timely guidance on the operation, repair, and maintenance of all equipment and weapons or weapons systems."[12]

(2) On 1 May 1966 the CNM was placed under the command of the CNO. Until this time, CNM, under the Secretary of the Navy, had been responsible for "effectuating policies and plans for the procurement, contracting, and production of material throughout the Naval Establishment," and for "determining the procurement and production policies and methods to be followed by the Naval Establishment to meet the material requirements determined by the Chief of Naval Operations to be necessary to the support of the Operating Forces, and coordinating and directing the bureaus and offices of the Navy Department in this respect."[13]

(3) Most of the logistic activities within CONUS are in the chains of command of the Chief of Naval Material, the Bureaus (e.g., Naval Personnel, Medicine and Surgery), and the Systems Commands. Most of the logistic activities overseas, ashore as well as afloat, are in the chains of command of the operating forces. Commonality of standards, procedures and systems is ensured by the fact that within their areas of responsibility, the Commanders of Systems Commands, under the Chief of Naval Material, provide technical direction to units ashore and afloat regardless of the chain of command.

c. Responsibilities of Subordinate Logistic Commands

(1) Commanders within the operating forces have logistic responsibilities consistent with basic responsibilities for the readiness and performance of their forces. Details vary depending on missions and operating environments. The logistic responsibilities within the Pacific Fleet are illustrative, as follows:

"In the area of logistics, CINCPACFLT will:
"(1) Promulgate general logistic policies, plans and orders for the support of PACFLT.
"(2) Establish standards of logistic readiness.
"(3) Disseminate information to subordinate commanders regarding logistic plans or projects.
"(4) Coordinate the logistic activities of PACFLT and subordinate commanders.
"(5) Coordinate planning for facilities and base development in support of the Fleet.

[12] Department of the Navy, General Order No. 5, 29 April 1966.
[13] U.S. Navy Regulations, Article 0480, 1948.

"(6) Act as coordinating agent for liaison with component and higher commands for logistic matters.
"(7) Prepare, submit, and justify a consolidated operations and maintenance budget for the Fleet, including Fleet ashore activities.
"(8) Distribute and account for funds allocated to CINCPACFLT."[14]

(2) Commander, Service Force, Pacific Fleet, is the principal logistic agent of CINCPACFLT. "Except for those logistic functions specifically assigned to other commanders or assigned under joint logistic agreements, he is charged, in general, with the supervision and coordination of the planning, conduct, and administration of services and the supply of material to PACFLT."[15] He commands logistic ships, craft, and mobile units; ship repair, supply, and ammunition facilities, and other support activities; mobile construction forces: and has the responsibility to:

"(1) Provide mobile logistic support to the Fleet, except for the support provided by special auxiliaries and service craft assigned to other commanders.
"(2) Provide logistic support to those bases for which CINCPACFLT has command, administrative, or logistic responsibilities.
"(3) Through the planning, direction, review, and modification, as necessary, of all aspects of inventory control, monitor and administer supply support to PACFLT ships not specifically assigned to another logistic commander.
"(4) For other than aeronautical material and items peculiar to the Marine Corps, administer . . . the flow of material into the Pacific Area in support of the Naval forces so that approved stock levels are maintained and material allocations fulfilled."

(3) The Commander, Naval Air Force, Pacific Fleet "is the aviation logistic agent of CINCPACFLT. He is charged with the logistic support of Navy and Marine Corps aviation units in the Pacific." In addition to ships and aircraft he commands Pacific Fleet aviation facilities ashore.

(4) The Commanding General, Fleet Marine Force, is responsible for Marine peculiar logistics (see Section F).

3. MAJOR LOGISTIC SUBSYSTEMS

a. Supply

(1) Fleet Support. Navy supply support of the operating forces is based on two echelons of supply.[16] The first echelon is the combatant ship itself; the second echelon consists of the Mobile Logistic Support Forces, supplemented by Navy overseas bases.

(a) In the first echelon is that material specified in each ship's allowance list and carried onboard. The allowance list is tailored to the ship's unique equipment configuration. Except for the smaller ships, the range and depth of material on the allowance list are computed to achieve a basic combat endurance of 90 days.

(b) The second echelon of supply support includes material positioned in the Mobile Logistic Support Force, and resupply material positioned at designated bases, in support of actual and planned fleet deployments for a stated period without augmentation—to satisfy 90 days combat requirements.

[14] United States Pacific Fleet Regulations, CINCPACFLT Instruction 5440.3B, change 3, 1 June 1967
[15] Ibid.
[16] Chief of Naval Operations Instruction 4441.12, 27 August 1964.

(2) These in turn are supported by material located in tidewater supply centers and supply depots in CONUS and at other stock points, such as Naval Air Stations and shipyards. These stock points serve as the material reservoir to the first and second echelons, and the material they carry for distribution is the property of the Navy Supply System, or, for some stocks at the Naval Supply Centers (Oakland and Norfolk), is the property of DSA but warehoused by the Navy. The management of supplies, the problem of having the right amount of stock on hand when needed, is the basic function of the Ships Parts Control Center, the Aviation Supply Office, and the Electronics Supply Office. The ICPs implement approved stock levels at each support level, e.g., ship, Mobile Logistic Support Force, and stock points, so that items are available when and where they are needed and inventories are kept to a minimum consistent with the need.

(3) Ships operating off CONUS normally requisition their requirements from the nearest CONUS stock point. Forces positioned in the Sixth Fleet in the Mediterranean and the Seventh Fleet in the Western Pacific (WESTPAC) obtain as many supplies as possible from Mobile Logistic Support Forces, with minimum direct dependence on overseas bases. In general, deployed combatants are replenished at various intervals depending on the item concerned. For example, operations may require replenishment of fuel oil every 4 days, ammunition every 6 days, and food and repair parts every 20 to 30 days. In any event, the fleets are replenished routinely at least every 30 days and, because of the flexibility of the Mobile Logistic Support Force, they can take on supplies at any frequency required by the fleet commander.

(4) If an emergency requirement develops which cannot be satisfied from onboard stocks, the ship first queries accompanying ships. If the requirement cannot be met the command responsible for logistics conducts an expanded fleet search. If the item is not located, the requirement is forwarded to Norfolk (Sixth Fleet) or Oakland (Seventh Fleet). Rapid communications, airlift from CONUS, and Carrier-on-Board Delivery aircraft are particularly vital elements in the support of combatant units during extended periods at sea. Carrier-on-Board Delivery is a transportation technique that involves air delivery of material from a shore point to an aircraft carrier. If the item is needed by one of the other ships in company, it is then transferred by helicopter or by high-line between ships.

(5) Overseas Base Supply Support. Navy Supply Depots overseas support a wide variety of customers in addition to the operating forces, e.g., ship repair facilities, naval ordnance facilities, air facilities, naval stations, communications stations, other Services, and other Government organizations. In close proximity, they often eliminate the need for supported activities to carry their own stocks.

(6) Much of the Navy supply support of forces operating within Vietnam was required for newly organized units or units not previously deployed to WESTPAC. Existing supply procedures were applied in establishing the Naval Support Activities at Da Nang and Saigon. These two major Navy stock points in Vietnam have operated under essentially the same supply support concepts as other Navy overseas bases. Generally, requisitions from Da Nang and Saigon have flowed directly to the Naval Supply Center at Oakland, which either has filled the requirement or has taken action to provide material by other means.

b. Maintenance

(1) There are major variations in repair capabilities, including shops and personnel. The smaller ships can undertake only relatively modest repair tasks. The large ships, with extensive shop spaces and highly trained personnel, can accomplish repairs of an intermediate or higher level. Thus, strict application of the standard DOD levels is not practical or desirable. However, in general, operating forces personnel perform organizational maintenance at the ship and aircraft squadron level and intermediate maintenance at the tender and air wing level. Depot level maintenance is performed at naval shipyards, ship repair facilities, commercial shipyards, and naval air rework facilities. Depot maintenance at three ship repair facilities overseas is performed by indigenous civilian labor supervised by U.S. Navy and civilian personnel. Commercial activities performing contract depot maintenance are manned and managed entirely by civilians, but the work is administered and inspected by naval personnel.

(2) Assignment of fleet work to repair ships, tenders and repair facilities in WESTPAC is controlled by the Commander, Service Group Three, who is also the Commander of the Mobile Logistic Support Force of the Seventh Fleet.

(3) Within Vietnam, repairs by both mobile and fixed facilities are the responsibilities of the Naval Support Activities, Da Nang and Saigon.

c. Munitions

(1) In support of SE Asia operations, the Commander, Service Force, Pacific, is responsible for ammunition logistics, other than ammunition peculiar to the Marines, in the Pacific Fleet. He controls the flow of naval ammunition to the Pacific through requests to the Naval Material Command (Ships Parts Control Center), Mechanicsburg, Pennsylvania. He is responsible for achieving and maintaining readiness and adequacy of stocks, and carrying out inventory control and distribution of ordnance.

(2) In WESTPAC, ammunition was provided normally to the Seventh Fleet by the ammunition ships of the Mobile Support Force. These in turn were supported by Naval Magazines, Subic and Guam; Naval Ordnance Facilities, Yokosuka and Sasebo; and by the Naval Support Detachment, Cam Ranh Bay. Under Commander, Service Force, Pacific, Commander, Service Group Three was charged with supervising and directing the distribution of ammunition including Marine Aviation in WESTPAC.

d. Other. Because of special complexity or importance, some weapons systems are supported by unique logistic systems or subsystems. A Navy example of special support is that accorded to the Fleet Ballistic Missile forces. Special support organizations have been established to assist POLARIS submarines and their supporting tenders in obtaining the most effective logistics response from the United States. The POLARIS submarines in the Atlantic and Mediterranean are supported by submarine tenders at Charleston, S. C.; Holy Loch, Scotland; and Rota, Spain. Under Commander, Submarine Force, Pacific, POLARIS submarines in the Pacific are supported by a tender located at Guam. The resupply of tenders is coordinated by POLARIS Material Offices located at Charleston, S. C., and Bremerton, Washington. The resupply is accomplished in part by specially configured ships of the Military Sea Transportation Service and by airlift from Charleston and Bremerton.

4. INTEGRATION OF SUBSYSTEMS

a. The CNO has overall responsibility for the integration of logistic support of the Naval Material Command, the Bureaus, and the operating forces. The CNM is responsible for integrating the subsystems of the Naval Systems Commands.

b. Under the Commander in Chief, U. S. Pacific Fleet, Commander Service Force, Pacific, integrates the subsystems with the fleet, except for aviation, Marines, and the POLARIS system. Integration at lower levels is accomplished by the Commander Service Group Three in the WESTPAC and by the commanders of the naval support activities in Vietnam.

5. FUTURE TRENDS

a. General. Logistics in the Navy has been and is subject to evolutionary improvements. These improvements involve both advanced management and programming techniques in addition to the most modern state-of-the-art hardware.

b. Approved Proposed Programs. Innumerable steps are underway to improve the functional subsystems and their integration under the CNM. Important contributions are being made by automatic data processing programs within each subsystem area. The exchange of information between subsystems and the collection of information for overall logistic monitoring and management by the CNO, his subordinates, and the Secretary of the Navy is being improved by the Navy Integrated Command Management Information System, whose full development will take several years.

SECTION F

MARINE CORPS LOGISTIC SYSTEM

1. BASIC RESPONSIBILITIES. The logistic responsibilities of the Marine Corps are described as follows:

> "7a. ... He (the Commandant of the Marine Corps) is directly responsible to the Secretary of the Navy for the administration, discipline, internal organization, training, requirements, efficiency, and readiness of the Marine Corps; for the operation of its material support system and for the total performance of the Marine Corps. He is also responsible to the Secretary of the Navy for the utilization of resources by and the operating efficiency of all activities under his command. When performing these functions, the Commandant of the Marine Corps is not a part of the command structure of the Chief of Naval Operations. However, there must be a close cooperative relationship between the Chief of Naval Operations, as the senior military officer of the Department of the Navy, and the Commandant of the Marine Corps, as the one having command responsibility over the Marine Corps. The Commandant of the Marine Corps is directly responsible to the Chief of Naval Operations for the organization, training, and readiness of those elements of the Operating Forces of the Marine Corps assigned to the Operating Forces of the Navy. Such Marine Corps forces, when so assigned, are subject to the Command exercised by the Chief of Naval Operations over the Operating Forces of the Navy.
>
> "b. These general responsibilities include the following specific responsibilities:
>
> "(1) To plan for and determine the support needs of the Marine Corps for equipment, weapons and weapon system, materials, supplies, facilities, maintenance, and supporting services. This responsibility includes the determination of Marine Corps characteristics of equipment and material to be procured or developed, and the training required to prepare Marine Corps personnel for combat. It also includes the operation of the Marine Corps Material Support System."[17]

2. ORGANIZATION FOR LOGISTICS

a. Introduction. The United States Marine Corps (USMC) operates an integrated logistic support system designed for effective operation in both peacetime and war. The system makes the Marine Corps essentially self-sufficient in logistic operations and is structured to be responsive to the needs of the operating and supporting forces. All logistic functions are encompassed within the logistic support system except that Marine aircraft and related items are budgeted for, procured, and distributed by the Navy. Those items required for support of the air elements of the Fleet Marine Forces are provided by the Navy, based on requirements determined by the Marine Corps.

b. Logistic Responsibilities of Major Commands

(1) The United States Marine Corps, within the Department of the Navy, includes Headquarters, USMC, the operating forces, and the supporting establishment.

(a) Headquarters, U.S. Marine Corps. In the planning for and determination of the support needs, the Commandant of the Marine Corps assigns responsibilities to three subordinate staff agencies at the headquarters level. The Assistant Chief of Staff, G-4, is the

[17] Department of the Navy, General Order No. 5, 29 April 1966, pp. 3 and 4.

principal logistician on the general staff of the Commandant and, as such, is responsible for logistic plans, policies, materiel program objectives and programs relating to materiel readiness. He plans and establishes requirements for logistic research and development and develops ground materiel equipment required for support of amphibious operations. The Deputy Chief of Staff (Air) acts in a dual capacity as Director of Aviation, Headquarters, USMC, and is Assistant Deputy Chief of Naval Operations (Marine Aviation). In fulfilling logistic responsibilities for Marine Aviation, the Deputy Chief of Staff (Air) performs generally the same functions as the Assistant Chief of Staff, G-4, does for ground elements. The Quartermaster General, on the other hand, is the supply manager and heads the Supply Department at Headquarters, USMC, where supply plans, programs, and policies are executed. He is responsible for the management of the Marine Corps Materiel Support System, the procurement of materiel and services, and the provision of engineering and technical services in acquisition, support, and maintenance of ground equipment.

(b) The Operating Forces. The operating forces consist of the Fleet Marine Force (FMF) detachments aboard naval vessels, security forces at Navy shore activities, special activities and combat forces not otherwise assigned. The FMF make up the majority of the operating forces. Although the FMF are the users of logistic support, they contain internal logistic elements and have logistic responsibilities.

(c) The Support Establishment. The support establishment is composed of Marine Corps bases, camps, unit training centers, aviation installations, supply installations, individual training installations, and reserve and recruiting activities. The mission of the support establishment is to accomplish the development, procurement, training, administration, and logistic support required to assist the operating force in the performance of its assigned missions.

c. Logistic Responsibilities of Subordinate Commands. The logistic support system and the attendant logistic organization have been developed specifically to support four Marine Expeditionary Forces—three active and one reserve. The organization of major FMF units and their logistic capabilities are described in the following paragraphs.

(1) Fleet Marine Force, Pacific. Although the Commanding General, Fleet Marine Force, Pacific (CGFMFPAC), is the Commanding General of Marine Corps Bases, Pacific, the Commandant of the Marine Corps retains complete command including administrative, logistic, and operational control. Marines assigned to the U. S. Pacific Fleet and the III Marine Amphibious Force (III MAF) are under the operational control of the commanders of the unified commands, but the responsibility for their administrative logistic support rests with the Commandant.

(2) 3d Force Service Regiment. The 3d Force Regiment located on Okinawa is the forward logistic support unit for all of the FMF in WESTPAC. The regiment is charged with furnishing the following support to assigned Marine Corps units: supply, maintenance, shipping and receiving, financial accounting, personnel effects storage, map and chart support, explosive ordnance disposal, and salvage. The supply and maintenance effort of the regiment is primarily oriented toward support of III MAF through the Force Logistic Command (FLC).

(3) Force Logistic Command

(a) The FLC in Vietnam is a task organization employing the assets of one force service regiment, two Marine division service battalions, one force separate bulk fuel company, and an augmentation of approximately 300 billets. The FLC was established in March 1966 under the command of CGFMFPAC and under the operational control of the Commanding General, III MAF.

(b) The mission of the FLC is to provide sustained logistic support to III MAF organizations, to provide staff augmentation and self-sustaining balanced logistic support elements

in support of tactical forces when deployed on independent missions, and to provide logistic support to other organizations as may be directed.

(c) The FLC performs the following specific tasks:

1. Provides sustained logistic support to III MAF organizations and to other Free World Military Assistance Forces.

2. Maintains the capability to task organized organic forces to form logistic support units and the mobility to adjust these forces in support of combat operations through the remote areas of the I Corps Tactical Zone.

3. Provides supply support to all battalions, aircraft groups, separate companies in III MAF, and to the 2d Republic of Korea, Marine Corps Brigade.

4. Provides overflow 2d, 3d, and a portion of 4th echelon maintenance support of all units, including 1st Marine Air Wing, in III MAF.

5. Provides logistic support for civil affairs and civic action programs as directed by the Commanding General, III MAF.

(d) In providing this support, the FLC establishes logistic support areas in forward locations; installs and operates fuel farms and establishes and operates ammunition supply points in all tactical areas; provides for transportation of supplies and materiel in all tactical areas; and in addition to supply and maintenance, provides such services as baking, graves registration, shipping and receiving, laundry, and explosive ordnance disposal.

(4) Naval Support Activity, Da Nang. The Naval Support Activity, Da Nang, and the Force Logistic Command were conceptually developed and are operational with a distinct delineation between the tasks and missions performed by each. Coordination has been maintained to avoid duplication of functions. The basic principle has been to maintain the FLC as the internal support of combat operations while maintaining an organic capability for support of amphibious or land operations. The Naval Support Activity, Da Nang, however, is confined to the operation of ports, the support of semipermanent base functions, and provision of common supply items.

3. MAJOR LOGISTIC SUBSYSTEMS. The two major subsystems in the Marine Corps are supply and maintenance.

a. Supply System. On 1 January 1965, the operating forces and the supporting establishment were supported by two supply systems: the Marine Corps for Marine Corps-provided equipment and the Navy for aeronautical equipment.

(1) Marine Corps Supply. The supply organization for the Marine Corps consisted of a wholesale distribution or "stores" system and a retail or "out-of-stores" system.

(a) Stock accounts were located at all of the Marine Corps bases and recruit depots on the east and west coasts.

(b) The two Inventory Control Points (ICPs), Marine Corps Supply Activity, Philadelphia, Pennsylvania, and Headquarters, Marine Corps, Washington, D.C., constituted the top management echelon of the supply system. Each managed and procured assigned items – principal items at HQMC, and secondary items at the Marine Corps Supply Activity. The ICPs initiated appropriate supply action on requisitions referred from stock accounts via supply centers for materiel not available at lower echelon.

(c) A bicoastal (east and west coasts) distribution system was employed, with the two Marine Corps Supply Centers, at Albany, Georgia, and Barstow, California, as the inventory and accounting managers. Demands for items not available at one supply center were passed on to the other.

(d) The "out-of-stores" portion of the Marine Corps supply system consisted of organic accounts at using units and Fleet Stock Accounts at division, wing, and force levels. The organic accounts at battalion and separate company and Marine air group level maintained operating stocks and obtained their materiel from the appropriate service unit Fleet Stock Accounts. Stock replenishment requirements from the Fleet Stock Accounts were levied upon the distribution systems' local stock accounts, with the exception of the 3d Force Service Regiment on Okinawa, which requisitions directly from the Marine Corps Supply Center, Barstow, the designated supporting activity for WESTPAC forces.

(2) Aeronautical Supply

(a) The organization for supply of Navy-furnished aeronautical materiel was the same as that supporting the total naval air force. The Marine Air Group supply department paralleled the supply department of a ship with a central storeroom. Stocks of Navy materiel were funded under the appropriate standard naval allowance list procedures. Replenishment was by Military Standard Requisition and Issue Procedures on the Navy supply system.

(b) An exception to the Navy procedure occurred whenever a Marine Aircraft Group was in garrison at a Marine Corps air station. Under Navy procedures, the carrier air group received intermediate maintenance and supply support from a naval air station when ashore. However, the Headquarters and Maintenance Squadron of the Marine Aircraft Group (which corresponded to the carrier's air group) continued to provide supply support and intermediate maintenance for the operating squadrons.

(3) The Marine Corps Unified Materiel Management System (MUMMS) was implemented throughout the Marine Corps on 1 May 1967. It is an integrated system of centralized supply management designed to satisfy all Marine Corps requirements (internal and external) by utilizing modern management and automatic data processing techniques at an ICP and eight Remote Storage Activities (RSA). The system connects the ICP to logistic support organizations throughout the world, utilizing third-generation automatic data processing equipment and techniques.

(a) The ICP is the central supply processing point for the Marine Corps Distribution System. As such, it executes that phase of military logistics that controls the input, availability, and disposal of materiel under its cognizance, and exercises technical direction over the operation of the Marine Corps Supply Distribution System under the military control of the Commandant. The Commanding General, Marine Corps Supply Activity, Philadelphia, Pennsylvania, is responsible for inventory control of all centrally managed and centrally procured items (other than subsistence and commissary stores) procured under the appropriate Marine Corps Stock Fund, plus the majority of Appropriation Stores Account items. Appropriation Stores Account items include major items such as ammunition and electronic, engineer, general property, missile system, motor transport, and ordnance equipment. Headquarters, Marine Corps, is the central supply element for all principal Appropriation Stores Account major items.

(b) Remote Storage Activities (RSAs) are assigned missions by the Commandant, who also establishes the basic functions to be performed at each location. The major common functions are:

1. Receive, inspect, accept, and store principal items control-coded for complete management by Headquarters, Marine Corps.

2. Receive, inspect, accept, and store secondary Stock Fund or Appropriation Stores Account items.

3. Pick, pack, and ship items for which a materiel release order has been received from the ICP, and confirm the shipment when accomplished.

4. Operate retail outlets for the direct supply support of local and adjacent units.

5. Determine requirements, procure decontrolled items, requisition controlled items from the ICP, perform item accounting for all items procured, and prepare and submit to the Commandant the budget estimate and financial plan for decontrolled stock fund items.

6. Perform special projects, such as computer program tests and operational analyses, as assigned by the ICP.

(c) The ICP, RSA's, Force Service Regiments, Defense Supply Agency activities, and other military installations are linked by AUTODIN. Customers' requisitions are transmitted directly to the ICP via mail, message, or AUTODIN, as appropriate. The requisition is processed in the ICP computer and a materiel release order is transmitted to an RSA. When the materiel is picked, packed, and turned over to the transportation element, the RSA transmits a materiel release confirmation to the ICP.

b. Maintenance System. Marine Corps forces receive maintenance support from the Marine Corps maintenance system and the Navy maintenance systems. Marine Corps aviation units operate, maintain, and obtain rebuild of aeronautical and other Navy-furnished materiel in accordance with Navy maintenance policies and procedures.

(1) Marine Corps maintenance doctrine emphasizes the responsibility of command, and provides that repair be performed at the lowest echelon of maintenance based on the nature of repair, authorized repair parts, tools and support equipment, and the skill level of personnel. Materiel requiring repair beyond the maintenance capability of one echelon is evacuated to the next higher echelon. The three broad categories of maintenance are subdivided within the Marine Corps into five echelons to provide additional flexibility and accuracy in defining levels of maintenance.

Categories	Echelons
Organizational	1st
	2d
Field (Intermediate)	3d
	4th
Depot	5th

All maintenance policy emanates from HQMC through normal command channels to elements of the operating forces and the supporting establishment. Elements of the supporting establishment are organized to support and contribute to maintenance readiness of the operating forces. In the supporting establishment there were three major logistic activities playing a significant role in the maintenance functions: Marine Corps Supply Activity in Philadelphia, Pennsylvania, and the Marine Corps Supply Centers in Albany, Georgia, and Barstow, California.

(a) The primary functions of Marine Corps Supply Activity, Philadelphia, are in the maintenance management areas of provisioning, preparation of repair parts lists, developing modification instructions, and scheduling depot rebuild of secondary reparables. The depot maintenance activity of the supply center is charged with providing depot maintenance support to include repair or rebuild of major equipment and secondary reparables, care in storage, and technical assistance service.

(b) Organizationally, ground units of the FMF are identified with either the Marine Division or Force Troops. Within these two commands, units may be mission-identified as combat, combat support, or combat service support. All units are assigned both first and second echelon maintenance responsibility. Combat service support units are provided third echelon support within the Marine Division and third and fourth echelon at the Force Troops level.

(2) Aeronautical Maintenance operations on 1 January 1965 were assigned to specific levels of command consistent with the assigned unit's primary mission.

(a) Organizational level maintenance was performed in the operating squadrons. Intermediate level was performed by the Headquarters and Maintenance Squadron of the Marine Aircraft Group, which could be compared to the Navy aircraft maintenance department of an aircraft carrier or a naval air station. However, it differed in that Headquarters and Maintenance Squadron equipment was required to be capable of rapid relocation and of operating in an expeditionary environment. The intermediate maintenance capability of the Headquarters and Maintenance Squadron moved with the parent Marine Aircraft Group, whereas the Navy carrier air group was supported by the aircraft maintenance department of a ship or naval air station. A further exception was that a Headquarters and Maintenance Squadron could have had a complete engine repair capability if required. Depot level aeronautical maintenance was not organic to the Marine Corps, but rather was performed at naval aircraft rework facilities, facilities of other military services, or commercial activities.

(b) Beginning in FY 65 the Standard Navy Maintenance and Material Management System (3M) was phased into Marine aviation units. The 3M system embraces two broad areas: planned maintenance, and maintenance and material management control and data collection. The result of the implementation of the 3M system reveals that the system has improved maintenance and material management within Marine aviation; however, the full benefits of the system have not yet been realized.

c. Munitions. The Marine Corps received ammunition from two sources. The majority of ground ammunition was received from the Army and the majority of air ammunition was received from the Navy. Management control was exercised by HQMC which included requirements determination, issuance of military interdepartmental procurement requests, and designation of either naval ammunition depots or Army depots as consignee for ammunition procured by the Marine Corps. The FMFs were responsible for ensuring that appropriate stocks of ammunition were suitably positioned and adequate to mount-out forces. Supporting establishment commands were responsible for maintaining specified types and quantities of ammunition as requested by FMF commanders. The Navy was responsible for the planning, budgeting, procurement, and positioning of air ammunition for Marine aviation units.

4. INTEGRATION OF SUBSYSTEMS

a. The Marine Corps Unified Materiel Management System is compatible with the Department of Defense Military Standard Procedures. MUMMS uses the Mechanization of Warehousing and Shipping Procedures which is compatible with that of the Defense Supply Agency. MUMMS provides controls and interfaces between 16 subsystems and utilizes various configurations of third-generation computers to operate these subsystems.

5. FUTURE TRENDS. The Marine Corps has systems in the design stage which can improve supply and maintenance support.

a. The first is an integrated computerized system that will relieve the tactical commander of much supply record keeping, yet will provide the information he needs for supply management. The system will compute tactical unit requirements and automatically order the materiel. The system will provide commanders, down to the company level, with the management information necessary to meet supply and financial requirements. The new unit supply system is compatible with MUMMS and will provide the Marine Corps with a more responsive, reliable supply system.

b. The second management system is designed to provide the Marine Corps with an efficient, automated, centrally controlled maintenance management capability. When implemented the system will establish master asset data records and will collect and store all maintenance cost and information required to manage, allocate, and utilize available maintenance resources.

SECTION G

AIR FORCE LOGISTIC SYSTEM

1. MISSION. "The mission of the Department of the Air Force is to provide an Air Force that is capable, in conjunction with the other armed forces, of preserving the peace and security of the United States, providing for its defense, supporting the national policies, implementing the national objectives and overcoming any nation responsible for aggressive acts that imperil the peace and security of the United States. In general, the Air Force includes aviation forces, both combat and service, not otherwise assigned. It is organized, trained, and equipped primarily for prompt and sustained offensive and defensive aerospace operations. It is responsible for the preparation of the aerospace forces necessary for the effective prosecution of the war except as otherwise assigned and in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Air Force to meet the needs of war."[18]

2. ORGANIZATION FOR LOGISTICS. Primary logistic channels extend from the Assistant Secretary of Defense (I&L) through the Assistant Secretary of the Air Force (I&L), the Deputy Chief of Staff Systems and Logistics, and the Deputy Chief of Staff Programs and Resources to the Major Air Commands and Operating Agencies (Figure 15). Logisticians and defense planners prior to 1965 had been committed principally to two policies. One embraced nuclear wars with total commitment of all resources for a short duration. The strategy was massive and rapid retaliation, which ensured the destruction of the enemy's will to fight. The second policy was to maintain the capability to rapidly deploy full wings or their elements to any area of the world, and the ability to begin conventional operations within hours after arrival. Logistics planning for these temporary duty forces encompassed spares and supplies for short periods. The combat units in the Air Force have developed mobility plans that give them the capability to respond to "brush-fire" incidents in the minimum time. The Air Force, through aerial refueling techniques, is capable of flying its operational aircraft, except helicopters, to combat areas, as demonstrated repeatedly by aircraft moved to Vietnam and Thailand. Such units are available for combat missions almost immediately after arrival. This mobility places a severe requirement on logistic agencies.

a. Responsibilities of Major Logistic Commands

(1) Air Force Systems Command. The Air Force Systems Command (Figure 16) has complete development responsibility for new weapon systems, including advanced technology, development, test, procurement, production, configuration, and site activation. It qualified newly developed weapon systems and equipment for Air Force use.

(2) Air Force Logistics Command. The Air Force Logistics Command (Figure 17) has the following responsibilities:

(a) Performs logistic management functions, including determining quantitative materiel requirements, buy and/or budget programs, inventory control, storage, distribution, maintenance engineering, technical services, and disposition of Air Force-managed materiel.

(b) Provides organic technical and maintenance assistance to the Air Force, Air National Guard, Air Force Reserve, and Military Assistance Program recipients.

(c) Provides engineering decisions in the sustaining of the design, performance, and reliability of aerospace, missile, space, and command and control systems and equipment.

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[18] United States Government Organization Manual, 1969-70.

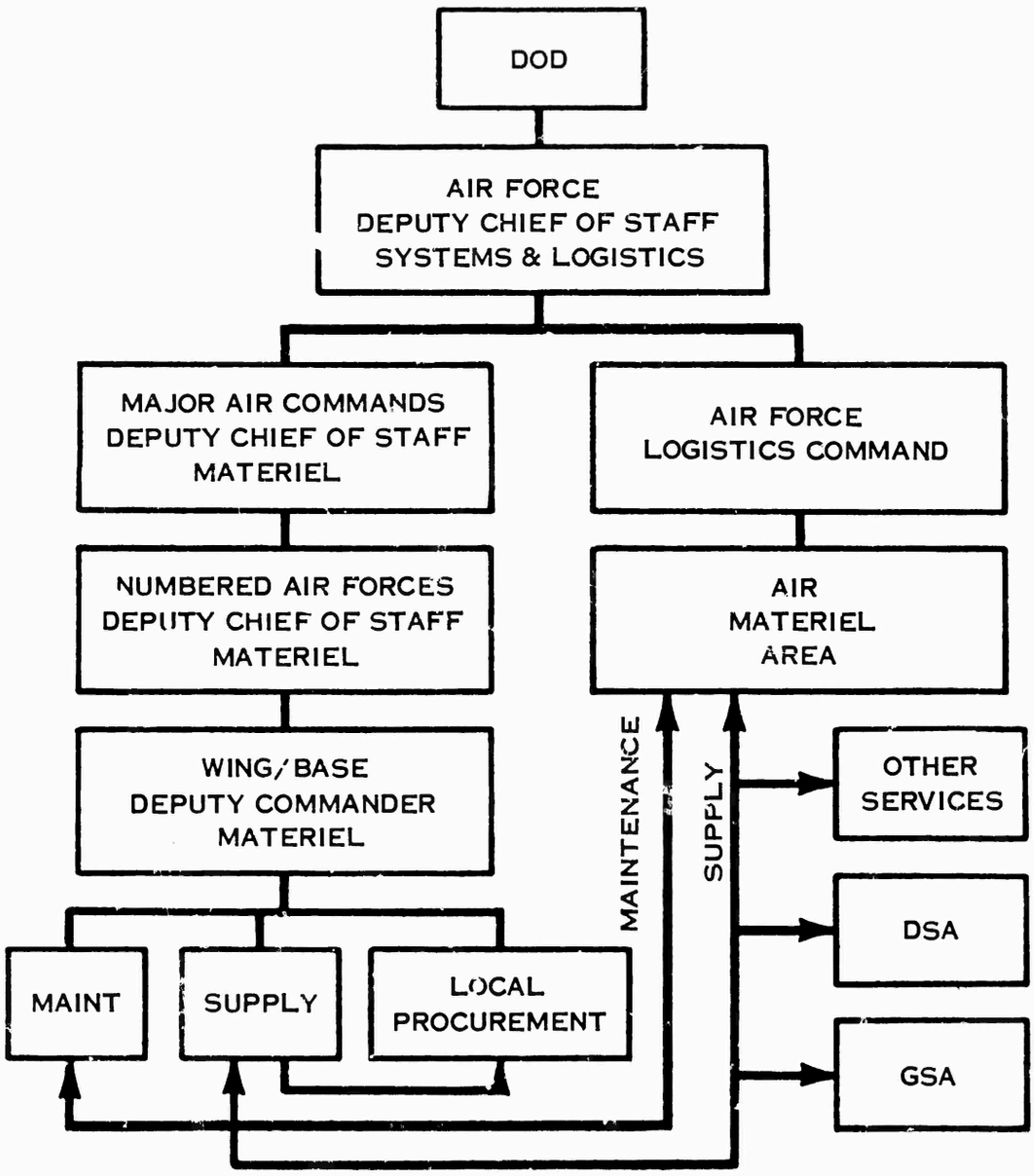

FIGURE 15. LOGISTIC SYSTEM OF THE AIR FORCE

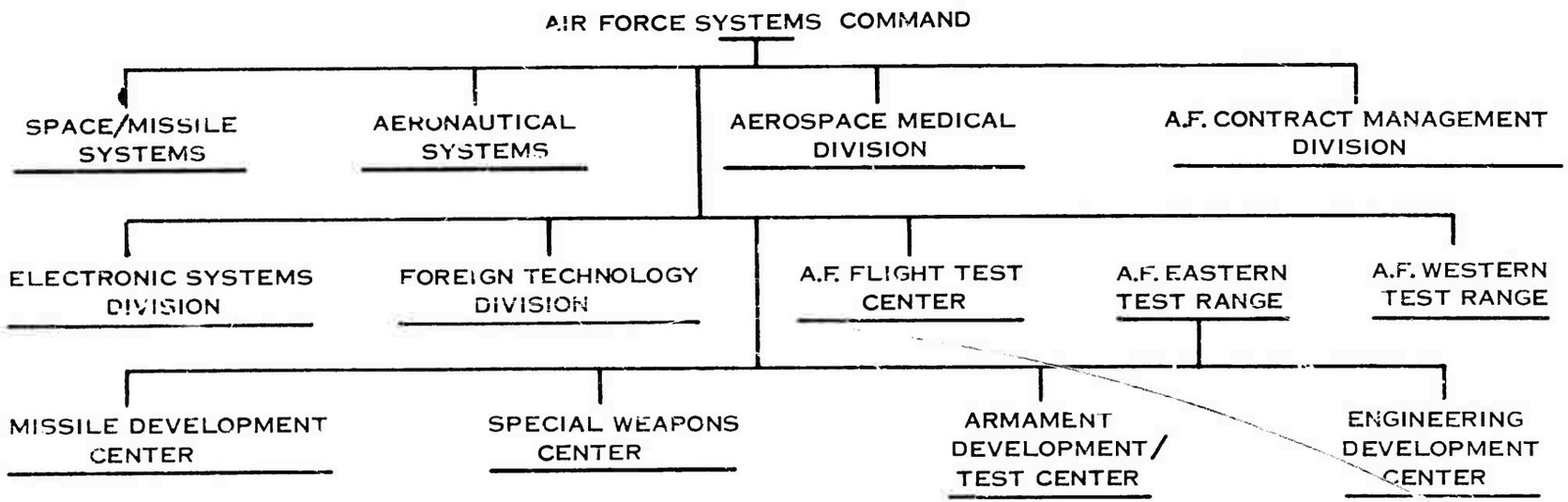

FIGURE 16. AIR FORCE SYSTEMS COMMAND LOGISTICS ORGANIZATION AND FUNCTIONS

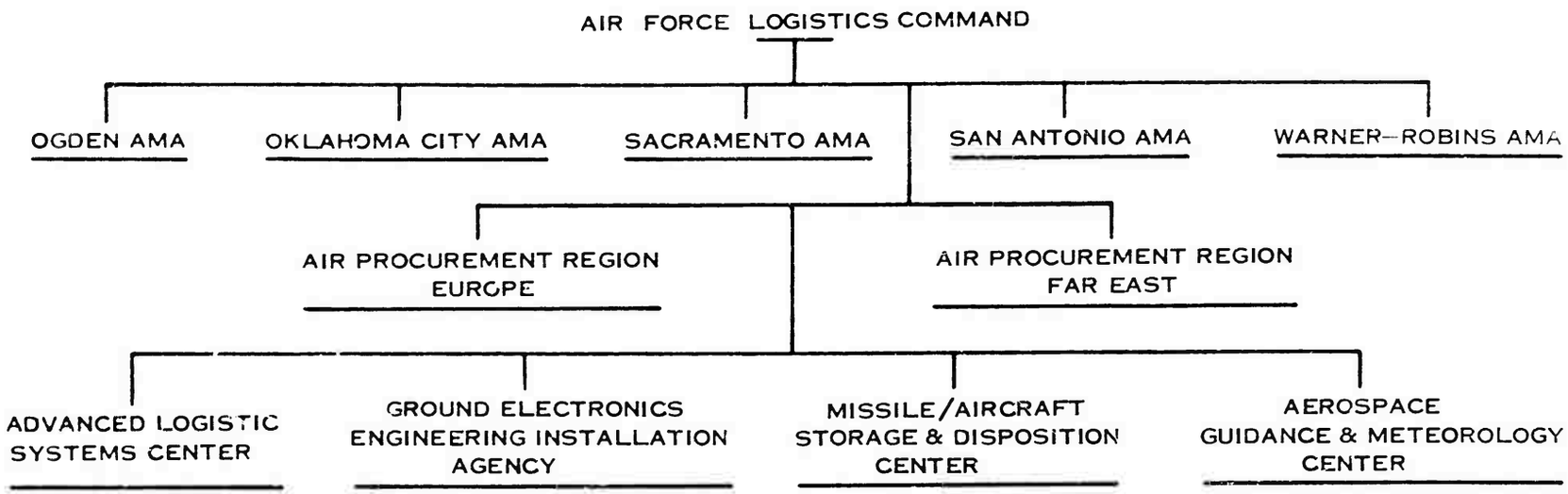

FIGURE 17. AIR FORCE LOGISTICS COMMAND ORGANIZATION AND FUNCTIONS

(d) Provides engineering decisions concerning logistic processes such as procurement, overhaul, repair, and quality control.

(e) Operates and manages the Air Force Technical Order system and prescribes Air Force-wide maintenance and engineering technical systems, methods, procedures, and modification tasks for all levels of maintenance.

(f) Provides single point management through the Ground Electronics Engineering Installation Agency for accomplishing engineering and installation and mobile depot-level maintenance of all ground communication equipment for which they have engineering installations responsibility.

(g) Provides transportation planning and services in support of the Air Force Logistics System.

(h) Determines and develops interface logistic concepts to operational requirements to attain an Air Force-wide integrated mobility support posture.

(i) Documents and administers the logistic portion of the Air Force Mobility Support Program.

(j) Manages the Air Force Stock Fund Program.

(k) Provides other logistic support services as required.

b. Responsibilities of Subordinate Logistic Commands

(1) Air Materiel Areas (AMA)

(a) The Air Force Logistics Command (AFLC) operates five AMAs in CONUS which have the following responsibilities:

1. Performs systems management, item management, federal class management, and packaging, transportation, and materials handling management.

2. Operates the maintenance, supply, and transportation depot-level industrial complex.

3. Manages and executes procurement responsibilities and programs assigned to the AMAs in consonance with appropriate AFLC and USAF directives and the Armed Services Procurement Regulations.

4. Provides logistic support and planning assistance to the AFLC Plans Office for Systems/Programs during the conceptual phase, and provides logistics and management support to the System Program Offices/Project Offices for systems and programs in the definition, acquisition, and operational phases.

5. Provides area logistic support to AF activities and international logistics program recipient countries.

6. Acts as agent for the Advanced Logistic Systems Center in the design, development, and maintenance of assigned command data systems.

7. Operates the command data systems.

(b) Under the AFLC collocation policy, each AMA is assigned, to the extent possible, all logistic functions for its assigned weapon systems and items. For example, the C-141 is assigned to Warner-Robins Air Materiel Area (WRAMA) as systems manager. In a program closely coordinated with Military Airlift Command (MAC), WRAMA schedules depot

modification and repair for the C-141 fleet, all of which is accomplished by WRAMA organic maintenance. Similarly, the many item managers at WRAMA schedule the repair of their items at the designated repair facility (usually WRAMA shops), or provide for their accomplishment by contract. WRAMA procurement buys to meet the requirements of the C-141 systems manager and of the item managers. There are exceptions to the C-141 collocation concept. Oklahoma City Air Materiel Area (OCAMA) is the engine manager and overhaul facility for the C-141 engine. This assignment results from the high cost of engine overhaul facilities along with the need for highly skilled mechanics. It is not feasible to assign engine maintenance and management among the five AMAs. However, the Commander, OCAMA, is responsible to the Commander, WRAMA, for C-141 engine support. Thus, the Commander, WRAMA, is responsible to MAC for total logistic support of the C-141. There are other similar exceptions, but to the extent possible, the AMA assigned a weapon for management is given total responsibility, including repair. The AMA is authorized and directed to work closely with each of the concerned commands, and with other AFLC activities, in solving logistic problems.

(2) Major Air Commands. The logistics responsibilities of the major air commands include developing and directing plans, policies, programs, and procedures for the management of logistic support of assigned units. This involves assigned weapon systems and support equipments. They determine quantitative logistic requirements and monitor activities involved with procurement, maintenance, engineering, transportation, munitions, supply, and services. They are also responsible for ensuring that the materiel support of assigned units is consistent with current and future operating concepts, new weapon systems development and mission assignments.

(3) Wing/Base. The wing/base unit is the retail level of logistics and is supported directly by the wholesale level with no intermediate levels. The Deputy Commander for Materiel of the wing is responsible for all logistic functions on the base, with the exception of civil engineering, medical services, and evacuation, which are the responsibility of the Combat Support Group and Medical Group Commanders, respectively.

3. MAJOR LOGISTICS SUBSYSTEMS

a. Supply. The Air Force concept for supply has three elements. First, direct requisitioning is provided from the base supply to the appropriate source, which includes the AMAs, GSA, DSA, and the other Services. Second is the direct delivery from the source to the base supply by the most expeditious means, particularly when applying airlift to the delivery of high-priority and high-value items. Third is the maximum use of automation and electronic data processing for record keeping and transactions.

(1) The management responsibility of the Air Force supply system is vested in the AFLC. There is a Director of Materiel Management at each AMA who brings the efforts of requirements, procurement, maintenance, transportation, and the distribution system into direct focus on the needs of the ultimate user. At the AMA level the materiel is warehoused, packaged, and shipped to the user. The AMA Commander is wholly responsible for his assigned items. He must compute the requirements; justify the budget; and procure, warehouse, distribute, repair, sometimes re-engineer, obtain and furnish necessary technical instruction and drawings for operation and repair, and finally dispose of the items as they become obsolete. He accomplishes this by the assignment of System Managers and Item Managers. The System Manager is the AFLC's focal point for logistic support of each weapon and support system in both the Air Force and Military Assistance Program inventories. He is essentially an organizer, manager, and integrator, fitting all the complex parts of logistics together on a timely basis to ensure system supportability. During the acquisition phase of the system life cycle, he is the principal logistic advisor and ensures that logistic considerations and requirements are incorporated into the acquisition contracts. One of the most important tasks of the System Manager is to prepare for the support of the first operational squadron, and subsequent activations and conversions. He knows the status of all actions being taken to ensure supportability for his system and takes prompt action to forestall or correct deficiencies as they arise. The Air Materiel Area System Manager's responsibility ceases only when the Air Force is relieved of the responsibility to support the system.

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(2) Each of the approximately 900,000 items managed by the Air Force is assigned to one individual, the Item Manager. The organization is such that no item is managed by more than one individual. Normally, management responsibilities are assigned to an AMA by the Federal Stock Class or Group. The management philosophy is that all worldwide retail demands for a given item flow into the single inventory management point with all management control functions exercised at that point.

(3) The AFLC has adapted special management techniques to some highly specialized categories. For example, a special management system is used for aircraft engines. Installed engines represent an investment of $5 billion, with spare engines representing another $1.9 billion. Because of the extremely high unit cost and the basic characteristic of engines, the tracking of each engine is extremely important at all times. An engine's location is known as well as the time of installation or removal from a specific aircraft, and operating hours since last overhaul. Daily visibility is maintained by serial number. Engines are not requisitioned, they are "pushed" to operating units in accordance with the established stock level for that installation, responding to condition changes as reported by the base.

(4) Electronic data processing equipment is used for record keeping, for the actual accomplishment of transactions, and for producing management information. All bases have standard computers and utilize standard programs developed by the Air Force Data System Design Center. That agency is the authority for all changes in standard programs. On 1 January 1970 there were 146 computers installed. The accounts not large enough to justify a computer are satellited on a base computer through overland transmission lines. With the USAF standard system, a supply specialist can function efficiently at any supply activity without additional training.

(5) The Air Materiel Areas, which are the wholesale supply depots for Air Force-managed items, also have standard computer systems controlled by the Advanced Logistics Systems Center of AFLC. The AMA and base computers interface. Transactions in the recoverable item inventory, covering some 75,000 line items with a value of approximately $5 billion, are reported daily to the inventory managers at responsible AMAs. A quarterly stock balance report is provided by the base through the computer to the inventory manager on all recoverable items regardless of the number of transactions.

(6) There is a Chief of Supply assigned at each base that has a supply account. He is the only person on the base authorized to requisition materiel from AFLC, DSA, GSA, and other Services and is also the only individual who can authorize the purchase of items coded for local procurement. A typical base supply has an average of about 62,000 line item records. With this number, the stockage would be valued at about $7 million with $5 million a year for restockage. Clark Air Base, the largest account overseas, has 137,000 line item records with a total value of $42 million.

(7) The fundamental method of controlling inventories at base level is to establish a stock level to meet demands for a certain period in the future. Experience with local consumption factors, programmed formulas, and judgment are used in determining the quantities of items that constitute the stock control level. The computer maintains a stock level of each line item based on demands.

b. Maintenance

(1) Air Force philosophy places the responsibility for proper maintenance of equipment with the commander of the organization to which the equipment is assigned, with equipment maintenance accomplished under centralized direction and control. Basic maintenance policy places this responsibility at the lowest echelon at which the work can be performed effectively, consistent with skills, equipment, facilities, and other resources. This policy ensures maximum base maintenance self-sufficiency and reduces the amount of reparable equipment returned to the depot. It is also Air Force policy to design the organizational structure of the maintenance function in a manner to guarantee an in-being maintenance capability to support both limited and general war operation. A standard maintenance organizational structure is mandatory at all air bases. The manpower and skill levels are tailored to accomplish the maintenance mission.

(2) The performance of equipment maintenance and related functions of servicing, calibration, modernization, conversion, and inspection are carried out as appropriate at three levels: organizational, intermediate, and depot.

(a) In organizational maintenance, the using organization is responsible for performing maintenance on its assigned equipment. It usually includes the daily preflight and postflight inspection of aircraft or minor inspection of other materiel, servicing, and routine preventative maintenance.

(b) In intermediate maintenance, designated units are in direct support of using organizations. Intermediate maintenance usually includes intermediate and major inspection of equipment, the repair of various parts and assemblies, testing and calibration, reclamation, and the manufacture of a limited number of parts that are not otherwise available. It may also include scheduled inspection of aircraft when greater efficiency can be obtained.

(c) Depot maintenance includes all maintenance that cannot be accomplished at base level. It generally consists of the major overhaul or complete rebuilding of parts, assemblies, and end items, including the manufacture of parts, modification, and testing. Depot-level maintenance for specific commodities is a major responsibility of the AMAs. Each AMA has extensive fixed installations for this repair work.

(3) AFLC exercises central technical control over Air Force maintenance primarily through the publication of Technical Orders. Close contact with all major commands is made to ensure a clear-cut division of the maintenance workload. The cognizant AMA is responsible for depot maintenance, as well as the distribution of Technical Orders and other data required for performing organizational and field maintenance on its assigned equipments. The AMA also analyzes deficiency reports and similar data on improper functioning of the equipment and evaluates suggested modifications.

c. Munitions

(1) The AFLC procures munitions primarily from the Army and the Navy. It carries out its principal air munitions responsibilities through the Ogden AMA, whose personnel also perform explosive ordnance disposal, safety inspection, inventory management, supply, and renovations tasks in support of the Air Force air munitions program. The 2705th Air Munitions Wing, a unit within the Ogden AMA, is the operating agency for air munitions support. Warner-Robins AMA manages rocket launchers, chaff, and air and ground missiles.

(2) Before the buildup in SE Asia, the Air Force depended on the Army for depot storage of its nonnuclear munitions in CONUS. The adequacy of support had never fully been tested until SE Asia operations reached a level requiring large withdrawals of Air Force reserves stored in various Army ordnance depots. Difficulties were occasioned by delays in processing requisitions through an additional supply structure, by the frequent absence of accurate inventory data resulting in losses of assets, and by lack of compatible accounting and reporting systems necessary for providing responsible support and interchange of inventory data. To minimize those difficulties the Air Force and the Army Materiel Command worked out better interservice agreements. Further, they reexamined the dual stock control and accounting procedures being employed at the Army Ammunition Procurement and Supply Agency and the Ogden AMA and made them compatible.

(3) The management control system is designed to ensure that the monthly allocation of complete rounds (bomb bodies plus components) is delivered within the time specified. Procurement, production, and shipping are coordinated so that all actions are taken sufficiently early to meet the allocation schedule. The 2705th Air Munitions Wing officially notifies PACAF when materiel is in transit and estimates the time of arrival in the theater.

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4. INTEGRATION OF SUBSYSTEMS

a. General. The overseas depots of the AFLC were disestablished incident to a decision to integrate all elements of logistics so that the Air Force could achieve optimum use of all materiel resources. This decision was a key element in an effort not only to acquire meaningful visibility of high-cost items but also to ensure that all supply actions would be responsive to the needs of the operational units. This integration ensured that minimizing the cost of one element would not result in increased cost of another element.

b. Relationship Between Subsystems

(1) Recoverable items are the most important materiel category in terms of spares inventory investment (over $5 billion) and the most complex from a management standpoint. High-cost recoverable items are bought conservatively and are controlled precisely. Base stockage of these items is limited and dependent on full use of local repair capability. A reparable item must be returned each time a spare is installed. The base therefore establishes memorandum balance, due-in from maintenance (DIFM), with each issue of a recoverable item. Maintenance is jointly responsible with supply for the prompt clearance of this record by turn-in of a like item from repair lines either serviceable for return to base stocks, as reparable for shipment to the depot repair site, or condemned for disposal action. The DIFM balance is considered a base asset for requisitioning purposes, and prompt action is mandatory to maintain an adequate support posture. The AFLC maintains comparable management of recoverable items in the wholesale system. The Air Force Recoverable Assembly Management System (AFRAMS), implemented in November 1967, provides constant worldwide visibility of recoverable assets by linking the base level systems to the depot supply systems. This visibility gives the inventory manager greater capability to compute requirements, distribute assets, direct reparable carcasses to repair activities, and detect supply trends on assets. The system features daily asset reporting from every Air Force base for each recoverable item centrally managed by AFLC that had activity in the preceding 24-hour period.

(2) The reparable program is designed so that with the minimum number of items being bought (high-value items have a 15-day level of normal usage), maintenance action must be continuous. These recoverable items have not been procured for depot stocks since 1967, with some exceptions, so the source of resupply is from the repair line. To maintain a flow of reparables there must be an increased use of airlift, quick communications, and efficient materiel handling to replace pipeline time and ensure optimum use of resources. Since the level of recoverable items is maintained from the repair line, items in short supply must be given repair priority. The AFLC uses the Management of Items Subject to Repair (MISTR) system to schedule these reparables through maintenance, based on urgency of need.

(3) The integration of the subsystem of logistics in the Air Force has been responsive to the operational requirements. During CY 69 the average time to receive a Not Operationally Ready Supply (NORS) item by Thirteenth Air Force (Philippines) and Seventh Air Force (Vietnam) was 5 days after the requisition was submitted.

5. FUTURE TRENDS

a. General. The current emphasis on the development of conventional war capability necessitates increased mobility and immediate response to provide air support. The policy, requiring conventional forces to have the ability to respond rapidly to conflicts at any point on the globe, dictates the establishment of a bare base program. Its purpose is to develop recoverable, air transportable mobile shelters, facilities, and equipment so that a wing-size unit can deploy to a bare base and begin operations almost immediately. When the deployment ends, the facilities and equipment can be returned with the unit.

b. Approved Proposed Programs. The Advanced Logistics System is one of the approved systems that is being developed to further improve the Air Force Logistics System. The objective of this ADP logistics system is to update and integrate the AFLC's functionally oriented management data subsystems from current second-generation sequential computers to integrated

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processing using third-generation computers (real-time). Visibility of Air Force assets will be further improved and computers will be relied on to perform an increased number of transactions automatically in accordance with prescribed procedures. Techniques of multiprocessing, marginal analysis, and differential management will be utilized. The system will prompt managers to take appropriate and timely actions and follow up if actions are not cleared. There will be central data banks in the AFLC that will provide arrays of near real-time information by inquiry, and printouts will be reduced to those that are actually necessary.

SECTION H

OTHER GOVERNMENTAL LOGISTIC SYSTEMS

1. Defense Supply Agency

a. Basic Responsibilities and Functions. The Defense Supply Agency (DSA) charter (DOD Directive 5105.22) charges DSA with the following responsibilities in addition to those set forth previously in Section B6:

(1) The organization, direction, management, administration, and control of the supply and service functions of assigned subordinate units, facilities and activities.

(2) Monitoring DOD supply relationships with the General Services Administration (GSA).

(3) The management (including organization, direction, procurement, administration, and control) of items, services, and programs as directed by the Secretary of Defense. Specifically, these include:

(a) The Federal Catalog Program

(b) The DOD Item Entry Control Program

(c) Operation of the Defense Automatic Addressing System

(d) DOD Industrial Plant Equipment Program

(e) DOD Excess, Surplus, and Foreign Excess Personal Property Disposal Program

(f) Assigned logistic support operations connected with the National Civil Defense Program.

(4) A wholesale distribution system for assigned items.

(5) Providing assigned contract administration services in support of the military services, other DOD components, Federal civil agencies, and, when authorized, to foreign governments and others.

(6) Administration and supervision of such programs as may be directed by the Secretary of Defense. Specifically, this covers:

(a) The DOD-Coordinated Procurement Program

(b) The DOD Warehousing Gross Performance Measurement System

(c) The DOD-wide program for redistribution/reutilization of excess automatic data processing equipment.

(d) Management of that part of the Defense Standardization Program assigned to DSA.

(7) Systems analysis and design, procedural developments, and maintenance for supply and service systems as assigned by the Secretary of Defense, i.e., the MILS Programs (MILSTRIP, MILSTAMP, etc.).

b. Logistic Mission. The mission of DSA has a twofold objective:

(1) To ensure effective and timely supply and service support at all times to the military services.

(2) To furnish this support at the lowest feasible cost.

c. Organization for Logistics

(1) Introduction. In its supply support role, DSA is a manager of secondary items such as repair parts and personnel support supplies (e.g., food, clothing, medical). Initially, items assigned to DSA for management were those that had previously been assigned to the various single manager organizations that preceded the establishment of the agency. Subsequent assignments have been made in accordance with established item management coding criteria. Most DSA commodities are positioned throughout the distribution system with the item selection at any given depot being dependent on demand. However, because electronic and medical items are susceptible to parcel post shipment, these commodities are concentrated in two and three depots, respectively. With certain minor exceptions, such as subsistence in Alaska and the disposal program worldwide, the DSA is limited by charter to operate in CONUS.

(2) Major Components and Services

(a) Defense Supply Centers. Five of the six Defense Supply Centers operated by DSA are responsible for centralized inventory control. These centers, Inventory Control Points (ICPs), are the Defense Personnel Support Center (DPSC), the Defense Electronics Supply Center (DESC), the Defense Industrial Supply Center (DISC), the Defense Construction Supply Center (DCSC), and the Defense General Supply Center (DGSC). The supply management functions of procurement, distribution, requisition processing, inventory accountability, stock replenishment, financial accounting, reporting, billing, and collecting are performed by these centers. Management of DSA inventories is distributed among these five ICPs. The sixth Defense Supply Center is the Defense Fuel Supply Center (DFSC), which has no responsibility for inventory control. It is responsible for procurement of fuel, petroleum products, and commercial petroleum service. Defense Supply Centers, except for DISC and DFSC, also have depot functions.

(b) Defense Supply Depots. The six DSA activities classified as Principal Distribution Depots (PDDs) are responsible for the receipt, storage, and issue of supplies as directed by the Defense Supply Center having materiel management responsibility for the items involved. The Atlanta Army Depot also performs functions as a PDD on a cross-servicing basis.

(c) Other Depots and Depot Activities. In addition to the PDDs, DSA is served by four Specialized Support Depots (SSDs) of which two are the DESC and the DPSC. The former specializes in electronics materiel and the latter provides primarily clothing and textile items. The remaining two are tidewater Naval Supply Centers at Norfolk, Va., and Oakland, Calif. The PDDs carry a wide range of DSA commodities, but the SSDs carry types and quantities of items as appropriate to their assigned missions. In addition, ten Direct Supply Support Points (DSSPs) located at six naval shipyards, three naval supply centers, and one naval training center support the fleet, overseas areas, local maintenance, and shipyard repairs.

(d) Contract Administration. The contract administration responsibility portion of the DSA mission is implemented by the Defense Contract Administration Service. This organization, headed by the Deputy Director for Contract Administration Services, administers all DSA contracts which require on-site administration. Its field organization consists of eleven Defense Contract Administration Services Regions. Under each region there are districts and offices, which may vary in number according to the workload in specific geographical areas. Although in theory any military contract may be assigned to the Defense Contract Administration Service, in practice the military services exercise their option to retain administration for most weapon systems contracts and for certain other areas such as research and development. In addition, contracts are administered for the National Aeronautics and Space Administration and certain other Government agencies. In the areas of industrial security clearance and contract

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compliance, the Defense Contract Administration Service functions for the entire DOD and for certain other agencies of the Government. Quality assurance is performed on the contracts administered and, on request, for other contracts such as those entered into by foreign governments.

(e) Other Logistic Services. A major mission responsibility of the DSA is for logistic services and programs. This responsibility is discharged through four centers: the previously mentioned Defense Fuel Supply Center, the Defense Logistics Services Center, the Defense Industrial Plant Equipment Center, and the Defense Documentation Center.

(1) Although the DFSC has the appearance of being an ICP, it lacks two basic elements of a control point: it has no inventory control functions and it typically does not compute requirements. However, the DFSC does consolidate the computed requirements of the military services and certain other Government agencies, performs the procurement function, and arranges worldwide transportation for the bulk fuel portion of the procurement.

(2) The Defense Logistics Services Center administers three of the major DOD logistic programs: the Federal Catalog System, the Materiel Utilization Program and the Property Disposal Program. In its administration of the catalog program, the Defense Logistics Services Center is responsible for both the assignment of stock numbers to new items and the screening of all items for procurement or provisioning to ascertain the availability of existing stock numbers and available assets.

(3) The Defense Industrial Plant Equipment Center maintains records of all Defense-owned industrial plant equipment (currently 450,000 items valued at $4.2 billion) and maintains and manages the inventory of idle or excess equipment in this category.

(4) The Defense Documentation Center is the repository for all DOD research and development documents required by the scientific community throughout the Federal Government.

c. Logistic Procedures. An important DOD program managed by the DSA is the one relating to military standards procedures--the so-called MILS systems:

(1) MILSCAP—Military Standard Contract Administration Procedure

(2) MILSTAMP—Military Standard Transportation and Movement Procedure

(3) MILSTEP—Military Standard Supply and Transportation Procedure

(4) MILSTRAP—Military Standard Transaction Reporting and Accounting Procedure

(5) MILSTRIP--Military Standard Requisitioning and Issue Procedure.

d. Automatic Data Processing. From its inception the DSA has had to exploit automatic data processing systems in all three areas of its mission responsibilities with particular emphasis on the supply support areas. It is now, and in the past would have been, virtually impossible to handle the volume of requisitions or the enormous list of items managed without computer processing. This volume reached 20 million requisitions in FY 69 and the items managed numbered approximately 2 million; it is expected that both quantities will continue to increase.

(1) The DSA's initial progress in the automatic data processing field was handicapped by the fact that existing equipment came from many Service sources and utilized programs that were not compatible. It took some time to design, develop, and program the principal systems that are now being implemented. In the supply support area there are two systems: the Standard Automated Materiel Management System and the Mechanization of Warehousing and Shipment Processing Procedure. The development of these systems has been coordinated with the Office of the Assistant Secretary of Defense (I&L) to ensure compatibility with DOD policy and to interface with the various military service and the GSA systems.

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(2) Although these systems were developed by and for the DSA, they have already found other applications in the military services. As a complementary system, the Defense Automatic Addressing System has been developed to ensure automated and correct routing of all requisitions submitted to supply managers. When this system is implemented and interfaced with the complete Defense Logistic Service Center file, it should be possible for a requisition to be processed if it contains any currently or previously valid stock number. Further refinement may enable a requisition to be processed if it merely contains a valid manufacturer's part number.

(3) Among the other automatic data processing systems developed for use in DSA, the Mechanization of Contract Administration Services and the Defense Logistics Services Center Integrated Data System are worthy of note. The latter is designed to expand and update the Defense Logistics Services Center data file and to program it for use in third-generation computers.

e. The DSA is also involved in the administration of three additional DOD programs and utilizes the following offices for this purpose:

(1) The Defense Item Entry Control Office, which screens proposals for new Federal Stock Numbers.

(2) The Defense Warehousing Gross Performance Measurement Office, which develops standard methods and productivity measure for the evaluation of military warehousing operations.

(3) The Automatic Data Processing Equipment Utilization Screening Office, which endeavors to redistribute excess or surplus items of equipment first within the DOD and, subsequently, working with the GSA, within the Federal Government.

2. GENERAL SERVICES ADMINISTRATION

a. Federal Supply Service. Of principal interest within the GSA is the Federal Supply Service. Its responsibilities are categorized as follows:

(1) Regulatory—to develop policies and methods of procurement and supply of personal property and nonpersonal services that are promulgated in the Federal Property Management Regulations or in Federal Procurement Regulations.

(2) Advisory--to provide guidance to Federal agencies through publications in the field of supply and procurement together with on-site assistance through surveys and studies to individual agencies for improvement of their internal supply systems.

(3) Operational—to provide direct support and assistance to Federal agencies in the field of supply and nonpersonal services. This includes the functions of procurement and contracting, storage and distribution, quality control, development of specifications and standards, cataloging of common-use items, and Government-wide management and utilization of automatic data processing equipment.

b. Organization of the Federal Supply Service. The Federal Supply Service operates under the direction of a Commissioner who discharges his responsibilities through five offices:

(1) Office of Automated Data Management Services--for the purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal agencies.

(2) Office of Procurement—for management of the program that provides purchasing and contracting services for all Federal agencies and inventory management services in support of GSA supply distribution.

(3) Office of Standards and Quality Control—for quality control on procurement, for development of Federal Specifications and Standards for common-use items procured by Federal agencies, and for maintenance of a uniform Federal Catalog System.

(4) Office of Supply Distribution—for management of nationwide wholesale and retail supply systems, storage, and distribution of common-use items of supply to all Federal agencies including support to overseas activities.

(5) Office of Supply Management—for the development, coordination and monitoring of an integrated Government-wide supply system for the procurement and supply of personal property and nonpersonal services.

c. Operations of the Federal Supply Service

(1) At the national level, the Central Office provides program direction, resources, technical guidance, performance standards and goals, and evaluation of results. It is also responsible for management and content of field operations. The Central Office is organized to accommodate five major programs as follows:

(a) Automated Data Management Services

(b) Procurement

(c) Standards and Quality Control

(d) Supply Management

(e) Supply Distribution

Within the Central Office, a national inventory control center is responsible for ensuring full use of total system assets and, in this regard, provides overall policy guidance, nationwide control of inventories, and interregional referral of orders for items which cannot be readily supplied.

(2) Complete supply operations are carried out within ten GSA regional areas, each having its own depot facilities. Distribution of supplies to all government agencies is accomplished through a nationwide network of 26 warehouse facilities and 46 self-service stores. Six GSA regions perform export packing and handle overseas requirements.

(3) The GSA is prepared to respond to requisitions from military supply centers and depots, from Air Force bases overseas, or from individual requisitioning activities of any Service. In emergencies, it is prepared to operate Federal Supply Service Logistics Control Centers on a 24-hour basis together with the Emergency Supply Operation Center of DOD/DSA.

(4) The GSA maintains liaison in each regional area by Supply Service Officers; overseas these officers are located in Hawaii, Okinawa, the Philippines, Vietnam, and Germany.

d. Interface with Department of Defense

(1) Although initially the Federal Supply Service was primarily concerned with the support of civil agencies, support to military agencies was provided by specific GSA/DOD interagency assignments for office furniture, office supplies, and office machines. Subsequent assignments covered certain hand tools, household furniture and equipment, hardware and abrasives, and paint and sealers. Later a Memorandum of Understanding was entered into between GSA and DOD (DSA) which provided for GSA assumption of responsibility for the procurement and management of the bulk paint and hand tool commodities then managed by DSA. Provision was made for DSA to retain responsibility for certain functions, such as general mobilization reserves, industrial mobilization planning, standardization, provisioning, cataloging, procurement of overseas Army and Air Force decentralized items, and procurement of military service weapon system related items. Experience with this assignment led toward the development of the National Supply System.

(2) The General Services Supply System and the Department of Defense Supply System make up the National Supply System. Under this system, common-use, commercial items used by all Federal agencies are managed by a single commodity manager. Items peculiar to specific agency programs or weapons systems are managed by the agency involved. The primary objective is to eliminate avoidable overlap and duplication of procurement and supply functions throughout the Federal Government.

(3) Of particular importance are the established coordination responsibilities whereby the Federal Supply Service acts as coordinator between DSA and civil agencies and DSA acts as coordinator between the Federal Supply Service and the military services.

(4) The relationship between GSA and DOD is active, with emphasis on GSA performing the complete supply management job for its assigned classes. Recent developments include coordinated procurement assignments, agreements on procurement support for overseas requisitioners, use of long-supply items and shelf-life items, planning for the assumption of mobilization reserve and industrial mobilization planning functions, mutual use of storage and warehousing services, application of standard policies and procedures for return to stock of excess materiel, and the execution of several Interagency Supply Support Agreements. It should also be noted that in 1969 GSA assumed the coordinated procurement responsibility for commercial passenger-carrying vehicles.

(5) The GSA participates actively in all phases of the Federal Catalog Program managed by the Defense Logistics Service Center, in inactive items review, and in the Defense Automatic Addressing System through connection with MILSTRIP, MILSTAMP, and the Uniform Material Movements Issue Priority System (UMMIPS). GSA employs the General Supply Fund in the same manner as DOD employs the various stock funds.

SECTION I
SUMMARY

1. The published descriptions of logistic responsibilities of the Office of the Secretary of Defense, Joint Chiefs of Staff, military services, unified commands, Defense Supply Agency, and General Services Administration are comprehensive and well defined. They are, however, scattered throughout numerous documents, which are rarely available in the same place at the same time. Logistics administration would benefit from a compilation (such as that contained in Section B of this chapter) and publication in a single document of these basic responsibilities by the Joint Chiefs of Staff or other appropriate agency.

2. Some logistic processes and systems, such as MILSTRIP and the Defense Automatic Addressing System, lend themselves to standardization and commonality among the Services. Other systems must be adapted or redesigned to meet the various needs arising from the fundamental differences in the roles and missions of the Services, e.g., the Army and Marine Corps essentially equip men whereas the Navy and the Air Force man equipment. Examples of this adaptation are found in the Navy's Mobile Logistic Support (underway replenishment) concept and in the Air Force's wholesale-retail supply relationship between Air Materiel Areas and supply organizations at fixed bases.

a. The Army supports a large, expandable force capable of rapid deployment and flexible operations in all levels of conflict on a global basis. The operational concepts of the combat arms require the maximum in flexibility and mobility to cope with fluid tactical situations in the combat zone, operating under primitive field conditions, frequently at great distances from supporting fixed locations. This is illustrated by the Army wartime lines of communication, which are indeterminate and variable and are controlled by the operational environment. Support is provided to widely dispersed tactical units under relatively primitive field conditions that inhibit the exercise of positive controls and centralized management. In addition, differences between peacetime and wartime logistic operations result from the greatly increased size and character of the wartime requirement as evidenced by the utilization of Army Logistic Commands not normally used in peacetime. This is in contrast to the other Services where the difference in logistic operations in peace and war is fundamentally a difference in activity rates.

b. The Navy logistic system is predicated on the need to meet fleet characteristics of readiness, mobility, and endurance. The basic support concept encompasses fixed installations, both CONUS and overseas, extended by the at-sea mobile support capability of the Mobile Logistic Support Force organic to each fleet.

c. The Marine Corps logistic system was developed specifically to support the traditional Marine Corps mission of amphibious operations under limited or general war conditions and operates essentially the same in peace and war. Logistic organizations and techniques of employment are designed to permit conformity to existing operational circumstances and to provide incremental adjustments to conform to the size and makeup of the landing force.

d. The Air Force logistic system was designed with maximum flexibility in mind so that worldwide deployments could be supported and sustained on short notice. The supply support concept provides for a direct requisition flow between the base supply supporting the using unit, and the prescribed source of supply. Standard systems, extensively computerized, are used in CONUS and overseas.

e. The Defense Supply Agency operates in CONUS to provide support for all items assigned to DSA management to all the military services and, by agreement with the General Services Administration, to certain civil agencies of the Federal Government. The Director of DSA reports directly to the Secretary of Defense and this permits DSA to administer a number of

Department of Defense programs such as the Federal Catalog Program and the Military Standards Program and to be the liaison with the General Services Administration.

f. The General Services Administration provides support to all Services for the items that it manages; these include most commercial items. Even though the GSA Federal Supply Service is designed to interface with military supply systems, GSA is not in any way under the control of the Department of Defense.

3. Historically, the Joint Chiefs of Staff and the commanders of the unified commands have, at times, entered the logistics arena, usually after critical problems have developed. This was particularly demonstrated by the experience of the Commander in Chief, Pacific, during the Vietnam era. It became necessary for CINCPAC to intervene in the allocation of in-theater resources such as transportation, construction, ammunition, and war reserves. Such intervention is clearly provided for in JCS Pub 2. Unified commanders should plan for and be prepared to make logistic decisions in these same areas, with a nucleus peacetime staff and information systems that can be expanded in a contingency. The Joint AMC, NMC, AFLC, and AFSC Commanders have provided a valuable forum for the exchange of logistic information, for exploring problems of common interest or concern, for reaching agreement on such problems, and for the identification of basic logistic principles. Overall, their actions have contributed to improved management and decisionmaking in their areas of responsibility.

CHAPTER 4

LOGISTIC SUPPORT IN SOUTHEAST ASIA

SECTION A

INTRODUCTION

1. PURPOSE AND SCOPE OF THE CHAPTER

a. The Terms of Reference of the Joint Logistics Review Board (JLRB) provide that: "Emphasis will be given to the effectiveness and economy of current and planned logistic systems under combat conditions; and the quick reaction capabilities of these systems to meet changing situations and emergencies worldwide." The preceding chapters of this volume discussed factors that influenced logistic response, noted the U. S. logistic posture on 1 January 1965 and described the system that provided support. This chapter is concerned with logistic support of military operations in SE Asia during 1965 and subsequent years. The conflict in Vietnam, as a major test of existing logistic systems, provides the case history for the analysis.

b. The multiple objectives of the review are to summarize pertinent facts; to present significant considerations outside the scope of individual monographs; to provide a cohesive logistic overview to which the monographs relate; and to assess effectiveness, responsiveness, and, where feasible, economy of logistic support rendered. Accomplishment of this purpose, to be complete, requires an overall review of logistic support. Yet the potential dimensions of such a review made it mandatory to select representative facts to highlight matters of particular significance or provide background and perspective. As a result, this chapter reflects a judgment as to balanced treatment; it goes beyond summarizing matters given detailed but isolated review in the monographs, yet does not extend into a comprehensive reference document for areas not germane to the Board's assigned tasks. This chapter focuses on support to operations in Vietnam, rather than SE Asia as a whole, because Vietnam is where the major effort was expended and the magnitude of that effort permits a review of the full spectrum of logistic activity.

c. Chapter 4 identifies key events and decisions, including those of a policy nature, which had major impact on logistic requirements. Essentially these relate to the increasing levels of force deployments and to the nature and extent of military operations conducted. Chapter 4 also reviews the sequence and timing of steps leading to actions in fulfillment of logistic requirements as well as the responsive actions themselves, with consideration given to difficulties encountered and evidence of strengths.

d. Just as this chapter focuses on support to operations in Vietnam rather than SE Asia, it also focuses on those portions of the logistic support systems functioning in the combat zone and gives less emphasis to equally important functioning of out-of-country portions of the systems, within the Pacific Command and in the United States; these latter aspects are treated in depth in the various monographs. This approach, by examining what tangible support was in fact available to the operational commanders, is intended to identify the success or failure of the support systems as a whole by the yardstick of end results. The actual theater of operations is reviewed as a complex of closely related and interacting separate combat areas, in a logistic sense, e.g., logistic support common to all forces, to Army ground operations, to Navy offshore and in-country operations, to Marine-Navy operations in I Corps area, to Air Force operations, to Army-Navy riverine operation in the Delta region, and to Republic of Vietnam Armed Forces and Free World Military Assistance Forces, each having distinctive elements in their logistic support system.

2. OVERALL MEASURES OF RESPONSIVENESS, EFFECTIVENESS, AND ECONOMY

a. As stated, the objectives of this chapter include an assessment of responsiveness, effectiveness, and economy. The discussions try to determine if timely actions were initiated

to satisfy approved requirements and if logistical responses were adequate to permit accomplishment of missions without wasting men and material. In making these assessments, Chapter 4 is concerned with going beyond generalized conclusions and seeks identification of specific strengths and weaknesses that offer lessons still applicable as guides for future actions. It also notes actual measures of logistic accomplishment in support of military actions in Vietnam.

b. Some broad, representative measures are included here to portray the immense order of magnitude of overall logistic accomplishments. They are meant as illustrative; the limitations of gross figures for assessment purposes are recognized. To convey some sense of the logistic challenge, Figure 18 shows the buildup of more than half a million U. S. forces in the Republic of Vietnam (RVN) during the 3-year period, 1965-67, and the eventual buildup of total friendly force strength. Movement of forces from the United States halfway around the world was a continuing requirement, as shown by Figure 19, because tour length policies created repetitive transportation requirements as returning personnel were replaced; increasingly, this was by air. Shipments of dry cargo from the United States increased fivefold between 1965 and 1968, the bulk of it, more than thirteen million short tons, going by sea whereas well over half a million short tons of critical cargo went by air, as shown in Figure 19. These sealift and airlift capabilities were limited initially and had to be developed. Figure 20 shows the impact of cargo shipments on military seaports in the RVN, as port throughputs increased fourfold during 1966-68, to 1.26 million short tons monthly. Since a corresponding rate of development of port capabilities was necessary, the figure conveys a sense of port construction requirements as well as the scale of port operations. As shown in Figure 21 overall construction in the RVN, as measured by cost of military construction work in place, went from a level of $35 million in 1965 to $990 million by 1967 and had reached a cumulative value, vice cost, of almost $4 billion by early 1969.

c. Because of the restrictive land transportation situation in Vietnam, exceptional requirements for in-country airlift of passengers and cargo had to be met. Figure 22 shows the increasing level of these airlift operations and indirectly reflects the scale of supporting logistic activities, as over 11 million passengers and almost 3 million tons of cargo were airlifted within the RVN by mid-1969. Additional broad measures illustrating the scope of logistic accomplishments are shown in Figure 23, which presents a portion of the increasing aircraft inventories supported in the RVN. Figure 24 shows POL consumption in the Pacific Command as a direct reflection of SE Asia operations; Figure 25 shows satisfaction of escalating requirements for air and ground munitions and the vast gross totals consumed.

d. This chapter, in addressing the issue of economy, reviews areas of inefficiency such as the development of excess stocks in the RVN; the piecemeal deployment of logistic support units under cumbersome procedures for approval of program requirements; loss of control over early port operations as ships and cargo congested limited facilities; and the limited effectiveness of materiel control because of personnel limitations, insufficient automated procedures, and other factors. There were inefficiencies in the very nature of the hurried development of the logistic posture necessary to support a massive commitment of the forces in a remote, undeveloped combat area. Therefore, this review has also been concerned with the degree to which initial areas of inefficiency were identified and corrective actions taken.

e. It is of interest to note, in passing, views expressed in prior independent assessments of logistic support. The two senior commanders directly responsible for military operations in Vietnam during 1965-68 have addressed responsiveness and effectiveness. The General Accounting Office (GAO) has examined economy as well. There is no inference that these separate assessments are comprehensive; they are not introduced to support views expressed herein, but only as matters of interest.

f. Admiral U. S. G. Sharp, USN, former Commander in Chief, Pacific, has reported that: "A significant aspect of the war in Vietnam has been the continuous provision of effective logistic support to the United States and other Free World forces without mobilization of our national economy. The technology of modern logistics has been given a severe test. Responsive and timely logistics support by all of the Services and application of modern airlift combined

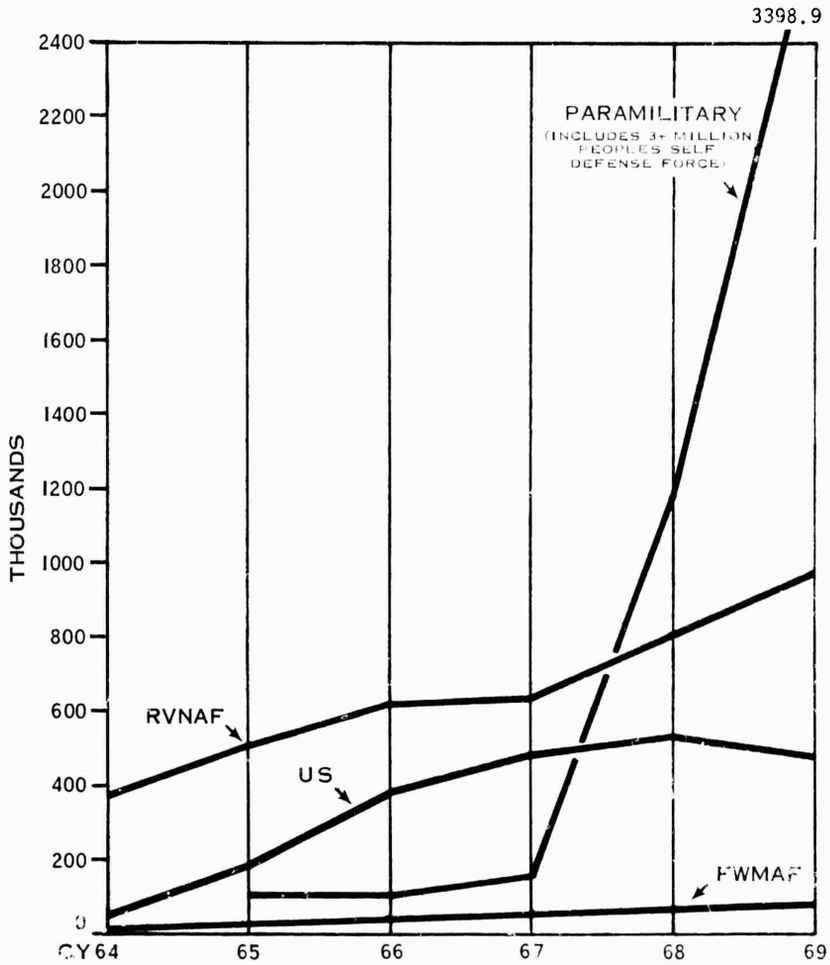
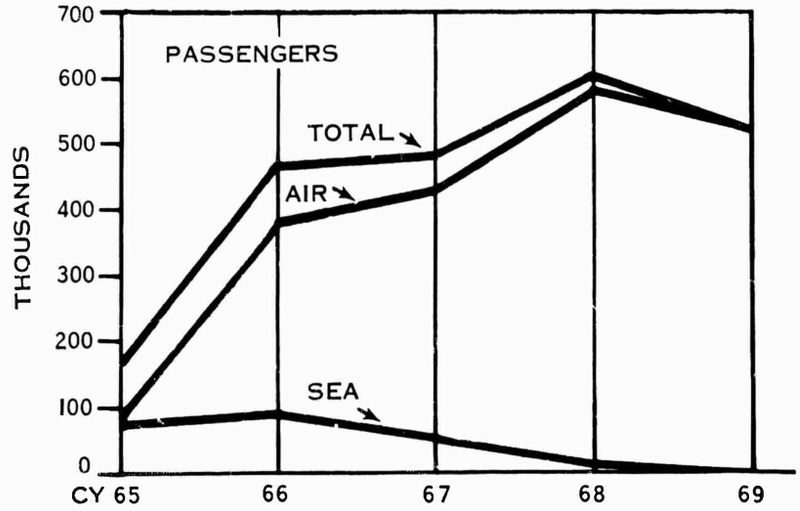
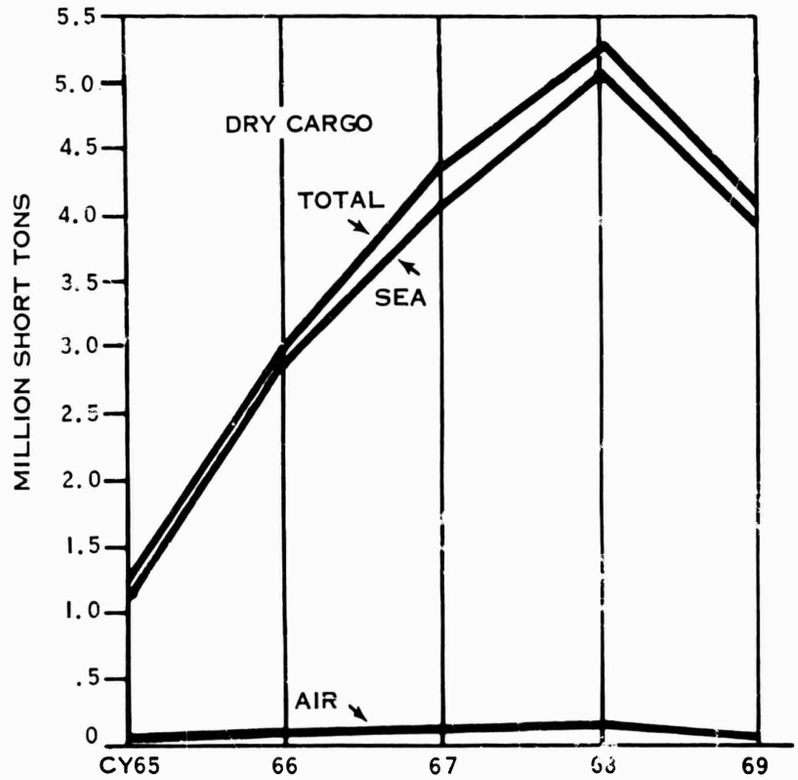


FIGURE 18. FRIENDLY FORCES BUILDUP IN RVN
(END OF CALENDAR YEAR)

Source: Statistical Digest of Military Development in SE Asia.



	CY 65	66	67	68	69
AIR	85,100	371,100	425,300	574,100	519,200
SEA	82,800	91,000	50,000	7,800	——
TOTAL	167,900	462,100	475,300	581,900	519,200



	CY65	66	67	68	69
AIR	38,700	117,500	207,400	212,800	175,800
SEA	1,230,700	2,831,500	4,114,000	5,046,400	3,941,200
TOTAL	1,269,400	2,949,000	4,321,400	5,259,200	4,117,000

FIGURE 19. CONUS OUTBOUND SHIPMENTS TO RVN

Source: Joint Chiefs of Staff, Special Assistant for Strategic Mobility, Statistical Digest.

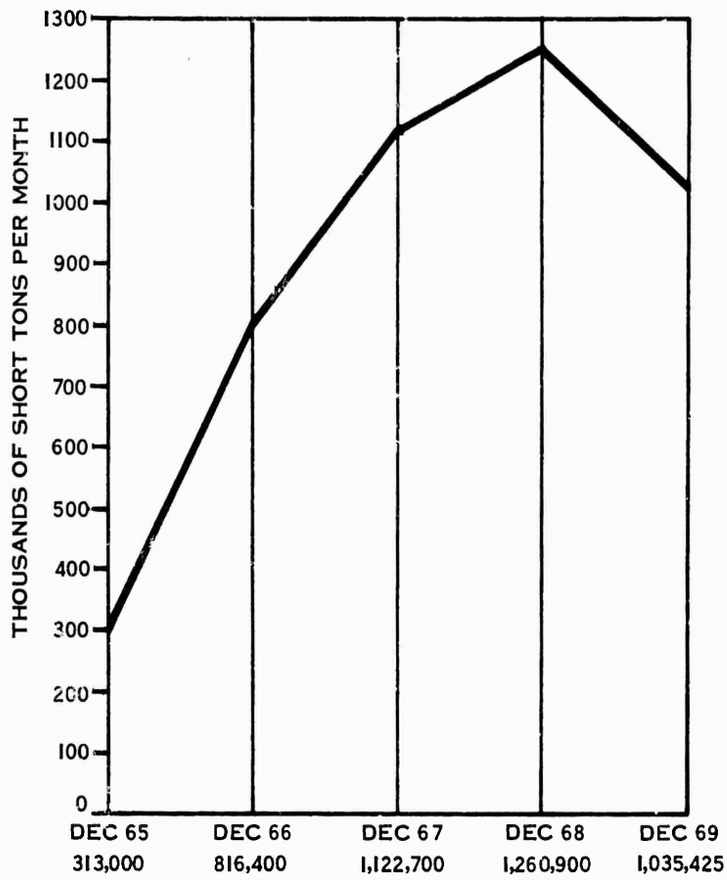
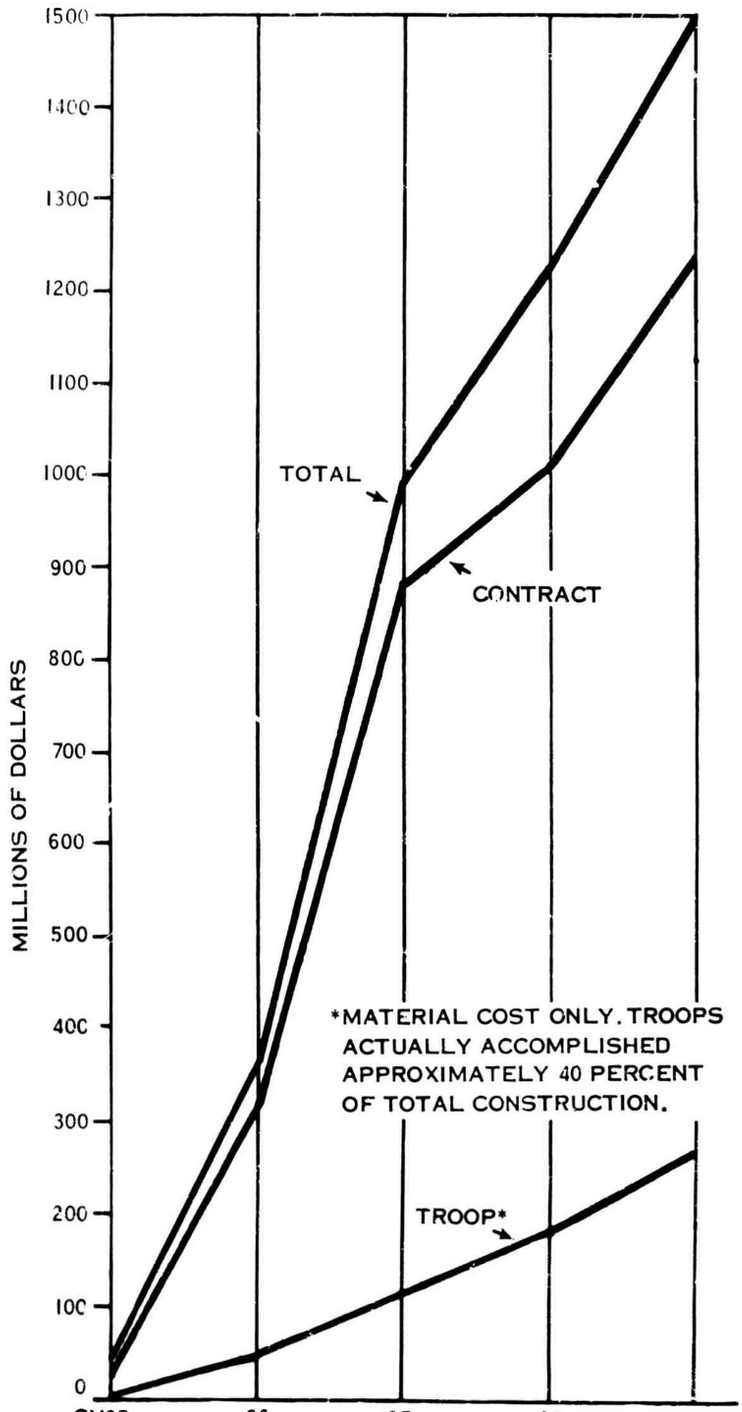


FIGURE 20. PORT THROUGHPUT (TOTAL CARGO HANDLED BY MILITARY IN ALL RVN PORTS)

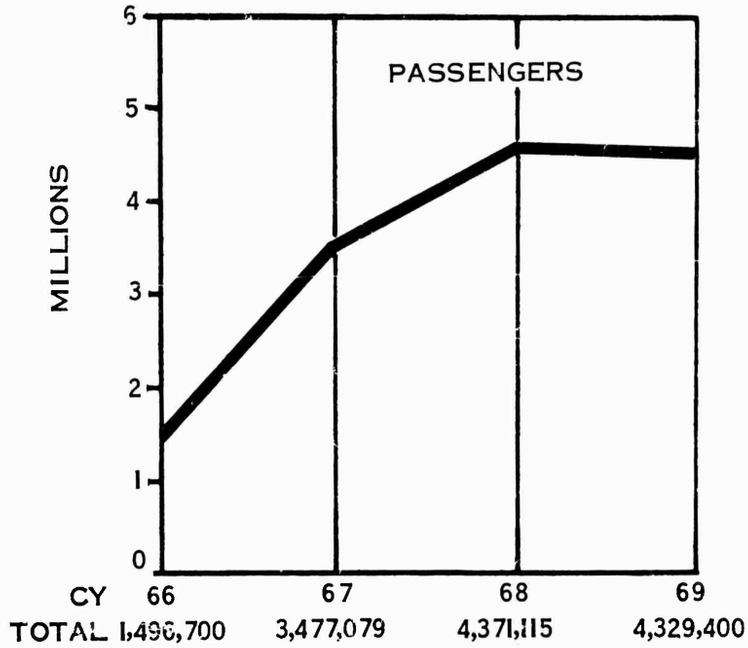
Source: Joint Chiefs of Staff, Special Assistant for Strategic Mobility, Statistical Digest.



	CY65	66	67	68	69
CONTRACT	$25.0	315.0	880.0	1050.0	1342.3
TROOP	10.0	45.0	110.0	185.0	264.8
TOTAL	35.0	360.0	990.0	1235.0	1507.1

FIGURE 21. MILITARY CONSTRUCTION PROGRAM IN RVN
(COST OF WORK IN PLACE)

Source: Military Construction Status Report for RVN, RCS-915.



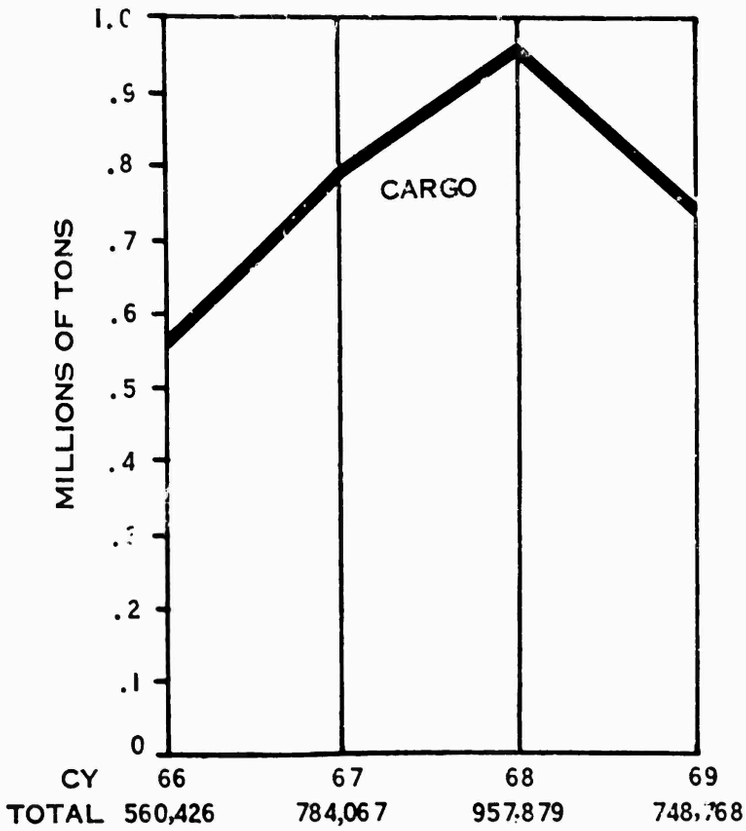
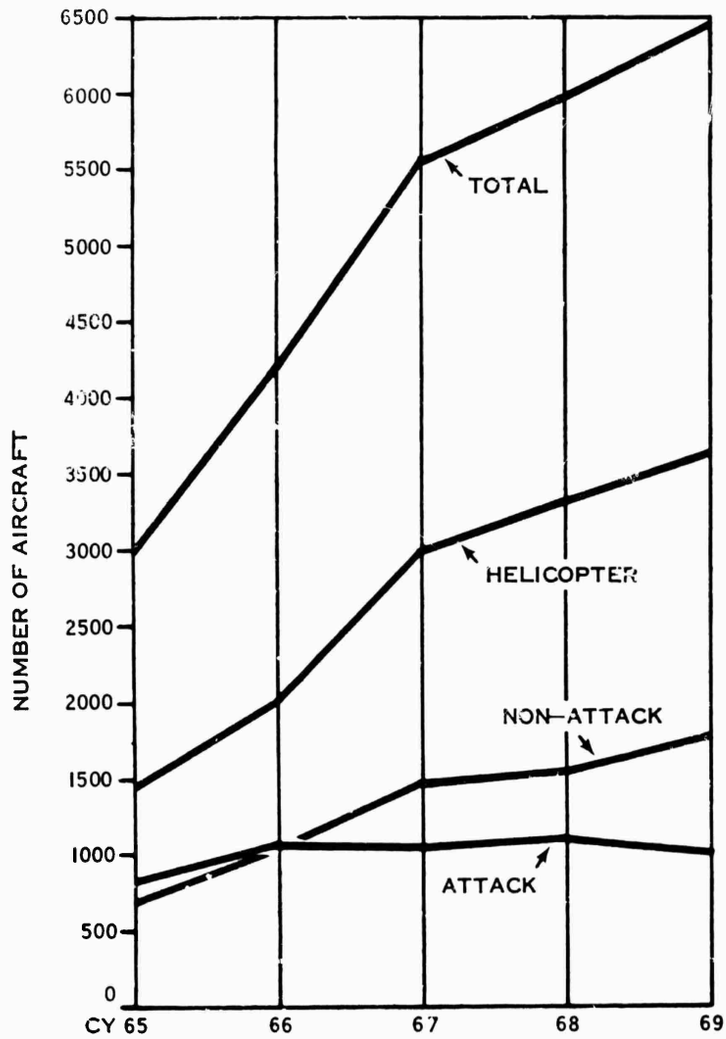


FIGURE 22. U. S. AIR FORCE AIRLIFT OPERATIONS IN RVN

Source: U.S. Air Force, Management Summary, SE Asia Review.



ATTACK*	817	1098	1056	1104	1016
NON-ATTACK**	706	1094	1473	1542	1779
HELICOPTER*	1483	2008	3041	3323	3636
TOTAL	3006	4200	5570	5969	6431

*INCLUDES USN CARRIER-BASED AND VNAF
**DOES NOT INCLUDE VNAF

FIGURE 23. SOUTHEAST ASIA AIRCRAFT INVENTORY (END OF CALENDAR YEAR)

Source: Statistical Digest of Military Development in SE Asia.

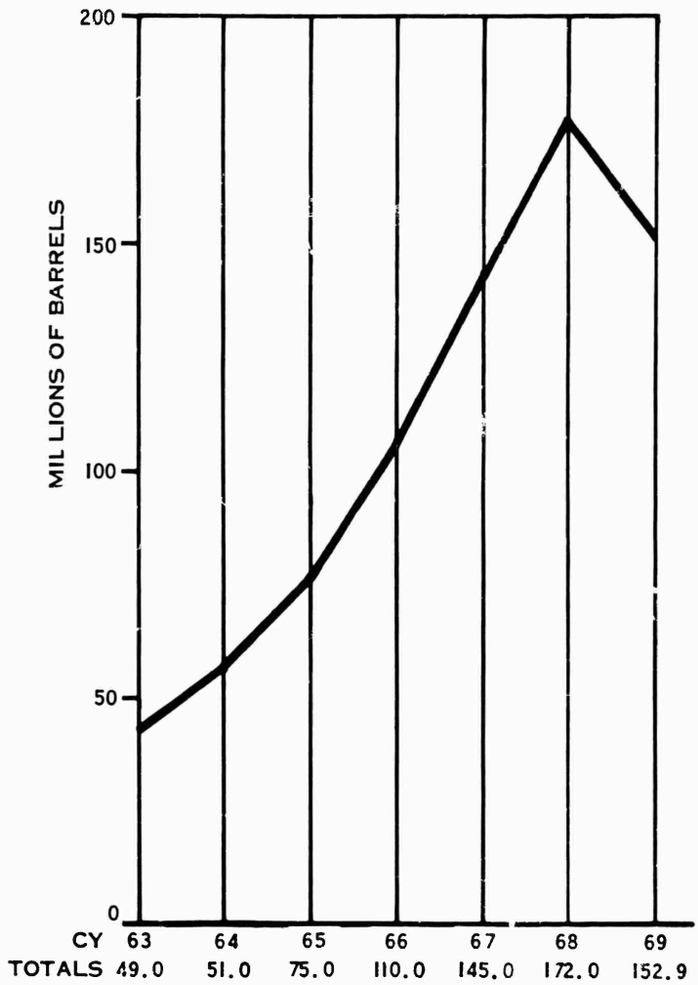


FIGURE 24. PETROLEUM, OIL, AND LUBRICANTS CONSUMPTION IN PACOM

Source: Defense Supply Agency, Defense Fuel Supply Center.

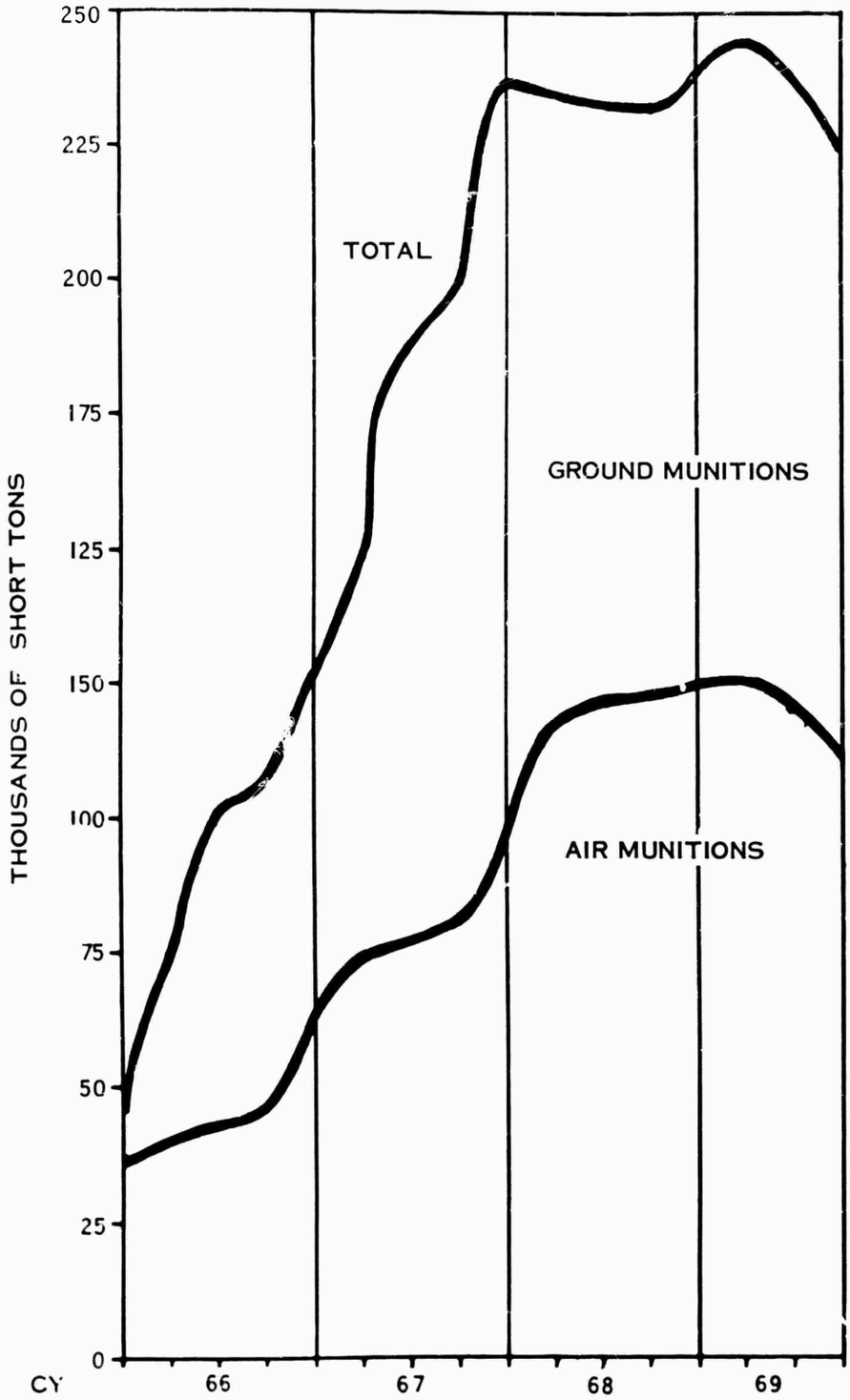


FIGURE 25. SOUTHEAST ASIA AMMUNITION CONSUMPTION (INCLUDES ALL U.S., RVNAF, AND FREE WORLD, EXCEPT NAVAL GUN ORDNANCE)

Source: Office of the Deputy Assistant Secretary of Defense (Materiel).

with a large fleet of freighters have been the keys to success . . . ."[1] General W. C. Westmoreland, USA, former Commander, U.S. Military Assistance Command, Vietnam, has reported that: "Our logisticians . . . provided the highest quality of support ever received by combat forces in the field . . . tactical units were never restricted in their combat operations by a lack of support or supplies."[2] And again: "Despite seemingly insurmountable problems, the logisticians created an organization responsive to every tactical need."[3]

g. It is recognized that the options available to operational planners may have been constrained by logistic limitations. However, there is no way to assess this aspect of logistic support and no evidence to suggest that it is of significance for this review.

h. The GAO, which had been examining selected aspects of military supply management by U.S. forces throughout the world, provided testimony at congressional hearings late in 1969 that updated previous reports furnished in 1968. Noting that a followup review of military supply systems in the Far East had been conducted, the GAO representative, in the course of summarizing the results of the review, testified in part as follows: "We concluded that the military services have continued to adequately support the military combat units in the Far East and in particular those forces involved in combat operations in Southeast Asia (SE Asia). The supply systems in the Far East, however, as well as the supporting systems in the continental United States, continue to include some costly and inefficient supply practices which are indicative of a need to improve the basic logistics systems, impose a greater degree of supply discipline, and provide for increased training of logistics personnel . . . some of the conditions noted during the Far East review are continuing and persistent problems in the military supply systems . . . ."[4]

3. ORGANIZATION OF THE CHAPTER. In addition to the introduction, Chapter 4 contains eight basic sections. The first of these sections reviews country-wide support, addressing common logistic activities that generally supported all operations in-country and are not identifiable with support of specific types of operations. The remaining sections of this chapter provide related reviews of those areas of operations where certain distinctive elements of the logistic support systems warrant separate treatment. Thus, logistic operations of a single Service are reflected in more than one section; the simplicity of separate Service treatment is subordinated to what is considered a more suitable and more basic review of the logistic response.

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[1] CINCPAC COMUSMACV, Report on the War in Vietnam, Washington, D.C.: U.S. Government Printing Office, 1969, p. 55.
[2] Ibid., p., 147
[3] Ibid., p., 265
[4] U.S. Congress, House of Representatives, Military Supply Systems 1969, Hearings, before a Subcommittee of the Committee on Government Operations, 91st Congress, First Session, U.S. Government Printing Office, 1970, pp. 12-13.

SECTION B

COUNTRY-WIDE SUPPORT

1. FORCES SUPPORTED—1 JANUARY 1965

a. Logistic activities in SE Asia at the beginning of 1965 were concerned primarily with the support of the Republic of Vietnam Armed Forces (RVNAF), U. S. forces of the Military Assistance Command, Vietnam (MACV), Seventh Fleet units operating off the coast and in the Tonkin Gulf, and some limited support of civilian agencies operating in the Republic of Vietnam (RVN).

b. By 1 January 1965, U. S. military strength in RVN had grown to a total of 23,310 personnel, consisting of:

(1) 14,697 Army personnel, of whom about one-third were advisors and MACV staff members and two-thirds were in operational units.

(2) 6,604 Air Force personnel, including the personnel of two A-1 Squadrons, four C-123 squadrons, a temporary duty fighter squadron, and a B-57 bomber detachment.

(3) 1,109 Navy personnel, 610 of whom were performing logistic functions for MACV in fulfillment of "administrative agency" responsibilities, constituting the principal logistic agency in RVN.

(4) 900 Marines, including a helicopter squadron in the Da Nang area with attached security and support detachments.

2. LOGISTICS SUPPORT RESPONSIBILITIES

a. As of 1 January 1965, logistic support in Vietnam was provided through a number of different systems. The responsibilities of some of the U. S. military systems are reflected in the following paragraphs.

b. Common support to the United States Advisory Command, primarily in the Saigon area, was provided in accordance with Department of Defense standard policies with respect to support of Military Advisory and Assistance Groups (MAAG).[5] As "administrative agency" for countries in the area of responsibilities of Commander in Chief, Pacific, the Navy was responsible in Vietnam for providing administrative and logistic support. As of 1 January 1965, these responsibilities were carried out under the Secretary of the Navy through the CNO-Fleet chain of command. Under Commander Service Force, U. S. Pacific Fleet, the Headquarters, Support Activity, Saigon (HSAS), was charged with this mission.[6]

(1) Since establishment of HSAS, common support responsibilities of the Navy included such diverse tasks as operating the military port at Saigon, warehousing in Saigon, motor transportation, industrial relations, housing and messing, security, public works and housekeeping services, transportation within capabilities of assigned aircraft, common supply items and coordinating and/or arranging support of MAAG field advisors.[7]

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[5] Department of Army Regulation 400-45; Office of the Chief of Naval Operations (OPNAV) Instruction 4900.31; and Air Force Regulation 400-45.

[6] Secretary of the Navy Notice 5450, 18 June 1962.

[7] Office of the Chief of Naval Operations (OPNAV) Instruction 5450.100, 22 June 1962.

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(2) In the case of provisions the Navy supplied all Services and delivered directly to the units concerned.

(3) The common supply items other than provisions consisted of a limited number of housekeeping, maintenance, and administrative items normally required to support a MAAG. About 25 percent were procured locally and offered under local stock numbers. This procedure served to minimize competition of the Services for the local market. The Headquarters, Support Activity, Saigon, also provided a service by ordering any item requested that had a federal stock number.

(4) These common supply items were issued to the COMUSMACV staff and to the senior logistic advisor in the four Corps tactical zones for further distribution to advisors in the field. Three organic aircraft (a C-47, a C-45, and an HU-16 amphibian) were invaluable in providing responsiveness to these demands.

c. Army personnel received other than common support through either the U. S. Army Support Command, Vietnam (USASCV), through ARVN channels for MAP peculiar items, or, in the case of the 5th Special Forces Group, through the Counterinsurgency Support Office in Okinawa.

d. Support of the Marine helicopter squadron was provided by attached personnel with peculiar supplies provided directly through normal Marine or naval aviation supply channels.

e. Air Force units that were permanently assigned in Vietnam had a complete organic maintenance capability and received the necessary repair parts support from the base supply located at Tan Son Nhut Air Base near Saigon. They were able to call on Clark Air Base in the Philippines for limited heavy maintenance support that exceeded their capability. Temporary duty units operated from forward bases in-country and received heavy maintenance support from Clark Air Base. The bulk of the supplies in support of Air Force units was provided by air from either Clark Air Base or the supporting Air Materiel Area in CONUS. Except for provisions and POL, reliance on the common support system was minimal.

f. The remaining systems were relatively minor so far as U. S. troop support was concerned and included the supply systems operated by USAID, the construction contractor, and the various MAP supply channels.

3. INCREASING REQUIREMENTS

a. As more advisors and units were deployed late in 1964 and early 1965 they were moving into more remote locations in the countryside. Also, the changing roles of these forces were creating new and different requirements, many of which were organic to the force concerned. In addition to the growing number of demands for other than common items, there were increasing requirements for maintenance, transportation, and other services in support of units deployed to remote locations.

b. With regard to construction, there was a critical need in early 1965 for military engineers to accomplish work not suitable for the contractor. The need was particularly great in the combat environment of remote areas and where the accomplishment of repairs, minor construction, and projects was time sensitive to rapidly changing military operational requirements.

4. REQUEST FOR ARMY LOGISTICAL COMMAND AND ENGINEER GROUP

a. Beginning as early as 1962, plans and recommendations had been made to introduce an Army logistical command[8] and consolidate the several logistic systems in RVN, but nothing had been approved since U. S. involvement was supposedly temporary and planning envisaged an

[8] Commander in Chief, Pacific, CINCPAC Command History, 1965, Annex A, USMACV, 2 May 1966, p. 164.

early reduction in the U. S. commitment. As the military situation deteriorated in 1964, however, it became apparent that plans for withdrawal of U. S. forces in 1965 would not be realized and that a still greater U. S. involvement would be necessary.

b. As of 1 January 1965, a CINCPAC plan for the establishment of the Army Logistical Command, as submitted by COMUSMACV in October 1964, was under consideration by the Joint Chiefs of Staff. On 15 January 1965, the Joint Chiefs of Staff recommended that the Secretary of Defense approve in principle the deployment of the proposed 2,100-man Army Logistical Command and a 2,400-man Army Engineer Group with a 230-man advance party to be deployed as soon as possible.[9] Based on the recommendations of an OASD (I&L) representative, who made a visit to Vietnam the latter part of January, the Deputy Secretary of Defense on 12 February 1965 approved in principle the deployment of a logistical command and the early deployment of 38 logistical planners and 37 logistical operating personnel. At the same time, he disapproved the deployment of the engineer group on the basis that the joint venture civilian contractor "has virtually unlimited capacity for expansion and is capable of working in combat areas."[10] The COMUSMACV/CINCPAC/JCS recommendation to deploy the 2,400-man engineer group was subsequently approved on 2 April 1965, but almost two months had been lost and it was the 9th of June before the first two Army engineer battalions arrived in-country. It is of interest to note that the first two Naval Construction Battalions (Seabees) arrived in I Corps Tactical Zone (CTZ) shortly before that time. On 2 April 1965, the deployment of the full logistical command was finally approved, but this approval was more directly related to the deployment of combat forces than to the original CINCPAC plan to improve and expand the existing logistic system. Accordingly, the details concerning the introduction of the 1st Logistical Command are treated later in this chapter during the consideration of the development of the Army logistic system in Vietnam.

c. The timing of the approval for deployment of the Army Logistical Command effectively resulted in MACV "changing horses in the middle of the stream." At the time the build-up was gaining full momentum and logistic stability was most critical, the command was faced with the inherent problems in transferring logistic responsibilities between Services. Had the "administrative agency" responsibility been assigned in accordance with contingency plans for the area, or had approval been given for deployment of the logistical command in the fall of 1964, when it became apparent that additional U. S. commitment was probable, this situation could have been circumvented. In this regard, it should be noted that Joint Chiefs of Staff policy provides, "To the maximum extent practicable, assignment of logistic responsibility should be the same in peace as in an emergency in order to provide for adequate training and an orderly transition in an emergency."[11]

5. COMMON SUPPORT

a. Responsibility for common support of field advisors at the province, district, and sector level and in the tactical units was transferred to the 1st Logistical Command on 1 September 1965. Despite the continued increase in the number of advisors and their greatly dispersed locations, the most significant support problems encountered were in IV CTZ. The development of a logistic base to support increasing U. S. Army troop deployment to II and III CTZ complemented the advisor support requirements in these areas. IV CTZ, however, had limited U. S. troop population, a highly dispersed and rapidly growing advisory organization, and limited and insecure lines of communication, thus generating the need for a special logistic system. Common support of advisors in I Corps remained a Navy responsibility in accordance with the CINCPAC decision to assign responsibility in that area to the Navy.

b. By the end of September, sufficient capability had been established in the 1st Logistical Command that agreement could be reached on a planned transfer of all common

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[9] Joint Chiefs of Staff Memorandum, JCSM 33-65, 15 January 1965.

[10] Deputy Secretary of Defense, Memorandum, subject: U.S. Logistics Deficiencies in the Republic of Vietnam, 12 February 1965.

[11] Joint Chiefs of Staff Publication 3, paragraph 010102.

logistic activities in the II, III, and IV CTZ from the Headquarters, Support Activity, to the 1st Logistical Command. The turnover was scheduled to be accomplished during the period October 1965 to June 1966. The transfer of these responsibilities was planned between the Army and the Navy whereby Army personnel would work with their Navy counterparts until the new personnel were ready and an orderly turnover of the function in question could be made. Actual turnover began in November 1965 and was completed in April 1966 with Headquarters, Support Activity, inactivated on 17 May 1966. Common logistic support in I CTZ remained a Navy responsibility under the newly activated Naval Support Activity, Da Nang, which became operational on 15 October 1965. In addition, Service peculiar support for Navy forces in II, III, and IV CTZ was provided by establishment of Naval Support Activity, Saigon, on 17 May 1966.

c. Planning for further extension of common support functions continued based on Secretary of Defense directives, despite strong objection by the commanders of the unified commands and the Services that the existing system was working well and any change could well prove disruptive. This planning included the eventual assumption by the Army of the responsibility for common support in the I CTZ area as well as the expansion of the supply support responsibility of the Army to include the full range of common DSA/GSA/ATAC items. This planning, however, was complicated by the continuing deployment decisions and by the decision not to call up the Reserves. As increased logistic capabilities were achieved through new logistic unit activations and deployments, these capabilities were absorbed by the support requirements for the growing Army combat deployments. As a result, the planned extension of responsibilities continued to be deferred by the Secretary of Defense until necessary Army capabilities could be established and, in mid-1968, further planning was finally suspended.

d. Irrespective of formal common support assignments on an area basis, Interservice Support Agreements (ISSAs) were used extensively during the Vietnam era as a means of providing logistic support and services to U. S. forces in the Pacific Command.

(1) Basic Department of Defense (DOD) policy is that each Service shall request interservice support from another when the capabilities are available and the support is to the overall advantage of the Government and that each Service shall provide requested support to the extent that military requirements will permit, and capabilities exist or can be made available.

(2) An ISSA is essentially a contract between the command being supported and the supporting command. The purpose of the agreement is to state clearly the arrangements between the commands involved, especially the responsibilities assumed by the rights granted to each. To be effective, ISSAs must be specific with respect to the resources to be provided by both the supplying and receiving activities and must recognize the capabilities and capacities of each. Agreements are flexible in that they are subject to revision if the situation changes and extension of support is desired and to termination if support is not satisfactory or resources are not available. Agreements are approved at the local level if they can be carried out within available resources except where higher headquarters or major commands may direct otherwise. Agreements are normally written for a duration of 2 or 3 years.

(3) Data are not available on all the support so provided. The identified value of support provided through the use of ISSAs was $229.1 million on a worldwide basis during FY 65 and support provided to forces in the Pacific Command accounted for 26 percent of the total. In SE Asia over 200 ISSAs were in effect at the end of FY 69 with an estimated annual value of support of $240 million. In Japan, Okinawa, and Korea over 572 agreements among 250 participating activities were in effect. Throughout the Pacific Command over 900 agreements, with an estimated annual value of $376 million, were in effect at the end of FY 69. Approximately 65 percent of those agreements were related to the supply of subsistence, POL, and repair parts. Other support provided ranged from vehicle and facilities maintenance to buoy tending and veterinary services. Of the agreements in effect, 55 percent provided for reimbursement

for the support rendered. Of the total dollar value of support, 90 percent was provided on a reimbursable basis.[12]

(4) Interservice Support Agreements were used extensively for a wide range of logistic services and supply support. The agreements provided a straightforward means of arranging for logistic support. They could be changed as the result of mutual agreement and therefore had a flexibility to respond to changing situations. The effectiveness, responsiveness, and economy of support provided was clearly dependent on the availability of resources and capabilities, precisely defined responsibilities of both the receiver and supplier, timely forecasts of requirements and changes, command backing and confidence, geography, and the military situation. Overall the interservice logistic support program was effective and useful in the Pacific Command during the Vietnam era.

e. Any evaluation of the effectiveness of the common logistic support system, as differentiated from the standard system of interservice support, is highly suspect, partially because of inconsistencies in the compilation of statistical data but primarily because of the limited and varied degrees to which actual use was made of the system by the supported Services. Based on the experiences and views expressed by the supported commanders, as detailed in the monograph on this subject, common support proved most effective for stable and relatively predictable supplies and services, i.e., petroleum, subsistence, laundry, and medical. Further, irrespective of assigned missions or formalized support agreements, support and cross-servicing was provided on a case-by-case basis as the need arose and the capability existed to provide the support. From this experience, it is reasonable to conclude that, although common logistic support is feasible and desirable, there are definite limitations as to its range of applicability and that these limitations are further constrained by such factors as geography, local operational conditions, the state of development of the supporting base, and the capability of the customer to utilize the available resources. These parameters, as specifically defined in the monograph, provide a credible basis for further planning for common logistic support responsibilities.

6. CONSTRUCTION CAPABILITIES AND RESPONSIBILITIES

a. Contract Construction

(1) In an 8 March 1963 memorandum, the Deputy Assistant Secretary of Defense (Properties and Installations) had "decided that all DOD design and construction work in the Far East be accomplished by the construction agency designated for each particular area." This was done on the basis that "there are certain areas in the Far East where the current and projected workload for design and construction does not warrant the continuance of several construction agencies . . . good management of a military construction agency in any area requires a certain minimum volume of business . . . to perform efficiently . . . . Low work volumes generate high overhead costs and tend toward inefficient utilization of talents which are difficult to obtain and retain." The Bureau of Yards and Docks (Navy) was designated contract construction agency for the areas of the Philippine Islands, the Marianas Island (Guam), Thailand, Vietnam, Laos, and Cambodia.

(2) Raymond-Morrison-Knudsen (RMK) was under the contract to the Navy's Bureau of Yards and Docks for construction in Vietnam, the contract being administered via the Pacific Division of the Bureau, in Hawaii, and the Officer in Charge of Construction (OICC), Bureau of Yards and Docks, SE Asia.

(3) In the spring of 1964 actions had been underway to terminate the cost-plus-fixed-fee contract operations in Vietnam. However, in July, although project funding was not

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[12] Defense Retail Interservice Logistic Support Reports DD-PSA (AR&Q), Fiscal Years 1963 through 1969; Defense Logistic Services Center Annual List of Current Agreements, Program K1015 MSTR Agreements, Data Systems Output Product, May 1969; CINCPAC, Letter to Chairman JLRB, Ser 1327, subject: Additional Data; forwarding of, 7 March 1970, Enclosures (4), (5), (6), and (7).

in hand, the decision was made to retain the existing capability in U. S. supervisors, engineering staffs, and logistic support operations as a gamble that the planned program would materialize. When project funding was in fact received in September, additional construction equipment was requisitioned, additional personnel obtained, and the total labor force increased.

(4) Contractor construction capability in support of the Military Assistance Program, AID, and others was at the rate of about $1.4 million per month as of 1 January 1965. Action was taken to build up a rate of $4 to $5 million per month of completed construction by the spring of 1965.

(5) In June 1965, with funding of the FY 65 supplemental program, a target rate was set of $15 million per month by January 1966. The target was met. In October 1965, with funding of the FY 66 Budget Amendment, the target rate as of April was increased to $25 million per month. In December the proposed FY 66 supplemental program escalated from $115 million to approximately $700 million. The target rate was raised to $40 million per month to be achieved by October 1966.[13] The overall growth of the contractor effort in terms of the dollar value of work in place (WIP) (shown in Figure 21) is further reflected by the growth of the contractor work force from 2,500 in July 1964 to a peak of 51,000 in July 1966.

b. Deployment of Military Construction Units

(1) Despite the expansion of contractor construction capabilities, by April 1965 it was apparent that an extensive military construction effort would also be required. Subsequent to the 2 April 1965 approval for deployment of an Army engineer group, the total military engineering capability in Vietnam grew to a total of 57 battalions and squadrons of all Services by September 1968 (see Figure 26), including nine divisional battalions (seven Army and two Marine), which were solely committed to the support of combat operations of the divisions.

(2) Development and deployment of this military construction capability was not without its problems, chief among which was the decision not to call up the Reserves. As a result, it was necessary to activate, equip, and train new units, the preponderance of which were consequently not available until 1967. The Army was responsible for providing troop construction support for the Air Force. The five Air Force Civil Engineering Squadrons were new activations and provided a new capability for the Air Force to perform damage repair and minor construction, although they effectively augmented the total military engineering capability.

c. Funding

(1) Military construction (MILCON) funding in support of the construction program in SE Asia was provided using essentially peacetime funding procedures, with all the resultant problems inherent in having to identify and justify construction requirements on a line item basis in a changing combat environment. In addition, the incremental deployment decision process concurrently added increased requirements to existing funding shortages with the result that facilities availability lagged requirements by the lead time required to fund and procure materiel and labor and to construct the facilities.

(2) These funding procedures resulted in a lack of funding flexibility and in significant turbulence and an intensive management effort in the execution of the construction program as well as a reduction in efficiency in logistic operations because of the delayed availability of required operating facilities.

[13] U. S. Navy, Bureau of Yards and Docks, Analysis of Construction Capability Required in Vietnam, 15 March 1966

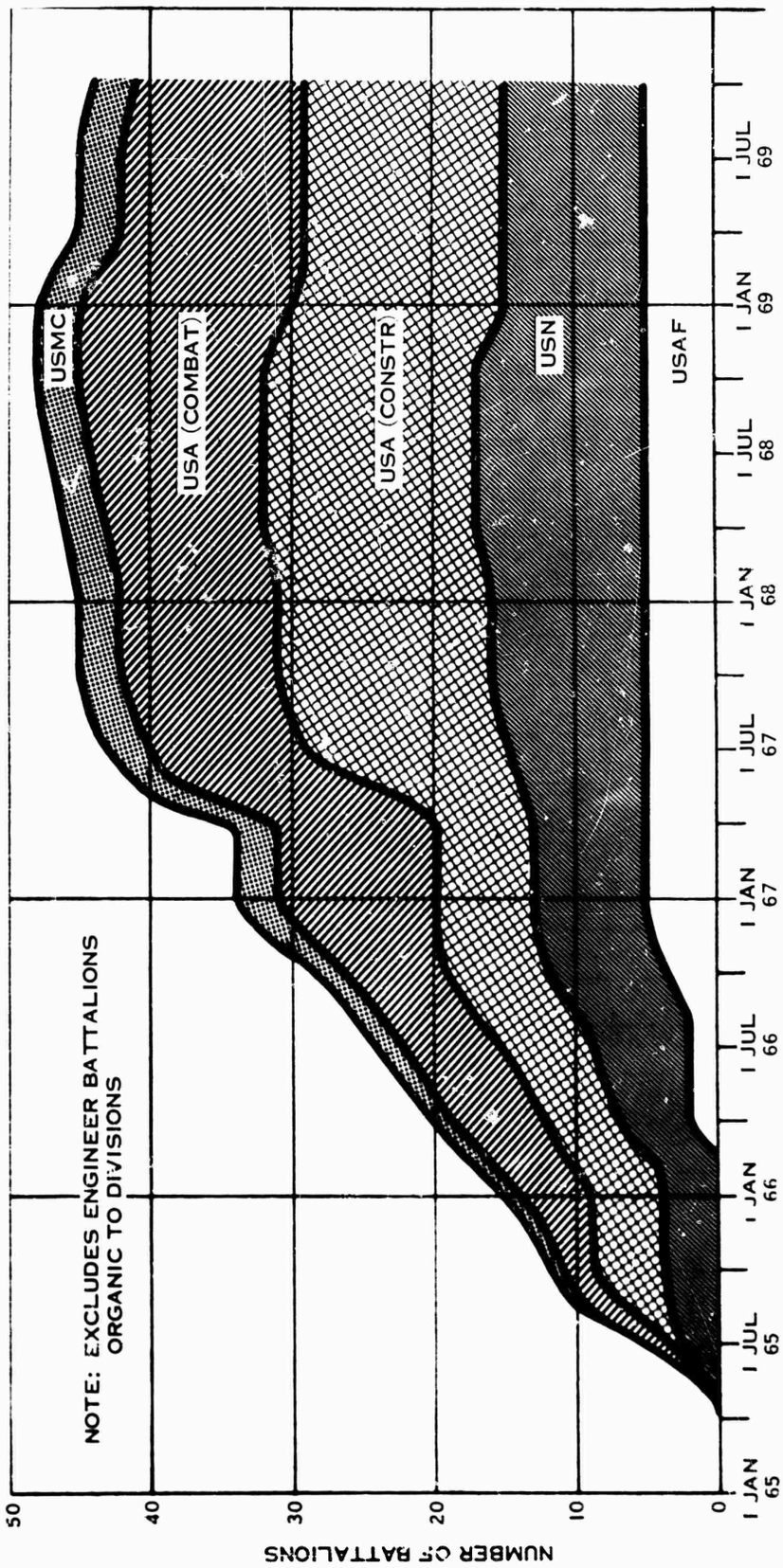

FIGURE 26. DEPLOYMENT OF MILITARY CONSTRUCTION UNITS

d. Management

(1) The growing construction capability, as measured both in terms of manpower and funding, created an early need for changes in the related management structure.

(2) As previously stated, the Navy exercised responsibility as contract construction agent through its Officer in Charge of Construction (OICC), SE Asia. In view of the increasing construction activity, particularly in Vietnam, steps were taken to disestablish this office and instead establish two such offices, one for Vietnam and the other for Thailand.[14] These were established on 21 June 1965 and assigned the mission "To administer specific construction, architectural and engineering contracts for the Navy, other Services, and Federal agencies and offices as assigned by the Chief Bureau of Yards and Docks or a Director of a Bureau of Yards and Docks Field Division."[15]

(3) To ensure responsiveness, the OICC, RVN, was charged with maintaining "close contact with the Commander, United States Military Assistance Command, Vietnam, paying close heed to his policies and seeking in every way possible to further his mission. The OICC will follow such directives as COMUSMACV may issue in relation to planning, design and construction in Vietnam."[16]

(4) Overall program control was a MACV responsibility exercised through the engineer staff under the MACV J-4. Primarily because of inadequate staffing, however, this control was passively exercised. In the absence of a troop construction capability, the Navy OICC exercised de facto responsibility for overall management as the DOD agent for contract construction. In February 1966, the MACV engineering capability was increased and a Director of Construction was established on the MACV staff to act as a construction "czar."

e. Responsiveness

(1) Although the construction effort in RVN was generally responsive to operational requirements, there was some degradation of the efficiency of logistic support operations until required operating facilities could be developed. Specific details are provided in subsequent sections of this chapter as they relate to the support function performed.

(2) The sheer magnitude of the construction task to be performed made delayed facilities availability inevitable. Unfortunately, this was compounded by the time required to determine and justify requirements, develop capabilities, obtain funding authorization, and construct the facility.

7. PETROLEUM, OIL, AND LUBRICANTS

a. Although supply support responsibilities for petroleum, oil, and lubricants (POL) were included as a part of the common logistic support system discussed earlier in this section, some specific consideration of the subject is warranted, both because of the special nature of the commodity and because of the associated high-dollar value and tonnage involved. Therefore, the entire subject matter is treated in depth in a separate monograph.

b. Supply of petroleum products was responsive and effective throughout the period of the Vietnam conflict and, together with subsistence, is generally cited by senior commanders as being the best example of outstanding supply performance. This was achieved through a combination of contractor and military effort which, during the 5 years from 1965 through 1969, provided some 163 million barrels of bulk fuel valued at approximately $1 billion to our forces in Vietnam. This excludes POL provided the Seventh Fleet and Air Force elements operating out of Thailand, Okinawa, Guam, and the Philippines.

[14] Chief, Bureau of Yards and Docks, Letter, subject: Administration of Construction in Southeast Asia, 6 May 1965.

[15] Secretary of the Navy, Notice 5450, 21 June 1965, OICC, Thailand and RVN.

[16] DIRPACDOCKS, Letter, subject: Design and Construction Responsibilities, serial 6940A, 7 October 1965.

c. As of January 1965, POL support of the advisory effort was provided exclusively by commercial contract to include both in-country storage and transportation. Total storage allocated for military use amounted to 670,000 barrels. As the buildup proceeded and POL consumption increased, military units were introduced to augment the contractor effort, commercial and military storage facilities were constructed to provide a 3.1 million barrel capacity in fixed facilities, 270 miles of pipeline were constructed, and port facilities were developed to both receive and transship products. In accordance with the division of common support responsibilities, the Navy in I CTZ and the Army in II, III and IV CTZ were specifically tasked by CINCPAC message 180039Z July 1965 to "provide and operate an in-country POL terminal and distribution system . . . to augment or replace commercial systems, where and when necessary . . . . "

d. Specific details as to the development of facilities, assignment of responsibilities, and performance of the support mission are provided in the POL Monograph. Although POL support was effective and responsive to the needs of the operational commander, it was nonetheless subject to continued criticism from a cost effectiveness standpoint. Added costs in transportation and service charges were incurred owing to the lack of adequate Government storage and receipt facilities in RVN. Additional problems were encountered because of the need to supply remote areas using a limited and aging fleet of small tankers and coastal vessels. Contract administration responsibilities were ill defined or misunderstood and were further complicated by the complex accounting, inspection, and administrative procedures. Procurement quality assurance was difficult because of the extensive use of commercial facilities, the lack of qualified inspectors, and problems of direction and control over inspectors.

e. In addition to identifying a need for more adequate contingency planning for operations in underdeveloped areas and for a modern fleet of small tankers and coastal vessels, these experiences highlight the necessity to ensure adequate contract administration over overseas contracts, for the Services to maintain a nucleus of qualified POL specialists, and for the simplification of accounting procedures in a contingency environment.

8. COMMUNICATIONS

a. The unusual effort of the communicators to meet the increasing demand of a rapidly growing logistic system in RVN is chronicled in detail in the Communications Monograph. This brief overview is intended only to highlight the major aspects thereof that directly impacted on the responsiveness, effectiveness, and efficiency of logistic support operations in RVN.

b. As the major troop buildup began in early 1965, the communications network both in and out of country was limited to the minimum essential for support of the advisory effort and, as in all other cases, had been planned for phasedown based on the projected reduced U. S. commitment. More critically, because of the limited logistic requirements, special consideration had not been given to these peculiar requirements.

c. The inadequacy of the communications network had been previously recognized but was confirmed almost as soon as the deployment of logistic units began. These units were deployed piecemeal into isolated and scattered locations. Command and control of these numerous small units was initially centralized until appropriate command organizations could be established and operational and administrative direction was exercised using available communications networks. This resulted in high usage of dedicated circuits for previously unplanned purposes and further degraded already limited capabilities. Also, the limited reliability of the existing system made the exercise of this control tenuous at best. An inordinate time was required to engineer new circuits and to obtain the necessary funding to alleviate this situation.

d. Further strain on the communications network was imposed by the demand for reliable high-speed data transfer. As the logistic workload grew to exceed manual processing capabilities, the requirement for conversion to automatic data processing (ADP) systems was recognized. Despite the relatively long lead times required to obtain and convert to adequate

ADP systems, the lead time required to establish high-quality data links was longer. Thus the improved response times offered by ADP were limited by the frequent and continued use of couriers. Although an interim AUTODIN system was operational in the Pacific area in January 1965, there was only a single terminal in RVN located near Saigon. In addition, data transmissions over the limited link initially available were subject to such a high error and loss rate that such transmission was unreliable.

e. Although these problems had been largely resolved by mid-1968, the lack of reliable and adequate communications during the initial critical years of the buildup was a contributing factor to the logistic problems that had developed. Specific instances are cited in the succeeding sections of this chapter as they relate directly to the function concerned.

f. Logistic operations during the Vietnam era have been characterized by a rapidly increasing demand for reliable communications. Further planning must consider the magnitude and nature of this demand and provide for its early attainment if the full capability of the modern logistic system is to be realized.

9. MEDICAL SERVICES

a. Although medical service in RVN has been a Service responsibility throughout the era, it is included in this section on country-wide support because of the commonality of the Service systems and the extensive use of cross-servicing between the Services in order to take best advantage of the geographic location of facilities.

b. Medical support expanded rapidly concurrent with the troop buildup. Initially, the Navy operated dispensaries at Saigon and Da Nang and a 60-bed infirmary in Saigon, the Air Force had a dispensary in Bien Hoa, and the Army operated a 100-bed hospital at Nha Trang. By 1968, literally all battlefield recovery was being accomplished by helicopter and any casualty evacuated was within 30 minutes flying time of a hospital capable of providing definitive surgical care. As of 16 June 1968, 9,052 operating beds were available in an Air Force hospital at Cam Ranh Bay, a Navy hospital at Da Nang, aboard the hospital ships USS SANCTUARY or USS REPOSE stationed offshore, or at one of the Army's five field hospitals, seven surgical hospitals, or 11 evacuation hospitals.

c. These facilities were adequate to support a MACV established maximum of 60 percent occupancy based on a 30-day evacuation policy. Any patient whose hospitalization and treatment would require more than 30 days was evacuated by air to offshore facilities in the Pacific Command as soon as his condition would permit. Casualty staging facilities for this air evacuation were operated by the Air Force and, as increased numbers of C-141 jet aircraft became available, this rapid means of air evacuation greatly improved the patient's prospect of survival. Offshore support in the Pacific area at Okinawa, Japan, the Philippines, Guam, and Hawaii provided 6,880 operating beds as of 23 June 1968. These offshore hospitals operated a 60-day evacuation policy for patients originating in RVN, beyond which the patient was further evacuated to CONUS.

d. The majority of the U. S. patients admitted to medical facilities in RVN were ill rather than wounded or injured. During a 2-1/2-year period from 1966 to mid-1968, 69 percent of the admissions were due to illness, 17 percent were battle casualties, and 14 percent were nonbattle injuries. Despite the high incidence of disease resulting from the unusual environmental exposure, the noneffective rate among U. S. forces remained comparable throughout to that of U. S. forces elsewhere. This was the result of continuing command emphasis on preventive measures as well as an intensive effort on the part of the medical personnel of the command.

e. The effectiveness and responsiveness of the medical service provided U. S. forces in RVN can probably best be shown through a statistical examination of battle casualty data. Deaths due to all combat causes occurred at a rate of 21.9 per thousand in RVN through June 1969 as compared to a rate of 43.2 in Korea and 51.9 in the European theater in World War II. Army data also show an admission rate due to nonfatal wounds of 95.6 per thousand in

RVN, 121.1 in Korea, and 162.0 in World War II from D-Day to V-E Day. Two and one-half percent of the admissions subsequently died of wounds during the Vietnam conflict, compared to 2.5 percent in Korea and 4.5 percent in World War II. This was despite the fact that the increased use of the helicopter for evacuation in RVN resulted in many patients being rescued and evacuated that no amount of skill and care could save and that in previous wars would have died on the battlefield.

f. Overall, the medical service was responsive and effective during the Vietnam conflict. The primary problem encountered and overcome was the obtaining of medical unit deployment authorization. The extensive use of the helicopter for battlefield recovery and of jet aircraft for evacuation, coupled with the technical competence and professional dedication of the medical personnel, provided an outstanding service that numerous tactical commanders credit for the high morale of the supported troops.

10. TRANSPORTATION

a. The remoteness of RVN from the originating sources of logistic support in the United States, plus the vast quantities of cargo and personnel to be moved, made transportation one of the key factors in the effectiveness of logistic support. The marshalling of lift capabilities, the control and coordination of movements, and the building of reception and distribution capability within the theater of operations were major challenges that were gradually overcome. Figure 19, in the introduction to this chapter, portrayed some of the dimensions of the transportation requirements, showing the 2.2 million U. S. military-sponsored passengers and 18 million short tons of dry cargo manifested from the United States to the Republic of Vietnam during the period 1965-69. Additional sealift and airlift originated within the Pacific Command significantly added to these totals.

(1) Transportation within RVN was provided by a combination of airlift, military and commercial contract lighterage and coastal shallow-draft vessels, military and commercial contract truck capability, and, to a minor extent, railway. Figure 21, in the introduction, illustrated the growth of just the airlift portion of this in-country lift, more than 11 million passengers and about 3 million short tons of cargo during the period through mid-1969; these figures do not include the enormous lift accomplishments of organic helicopters and fixed-wing aircraft.

(2) Detailed review of the problems, achievements, and lessons of transportation support to operations in SE Asia is provided in the Transportation Monograph.

b. Control Procedures. In addition to the control procedures of the operational commands employing transportation resources in support of the Vietnam conflict, additional measures to ensure coordinated direction of transportation support were initiated by CINCPAC and COMUSMACV. These actions were in response to problems arising from imbalances between requirements and lift capabilities, and between lift capabilities and ability to receive shipments within the area of operations. In May 1965, CINCPAC expanded both the mission and the organization of the WESTPAC Transportation Office in order to exercise centralized coordination over, and allocation of assigned airlift and sealift resources, and to establish priorities of movement in a manner that would provide the greatest overall benefit to PACOM forces. In January 1966 he established the Pacific Command Movement Priority Agency (PAMPA), collocated with the Western Area, MTMTS, in California. Its mission was to ensure that PACOM-bound sea and air cargo was effectively moved in accordance with the recipient's need for the materiel, the discharge and clearance capabilities of the receiving terminals, and the availability of the sealift and airlift resources. This followed by creation by CINCPAC of a Pacific Command Joint Transportation Board in August 1966 to receive for resolution those problems that were unsolvable locally because of the diverse relationships involved. The assigned mission was to recommend actions to CINCPAC concerning the optimum utilization of all PACOM transportation resources in meeting CINCPAC objectives. In September 1965, COMUSMACV established a Traffic Management Agency (TMA) to optimize use of limited transportation resources made available to MACV. TMA was operated on the principle of centralized direction and control of traffic management and related services at TMA headquarters, and

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decentralized traffic operations and services at field offices operating in support of the component commanders. Its movement management and coordination functions applied to common-service air, water, and rail movements, but the logistic island concept precluded management of highway transportation, which was coordinated through locally established movement control centers. Additionally, TMA provided cargo booking guidance to the WESTRAC Transportation Office for the inter-PACOM surface movements to RVN ports and coordinated directly with the PAMPA regarding CONUS outbound surface shipments to RVN.

c. Sealift. Common-user sealift to support transportation requirements was provided by the Military Sea Transportation Service (MSTS), an operating force of the Navy. This included common-user intratheater sealift within the Pacific Command as well, since CINCPAC had no such forces under his command. In addition, ships of the Amphibious Force, Pacific Fleet, were used for special sealift missions and provided an important capability for unit movements during the initial force deployments.

(1) Sources. The MSTS-controlled ship inventory was increased from 120 ships in 1965 to 527 ships by 1967. This had to be accomplished without the requisitioning of commercial shipping that had been assumed in pre-1965 planning. Needs were met by worldwide redistribution of the 89 passenger ships, cargo vessels, and tankers in the early 1965 MSTS nucleus fleet; by reactivating ships from the National Defense Reserve Fleet (NDRF); and by using volunteered U. S. merchant shipping. In addition, during peak periods when sealift requirements exceeded capabilities, chartering of foreign merchant ships and tankers was necessary.

(2) Problems. Early reactivations of NDRF ships were generally costly due to the age of the ships, some of which had to be scrapped later for submarginal performance; also, inefficiencies resulted from the urgency of the need and concurrent heavy Navy workloads in west coast commercial shipyards. As seagoing manpower became acute, extraordinary efforts were required of both unions and operators to find qualified seamen and reduce delays due to crew shortages. Port congestion problems, discussed later in this chapter, also caused delays, costly both in reduced ship availability and in dollars, until port problems were eased through expanded facilities, improved controls, and new port capabilities.

(3) Special Responses. Improvements in the effectiveness of transportation services were achieved in a variety of ways. Use of roll-on/roll-off shipping was initiated in the Pacific during early 1966. Containerization of cargo, discussed in detail in the Containerization Monograph, offered significant improvements in throughput capabilities but had limiting features in regard to facilities required aboard and ashore. The use of dedicated shipping was instituted for purposes such as handling of Air Force munitions, and use of ships for floating storage compensated for early shortages of warehouses. Also, fleet capabilities were utilized when such help was required and available.

(4) Coastal Shipping, RVN. The lack of sufficient deep-water ports created a serious requirement for shallow-draft vessels to provide sealift of personnel, supplies, and equipment to minor port areas along the east coast of the Republic of Vietnam. Special measures such as commercial contracting, interfleet transfers, reactivations, and use of foreign-manned MSTS landing ship tanks (LSTs) were necessary to satisfy demands for lighterage and small craft. LSTs in particular, because of their versatility, became vital assets for coastal and intratheater shipping.

d. Land Transportation. Highway and rail transportation in the Republic of Vietnam did not provide the extensive line haul and intersectional capabilities normal to developed regions. Instead, they were reduced to lateral movement of short haul and port clearance in the case of highway, and opportune local spur line operations in the case of rail. Intersectional movements were accomplished predominantly by air or coastal water operations. Management and operation of highway and rail movements were generally a Service responsibility on an area basis and are treated accordingly in subsequent sections of this chapter.

e. Airlift. The great distance from CONUS to SE Asia and the lack of reliable LOCs in-country caused the U. S. forces to rely more on airlift as a means of transporting personnel and

cargo than ever before. Following is a discussion of the responsiveness of the intertheater airlift (airlift into the theater) and intratheater airlift (airlift within the theater). Additional discussion can be found in the Transportation Monograph.

(1) Intertheater Airlift. The buildup of U. S. forces in South Vietnam and Thailand caused extremely heavy demands for airlift. Because of the long distances involved, airlift took the leading role in movement of passengers and priority cargo into the theater of operations. During the early stages of the buildup, when units were being deployed with their organizational equipment, only 50 percent of the total passengers were moved by air. As the force levels stabilized and the passenger traffic changed from unit movements to casual replacements, in 1969, airlift accounted for 100 percent of the passengers. In 1965 there were 85,100 air passengers to RVN; by 1969 the number of air passengers had increased sixfold. Similarly, the 38,700 short tons of air cargo in 1965 were increased five and one-half times by 1968.

(a) Several actions were taken by the Air Force to increase the airlift capability. With the decision not to call up the Air Force Reserve Airlift units or to mobilize the Civil Reserve Air Fleet (CRAF), the increased capability had to be achieved by improved management of the airlift resources, modernization of the fleet, and increased use of commercial air carriers.

1. Commercial Air Carrier. In FY 67 the Military Airlift Command (MAC), using normal peacetime contracting procedures, increased the use of commercial air carriers by 300 percent over FY 65. Because most of the commercial carriers were better adapted to passenger traffic than cargo, a majority of the passenger traffic to SE Asia was by this means. The military air fleet on the other hand, although designed for either cargo or passenger configuration, was used predominately in the cargo role. Although the CRAF was not mobilized, contracting with commercial carriers was confined to those carriers registered with the CRAF. By this means, in addition to fulfilling an airlift need, MAC was able, to a limited degree, to determine the commercial carrier's capability to perform the military wartime mission.

2. Increased Flying Hour Program. In August 1965 the Air Force directed the airlift forces to increase their flying hour utilization rate. For MAC, this amounted to an increase from 6 to 8 hours per aircraft per day. In effect this increased the military airlift capability by one-third. Increased flying hour utilization caused increased manpower requirements; however, these were partially alleviated in April 1966 when additional personnel were assigned to MAC from inactivated Strategic Air Command units.

3. Reserve Airlift Forces. The reserve airlift forces were utilized on a voluntary basis to augment MAC lift capability. Because of their civilian responsibilities and their older, smaller, and slower aircraft, the reserve airlift forces' primary usefulness was on the shorter channels. However, during their training periods, between August 1965 and July 1966, the reserve units moved 30,000 tons of cargo and 5,790 passengers from CONUS to the Pacific area.

4. Introduction of C-141 into MAC Fleet. One of the most important contributions to the intertheater airlift capability was the introduction of the C-141 into the operational airlift inventory. The first C-141 squadron was activated in April 1965. Under the pressure of expanding SE Asia operations, the C-141 was put to work while it was still in the test phase. On 5 August 1965 the first flight was made from Travis AFB, California, to Saigon. The actual flying time was 18 hours and 15 minutes, or about one-half the time required for a C-130E. This increased speed coupled with a 50 percent greater load carrying capacity provided a dramatic increase in the MAC lift capability. As new aircraft came off the production line they were added to the airlift fleet and the older transports were phased out. The four C-141's in the MAC fleet in July 1965 increased to 242 by July 1969.

5. Establishment of New Channels. In January 1965 MAC was operating only one airlift channel into RVN and one into Thailand; these terminated in Saigon and Bangkok. Since all aerial passengers and cargo were delivered to these points, a massive

problem of in-country distribution was created for the in-country common-user airlift system. (Intratheater airlift will be discussed later.)

(b) As new jet-capable airfields became available in RVN and Thailand, MAC established additional channels. Some of these channels orginated from the east coast and central area of the United States, which relieved some of the cross-country shipping in CONUS and the congestion of the APOEs on the west coast. In all, one additional channel was established in 1965, seven in 1966, fifteen in 1967, and five in 1968. MAC maintained the flexibility to provide channel service from and to the locations desired by the customers providing the requirement was large enough. One problem that was initially experienced in RVN was obtaining approval from the RVN Government for contract commercial carriers to land at bases other than Tan Son Nhut. (See the Transportation Monograph for a detailed discussion.)

(2) Intratheater Airlift. In-country airlift was provided by the Common Service Airlift System (CSAS). CSAS was managed by the MACV Traffic Management Agency (TMA) and was operated by the 834th Air Division.

(a) Tactical Airfields. To accommodate the growing airlift requirement, over 200 tactical airfields were developed to support the movement of passengers and cargo in-country. Passenger traffic within RVN increased from an average of 125,600 per month in 1966 to 364,200 per month in 1968, while cargo movements increased from 45,900 tons per month to 79,800 tons per month for the same period.[17]

(b) Shuttle Force. In January 1965 the in-country airlift system utilized 4 C-123 squadrons (64 aircraft) and six Royal Australian Air Force CV-2 (CARIBOUS). The U. S. Army CARIBOUS provided organic airlift to Army units and were not a part of the CSAS. In April 1965 because of a large backlog in the in-country aerial port system, the CSAS was augmented by C-130s from the 315th Air Division, Tachikawa, Japan. Although this was intended to be a temporary measure, it was the beginning of the "shuttle force" concept for providing airlift capability in RVN from CINCPAC's intratheater airlift resources. Under the shuttle force concept COMUSMACV was provided a specific number of operational C-130s on a daily basis. Aircraft remained in-country under the operational control of the 834th Air Division for approximately 2 weeks before returning to offshore home bases for maintenance. Maintenance and support was retained by the home base. Since July 1967 MACV was provided between 45 and 60 operationally ready aircraft daily. Peak requirements such as the Tet Offensive of 1968, which required 96 C-130 aircraft, were provided out of PACOM resources. Immediate augmentation to the C-130 fleet operating in-country could be provided by deferring required airlift in other areas of PACOM. When the PUEBLO incident and the Tet Offensive occurred in the same time period of 1968, three additional C-130 squadrons were provided CINCPAC from CINCSTRIKE resources to augment the intratheater airlift forces for the critical period.

(c) Transfer of Army CV-2s to the U. S. Air Force. On 1 January 1967 the U. S. Army CV-2s were transferred to the U. S. Air Force and redesignated C-7As. At that time they were organized into six troop carrier squadrons (total 87 aircraft). An average of 40 of these aircraft were assigned to ground commanders, two to Civil Operations and Revolutionary Development Support, and two to the Military Assistance Command, Thailand, on a daily basis. The remaining aircraft were included in the CSAS. In case of operational emergency, COMUSMACV would withdraw the appropriate number of aircraft assigned to the ground commanders and would place them in the CSAS.

(d) Increased Efficiency and Flexibility. As the number of MAC channels into RVN increased, the intratheater redistribution load was decreased and a greater percentage of in-country airlift capability was provided to the direct support of the combat forces. The flexibility inherent with the use of aircraft provided a variety of additional options to the senior operational commander. During the period of review the airlift system for both intertheater and intratheater support proved to be responsive to the requirements of the user.

[17] U. S. Air Force Management Summary, Southeast Asia (U), 1969 (SECRET).

11. SUMMARY

a. The country-wide logistic support provided to the 23,000-man U. S. advisory force located in RVN prior to January 1965 was the bare minimum possible, predicated on a temporary involvement. Concepts, organizations, types of personnel, and facilities were designed to support this force level for only a short period of time followed by an almost total withdrawal within a year. However, in 1964 it became evident that the forces would remain for a more extended period of time. In January 1965, the Joint Chiefs of Staff recommended that the Secretary of Defense approve the proposed deployment of a 2,100-man Army Logistical Command and a 2,400-man Army Engineer Group to establish logistic facilities and an operational structure necessary to support effectively the deployed forces.

(1) Approval of this 4,500-man logistic force was incremental and deployments were delayed accordingly. At the time they arrived and became operational, combat units were already deploying throughout RVN. The effect of this delay required several years to overcome.

(2) At the time of the introduction of these logistic units into RVN, the logistic activities changed from a housekeeping function supported by the Navy to a full-scale wartime operation. The 1st Logistical Command was activated and assumed responsibility for all common logistic support in II, III, and IV CTZ areas, with the Navy retaining responsibility in I CTZ. At the time the buildup was gaining full momentum and logistic stability was most critical, MACV was faced with inherent problems in transferring logistic responsibilities between Services.

b. Action was initiated to respond to problems developing daily over a wide front in areas as indicated below.

(1) Common support responsibility in I CTZ was assigned to the Navy and in II, III, and IV CTZ to the Army and remained so through 1969, notwithstanding continued planning for extension of Army responsibility throughout the country to include an expanded range of supply items. Customer satisfaction with the common support system varied but was best for relatively stable and predictable supplies and services. Extensive use was made of interservice support agreements, which provided a more sound planning basis for both the supporting and supported activity.

(2) Construction of port and storage facilities was undertaken to replace the over-the-beach and open storage methods originally utilized. The demand for construction of logistic facilities extended throughout the country and immediately construction resources became acute. Sufficient military construction units, normally used in a combat environment, could not be introduced on a timely basis because of escalating requirements. Many of these units required activation, equipping, and training in CONUS before deployment. Contract services already available in Vietnam but scheduled for phase out were instead continued and expanded. The need for centralized supervision of the extensive program resulted in the establishment of a Director of Construction under COMUSMACV. Gradually, the use of military construction units and contract services became more balanced. Requirements for adequate logistic facilities were eventually met during the latter part of the Vietnam era.

(3) Communications capabilities both in and to RVN were marginal as of January 1965. The location of combat units in remote areas and controlled from a central location levied excessive requirements against the limited in-country networks. During the early period, facilities available to meet logistic communications needs were lacking in both quantity and quality. Communications facilities were improved throughout the Vietnam era and eventually fulfilled logistic requirements. However, the high quality data links required to handle ADP logistic data were not available until mid-1968.

(4) Transportation services responded rapidly to fulfill most of the country-wide requirements. Air and water facilities assumed unusually heavy burdens in-country because of the difficulty of maintaining land lines of communications. Helicopter airlift assumed proportions never before experienced in a combat environment. The 200 tactical airfields and the extensive coastal and inland waterways provided an environment that was exploited by the use of fixed-wing

aircraft and shallow-draft vessels. Special techniques such as roll-on/roll-off and containerization were introduced to expedite handling and control of cargo.

(5) The POL support was initially provided U. S. advisory units by commercial sources. Later a combined military and commercial effort developed and operated the port, storage, and distribution facilities necessary to support the buildup of forces. Despite problems involving contract administration and reimbursement accounting, POL support was consistently responsive to the needs of the operational commander.

(6) Medical service provided during the Vietnam operation relied heavily on helicopter evacuation. By 1968, no casualty was more than 30 minutes by helicopter from a competent medical facility. Jets further expedited transfer of patients to PACOM or CONUS hospitals when necessary. By 1969, mortality rates in Vietnam dropped to 22/1,000 as compared to 43/1,000 during the Korean operation and 52/1,000 during World War II.

c. The logistic support of combat forces country-wide was responsive, but there were some delays. Contributing factors to this situation were piecemeal decisions, justification of expenditures on a line-by-line basis in a combat environment, nonactivation of Reserve components, and the change of logistic responsibility during a period of rapid buildup.

SECTION C

ARMY LOGISTIC SUPPORT OPERATIONS

1. INTRODUCTION

a. The development of the Army logistic system in support of U. S. and Free World Military Assistance Forces (FWMAF) in the Republic of Vietnam (RVN) was largely an evolutionary process.

b. From a small nucleus of 300 plus service support troops in January 1965, Army logistic troops in RVN increased to over 50,000 three years later, plus approximately the same number of civilian employees and contractor personnel. During the same period, ports, access roads, and storage and operating facilities were constructed; lines of communications established; supplies and equipment procured and provided; and a supply system previously untested under combat conditions was further developed and refined.

c. That the logistic support was effective and responsive has been unanimously attested to by senior combat commanders, the General Accounting Office, and responsible committees of Congress. The efficiency of the logistic system, however, has been the subject of continued and generally valid criticism.

d. This section will attempt to highlight the decisions that were made and the actions taken to provide the men, materiel, and facilities that were required and, from the advantage of hindsight, to appraise these decisions and actions and the logistic system they created to determine what things were done well and what things could have been done better.

e. The succeeding paragraphs will consider:

(1) The force buildup in RVN and the associated deployment of logistic units to support these forces.

(2) Materiel resources.

(3) The development of logistic facilities in RVN to include ports, storage and maintenance facilities, and lines of communication.

(4) The logistic system created from these resources to include how it operated, its evolution, and its strengths and weaknesses.

(5) The excess problem as it relates to these weaknesses and serves to further focus on them.

(6) A separate detailed consideration of the "Stovepipe" system established for support of Army aviation.

2. FORCE BUILDUP

a. Status on 1 January 1965

(1) U. S. Army strength in RVN on 1 January 1965 totaled 14,697. Approximately one-third of these were working directly under COMUSMACV as staff officers and field advisors. The remaining two-thirds were assigned to Army units under command (less operational control) of the U. S. Army Support Command, Vietnam (USASCV), and were providing combat support and

combat service support to RVNAF forces. The major units were the 5th Special Forces Group, a number of various aviation units, and some signal units.[18]

(2) As discussed in Section B of this chapter, the major elements providing logistic support for these forces were the Navy agency; Headquarters, Support Activity, Saigon (HSAS); and the USASCV. The USASCV provided supply support for Service-peculiar items and maintenance for Army aircraft. In addition, USASCV operated a small post, camp, and station-type supply room and the third-echelon automotive maintenance shop in Saigon. As of March 1965, a total of 321 USASCV personnel were involved in consolidated supply and maintenance activities.[19]

b. Introduction of the Army Logistical Command

(1) The U. S. troop strengths had been increasing monthly. However, with an ever greater number of advisors located outside the Saigon area, for which Navy support capabilities had originally been established, a requirement to provide sustained support of all types over extended distances was a mission for which an Army logistical command was better suited. CINCPAC and MACV had recommended the prompt introduction of a logistical command to remedy the lack of a retail supply and maintenance capability outside of the Saigon area, as well as to bolster the base wholesale system in Saigon. The MACV study, dated 30 October 1964, had recommended a net increase of 1,190 logistic personnel to establish an Army logistical command which could assume responsibility for common supply support of the advisory effort. Based on the Secretary of Defense concurrence in a further study of this basic concept, the Joint Chiefs of Staff, on 9 December 1964, directed CINCPAC to prepare a detailed plan, including the necessary troop lists, to accomplish the proposed improvement in the logistic system in RVN.[20]

(2) The CINCPAC plan, dated 30 December 1964, recommended 2,100 logistic personnel to provide common support for a total strength of just under 26,000—23,300 in-country plus the 2,100-man logistical command. On 15 January 1965, the Joint Chiefs of Staff recommended that the Secretary of Defense approve in principle the deployment of a 2,100-man logistical command with a 230-man advance party to be deployed as soon as possible.[21]

(3) On 12 February 1965, the Secretary of Defense approved the plan in principle as well as the deployment of 38 logistic planners and 37 operating personnel who were destined to become the nucleus of the 1st Logistical Command, Type A (reduced).[22] However, almost before the planners were onboard and planning initiated and long before any transfer of responsibilities could be initiated, the planners were overwhelmed by the tide of increased troop deployment and faced the reality of becoming an operating command with the task of supporting the arriving Army troops.

(4) The strength authorization of the logistical command was increased to 618 personnel on 26 March 1965 and finally on 2 April 1965, coincident with the decision to introduce U. S. combat troops into Vietnam, the decision was made to authorize the total 2,100 logistic personnel.[23] By this time, however, total U. S. in-country strength was already nearing 30,000 and was to exceed 36,000 by the end of the month.

(5) The time required to obtain this approval for Army logistic unit deployment resulted in an initial deficit in logistic capability and set the stage for many of the problems

[18] Commander in Chief, Pacific, CINCPAC Command History, 1965, Annex A, USMACV, 2 May 1966, p. 46.
[19] Col. Robert Duke, Historical Interview, 20 May 1966, p. 12.
[20] Joint Chiefs of Staff, Message 2752, 9 December 1964.
[21] Joint Chiefs of Staff, Memorandum, JCSM 33-65, 15 January 1965.
[22] Deputy Secretary of Defense, Memorandum, subject: U.S. Logistic Deficiencies in the Republic of Vietnam, 12 February 1965.
[23] Deputy Secretary of Defense, Memorandum, subject: Improvement of Logistics in Vietnam, 2 April 1965.

encountered in the ensuing months. As this is developed more fully in the following pages, it becomes evident that military operations in an underdeveloped area create a special requirement for the early deployment of logistic units.

c. Deployment of Combat Forces

(1) The first ground combat unit of the U. S. Army to be deployed was the 173d Airborne Brigade from Okinawa. The decision to deploy this brigade was announced on 14 April 1965 and, by 5 May 1965, the main body began to arrive at Bien Hoa. Similarly, the decisions to deploy the 2d Brigade, 1st Infantry Division, and the 1st Bridge, 101st Airborne Division, were announced on 20 May and 30 April, respectively, with the former departing Fort Riley on 18 June 1965 and arriving at Bien Hoa on 16 July 1965, and the latter departing Fort Campbell on 2 July 1965 and arriving at Cam Ranh Bay on 29 July 1965. The deployment of the 1st Cavalry Division (Airmobile) began arriving in the An Khe-Pleiku area on 12 September 1965; however, the formal deployment decision was not announced by the President until 28 July 1965, although preliminary planning on a limited basis had been in process since 30 April 1965.

(2) Although the timing of these early deployment decisions represented an extreme, the delays in the decision process had a significant effect on all aspects of the effectiveness and responsiveness of logistic support. The decisions to deploy additional U. S. forces resulted in an increased U. S. Army strength of 116,755 by the end of 1965, 239,400 by the end of 1966, 319,500 by the end of 1967, and an ultimate peak strength of 365,600 in January 1969. The buildup of U. S. Army strength in RVN is shown in Figure 27.

d. Logistic Deployments

(1) The availability of logistic support units generally lagged behind the deployment of combat units during 1965 and most of 1966. At the 27 September - 1 October 1965 Honolulu Conference, MACV agreed to accept combat forces as they became available even though logistic support would be marginal, but by December 1965 this calculated risk could no longer be accepted and further tactical unit deployments were delayed.

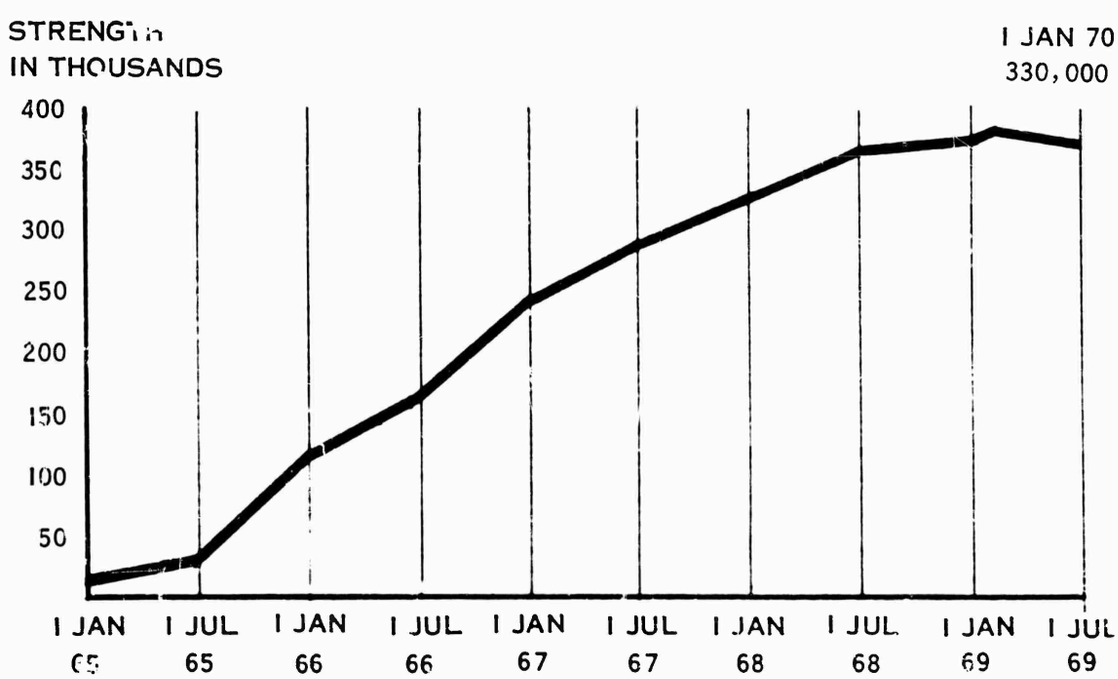

FIGURE 27. U. S. ARMY STRENGTH IN RVN

(2) The delays encountered in achieving authorized logistic unit strengths stemmed from three basic problems.

(a) First, force planning prior to this time, to include specific force planning in support of a Vietnam contingency, had been based on the assumption that the Reserve components would be mobilized in a contingency of such magnitude. Because of stringent active Army strength ceilings, a great number of logistical units that required low skill levels or were amenable to civilian skills and were not required in the highly civilianized peacetime logistic base were structured in the Reserve components. With the decision not to call up the Reserves, it became necessary to activate, equip, train, and deploy new active Army units. Table 9 shows the number of service support units of company and detachment size requiring activation in CONUS out of the total deployed or alerted for deployment during 1965.[24] Table 10 shows the availability of selected service support units in the CONUS as of 31 July 1965, which made these activations necessary.[25]

(b) Second, because of the limited and incremental strength ceilings imposed on MACV during the buildup, logistic forces were structured sparingly to retain maximum combat strength. This resulted in repetitive demands for small cellular teams that were not available in the Army force structure. By 30 September 1965, 465 new units had been activated in the CONUS, 83 percent of which were smaller than company size.[26] The time required for detailed unit-by-unit justification and the attendant activations, inactivations and reorganizations were not compatible with the time available between major unit deployment decisions and in-country closing dates.

TABLE 9

UNITS DEPLOYED OR ALERTED FOR DEPLOYMENT
(During CY 65 Requiring Activation)

Type	Deployed or Alerted	Activated*
Ordnance	58	19
Signal	71	54
Quartermaster	83	74
Medical	79	43
Engineer	118	63
Transportation	123	72
Military Police	25	18
Chemical	8	1
Psywar	5	5
Adjutant General	19	9
Finance	12	9

*Included in units deployed or alerted.

[24] Department of the Army, Compiled from DA ACSFOR troop basis files.
[25] USCONARC USARSTRIKE, Annual Historical Summary, 1 July 1964-30 June 1965, p. 114.
[26] DA ODCSLOG Memorandum, subject: Reasons for Unit Activations and Resources Available in the Reserve Components, 1 February 1966.

TABLE 10

AVAILABLE UNITS IN CONUS
(As of 31 July 1965)

Type Unit	No.	Type Unit	No.
Engr. Gp., Hq. Co.	0	QM Gp., Hq. Det.	1
Engr. Co., Dump Truck	1	QM Bn., Hq. Det.	1
Engr. Co., Port Constr.	0	QM Petrol Co., Depot	1
Engr. Co., Constr.	0	Sig. Gp., Hq. Co.	1
Mil. Intel. Bn.	1	Sig. Bn., Hq. Det.	1
Hq. Co., Ord. Gp., Maint. & Sup.	0	Sig. Co., Comm. Center Opns.	1
Hq. Det., Ord. Bn., Maint. & Sup.	0	Sig. Co., Depot	0
Ord. Co., Field Sup.	1	Hq. Det, Trans Bn, Term.	0
Ord. Co., Coll. & Class.	1	TC Co , Hvy. Boat	1
Ord. Co., Supply Depot	1	TC Co., Med. Boat	1

(c) Third, the Army was in the process of reorganizing worldwide logistic units from a technical service structure to a functional organization. It should also be noted that this dictated a comparable reorganization of like units in Vietnam beginning in early 1966. The impact on efficiency of a major reorganization of all logistic units in a combat environment can readily be appreciated.

(3) In recognition of the drawdown on available Army troop resources and to improve capabilities to meet future requirements, the Secretary of Defense, on 24 July 1965, approved an end strength increase of 235,000 for the Army. Almost 62,000 of these spaces were ultimately allocated for activation of 160 plus logistic units.[27] As these units were activated, equipped, and trained, the Army was eventually able to catch up with the MACV logistic unit requirements. However, much valuable time had been lost and problems such as port congestion, construction backlogs, and supply control had become realities. Illustrative of the delays in meeting CINCPAC desired deployments are the units shown in Figure 28.

e. Logistic Skill Levels

(1) In addition to the initial quantitative problems encountered in providing logistic personnel within the desired time frame, qualitative problems persisted throughout the period. These problems were most prevalent in the areas of wholesale supply and maintenance and, although they resulted from the large extent to which the CONUS base had been civilianized, they were further compounded by the 1-year rotation policy and the low retention rate of skilled personnel.

(2) As an example of the magnitude of the problem, as late as 1968 the Long Binh Depot had an average of 125 assigned officers, a maximum of three of whom had prior depot experience and in May of 1969 only four of the 140 assigned officers had prior experience.[28] Further insight can be gained by looking at the military and civilian personnel mix and the grade

[27] USCONARC USARSTRIKE, Annual Historical Summary, 1 July 1965-30 June 1966, p. 55.
[28] Maj. Gen. Joseph M. Heiser, Jr., Presentation to the Joint Logistics Review Board, U.S. Army Logistics in Vietnam, 21 May 1969.

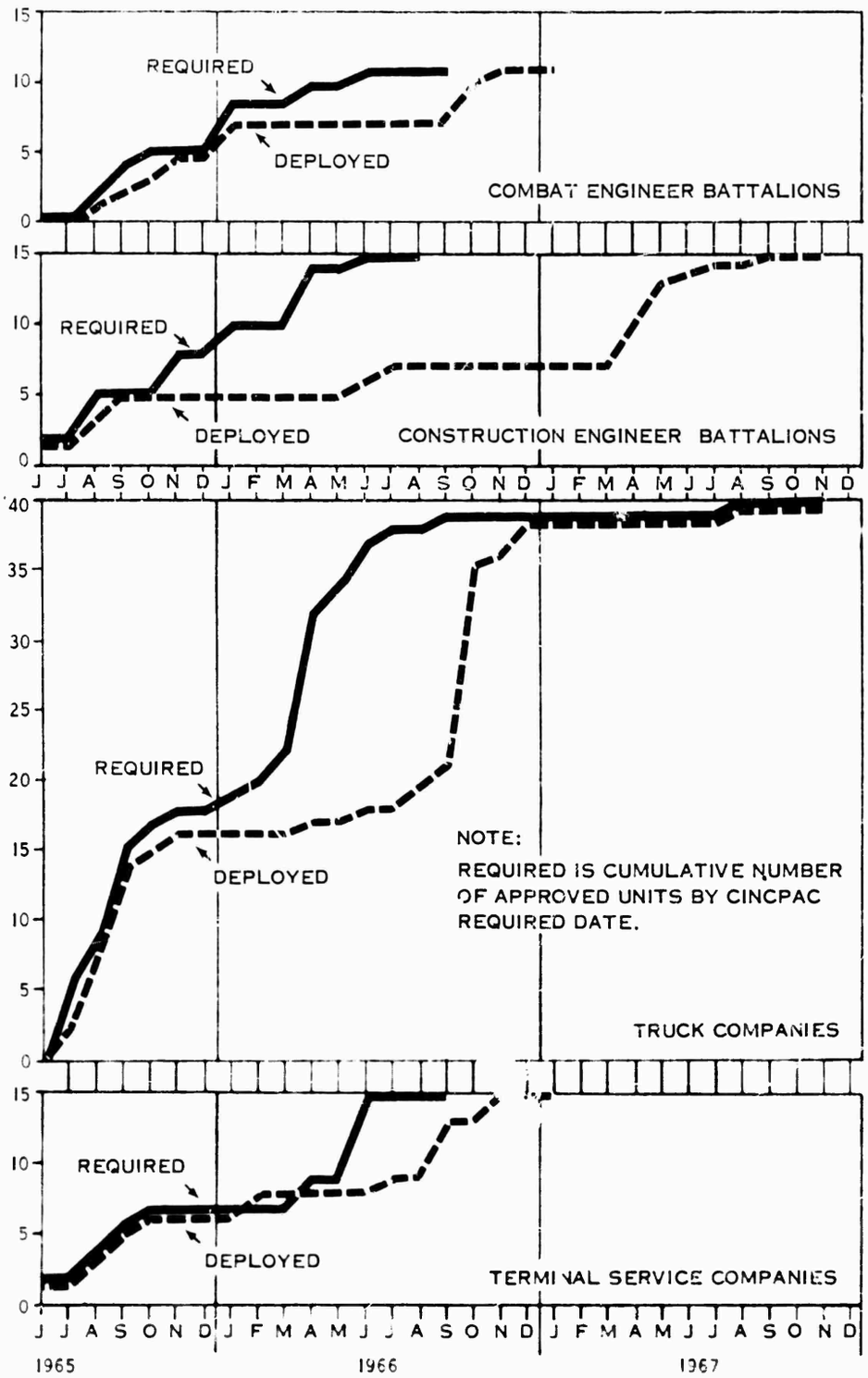

FIGURE 28. COMPARISON OF DATE REQUIRED AND DATE DEPLOYED FOR SELECTED UNITS

imbalances and shortages that existed in the Army Materiel Command, which provides the Army's major base in CONUS for the development and retention of wholesale logistic skills. On 1 July 1965, AMC was authorized 17,652 military and 145,200 civilian spaces. As of late 1968, the percentage of authorized officer spaces filled by grade in AMC was:[29]

05/06	62.8%
03/04	52.4%
01/02	189.3%
Average	83.0%

(3) During the Vietnam era, 67 to 70 percent of all Army enlisted men and 49 to 55 percent of all Army officers were first-term personnel with less than 2 years of military service. The lack of skilled career personnel backed by an adequate rotation base resulted in semiskilled personnel operating and supervising a highly sophisticated logistic system. By the time an unskilled man gained experience on the job, he was due for rotation or discharge.

(4) As the buildup began to stabilize and sufficient logistic forces became available in-country to respond to the priority requirement of providing support to the combat troops, attention was focused on ways to improve the efficiency of logistic operations and compensate for the shortages of experienced logistic personnel. Numerous special projects were undertaken, one of the first of which was the establishment of Quick Reaction Teams by AMC to provide supply and management specialists on a temporary basis. Another was Project Counter. In early 1967, it was decided to form a group of supply assistance personnel, under the code name Project Counter, to provide formal instruction in supply procedures as well as to provide informal instruction while assisting personnel in-country to perform location surveys, conduct inventories, identify and classify materiel, review and purify prescribed load lists (PLL) and authorized stockage lists (ASL), and generally assist in supply management activities. In mid-March, after undergoing a special 4-week training and orientation course at Fort Lee, Virginia, the group was deployed to Vietnam for a 180-day TDY period. In all, a total of four Project Counter teams (Table 11) were provided during 1967-68 and proved invaluable in upgrading the short-term technical competence throughout the command.

(5) In addition to numerous such special assistance teams that were intended to upgrade available personnel capabilities, unusual methods were employed to expand the base of qualified personnel. Intensive efforts were initiated to recruit qualified Civil Service personnel

TABLE 11

PROJECT COUNTER IN RVN

No.	Strength	From	To
I	493	24 Mar 67	19 Aug 67
II	155	29 Aug 67	15 Dec 67
III	442	6 Feb 68	2 Jul 68
IV	262	30 Jun 68	15 Dec 68

[29] Report of the Long Range Logistics Manpower Policy Board, February 1969, p. 80.

and Tables of Distribution (TDA) were prepared to replace standard TOE in order to provide an authorization base for these civilian spaces. The extent of civilianization of selected major logistic activities[30] is shown in Table 12.

(6) Also, many logistic functions that had been planned for accomplishment by standard military organizations were instead contracted through available resources. Based on contracts administered by the U. S. Army Procurement Agency, Vietnam, the contractor employee effort utilized during FY 68 averaged about 50,000 personnel, some 2,000 of whom were U. S. civilians, 8,000 third-country nationals, and 40,000 local nationals.

(7) Although the use of contractors and the DA civilian recruitment program provided a much-needed augmentation of technical skills, the effort was costly, slow, and a drain on scarce personnel resources to provide qualified supervision, and was never fully able to meet the demands of the command. Also, during periods of heightened hostilities such as the 1968 Tet Offensive, a large part of the civilian work force was unavailable at the time it was most needed.

3. MATERIEL RESOURCES

a. Programming and Budgeting

(1) The need to provide a timely response under the program budget process and the peacetime funding procedures used throughout the Vietnam era proved a massive challenge to the logistician. As a result of the incremental deployment decisions and the numerous

TABLE 12

ASSIGNED MILITARY AND CIVILIAN PERSONNEL MIX IN KEY LOGISTIC UNITS
(31 May 1969)

Logistic Unit	Mil	US	VN	Third-Country National
Da Nang Spt. Cmd.	233	7	924	0
Qui Nhon Spt. Cmd.	746	8	2,539	0
Qui Nhon Depot	1,937	43	1,261	0
Cam Ranh Bay Spt. Cmd.	245	9	2,132	0
Cam Ranh Bay Depot	1,615	44	1,020	0
Saigon Spt. Cmd.	844	52	3,798	0
Long Binh Depot	2,562	63	3,228	0
Inventory Control Center, VN	372	171	115	0
USA Procurement Agency, VN	94	51	77	0
Marine Maint. Activity	474	0	39	0
Aviation Matl. Mgmt. Agcy.	150	0	70	0
USA Engr. Constr. Agcy., VN	534	18	62	1
USA Hq. Area Command	660	42	3,092	7
Total USARV	323,038	721	36,488	13

[30] DA Report, Personnel Subject to Manpower Authorization Voucher, RCS CSGPA-523, 31 May 1969.

reorganizations, activations, and inactivations previously discussed, the Army budget was in a process of continuous flux based on frequent changes in both requirements and projected assets.

(2) The FY 66 budget was before the Congress and force data and guidance had been provided the field commands to begin development of data for the FY 66 apportionment request and FY 67 budget when the initial major force deployments were announced.

(3) Automated capabilities in-being at the Major Items Data Agency (MIDA) in Chambersburg, Pennsylvania, and at the DSCLOG Data Processing Center (DDPC) in Radford, Virginia, provided a capability to react rapidly to the force and deployment changes as they were made. In the early stages of a given budget cycle, changes were passed to MIDA to permit consideration at the commodity command level. Changes made late in the budget cycle were developed by DDPC on an add and delete basis for manual incorporation at the DA staff level with feedback through AMC to the commodity commands to permit adjustment of related programs at the commodity command.

(4) In all, the system proved effective and responsive but it required an all-out effort on the part of the logistic personnel involved. The extensive manual effort required provided a needed stimulus to further develop and refine automation programs that are responsive to rapid and continuing change.

(5) Major problems, however, resulted from the inability to identify requirements sufficiently in advance to plan for their orderly attainment. In order to meet compressed activation and deployment dates, many commercial items were procured off-the-shelf and units were deployed with such equipment as was available or with shortages. The results of these actions were:

(a) Difficulty in determining repair parts requirements.

(b) A proliferation in repair parts stockage at all levels to support varied makes and models.

(c) Inadequate maintenance because of lack of skills to support multiple makes and models.

(d) Added costs for early replacement of commercial items not suited to the harsh environmental conditions.

(e) Added transportation costs to support subsequent standardization programs.

(f) Reduced operational capability of some logistic support units deploying without full TOE equipment.

b. Funding

(1) A unique funding control, derived from the strategy of measured response, was the assumption of a "war end" date. In the case of the FY 66 budget request, revised funding requirements were developed based on the assumption that the war would end 30 June 1966. In other words, currently approved force levels would be maintained and deployed forces would consume at combat rates through 30 June 1966, after which force levels would revert to those existing prior to the buildup with all forces consuming at peacetime training rates. This same guidance was applied during the FY 67 budget cycle.

(2) Not until the FY 68 budget development was the guidance changed to reflect the realities of production lead time. Logistic guidance for FY 68 and after was based on an assumption that the war would end "at the end of the funded delivery period" for any given time. For example, for most conventional ammunition items having a 6-month production lead time and

delivering over a 12-month period, this changed guidance effectively moved the war end from 30 June 1968 to 31 December 1968, at which time FY 69 funding could continue the production line.

(3) Since the war did not, in fact, end at the time assumed by the earlier guidance, a supplemental budget was required to finance production through the balance of the funded delivery period. The workload of contracting officers was substantially increased because of multiple negotiations, contracts were written with both options and termination clauses to accommodate the uncertain future, and a form of multiyear contract was developed to permit incremental funding of a single-year contract within the funding controls. Although it is difficult to isolate cost increases due purely to inflationary pressures, it appears likely that a substantial premium was paid for increased administrative costs and for production risks. Available data are inadequate to identify the cost differential between these cost increases, the termination or stretchout costs if the full funded delivery period had been financed, and the savings resulting from the deferred obligations.

c. Loss Rates and Consumption Factors

(1) Further complicating both the funding and the contracting and production planning was the difficulty of forecasting consumption and attrition rates. Loss rates in use at the beginning of the Vietnam conflict were based on historic data accumulated during World War II and Korea as modified by various studies, war gaming exercises, and, for many new material items, engineering estimates. Although some of these data proved valid, the unique environmental and operational conditions in Vietnam resulted in radical changes in loss rates for many items as empirical data were accumulated. Illustrative of this are the loss rates for construction and materials handling equipment (MHE), which generally doubled, whereas combat vehicles and weapons dropped to a fraction of forecast rates. Even more volatile were ammunition requirements that are a function of weapons density times rate of expenditure. Both factors were in a continuing and unpredictable state of flux.

(2) The impact on both funding requirements and production plans resulting from these changes indicated the need for a broader planning base that considers the environmental conditions of counterinsurgency operations.

(3) The difficulties encountered in the collection of valid loss or consumption data should also be noted. Although a responsive and timely ammunition reporting system is in being today, considerable difficulty was experienced initially because of the dispersion of units and the reporting problems inherent during extensive small unit operations. For major equipment items, however, the accumulation of loss data was slow and the validity of the data has generally been suspect. An equipment item that is a combat loss to the using unit is often reparable at a higher echelon during the evacuation process and will be returned to the supply system, thus negating the unit's reported loss. Although reports established by The Army Equipment Records System (TAERS) provide the basic capability to reconcile these data, the current program to streamline and simplify these reports must be completed before they will provide timely and accurate data under combat conditions.

(4) Because of the urgent need for valid loss data and the inability of existing reporting systems to provide these data, a six-man team was dispatched to Vietnam in April 1967 under the code name Combat Operations Loss and Expenditure Data, Vietnam (COLED-V), to institute a special reporting system and to collect, process, and evaluate these data. Although the COLED-V mission proved highly successful, the fact remains that it was a special system designed to provide a temporary solution. However, 2 years of valuable data had generally been lost.

d. Maintenance

(1) The direct interrelationship and impact of maintenance policies and procedures on resource planning lead to consideration of these policies and procedures at this point. The current Army maintenance policy, which was in effect throughout the Vietnam era, is based on

piecepart repairs in the forward area and requires cumulatively large stocks of repair parts and large numbers of supply clerks and mechanics at the using units and at the backup direct and general support unit levels.

(2) This system was marginally effective initially in RVN for two basic reasons. First was the inability of the supply system to provide the required repair part at the right time and the right place. Second was the lack of adequate numbers of qualified supply and maintenance personnel to provide the requisite expertise throughout all echelons of the maintenance organization.

(3) Further adding to the maintenance problems in early 1966 were the shortage of publications and the number of outdated regulations on hand, the need to expedite the evacuation of damaged equipment for rebuild, the need to maintain repair parts stockage for the many makes and models of like items of equipment (particularly MHE), the short life of the 175mm gun tube resulting from extensive firing at maximum ranges, and the high deadline rates of all types of equipment used in port operations.

(4) The result of these difficulties in the maintenance system was an extremely high deadline rate of many critical items in 1965 and most of 1966, which was gradually improved in late 1966 and 1967 through the introduction of various expedient systems. As an example of the deadline rates experienced, at the end of January 1966, 36 percent of the bulldozers and 26 percent of the MHE in-country were deadlined. The extraordinary effort to construct bases and LOCs resulted in double shift operations and reduced available maintenance time, while climatic conditions contributed to excessive wear, premature breakdown, and high consumption of repair parts. These factors, plus the limited maintenance capability, reduced the life expectancy of the equipment because it generally was not repaired until it became completely inoperable. The initial submission of a new deadline report initiated in July 1966 was based on selected items of equipment that merited special management because they were mission-critical. The sample of the first report consisted of nine categories and 14,211 major end items, of which 2,246 or 16 percent were found to be deadlined.

(5) An extensive preventive maintenance program initiated by USARV in 1966 and the innovative introduction of a number of expedient systems finally reversed this trend in 1967, with the result that by 1968 U. S. Army forces in RVN enjoyed the lowest deadline rate of any Army command in the world.

(a) Red Ball Express. The first of these expedients was known as Red Ball Express and was developed to intensively manage and control the flow of critical repair parts so that the right part would be at the right place at the right time. For submission of a Red Ball requisition, a peice of equipment had to be deadlined with no parts available.

1. All Red Ball requests were consolidated by the 1st Logistical Command and placed on machine records cards for hand-carry by a CONUS returnee to the Logistics Control Office, Pacific (LCOP), in San Francisco. Seven days from the time requirements were received at LCOP was the maximum time for fill of Red Ball requisitions and delivery to Saigon. Initially, Red Ball items were moved by dedicated airlift. If all went well, the equipment would be deadlined for not more than 9 days (2 for processing and 7 for filling requisitions).

2. During the first 7 months of operation (8 December 1965 to 28 June 1966), a total of 83,615 separate requisitions were processed through the Red Ball Express system, resulting in 4,300 tons of critical repair parts being airlifted from Travis AFB to Saigon, which removed 4,747 helicopters, 1,822 heavy-duty trucks, 247 bulldozers, and 150 pieces of materials handling equipment from deadline.[31]

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[31] Department of Defense Annual Report, 1966, pp. 55-56.

(b) Closed Loop Support. Maintaining a balance between equipment requirements and availability required careful planning and programming. In January 1967, as a means of enhancing this balance, the Army initiated an intensive management program to control the flow of critical items to Vietnam. The program was called Closed Loop Support (CLS). Under this concept the functions of supply, maintenance, and retrograde were integrated into the control system to ensure that critical items were directed to specific customers at the appropriate time and that unserviceables were retrograded to designated repair and overhaul agencies in accordance with their production schedule. The CLS provided a supplement to Red Ball Express, and relied on fast, efficient transportation to move serviceable and unserviceable assets between Vietnam and offshore bases. In April 1967, the initial CLS Conference was held to develop schedules for the cyclical overhaul and replacement of tanks and armored personnel carriers. Schedules were developed based on fleet mileage, projected attrition, rebuild capabilities, and worldwide asset availability. The program proved so successful that it was ultimately expanded to include aircraft, artillery weapons, combat and tactical vehicles, construction equipment, generators, MHE, and selected components and assemblies.

(6) Standardization of these expedients and incorporation into a basic maintenance policy that limits the maintenance effort in forward areas to modular assembly replacement would permit more economical use of available skills and a significant reduction in repair parts stockage. These objectives are included in the current Maintenance Support Positive program of the Army and are in the process of implementation.

4. DEVELOPMENT OF FACILITIES

a. Background. A very essential part of the logistic effort in SE Asia has been the military construction program. Port facilities, roads, warehouses, barracks, and airfields had to be started almost from scratch. At the beginning of 1965, there were only 12 deep-draft berths in all of RVN. Warehouses, storage areas, and maintenance facilities were literally nonexistent except for limited facilities in the Saigon area, and there were no major U. S. base complexes in RVN. The construction capability in-being was that required to support advisors and to provide necessary facilities for expanding USAF base requirements in support of VNAF and contingency missions.

b. Logistical Facilities Planning

(1) When the 38-man planning group, which had been approved for deployment on 12 February 1965, finally arrived in-country between 20 and 25 March 1965, a major part of its initial effort was devoted to planning for the required logistic facilities. The original concept on which their planning was based envisioned the establishment of support areas in five enclaves to be located at Da Nang, Qui Nhon, Nha Trang, Vung Tau, and Bien Hoa—all of which (except Bien Hoa, a major air base) were located on the coast and would be supported primarily by sea since the roads and railroads were contested by the Vietcong.

(2) Development of a major supply base at Vung Tau was contingent on the development of a deep-water port. Further detailed study revealed that at least 18 months would be required to develop Vung Tau because of the extensive dredging required. Because of the excessive time, further search led to the selection of Cam Ranh Bay and the decision to establish major logistic bases, or areas, at Saigon and Cam Ranh Bay. The CINCPAC decision on 24 April 1965 to give the Navy responsibility for common support from Chu Lai north to the DMZ, as modified in July to extend Navy logistic control to all of I CTZ, revised the planning for development of Da Nang.

(3) By the end of 1965, the Army had total logistic responsibility for all Army elements and was in the process of assuming responsibility from the Navy for common support of all U. S. and FWMA forces in II, III, and IV CTZ. Logistic bases had been established at Saigon and Cam Ranh Bay and logistic support areas, drawing from the logistic bases, had been established at Qui Nhon, Nha Trang, and Vung Tau. Plans had also been made for logistic support areas at Da Nang to provide Service peculiar support in I CTZ, if required, and at Can Tho if a decision was made to deploy U. S. forces in the Delta. Subsequent changes, resulting from additional troop deployments, led to the development of major depot complexes at Qui Nhon

and Long Binh, deep-draft port facilities at Newport and Qui Nhon, and numerous minor port facilities at places such as Phan Thiet, Phan Rang, and Vung Ro.

(4) Although the initial planning effort provided the basis for much of the logistic system that exists today, the plans were rapidly overtaken by the decisions to deploy additional forces. The early days of the buildup were hectic and characterized by improvisation and much hard work on the part of all concerned.

c. Ports

(1) One of the initial problems encountered by the logistician in RVN was that of port congestion. On 26 November 1965, a peak of 122 ships were in RVN waters waiting, holding, or off-loading. The attendant high costs plus the unavailability of critically needed shipping made relief of this congestion a number one priority. To relieve the extreme congestion of the civilian port in Saigon, which is discussed in detail in the Transportation Monograph, initial emphasis was placed on port construction at Cam Ranh Bay using Army Engineer troops. On 30 April 1965, the logistical command was informed by cable of the pending arrival between 21 and 30 May of six ships with 68,000 short tons of cargo.[32] This represented a 2-month backlog at the 30,000-short ton rated capacity of the Saigon port. Included in these six ships were the engineer units and their equipment that would do the construction work at Cam Ranh Bay. Consequently, instructions were issued to divert the ships to Cam Ranh Bay and to develop plans for unloading the ships. A 100-ton floating crane and a tug were obtained from Okinawa and moved to Cam Ranh Bay; 2-1/2-ton trucks were borrowed and moved from Saigon by LST; and assorted personnel were recruited under the command of a Transportation Corps lieutenant from the logistical command staff to unload the first ship. Although final approval to proceed with the development of Cam Ranh Bay was not received until 14 May, a week before the scheduled arrival of the first ship, the ships were unloaded and work began on development of the port and the necessary storage facilities, roads, and other operating facilities. By August 1965, the port became operational when 73,000 measurement tons were offloaded. In September 137,000 measurement tons were handled, and in October 143,000 measurement tons. When completed, the port facility had 10 deep-draft berths and a daily discharge capacity of close to 7,000 tons as well as 30,000 barrels of fuel. Facilities for handling shallow-draft shipping and lighterage and a number of LST ramps permitted extensive use for intercoastal shipping and the transshipment of supplies.

(2) The next priority effort was construction of a new port, coincidentally named Newport, in the Saigon area a short way up the Saigon river from the city. Congestion in the commercial Saigon port had manifested itself as soon as large numbers of U. S. and FW forces arrived in RVN. The port, in its arrangements, physical location, working routine, and MHE, was geared to support an agricultural economy, not a vast, modern war machine. A completely separate military port, free from the overburdening Agency for International Development and commercial cargoes, was planned, with preliminary survey work begun in 1965; it became operational in 1967.

(3) As a result of the construction of these and other port facilities, the total port throughput in RVN increased from 370,000 short tons in December 1965 to 1,098,860 short tons by December 1967. As a measure of growth, discharge rates for ports in the II, III, and IV CTZ areas after completion of the construction effort[33] are shown in Table 13.

(4) Table 14 shows a comparison of deep-draft berth availability[34] in the II and III CTZ areas between 1 January 1965 and the present.

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[32] Col. Robert Duke, Historical Interview, 20 May 1966.

[33] Commander In Chief, Pacific, CINCPAC Command History, 1968, Annex A, USMACV, 30 April 1969, pp. 683-691.

[34] Ibid.

TABLE 13

DISCHARGE RATES FOR PORTS IN II, III, AND IV CTZ
(31 December 1967)

Port	Short Ton/Day	Barrels/Day
Saigon Nha Be (military only)	16,509	120,000
Cam Ranh Bay	6,520	30,000
Nha Trang	900	30,000
Qui Nhon	6,275	59,000
Phan Rang	900	30,000
Vung Ro	1,560	45,000
Vung Tau	2,450	21,000
Dong Tam	710	-
Can Tho	850	-

TABLE 14

DEEP-DRAFT BERTH AVAILABILITY
IN ARMY-OPERATED PORTS

Port	1 Jan 65	1 Jan 66	1 Jan 67	1 Jan 68[1]
Saigon	-	3[2]	4	4
Newport	-	-	-	4
Vung Tau	-	-	-	2
Cam Ranh Bay	-	4	10	10
Vung Ro	-	-	2	2
Qui Nhon	-	-	4	4
Total	0	7	20	26

[1] Construction essentially complete.
[2] Exclusive military use since December 1965.

d. Logistic Operating Facilities

(1) Development, construction, and acquisition of depot facilities, including warehouses, storage areas, and maintenance facilities, presented problems that closely paralleled port development. At the time the logistical command became operational, there was already a big construction backlog for the troops already in-country and construction of logistic facilities was generally at the bottom of the priority list. Supplies were scattered in nine various locations throughout Saigon, all of which were substandard and overcrowded and some of which were only open storage.

(2) To initially offset this shortage of facilities, negotiations were initiated with the U. S. Overseas Mission (USOM) to obtain 13 Japanese-built warehouses with dirt floors and no electrical wiring in the Fishmarket area in Saigon on the Saigon River. A contract was also let to construct an added 210,000 square feet of covered storage and to fill an area behind the warehouses that would serve as hardstand for open storage and cantonment area for the troops. This, then, was the Fishmarket that would house the 506th Field Depot, a larger operation by far than any depot in the United States, from that time until a new depot was constructed in Long Binh in 1968. In addition, agreement was reached with USOM on 16 March 1965 to provide and erect some Butler buildings owned by USOM for use as warehouses in the Qui Nhon, Da Nang, Cam Ranh, Nha Trang, and Saigon areas.

(3) The same basic situation prevailed at Qui Nhon where substandard and overcrowded facilities were occupied until completion of the new depot at Long My in 1968. Cam Ranh Bay, which was orginally nothing more than a large sand dune, suffered a better fate, since it was necessary to build a facility from scratch.

(4) To augment available covered storage facilities, extensive use was made of CONEX containers. By the end of 1968, almost 140,000 of the containers shipped had been retained in Vietnam and provided more than 6 million square feet of expedient covered storage.

(5) By way of comparison, the depot facilities at the Fishmarket and in Saigon had a total of 670,000 square feet of covered storage as late as March 1967, whereas the new depot facilities at Long Binh provided 207,700 square yards of black-topped hardstand, 1,458,000 square feet of covered storage, and 281,800 square feet of administrative facilities including the necessary environmental control for automatic data processing equipment.

e. Lines of Communication

(1) The development of both air and surface lines of communication (LOCs) was undertaken concurrently with development of the ports and other logistic facilities. Time did not permit construction of water terminals, depots, and other support facilities prior to receiving thousands of men and tons of materiel. Therefore, it was necessary to deploy over the beach, using amphibious capability to provide support until the standard, more economical fixed facilities could be developed. This rapid buildup on the beaches magnified the problems of the supply units, which did not yet have adequate personnel, equipment, or facilities with which to receive, identify, and store these large quantities of materiel. Terminal units, stevedore companies, terminal transfer units, amphibious truck companies, and boat companies provided personnel and equipment to receive, discharge, and clear personnel and materiel over the beach. Light and medium truck units and petroleum companies cleared the ports and beaches and moved materiel and supplies forward to depots and combat units. Civilian contractors were also used extensively to discharge and clear the ports, since active Army units were not available initially in the numbers required.

(2) Water. Supplies were shipped through the major ports and also through a series of shallow-draft ports along the coast for the lateral distribution of supplies. As the major port and depot complexes developed, supplies were transshipped by water to the lesser facilities and then inland by highway or airlift to the combat units. The importance of the intercoastal shipping is illustrated by the increased tonnage moved from a few hundred thousand in 1965 to over 3 million short tons during the 12 months ending 30 June 1968.

(3) Land. Tonnages moved by highway in early 1965 were negligible, although the picture improved rapidly. For example, average monthly tonnage from April to October 1966 was 622,700 short tons and during the May 1967 through April 1968 period, the monthly average had increased to 1,183,400 short tons. These figures, however, do not adequately portray the magnitude of the achievement. The highway system in RVN was badly deteriorated as the result of several years of sabotage, lack of maintenance, monsoon rains, and increasingly heavy use by the military forces. But even if it had been in good condition, the highway network would have been inadequate, for it had not been designed for the large carriers and increasingly heavy axle loads of military traffic. The width of the roadways, the alignment, the paving

surface, and the bridges were all substandard to the needs of the 1960's and required major upgrading to permit movement of this magnitude. Vietcong interdiction of the roads created a continuous security problem and required extensive efforts on the part of both tactical and logistic units. A noteworthy contribution that increased the security of the roads and permitted greatly increased usage was the operation directed at clearing forested areas along major military essential highways. U. S. Land Clearing Teams using Rome plows on D-7 bulldozers cleared 100- to 300-meter wide strips along many highways. The resulting open areas lessened Vietcong capability to mount ambushes and lessened the effectiveness of those which occurred. Convoy security requirements were also significantly reduced, although by no means eliminated.

(4) Rail. Normally, large amounts of supplies are moved by rail. However, in 1965 the once excellent narrow gauge railroad running north and south along the east coast was inoperable and largely destroyed. During 1965, only 30,201 short tons of cargo were moved by rail. Even on sections of the railroad that were open, constant sabotage and Vietcong interdiction made it impossible to rely on this mode for critical cargo. Some restoration effort and region improvement in security resulted in an increased movement of 93,000 short tons in 1966 and 247,000 short tons in 1967. However, much of this was in the immediate Saigon area, between Qui Nhon and Phu Cat and vegetable shipments on the spur line from Dalat to Ba Ngoi and Nha Trang.

(5) Air. Air terminals were developed in each of the major and many of the minor port complexes. Over 200 tactical airfields, eight of which were jet capable, were developed to support intratheater movement of passengers and cargo by the Common Services Airlift System (CSAS). Passenger movement increased to over 360,000 monthly and the combined tonnage of cargo, passengers, and mail exceeded 2,600 short tons daily.

5. LOGISTIC OPERATIONS

a. The basic Army logistic system as it was organized and operated in support of the Vietnam conflict was presented in Chapter 3, as were the changes that evolved to improve the responsiveness of the system during the 1965-69 time frame. This section will review the extension of this system into the Vietnam operational environment in terms of how the various logistic functions were performed, since it was the process of performing these functions that, in the end, constituted the logistic response.

b. In-Country Logistic Operations

(1) General. Responsibility for operation of the evolving logistic system in Vietnam was basically vested in three separate commands under the command and operational control of USARV. A limited fourth system existed for a time for missile-peculiar supply support of the two HAWK battalions in-country, but this was a stovepipe system operated by the 97th Artillery Group in direct conjunction with the U. S. Army Missile Command at Redstone Arsenal, Alabama, and, as such, afforded a limited basis for meaningful observation. Supply and maintenance support of Army aircraft was provided by the 34th General Support Group and is discussed in detail later in this section. Medical supply support was provided by the 44th Medical Brigade, initially under the command of the 1st Logistical Command and subsequently as a separate command under USARV. Medical supply depots were established in the vicinity of 1st Logistical Command depots and generally operated a parallel supply system. Except that medical supply and maintenance was also basically another stovepipe system, based on the 70th Medical Depot in Okinawa, the growth and development of the system largely paralleled the 1st Logistical Command supply system and encountered many similar problems. This portion of the narrative will therefore be concerned primarily with the broader scope of the 1st Logistical Command logistic operations, recognizing that many of the common personnel, facilities, and management developments were equally applicable to the other commands providing logistic service.

(2) Support Commands

(a) Following activation of the 1st Logistical Command on 1 April 1965, unit deployments brought the command to a strength of 5,515 by 30 June 1965, 22,079 by

31 December 1965, and 51,940 by 31 July 1968. Until February 1968, these units were subordinate to one of three support commands, Qui Nhon, Cam Ranh Bay (designated the Nha Trang Support Command until mid-1966), or Saigon, which exercised 1st Logistical Command responsibilities within their respective geographic areas. When Task Force Oregon (later reorganized as the Americal Division) and the 108th Artillery Group were deployed to the I CTZ area in April 1967, the 80th General Support Group, with appropriate attached units, was given the mission of providing retail and Army peculiar support in the I CTZ. The 80th GS Gp continued under operational control of the Qui Nhon Support Command, however, until a fourth command, the Da Nang Support Command, was organized in February 1968 to support the large-scale deployment of Army troops in Northern I CTZ.

(b) Initially, operational control by functional area was retained centrally at the 1st Logistical Command headquarters in Saigon. After this proved infeasible because of time and distance factors and communications difficulties, the three support commands in II and III Corps became generally autonomous, operating within a self-sustaining island and capable of acting independently to provide responsive, continuous, and uninterrupted support. Qui Nhon and Can Ranh Bay (Nha Trang) Support Commands each operated a port and a supply depot and, as units became available, received the necessary transportation, maintenance, service, and administrative units to supply Army organizations in its geographical area and support the nondivisional units while providing backup support to divisional units. The Saigon Support Command was similarly organized except that, until mid 1967, it did not operate the Saigon or Vung Tau ports. Previously, this port operation was the responsibility of the 4th Transportation Command as a separate command under the 1st Logistical Command.

(3) Port Operations

(a) Within the support commands, cargo discharge and port clearance were the responsibility of a subordinate transportation terminal command, whose operations were continually plagued during the early months by the lack of stevedoring personnel and material handling equipment, the high deadline rate of available MHE and floating craft, the arrival of nonself-sustaining ships prior to adequate port development, the lack of sufficient lighterage to equal the discharge rate of hatch gangs, and limited hardstand for cargo handling and segregation.

(b) These problems were overcome with time as additional units were organized, equipped, trained, and deployed, construction of port facilities was completed, and the necessary supplies and equipment became available. However, they served to emphasize the need to maintain in peacetime adequate logistic forces, equipped and trained to operate in underdeverloped areas, as well as the importance of establishing a balance of logistic and tactical troops during the early phases of the buildup in such an environment. Containerization and the use of CONEXs and roll-on/roll-off ships proved invaluable. The initiation of Sea-Land Van service in 1967 provided one of the most significant contributions to efficient and economical port operations.

(c) Port clearance varied considerably over time. Initially, a large bulk of the cargo was destined for the depots for further breakout and distribution to the end user. Systems refinements resulted in an increasing percentage of direct customer throughput. Additionally, the depots established liaison teams in the port areas to check incoming cargo, both break-bulk and containerized, for direct shipment—thereby eliminating double handling in the depot while improving delivery times.

(4) Depots

(a) The depots, generally collocated with the ports, provided the next step in the wholesale logistics system under the respective support command. There were substantial differences between depots throughout, both as to organization and missions.

(b) Initially, all depots were organized on a TOE basis utilizing assigned units to perform depot missions. The Saigon/Long Binh and Cam Ranh Bay depots reorganized

on a functional basis relatively early in their existence, whereas the Qui Nhon depot continued to operate based on TOE structure until early 1968, at which time all three depots were reorganized functionally as TD units.

(c) The Cam Ranh Bay depot was responsible for all classes of supply, but the Saigon and Qui Nhon depots did not have a Class V (ammunition) mission. Instead, a separate Ammunition Supply Depot (ASD) was operated by an assigned ordnance ammunition battalion under the direct operational control of the respective support command.

(d) Variations also existed in the use of contractor effort to perform various depot functions such as care and preservation, packing and crating, rebuild, and the operation of engineer construction materiel yards.

(e) Initially, stock accounting was performed manually with the Saigon depot being the first to convert to an automated system in November of 1966. This was followed by a second conversion to second generation equipment, commencing in October 1967. Supply records remained highly unreliable, however, because of the volume of transactions, coupled with the lack of trained supply personnel and limited facilities. Even after the introduction of the automated systems, the time lag between the decision and equipment selection until facilities, power, climate control, and conversion programs were completed resulted in the saturation of the new machine capability. Also, to the extent the old records were erroneous and not corrected, provision of improved ADP provided little more than a capability to make mistakes faster. Despite a massive effort to complete inventories and location surveys and to validate demand data, it was not until late 1968 and early 1969 that the data base was sufficiently purged to permit reasonable credibility.

(5) Inventory Control

(a) Initially, each depot maintained separate stock status data and demand data, established its own requisitioning objectives, and initiated its own replenishment requisitions. In late 1966, the 14th Inventory Control Center (redesignated Inventory Control Center, Vietnam (ICCV), in June 1968) was deployed and began the task of establishing a system of integrated management under the 1st Logistical Command.

(b) The ICC began a phased program to establish a system of centralized management over all theater assets. For each depot, requisitioning objectives were established, replenishment requisitions initiated, due-in and due-out files maintained, demand history maintained and analyzed, and recurring and special management reports prepared. As the phased program was completed, a capability was created at the ICC to cross-level stocks between depots and screen Red Ball and high-priority requisitions against total theater stocks, thus referring requisitions to another depot in-country rather than passing them to the CONUS.

(c) Equipped initially with first-generation ADPE, the increasing workload required subsequent conversion to second generation equipment in 1967 and third generation in 1969, which progressively improved the management capability of the ICC. By early 1968, the rate of referrals was running between 20-40 percent of all requisitions passed to the ICC, which represented a significant improvement in customer satisfaction as well as improved use of available theater stocks. The theater authorized stockage list (TASL) was reduced from 200,000 lines in October 1966 to a low of 120,000 lines in September 1967 and finally leveled off at about 130,000 lines late in 1968. This was subsequently reduced to 65,000 lines by April 1970. Order-ship times were reduced, due-in and due-out reconciliations were initiated, programs to identify and retrograde theater excesses were established, and controls were established on the use of high-priority requisitions—to mention only a few of the more significant management benefits.

(d) Major problems encountered by the ICC were the availability of qualified personnel, the saturation of machine capability because of the continued growth of requirements between the time improved equipment was justified and finally became operational and, until mid-1967, the lack of reliable, high-quality transceiver circuits.

(6) Retail Operations

(a) Although the depots were basically established to provide logistic support at the wholesale level, some degradation of operational capability did occur due to the tendency toward proliferation of retail accounts. For example, late in 1967, the depot in Saigon had over 700 separate accounts requisitioning directly on the depot. Intensive management resulted in reducing this number to 67 accounts by February 1968 and a gradual leveling off at about 100 accounts.

(b) Normally, the link between the depot and the customer for retail support was the direct support unit (DSU) for maintenance and repair parts support and supply and services units for all other support. For divisional units, this support was provided by units organic to the division operating under the division support command commander. For non-divisional units and backup support for the divisions, this support was provided on an area or mission basis by task-organized elements of the support commands (see Figure 29).

(c) Precise channels of support were developed on a case-by-case basis dependent largely on time-distance factors. Although divisional units normally requisitioned directly on the depot, on occasion support was provided as a deviation from doctrine by a logistic support activity (LSA) or, for a specific operation, from a specially established and stocked forward support activity (FSA) established by 1st Logistical Command elements. For example, in late 1967 and early 1968 the 29th General Support Group, a subordinate unit of the Saigon Support Command, operated an LSA at Tay Ninh to provide services and a limited range of all classes of supply for both 25th Division and nondivisional troops in the Tay Ninh area. 25th Division troops in the Cu Chi area were supported by organic logistic units drawing directly on the depot. At the same time, an FSA was established at Katum by the 29th GS Group to support 25th Division units participating in Operation Yellowstone. Although this example serves to illustrate the complexity of logistic support arrangements and the need for detailed planning, the fact remains that the system proved flexible and responsive to the needs of the customer and extended the support forward within the logistic island from the base to the fighting units where it was required (see Figure 30).

(d) Initially, all requisitioning and stock control at the user and retail level were performed manually with the point of conversion from manual to automated records being the depot. In 1966, a program began to provide an improved capability at the maintenance unit through conversion to an automated stock record accounting system using NCR 500 equipment. The first set of equipment arrived in the 79th Maintenance Battalion in mid-October of 1966, with additional equipment arriving throughout 1967 and the first half of 1968 to equip both divisional and separate maintenance units. Although introduction of this equipment has improved the capability of the retail system to interface with the automated wholesale system and has done much to simplify requisitioning procedures and maintenance of prescribed load lists at the using unit level, the limited application to repair parts supply results in continued manual management of the large volume of general supplies at the retail and using unit level. Although planning is underway to provide additional ADP capability at the retail level for general supplies, during the Vietnam era the scope of manual effort required served to detract from the efficient operation of a highly complex system.

6. EXCESS PROBLEM

a. Background

(1) To this point, consideration has been given to the assets, i.e., men, materiel, and facilities, of the Army logistic system and the interface of these assets in terms of how the logistic system functioned in support of the forces fighting in Vietnam. At this point, it is appropriate to digress to look at the excess problem. Although this is a subject of detailed monograph review, some consideration is appropriate here as it tends to bear on the efficiency and economy of the logistic support provided.

(2) Before further discussion, however, a few pertinent facts should be considered so that the subject can be viewed in the proper perspective:

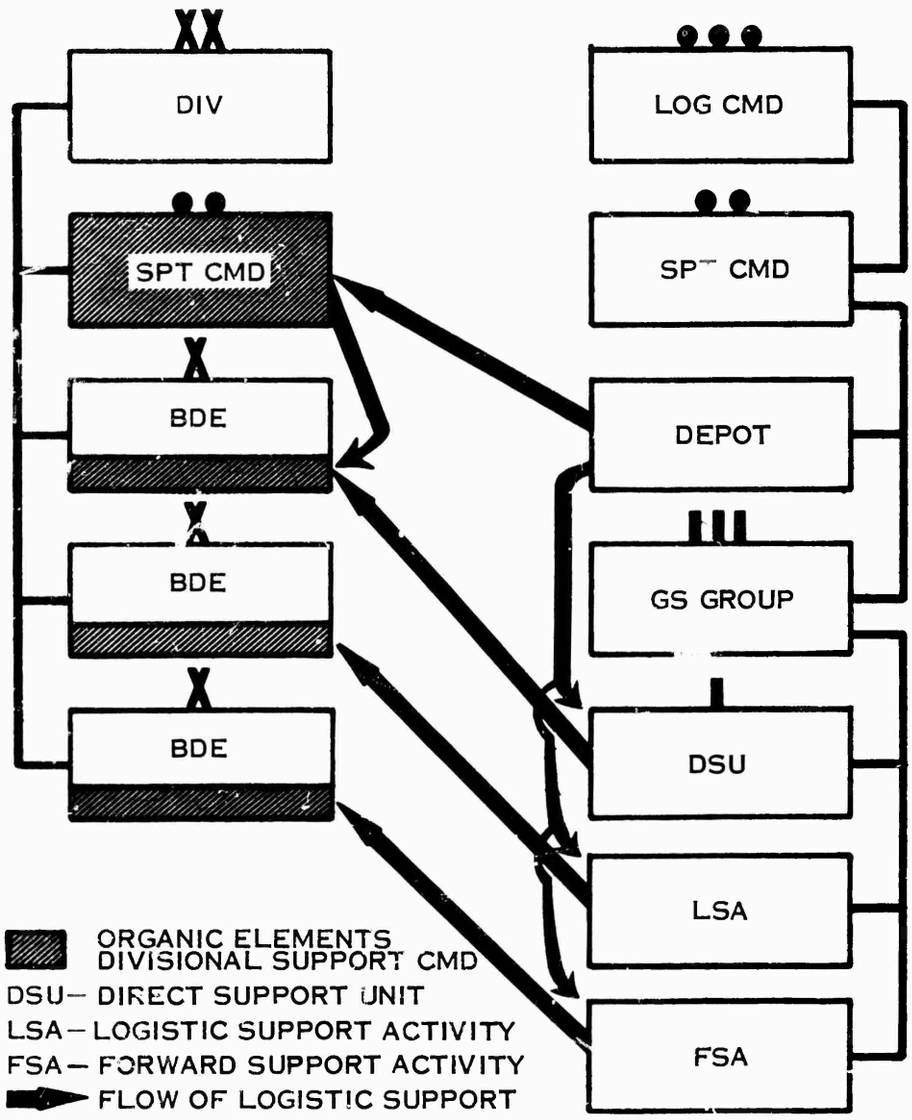

FIGURE 29. ALTERNATE FLOW OF LOGISTIC SUPPORT

(a) The excess included the retrograde of a large quantity of stock, the status of which was unknown. Because of the inadequate records that existed, it was impossible to determine that the stocks were in fact excess. And to the extent an item could not be identified, nothing was known as to its status.

(b) Materiel retrograded to Okinawa was inspected, identified, repaired, preserved, and repacked as necessary and returned to stock. Consequently, although Okinawa was removed from the supply chain in December 1966, USARV continued to process requisitions through Okinawa and, as late as mid-1968, was receiving 20 to 30 percent fill from that source.

(c) This stock was also processed for redistribution by the PACOM Utilization and Redistribution Agency (PURA). This was an agency established on Okinawa pursuant

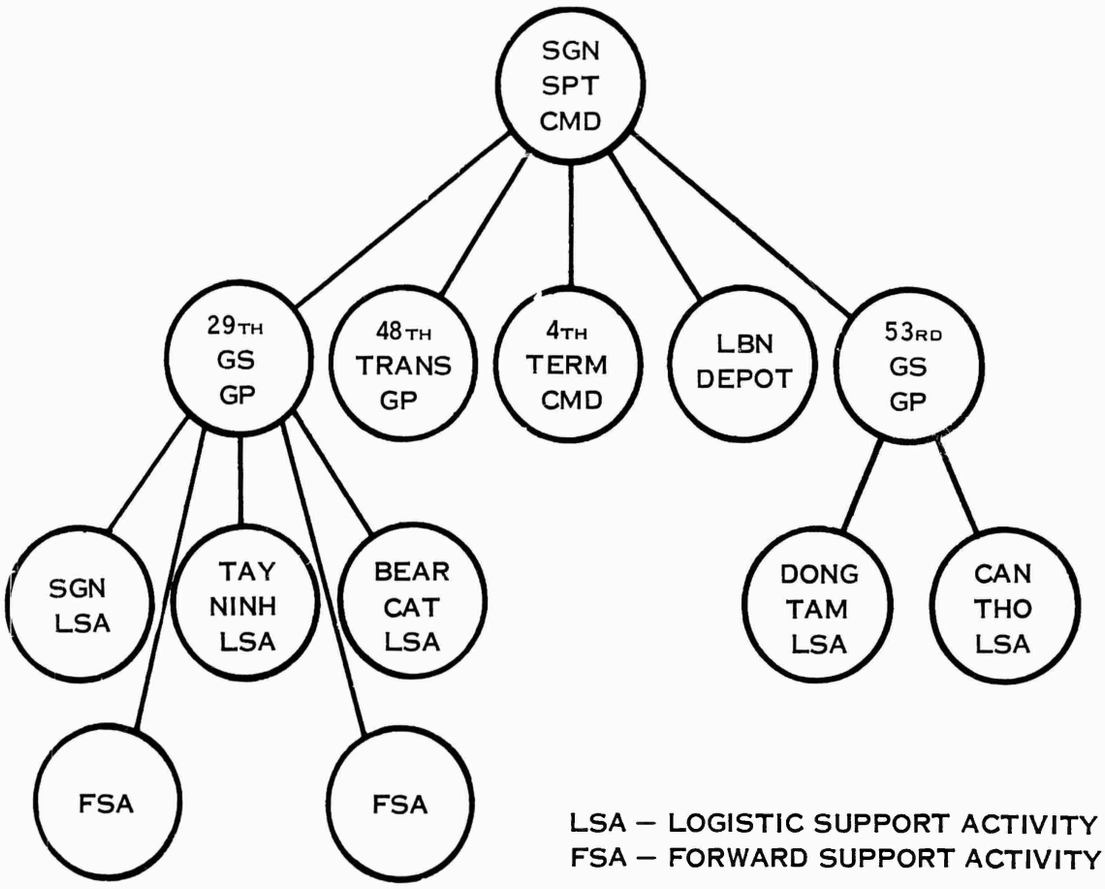

FIGURE 30. TYPE ORGANIZATION FOR LOGISTIC SUPPORT

to a 24 November 1967 Secretary of Defense directive to screen excesses of all Services throughout the Pacific and make these items available to all customers in the Pacific area.

(3) The foregoing notwithstanding, the fact was that substantial quantities of materiel in excess of the current operating requirements of the command were introduced into both Vietnam and Okinawa early in the conflict. This fact became increasingly evident in late 1966 and early 1967, as the logistic buildup began to level off, and required management capabilities became operational.

b. Command Management Actions

(1) Although the priority effort of all Army logistic elements continued to be devoted to supporting the increasing tempo of combat operations, the improvement in logistic resources permitted the initiation of programs late in 1966 to purify stockage levels and to identify and eventually retrograde items in long supply. Limited command-wide visibility of both requirements and assets was first achieved in October 1966, when the initial 14th ICC files were established based on input from the individual depots. By the end of January 1967, file activation was basically complete. Despite inherent inaccuracies, these centralized files established a point of departure for future purification as well as identifying potential problem areas for immediate management attention.

(2) More significant management actions included the reduction of the Theater Authorized Stockage List, reconciliation of due-in files with follow-up cancellations, cross-

leveling of stocks between depots, referral of requisitions between depots, and validation and purification of requisitioning objectives. Although these programs were effective, it was readily apparent that more dramatic action was required to eliminate long stocks already in-country. In April 1967, a decision was made to retrograde these stocks to Okinawa, which had an excellent but only partially used logistic capability as a result of the 12 December 1966 decision to remove Okinawa from the USARV supply channel.

(3) Special programs were initiated to expedite the flow of retrograde from Vietnam to Okinawa. In addition to the retrograde of 14th ICC identified excesses, which required verification because of record inaccuracies, Project Counter teams worked with tactical units to locate and retrograde organizational excesses, a "Gray Box" program was initiated at the depots on the assumption that if the box had sat for so long as to become weathered it was not required, a "Space Eater" program was established to identify and validate requirements and assets of large, bulky items, and items which could not be identified because of stock number changes or other reasons were automatically evacuated.

(4) Despite this aggressive retrograde program, by June 1968 it was apparent that even more drastic measures were required, since the flow of supplies into the country still exceeded the sum of issues and retrograde, and tonnages in-country continued to increase. A series of additional programs under the titles of Project STOP, STOP/SEE, and STOP/SEE EXPANDED were consequently initiated to cancel requisitions or frustrate shipments already underway for selected federal supply classes.

c. Causes. The obvious questions that this raises are how these excesses were generated, why were these additional supplies on requisition, and what can be done to preclude this in the future. Although the answer basically lies in the fact that materiel was shipped into country faster than it could be received, stored, and issued, a summary of more specific underlying problems is useful for the purpose of this review.

(1) Personnel. First, and probably foremost, was that logistic units of the types required were not available in the force structure of the active Army to meet deployment requirements. Even if they had been available, the deployment decision process was not timely, as in the case of the decision to deploy a 2,100-man logistical command capable of supporting 26,000 troops, when over 36,000 troops would require support by the time the logistical command arrived. Personnel trained and experienced in wholesale logistics were not available, and the civilianized CONUS base did not provide a source for retention or development of requisite skills.

(2) Facilities. Secondly, facilities to receive and store materiel were not available and the construction of required facilities enjoyed a relatively low priority until 1967 when the problem had already become critical. As the shipping backlog grew, materiel was moved directly from ship and port areas to any available storage area and stacked at random. Documentation was lost or became illegible; locator systems were ineffective; needed supplies were inaccessible; packaging became weathered and damaged; and markings became illegible. Consequently, because needed items could not be identified or located, they were re-requisitioned, further increasing the incoming flow and compounding the problem.

(3) Automatic Supply. Another factor, although not significant, was the "push" package system used to support early deployments. This subject is developed in detail in the Supply Management Monograph. For this purpose, suffice it to say that "push" packages are essential for the initial support of deploying forces but neither a "push" nor a "pull" system will provide exactly what is required without valid consumption data. In addition, data provided by deploying units on densities, makes, and models of accompanying equipment were inaccurate and the consumption factors used to develop these packages proved invalid in the Vietnam environment. This resulted in some corresponding excesses (as well as shortages).

(4) Item Proliferation. The delay in developing standardized criteria for austere cantonment facilities and the permissive policies regarding post, camp, and station type property and expendable supplies were major contributors to the excess problem in bulk if not in dollars. Deploying units brought all available supply catalogs, which opened a literal

Sears, Roebuck and Co. system to them. The resulting proliferation of items was sufficient to inundate any supply system. For example, requisitions for 5-gallon cans of white paint could pass through the machine identified only by a federal stock number (FSN) and be literally invisible to the human eye while excess quantities of white paint in 1-gallon cans were being retrograded from the depot. Also, a unit could requisition one of the 2-dozen-odd typewriters by FSN, thereby creating a CONUS demand even though similar machines under a different stock number were excess in the theater. Stringent controls on what a unit could order and machine programs to cross reference items for intechangeability and substitutability were instituted long after the damage was done.

(5) Supply Discipline

(a) Lack of confidence in the supply system resulted in using units submitting multiple requisitions for needed items. In addition, rather than using prescribed follow-up procedures, the requesting unit frequently re-requisitioned the needed item one or more times. Both of these practices brought unneeded items into country and concurrently inflated demand data at the supporting units and depots.

(b) This was accompanied by a tendency to assign high-priority issue designators to all requisitions and to hoard scarce items at using unit level and thereby contributed to the excesses because of the inflationary pressure on the supply system.

(c) The coding of demands as recurring or nonrecurring may or may not be considered a matter of supply discipline. More probably it lies somewhere between a trained personnel problem and a basic ambiguity in the system. Whichever may be the case, the tendency to miscode requisitions is difficult to detect in an automated system operating at high volume and results in a distortion of demand data and requisitioning objectives. Limited review indicates the tendency is toward coding as recurring with a resultant inflation of theater stocks.

(6) ADP Capability. Another major factor that contributed substantially to the excess problem was the delayed availability of an adequate stock control capability. During the initial year and a half of manual operation, the sheer volume of traffic and the inability to interface with the automated CONUS system resulted in a near insurmountable backlog of management problems that required 2 years to untangle. Even though the UNIVAC 1005 system was introduced late in 1966, the lead time associated with the approval process, construction of facilities, writing and debugging conversion programs, and getting the system operational is such that by the time the new system was on line it was barely adequate to cope with the continually increasing requirements. System planning should have provided excess capacity in recognition of the past growth trend.

(7) CONUS Controls. During World War II and Korea, and in support of peacetime operations, the Army had operated Overseas Supply Agencies (OSA) at the ports of San Francisco, New Orleans, and New York. These OSAs served as a focal point for the routing, follow-up, and status reporting on requisitions as well as cargo movement control for the supported theater. The directed discontinuance of these OSAs during the first half of 1964[35] resulted in the fragmentation of supply support responsibilities and the loss of control over supply support of overseas commands. This became apparent during the Dominican Republic crisis, when it became necessary to establish a Logistic Control Office (LCO) at New Orleans to coordinate support of deployed forces. Subsequent establishment of LCOs at New York and San Francisco in 1965 provided a rudimentary control capability, the full evolution of which was to require 2 years. During this time, many of the initial supply problems in Vietnam developed. Much of the early difficulty in knowing what supplies were enroute to Vietnam and controlling the input to correspond with the needs and capabilities of the command might have been alleviated had an operational control agency been in existence.

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[35] Assistant Secretary of Defense, Comptroller, Memorandum for the Assistant Secretary of Defense (I&L), subject: Funding for Army Overseas Supply Agencies, April 19, 1963.

(8) Other Causes. The foregoing are but a few of the major contributing factors. Additional factors that could be considered include transportation congestion that resulted in needed supplies sitting on the shipping docks for extended periods, maintenance policies that created a proliferation of repair parts in forward areas and fragmented scarce maintenance skills required to repair and return reparables to stock, item turbulence, and cataloging changes that resulted in delays due to misrouted requisitions, and rejected requisitions due to erroneous stock numbers. As in the case of poles, the unit of issue was changed from feet to each while a requisition was in process and resulted in substantial overshipment.

d. Future Excesses. In addition to the specific logistic problems identified, consideration of the excess problem tends to reveal two other considerations. The inherent uncertainty and unpredictability of war create a high probability of excesses in any other war. This fact should be recognized and, first, management information systems should be designed to identify such excesses at the earliest practicable date and, second, planning should provide for standardized systems such as PURA to maximize utilization of these excesses.

7. SUPPORT OF ARMY AVIATION

a. Background. Although much of what has been said regarding overall Army logistic support operations is fully applicable to the logistic support of Army aviation, some further elaboration is appropriate because of the investment costs and the intensively managed stovepipe system that was developed to provide this support. Also, consideration of the stovepipe system suggests possible further application of this methodology to other high-cost weapons systems.

b. The Buildup

(1) From an austere beginning on 11 December 1961, when the first two helicopter companies arrived in Vietnam, the total number of U.S. Army aircraft increased to 510 by 1 January 1965 and to a peak of 3,842 in May 1969. Total sorties flown and flying hours increased commensurately as shown in Table 15.

(2) The development of the logistic capability to provide supply and maintenance support for this growing aircraft density took place concurrently. The procurement lead time required to obtain the aircraft generally allowed sufficient time to organize, equip, and train the necessary logistic units so that they could deploy on a time-phased basis with the supported units.

TABLE 15

DENSITY, SORTIES, AND FLYING HOURS
OF U.S. ARMY AIRCRAFT
(Monthly Average)

	CY 65	CY 66	CY 67	CY 68	CY 69
Density					
Fixed Wing	183	353	444	557	593
Rotary Wing	340	1380	2076	2313	3184
Total	523	1733	2520	2870	3777
Sorties (Thousands)	N/A	247	445	596	686
Flying Hours (Thousands)	59	116	171	234	276

(3) When the buildup commenced in 1965, the U. S. Army Support Command Vietnam (USASCV) had one aircraft maintenance and supply battalion (765th Transportation Battalion) located at Vung Tau providing backup direct and general support for all Army aircraft in-country. Three direct support companies, located at Vung Tau, Saigon, and Nha Trang, provided backup support for the separate aviation companies that had their own organic or attached direct support capability. In addition, they provided direct support for the small aviation detachments that lacked this capability. The one general support company was located with the battalion headquarters at Vung Tau. Providing supply support for this battalion and its four companies was an Aviation Supply Point in Saigon operated by the Aviation Detachment of USASCV.

(4) As plans were developed in mid and late 1965 for the deployment of additional Army aviation units, the CG, USASCV (subsequently redesignated USARV), established a committee to devise a plan for supporting a large influx of Army aircraft. Basic criteria for the plan were that it was to provide one-stop supply and maintenance service and that it must provide for expansion commensurate with increasing aircraft densities. Additional considerations included the following.

(a) The 12th Aviation Group, then in-country, was planned to remain in the Saigon area to provide Army aviation support in the III and IV CTZ areas.

(b) A new group (17th) was planned for activation in the Nha Trang area to support II CTZ.

(c) The 0-1 company and the OV-1 platoon in I CTZ in the Hue-Phu Bai area had an organic maintenance capability. Since no further Army deployments were planned to I CTZ, plans called for these units to be supported from Pleiku or Qui Nhon.

(d) An Aviation Brigade headquarters was planned as a control element for the two groups at Saigon and Nha Trang with the brigade to be a subordinate command under USARV.

(e) The 1st Logistical Command had recently been activated.

(5) Consideration of the operational structure to be supported led to the development of three prime alternative organizations:

(a) Aircraft supply and maintenance units integrated in the Aviation Brigade,

(b) Aircraft supply and maintenance units integrated in the 1st Logistical Command, or

(c) A separate headquarters commanding all nondivisional aircraft supply and maintenance units. This latter alternative had three further variations:

1. Assigned to the Aviation Brigade.

2. Assigned to 1st Logistical Command.

3. A separate command under USARV.

(6) The decision finally reached was to adopt the latter alternative in the third variation, i. e., to establish a separate headquarters under the direct command of USARV. This basic organizational structure has subsequently operated throughout the Vietnam era with only one minor variation. Originally, the command was under the staff supervision of the USARV G-4. In October 1967, staff supervision was changed to the USARV Aviation Officer.

(7) Following the September 1965 decision to establish a separate command, the next 2 months were spent in developing an organizational structure and preparing the necessary

authorization documents. In November 1965, a Group Headquarters was established on a provisional basis and finally, on 17 January 1966, a USARPAC General Order was published activating the 34th General Support Group.

(8) Subsequently, as previously stated, total Army aircraft density increased to a high of 3,842 in May 1969. The deployed aircraft were assigned to a total of 142 company-sized units plus a number of miscellaneous smaller detachments. Of the 142 companies, 63 were organic to divisions, regiments, or squadrons and had their own organic direct support supply and maintenance capability. The 34th General Support Group provided direct support for the 79 nonorganic companies and the smaller detachments as well as backup support and general support maintenance for all aviation units.

(9) The 34th General Support Group ultimately had two depot companies, five general support companies, 11 direct support companies (later reduced to 10), four aviation electronics companies, and the Aviation Materiel Management Center assigned to accomplish its mission. Figure 31 shows the growth of the 34th Group and, for comparison purposes, the related density of aircraft supported.[36]

(10) Qualitative personnel problems in the aircraft supply and maintenance field were generally similar to those experienced throughout the logistic area, though perhaps more critical because of the nature of the materiel maintained.

(a) Civilian contractors were used to augment the military capability with critical skills, particularly in the areas of sheet metal and structural repairs. Table 16 shows strength authorizations by fiscal year for contractor personnel.[37]

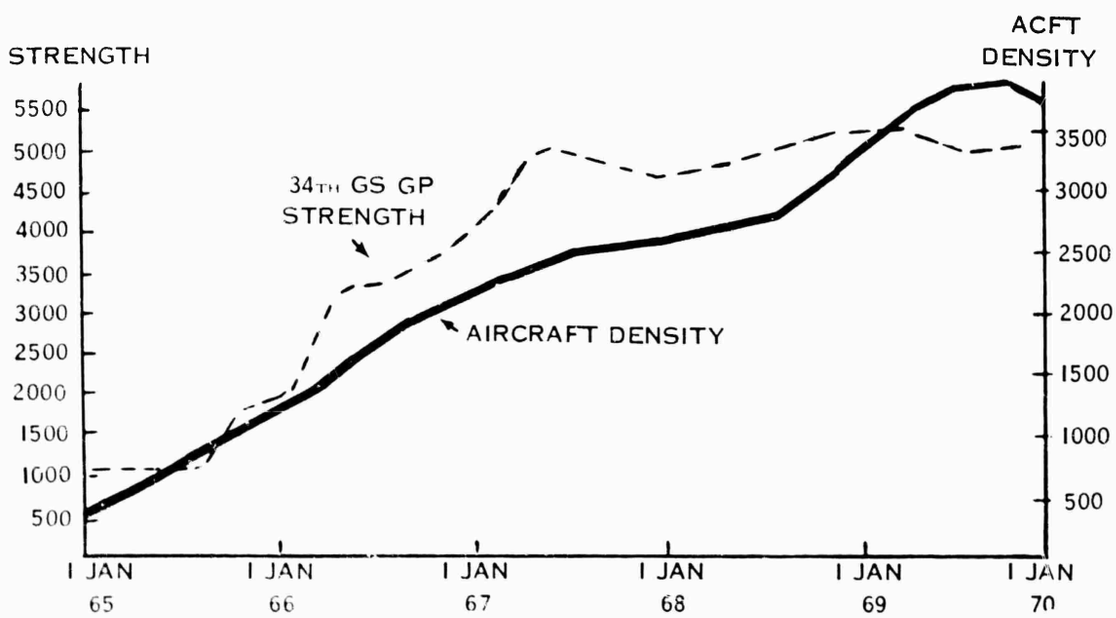

FIGURE 31. STRENGTH OF 34TH GENERAL SUPPORT GROUP AND AIRCRAFT DENSITY

[36] Department of the Army, Operational Report and Lessons Learned, 1 April 1965 to 30 April 1969, Issued quarterly.

[37] Ibid.

TABLE 16

CONTRACT MAINTENANCE MANNING LEVEL

Company	FY 65	FY 66	FY 67	FY 68	FY 69	FY 70
Lockheed	-	-	-	100	232	287
Lear Siegler	-	-	457	624	832	733
Dynalectron	34	239	550	847	1056	872
Total	34	239	1007	1571	2120	1892

(b) Other augmentation has been provided on a case-by-case basis by CONUS commodity command contracts for specialized modifications or retrofits, to include installation of new armaments and avionics.

(c) Through the field service representative (FSR) program, the Aviation Systems Command provided either DA civilians or contracted manufacturer's representatives to advise and assist in problem areas arising from the operation of complex and sophisticated equipment in the field. One hundred and forty-one FSRs were authorized in the summer of 1969. These FSRs were in addition to new equipment training teams sent into country upon introduction of a new equipment item.

(d) Project Counter teams, discussed in a prior section, were also provided the 34th GS Group.

(e) Formalized training was provided, initially by mobile teams and subsequently at a fixed school located at Vung Tau, to update assigned personnel on later models and series of equipment coming into the theater.

(f) The need for this extensive augmentation of contract labor and diversion of scarce skills to provide instruction stemmed from the same causes previously discussed. The high degree of civilianization of the CONUS base and the lack of a CONUS base for the development and retention of skills were even more pronounced in the aircraft area. Because of Vietnam priorities, literally all of the current makes and models were located in Vietnam even further restricting the experience base. Also, as in the electronics area, trained aircraft maintenance personnel were highly susceptible to incursions from industry, making retention in the Service more difficult.

c. Materiel Resources

(1) Aircraft and associated spares and repair parts received a large share of the Army's investment dollars between 1965 and 1970, second only to the cost of ammunition. Table 17 shows the annual investment cost funded by the PEMA appropriation.

(2) Although this total cost cannot be related entirely to Vietnam, most of the equipment procured went to equip newly activated units deployed to Vietnam, to expand the CONUS training base, to maintain the aircraft in Vietnam, or to replace the 2,800 plus Army aircraft lost in Vietnam between 1965 and 1969. This high investment cost plus a proportionately high operations and maintenance cost were the major factors influencing the decision to establish an intensively managed stovepipe system for the support of Army aircraft in Vietnam.

TABLE 17

FUNDING FOR PROCUREMENT OF EQUIPMENT AND MISSILES, ARMY (PEMA)
(Millions of Dollars)

Activity	FY 65	FY 66	FY 67	FY 68	FY 69	FY 70
Aircraft	346.7	1053.5	944.9	965.9	654.7	462.0
Spares and Repair Parts	52.5	252.2	241.9	300.8	154.4	99.6
Total	399.2	1305.7	1186.8	1266.7	809.1	561.6

Source: Department of the Army, Deputy Chief of Staff for Logistics.

(3) Programming and budgeting problems resulting from deferred activation and deployment decisions were generally the same as those previously discussed.

(a) Table 18 shows the monthly UH-1 production schedule since 1965. Although this is somewhat of an extreme case, it is illustrative of the general turbulence that was experienced.

(b) Continuing changes in force structure, unit organization, and distribution priorities resulted from unforeseen operational requirements and from experience gained from operating new systems in a harsh environment with evolving operational concepts. In addition to their impact on ancillary equipment requirements, these changes, coupled with the structural sensitivity of the airframe to weight and balance changes, resulted in production delays that reduced overall efficiency of the logistic system.

(c) Airframes themselves, however, have a relatively easily identified basis of issue and requirements and assets can readily be computed. The greatest difficulty, and one which resulted in problems and shortages throughout the period, was the determination

TABLE 18

UH-1 PRODUCTION SCHEDULE

CY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1965	57	58	58	60	63	66	68	67	70	71	74	75
1966	74	81	87	93	99	100	102	114	109	125	133	142
1967	150	150	155	152	150	143	139	120	110	106	98	85
1968	85	82	80	85	80	66	65	65	65	65	65	53
1969	73	82	89	100	100	44	100	101	101	101		

Source: Department of the Army, Deputy Chief of Staff for Logistics.

of requirements for ancillary equipment such as avionics, armament and ammunition, tools, test equipment, and other special gear.

d. Development of Facilities

(1) Facilities problems associated with the support of Army aircraft were largely related to the development of storage and maintenance facilities. The overall operation of the system was not significantly affected by port and LOC limitations.

(2) Expansion of storage facilities to accommodate the growth of the Saigon aviation depot was delayed by the congestion at Tan Son Nhut and the resultant difficulties encountered in obtaining required real estate. Some deterioration of packaging and damage to supplies occurred as a result of these delays, but the impact was not comparable to that in the general supply depots. The major problem associated with the Qui Nhon depot, established late in 1967, was one of siting. Location of the depot in the Long My Valley 20 miles from Phu Cat Airfield resulted in double handling of cargo using short haul trucking for both shipping and receiving, which increased the response time of the depot.

(3) Construction of aircraft maintenance facilities presented more serious problems because of the sensitivity of aircraft components to the elements. Maintenance tents provided as organizational equipment were not only short lived in the tropical climate and expensive to replace, but generally were too small for the volume of work and resulted in a significant loss of valuable man-hours moving aircraft in and out. Shop vans proved too small to handle sheet metal work on bulky cowling and for balancing blades. Construction of permanent facilities to offset these problems proved time consuming as in the extreme case of the 604th DS Company, which moved into Pleiku in March 1966 and occupied an adequate hangar facility in the summer of 1969. Although available statistics are inadequate to allow precise measurement, the weight of evidence indicates that the lack of adequate maintenance facilities appreciably degraded efficiency but not responsiveness or effectiveness.

e. Supply Operations

(1) During 1965, aircraft repair parts were provided by the aircraft supply point at Tan Son Nhut operated by personnel of the USASCV Aviation Detachment, augmented by the supply platoon of the 370th GS Company and about 70 local nationals. All requisitions from operating units, general and direct support companies, other Services, and free world forces were submitted directly to the supply point that provided a retail service. Items not available within the 8,000 item ASL were requisitioned from Okinawa which either filled the item from stock or passed it through USARPAC to the CONUS NICP. Figure 32 shows this requisition and supply flow.

(2) Following activation of the 34th General Support Group and arrival of the 110th and 241st Transportation Companies (Depot) and the 58th Transportation Battalion Headquarters, several changes were made in the basic supply system. Figure 33 shows the requisition and supply flow beginning in April 1966. Major changes included:

(a) Establishment of the Aviation Materiel Management Agency (AMMC) using resources of the 58th Transportation Battalion, which arrangement continued until February 1968 when an AMMC TD was approved and the 58th was reassigned to I Corps. AMMC served as an inventory control center for all aviation materiel and provided centralized accountability for all stocks after the second depot was established at Qui Nhon at the end of 1967. Stock control was converted from manual to an IBM 407 EAM machine in early 1966, to a UNIVAC 1005 at the end of 1966, to an IBM 1460 in March 1968, and to an IBM 360/50 in mid-1969.

(b) The Saigon Aviation Depot was removed from retail operations with all requisitions passing through DS companies except for Air Force and Air Vietnam. DS companies were equipped with NCR 500 equipment beginning late in 1966 to maintain supply data and interface with AMMC.

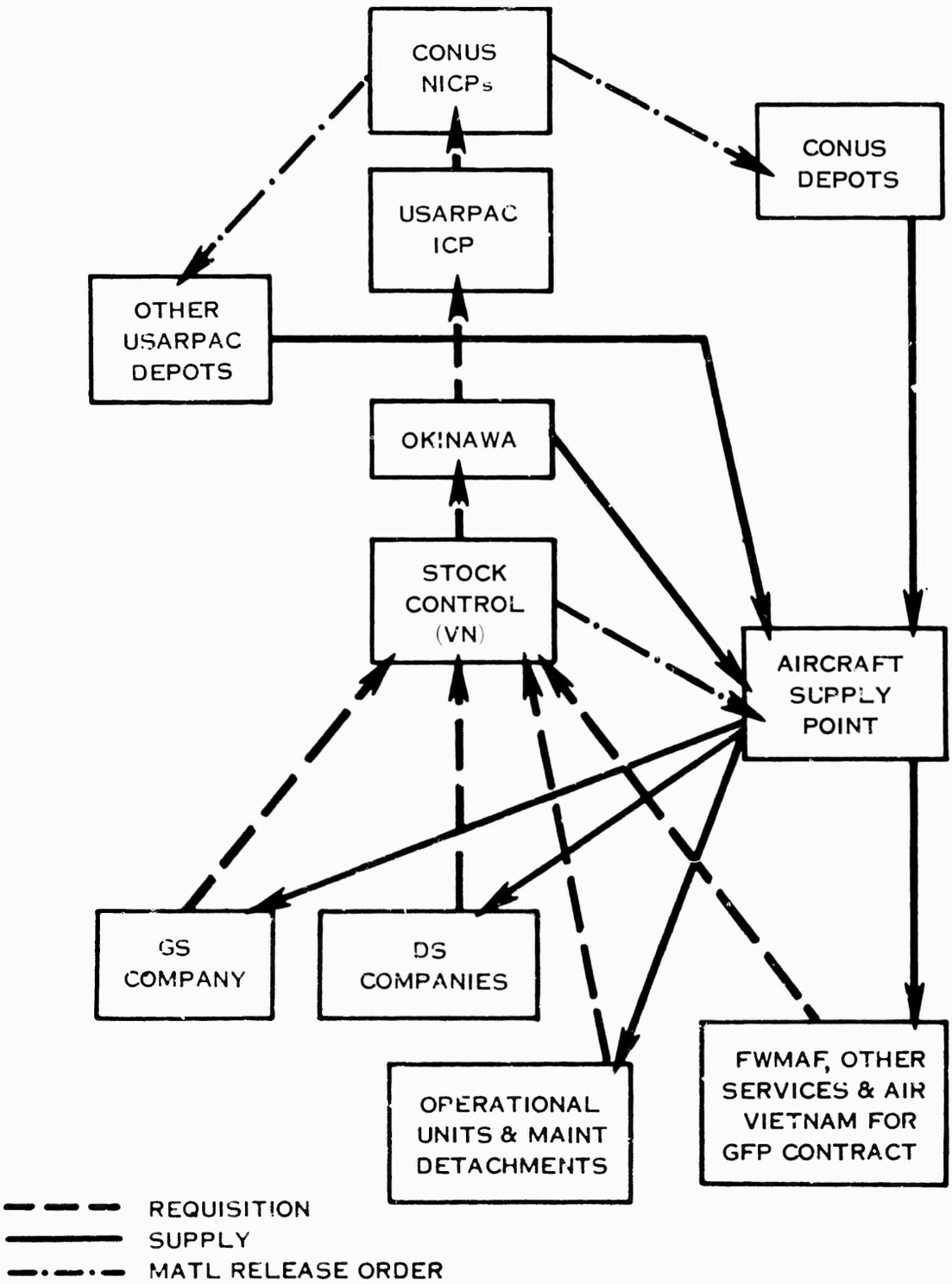

FIGURE 32. REQUISITION AND SUPPLY FLOW, 1965

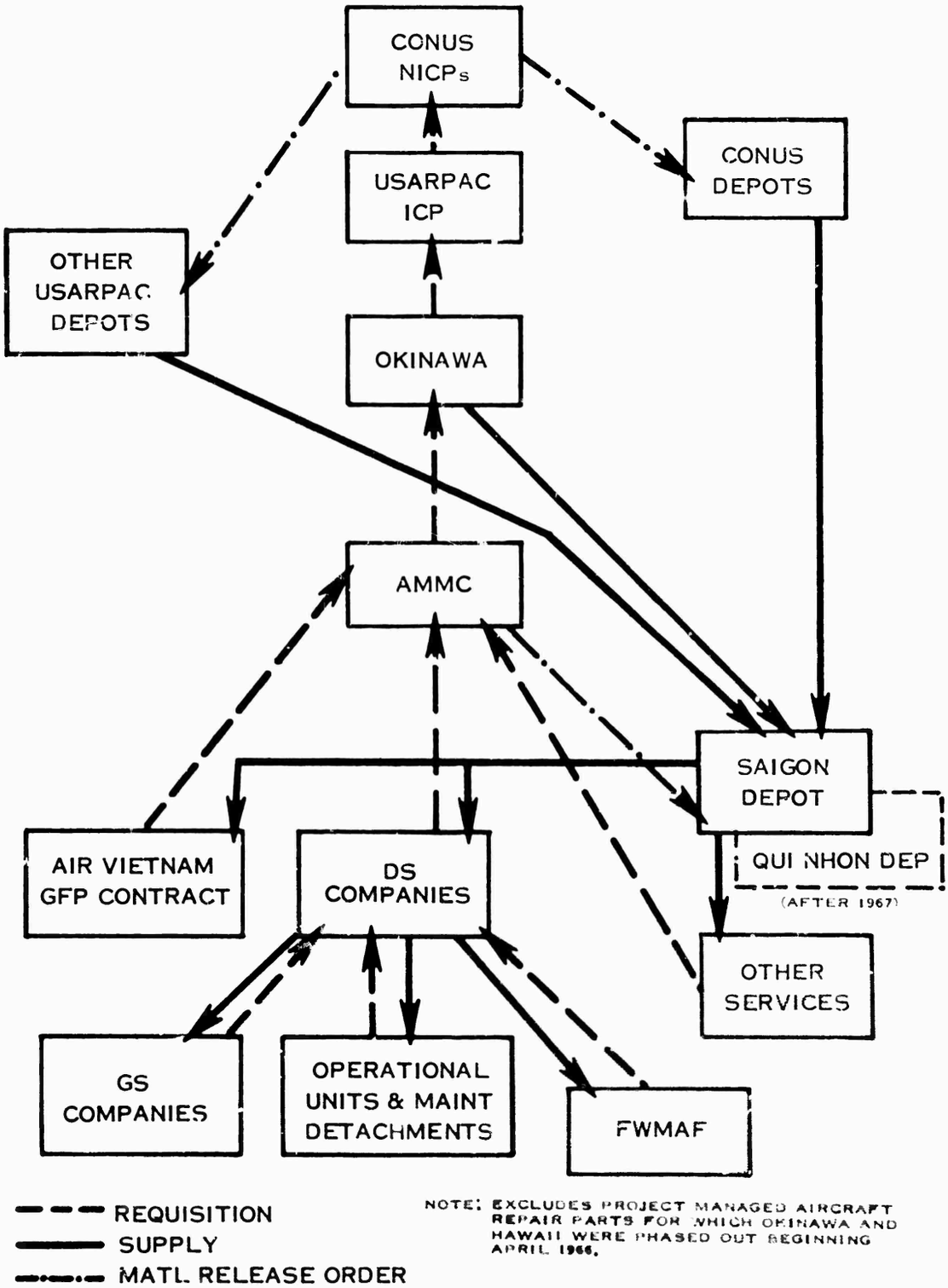

FIGURE 33. REQUISITION AND SUPPLY FLOW, APRIL 1966 TO APRIL 1968

(c) Beginning in July 1966, Okinawa and Hawaii were bypassed for all aircraft parts. A partial stovepipe system was initiated in April 1967 and was fully implemented for the CH-54 in July 1967, for the OH-6 in November 1967, and for the UH-1 in January 1968.

(d) Increased density of aircraft supported, together with increasing delays in obtaining supplies through the Okinawa/USARPAC route, resulted in the third major change in the supply system (see Figure 34). This was the introduction of a stovepipe system whereby AMMC passed all requisitions directly to the Aviation Systems Command in St. Louis, with only an information copy to USARPAC for billing purposes. In addition to a reduction in a high-dollar pipeline, this stovepipe system has had a major advantage in improved communications between the consumer in Vietnam and a supply agency in CONUS which, although it may not be the supplier of the item, is intimately familiar with its end item application.

(4) System Evaluation

(a) Overall, the aviation repair parts system has been effective and responsive, as indicated by the low percentage of aircraft in the not operationally ready—supply (NORS) category with a 5.9 percent rate as of 31 August 1969 (standard of 7 percent) and a demand satisfaction rate that has consistently been around 65 percent.

(b) From an ASL of 8,000 lines in 1965, stockage increased to a high of 46,000 lines late in 1968 and had subsequently been reduced to about 33,000 lines by June 1969 without apparent effect on supply effectiveness.

(c) A reduction in efficiency similar to that experienced by the 1st Logistical Command resulted from the phased introduction of marginal ADP equipment.

(d) The establishment of a separate logistic agency under the staff supervision of the USARV Aviation Officer had the end result that all aspects of logistics never finally merged until they reached the Chief of Staff, USARV. The existence of multiple logistic agencies with separate file formats also resulted in problems in the preparation of various common formats such as financial inventory accounting reports and Red Ball requisitions. These are basically command and organizational problems, however, which can readily be resolved and should not obscure the positive values that occurred as a result of consolidating technical expertise on a weapons system in a single command.

(e) There was some item duplication in stockage lists of the AMMC and the 1st Logistical Command. Again, this is a problem that could have been eliminated without detriment to the one-stop concept under different command arrangements.

f. Maintenance Operations

(1) Maintenance organization and operations closely paralleled aircraft supply while facing most of the same problems of the overall maintenance system as previously discussed.

(a) Aviation units had limited organic supply and maintenance capabilities and maintained a prescribed load list (PLL) of demand-supported repair parts. Providing direct support maintenance for this unit was either a detachment or a DS company, generally collocated with the supported unit and often sharing the same hangar facilities, which maintained an authorized stockage list (ASL) of repair parts based on demands of the units it supported.

(b) Backup direct support to accept the overflow was provided on an area basis by DS companies of the 34th GS Group and the five GS companies of the group provided general support maintenance on a similar area basis. In addition, the 1st Transportation Battalion (Seaborne), operating aboard the converted seaplane tender USNS CORPUS CHRISTI BAY at offshore locations, provided limited depot-level overhaul of components.

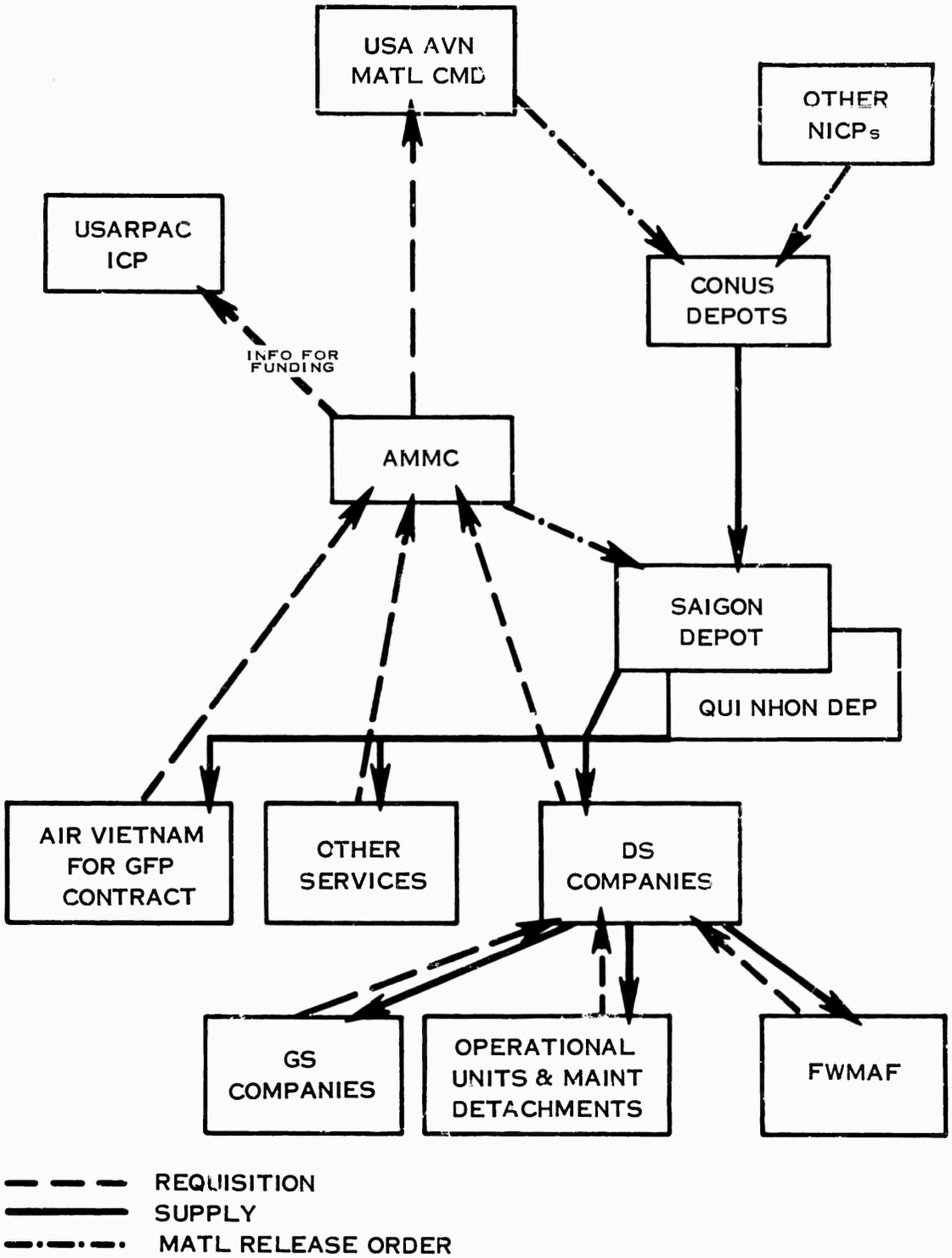

FIGURE 34. REQUISITION AND SUPPLY FLOW, APRIL 1968 TO SEPTEMBER 1969

(c) Aircraft and components requiring maintenance and overhaul beyond the capability of these units were returned to the CONUS to military or contractor facilities.

(2) System Evaluation

(a) Again, the effectiveness of Army aircraft maintenance support is attested to by the high operationally ready rate maintained. Compared to a standard of 21 percent not operationally ready because of maintenance (NORM), the USARV fleet had fluctuated from 11.1 percent to 22.9 percent, with an August 1969 rate of 20.1 percent. This rate has been maintained despite the increase in aircraft density and flying hours and the aging of a number of high-density aircraft in the fleet.

(b) This effectiveness was not achieved without difficulties; however, the major problems were the quantity and quality of available maintenance personnel, repair parts shortages, and shortages of special tools and test equipment.

(c) Although Red Ball Express, the intense management provided by the stovepipe system, and the augmentation with contractor skills tended to ease the problems, they appear to be remedies rather than cures. The high skill levels and high costs associated with complex aircraft, avionics, and weapons systems emphasize the points raised in the earlier consideration of maintenance in general. The layering of critical skills and high cost stocks, particularly at the forward echelons, resulted in a proliferation of scarce resources.

g. The results obtained by the Stovepipe system indicate that it provided better service, increased aircraft readiness, and resulted in an overall economy of supply. Specifically, the NORS rate was reduced on the CH-47 from 27 percent to 9 percent and on the UH-1 from 16 percent to 6 percent.

8. SUMMARY

a. Overall support provided by the Army logistic system met the operational requirement of the tactical commanders in Vietnam; however, it could have been provided more economically. The delay in the development of an Army logistic command, required to provide top-level on-site management of the development of the logistic base, was a major factor in subsequent diseconomies. Faced with the overriding necessity to provide support for combat forces before requisite capabilities had been established, the logistic command was placed in the position of trying to catch up with increasing demands during the first 2 to 3 years. Correction of problems that were developing concurrently was secondary.

b. Proper logistic planning and preparation for the support of combat forces were degraded by the limited time between deployment decisions and actual deployments. Even if adequate planning time had been available: however, support capabilities were limited. Logistic unit availability lagged deployment requirements because of the time required to activate, equip, train, and deploy logistic units not available in the active force structure. There was a shortage of personnel with critical logistic skill, particularly in the wholesale supply and maintenance areas. Logistic facilities in-country were literally nonexistent and operating facilities, including ports, hardstands, storage areas, and maintenance shops, had to be developed.

c. Supplies to ensure support of deployed forces were both pushed into the theater and requisitioned, notwithstanding the limited capability in-country to receive, store, and issue the materiel. Lack of a central agency in CONUS, such as the old Oversea Supply Agency, deprived the theater of a source for control, coordination, and visibility of supplies and requisitions in process or en route. As a result, the limited in-country logistic capability was rapidly inundated, port backlogs developed, supplies were stacked at random wherever possible in order to clear the docks, manual stock control records became invalid, excesses valued at over $600 million developed, equipment deadline rates climbed for want of available but unlocatable parts, and many more similar problems developed.

d. Although these mounting problems were rapidly apparent, their resolution was not so readily available. The first priority of all logistic elements was to provide the support required by the operational commanders. By mid-1966 capability was improved and continued support was assured. Resources could then be diverted to resolution of the accumulated problems.

e. By mid-1966, logistic units in the required types and numbers had been deployed to Vietnam. The use of special assistance teams from CONUS had been initiated and work continued in order to upgrade the technical competence of the transient logistic work force. Increasing use was being made of contract and local national personnel to provide skilled, semi-skilled, and unskilled augmentation of the military logistic units. An inventory control center became operational by the end of 1966 and, by early 1967, provided limited management capability. As improved automatic data processing equipment was introduced and records were purified, stockage levels were reduced and supply management procedures substantially improved. Programs were initiated early in 1967 to redistribute or otherwise dispose of accumulated excesses. The building of logistic facilities, begun in late 1965 and early 1966, was substantially completed by mid-1968 and port, storage, and maintenance facilities were generally adequate. Establishment of the Logistic Control Office, Pacific, provided necessary control and visibility over incoming shipments. The use of containerized shipments permitted improved port clearance and direct customer throughput.

f. Deadline rates, which were a source of major concern in late 1965 and early 1966, had been reduced through improved parts availability, equipment standardization programs, and the introduction of Red Ball and Closed Loop Systems. By 1968, forces in Vietnam enjoyed the lowest deadline rate of any Army command in the world.

g. Support of Army aircraft, although both complex and costly by its very nature, was vital to the overall Army mission. The high degree of effectiveness achieved is attributable to the strict weapon system orientation inherent in the stovepipe system established to provide this support.

SECTION D

SUPPORT OF THE SEVENTH FLEET

1. INTRODUCTION. On 1 January 1965, the Seventh Fleet was not a stranger to the South China Sea and the Tonkin Gulf. It had operated off Vietnam from time to time since the early 1950's. Carrier aircraft had conducted strikes against North Vietnam after the Gulf of Tonkin incident in October 1964.

a. In consonance with the decision to commit substantial U.S. forces ashore in Vietnam, the Seventh Fleet was almost doubled in numbers of ships and the center of its operations was shifted. The tempo of operations increased sharply, particularly air operations and naval gunfire support. These events vastly increased the logistic support requirements of the fleet. The strategy of graduated military actions, the lack of a declaration of war, the policy of keeping expenditures for support of military operations at a minimum, and the age of most naval vessels all contributed to the difficulty of providing the requisite logistic support. Nevertheless, logistic requirements were met and the problems overcome with only minor modification to, and expansion of, existing Pacific Fleet logistic organizations, systems and facilities. The concept of mobile support, supplemented by a system of advanced bases, continued.

b. This section provides a description and summary assessment of logistic measures taken to maintain operational effectiveness of the fleet in support of combat operations ashore in Vietnam. Mobility and endurance were sustained by replenishing the fleet underway. Other mobile logistic support units, supplemented by advanced bases in WESTPAC, provided maintenance capabilities beyond those organic to combatant ships. Aviation support capacities and capabilities in the area were expanded, and procedural innovations were instituted to support naval aircraft embarked in carriers and Marine Corps aircraft ashore. Intensive management was applied to permit unprecedented expenditure of aviation and naval gun ammunition because assets, particularly at the outset, were extremely limited. Naval personnel, funds, materiel, and other assets were concentrated to support an essentially uninterrupted combat pace never before attempted for so long a period of time.

2. MOBILE LOGISTIC SUPPORT. Concepts of underway replenishment developed in World War II had been kept in effect in the day-to-day operations of the Navy. Training exercises had ensured a degree of operational logistic readiness that enabled the fleets to go into action immediately and sustain operations. As a result of the basic policy of maintaining minimum dependence on fixed bases, ships of the Seventh Fleet had been required to make maximum use of underway replenishment and to take on fuel, food, and other supplies as a normal procedure prior to entering port. Even in port, supplies would be taken on from ships of the mobile support force, whenever possible, rather than replenishing from shore activities. To enhance endurance at sea and to allow operations in remote areas, ships of the fleet had been kept as self-sufficient as practicable as regards maintenance and repair parts, with shipboard personnel trained in maintenance as well as operation of equipment. In the loading of mobile supply ships, priority was given to fast moving items to permit ships to remain at sea for prolonged periods. The supply ships, in turn, were replenished by shipments from CONUS to minimize dependence on any individual advanced base.

a. Underway replenishment operations in SE Asia differed markedly from those of World War II. During World War II the fleet conducted sporadic combat operations with strikes and campaigns followed by lulls. This and the war at sea resulted in the fleet withdrawing to rendezvous with large replenishment forces and returning periodically to protected anchorages for logistic support. In the Vietnam conflict, with no enemy opposition at sea, replenishments were generally of an opportune nature by individual ships. This allowed support to be provided by fewer ships than would be required in another type of war.

b. The problems of underway replenishment were complicated beyond those of the Korean War by the distances involved as well as the higher tempo of operations. Whereas advanced base support in Japan was near operations off Korea, the areas of operation of units off Vietnam ranged from 700 to 1,300 miles from the major base at Subic Bay, Republic of the Philippines.

c. The increase in size of the Seventh Fleet from 100 plus ships in 1964 to over 200, prolonged periods at sea, high expenditures of ammunition, and heavy consumption of jet fuel placed severe demands on the underway replenishment ships. Nevertheless, the performance of these ships and the mobile logistic support force greatly surpassed previous experience. Figure 35 is a graphic comparison between Pacific Fleet underway replenishment volume levels for World War II and those of the Seventh Fleet in FY 68.

d. Between July 1964 and October 1965, the number of replenishment ships in WESTPAC increased 43 percent while monthly replenishments increased 196 percent, from 16 night and 183 day replenishments to 110 night and 483 day replenishments. Figure 36 shows underway replenishments in WESTPAC by day and by night for FY 65 through FY 69. The small increase in the number of underway replenishment ships normally deployed, and the significant increase in transfers they conducted, are depicted in Figure 37.

e. Most of the ships carrying out these tasks were approaching obsolescence. In 1969 the age spread of Service Force ships was as follows:

Years	0-4	5-9	10-14	15-19	20-24	Over 25	Total
Ships	14	5	11	3	99	72	204

The average useful life of a ship is 25 years. Costly and time-consuming actions were required to provide reasonable margins of safety and reliability for these old ships. The following are typical of the repairs effected during overhauls:

(1) In fleet oilers it was not uncommon to replace 50 to 70 percent of the sanitary drains and 100 percent of steam drains from deck machinery.

(2) Complete motor and generator rewinds.

(3) Extensive repair or replacement of sea valves and sea chests.

(4) Extensive replacement of electrical wiring, such as all exposed wiring on fleet oilers.

(5) Complete retubing of main condensers.[38]

f. The extensive repairs and replacements required on ships in overhaul, or being activated, were complicated by the fact that in most of the Service Force ships, those built during the emergency conditions of World War II, equipments were not standardized and many were no longer being produced. Obtaining repair parts for such equipments was a major challenge. Repair parts problems, changes required to update capabilities to match needs, escalating labor costs, and strikes with no wartime labor controls in effect all added to the costs and the time to complete overhauls and activations. Delays in completion prolonged the deployments of operating ships, particularly fleet oilers and ammunition ships.

g. In 1965 two new types of underway replenishment ships reached WESTPAC, the combat stores ship and the 27-knot, fast combat support ship. The former, together with stores issue ships, carried some 23,000 line items and generally filled 90 percent of the demands

[38] Commander, Service Force, Pacific. Operations of Service Force, U.S. Pacific Fleet, FY 67, pp. 20-3 and 20-4.

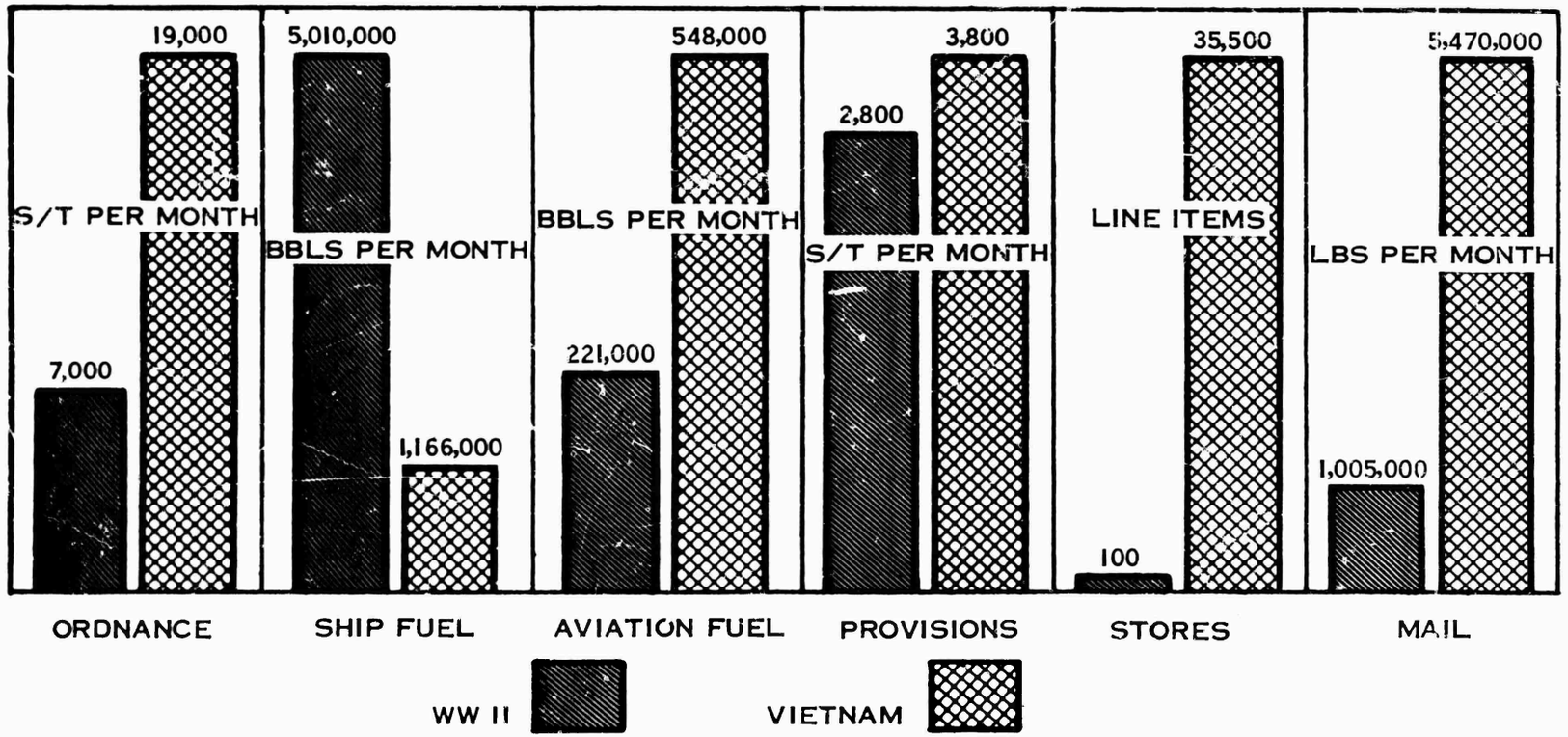

FIGURE 35. UNDERWAY REPLENISHMENT, WORLD WAR II VERSUS VIETNAM CONFLICT

Source: Commander, Service Force, Pacific, Operations of the Service Force, U.S. Pacific Fleet, FY 68, p. 1-2.

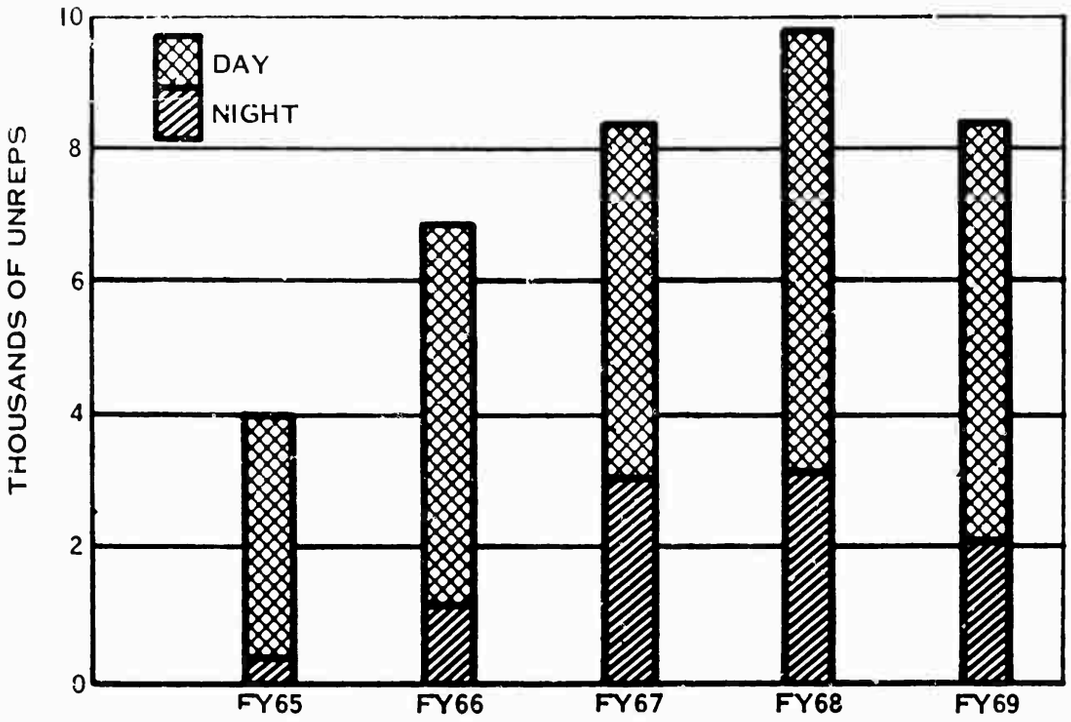

FIGURE 36. UNDERWAY REPLENISHMENTS IN WESTPAC

Source: Commander, Service Force, Pacific, Operations of the Service Force, U.S. Pacific Fleet, FY 68, p. 2-9

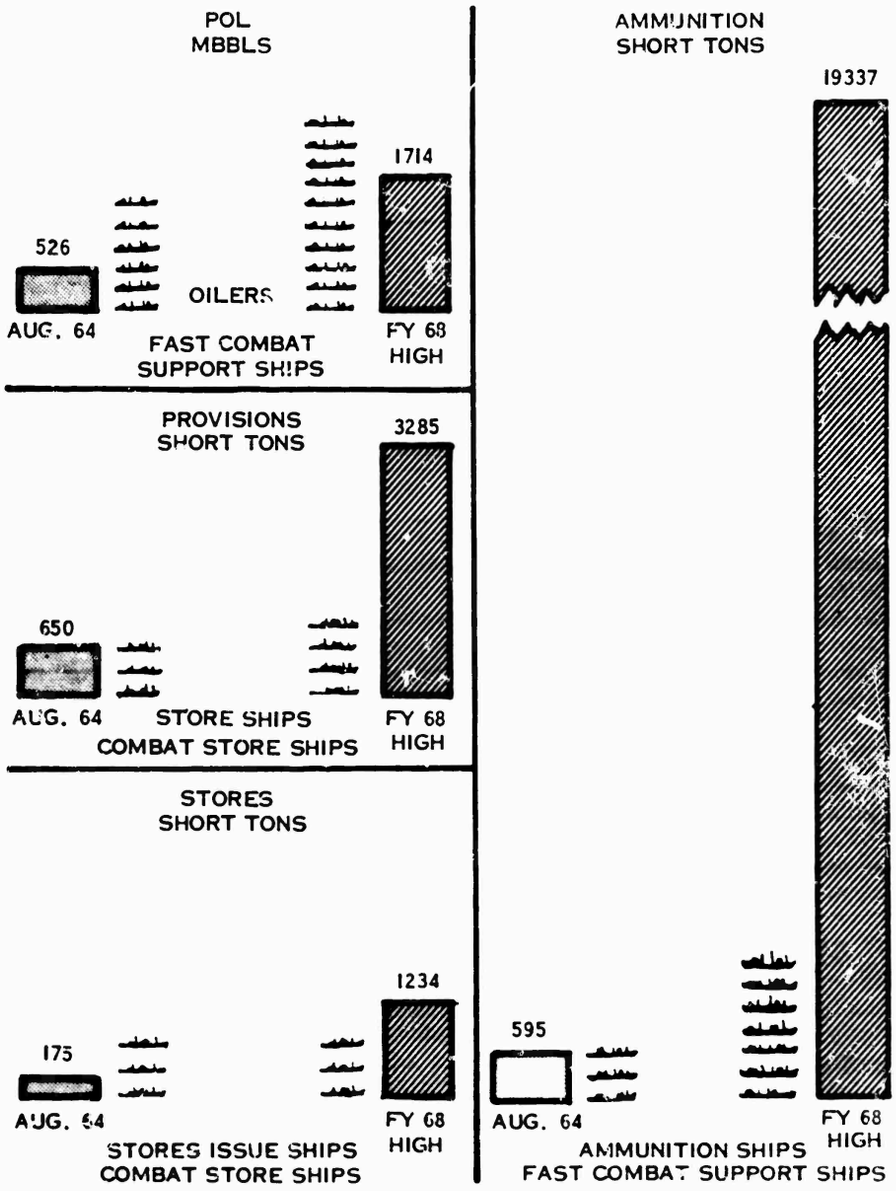

FIGURE 37. UNDERWAY REPLENISHMENT SHIPS DEPLOYED AND MONTHLY TRANSFERS, AUGUST 1964 TO JULY 1968

Source: Commander, Service Force, Pacific, Operations of Service Force, U.S. Pacific Fleet, FY 68, p. 2-6.

placed on them. The latter proved exceedingly efficient with its ability to transfer fuel, ammunition, and provisions simultaneously to ships alongside.

h. Each of these new multicargo types carried two logistic helicopters. Vertical replenishment operations increased to the point where more than one-third of the stores and ammunition issued by these ships were being transferred by helicopter, day and night. Transfers by vertical replenishment started as far as 75 miles away and were frequently made to smaller ships without delaying the replenishment circuit. Courses, speeds, and maneuvering were not restricted to the extent required by other modes of underway replenishment operations. The three on-station aircraft carriers were able to sustain the level of combat effort owing largely to the ability of the new ships to replenish them on station even during flight operations, rather than having the carriers retire from the line.

i. The growing numbers of jet aircraft resulted in unprecedented demands for aviation fuel. Steps were required to provide a better balance of products and higher pumping rates. The older fleet oilers could no longer support carriers efficiently. Nevertheless, 96 percent of the aviation fuel was transferred at sea.

j. In addition to the underway replenishment ships, other mobile logistic support units were positioned in the South China Sea area to maintain the operational capability of the fleet. The three Seventh Fleet tenders were augmented by a fourth. Repair ships were stationed at such ports as Kaohsiung, Taiwan; Subic Bay, Republic of the Philippines; and Sasebo and Yokosuka, Japan. In some ports they provided the only maintenance capability; in others they have supplemented facilities ashore. Floating drydocks at Subic Bay, Guam, and in Vietnam provided further maintenance support to Seventh Fleet units.

k. The types of mobile logistic support units required to keep the Seventh Fleet essentially independent of advanced bases were available, but not in adequate numbers. It would have required a vast expenditure to construct sufficient mobile logistic support units to permit the fleet to be independent of bases ashore, as the Third and Fifth Fleets had been in World War II. For economy and efficiency, the capabilities of shore bases already established in WESTPAC were utilized to complement the support provided by mobile logistic support units.

3. SHORE BASES. WESTPAC bases and shore activities provided important capabilities to the Seventh Fleet. The shift of fleet operations to the south placed a heavy load on Subic Bay, whose existing facilities were inadequate. Additional capabilities were made available by deploying mobile support ships and craft to Subic Bay and by shifting work, such as for military assistance programs, to Guam.

a. The gradual increase in operations made sound planning of base expansion difficult. Early in the buildup it was apparent that fuel storage at Subic Bay was marginal at best to provide for the outloading of fleet oilers. More critical were the capabilities of the naval magazine to receive and store ammunition and to outload the replenishment ships. Peacetime programming procedures, funding priorities, restrictive design criteria, and actual construction delays impeded the early completion of critically needed facilities once they were recognized. For example, the first increment of additional Navy Special Fuel Oil (NSFO) storage at the Naval Supply Depot (NSD), Subic Bay (350,000 barrels) (FY 65 MILCON Reprogramming) was not completed until August 1966 and the second increment (480,000 barrels) (FY 66 Budget Amendment) until February 1967. Additional ammunition storage was incrementally funded as follows: FY 65, Urgent Minor Construction, ammunition hardstands, $45,000; FY 65, MILCON Reprogramming, ammunition hardstands, $1,000,000; FY 65, Supplemental, ammunition hardstands, $1,300,000; FY 66, Budget Amendment, ammunition wharf (first increment), ammunition magazine, pontoon ammunition wharf; bomb loading facility, bomb segregation and storage facility, $4,133,000; and FY 66 Supplemental, ammunition storage, ammunition wharf, transit storage and barge landing, $4,620,000.[39] In addition, NSD, Subic Bay, required more warehouses, a material equipment handling facility, and other military construction, of lesser priority, to meet fleet needs.

[39] U.S. Navy Sea War Report SE Asia, May 1966, pp. III-B-3 and III-B-4.

b. The great increase in fuel issues at Subic Bay placed a severe strain on existing facilities and on the ability to maintain adequate resupply. In August 1965, for example, stock levels of NSFO at Subic Bay reached a low of 4 days because of increased operations. The crisis was solved by diversion of NSFO cargoes en route to Japan and Okinawa and by backhauling some stock from Japan. The diverted tankers consolidated at sea with fleet oilers and additional tankers were obtained to lift NSFO cargoes from Persian Gulf sources.

c. The inventory at the Naval Magazine, Subic Bay, in July 1965 was 20,000 short tons of ammunition. Storage space for this amount was barely adequate. By January 1966, the inventory had soared to 77,000 short tons. Emergency construction of hardstands was started in August 1965 but the increased amount of ammunition soon overtaxed the capacity of the magazine. It became necessary to stow ammunition in any cleared and level spot that could be found and to transfer to other naval magazines in WESTPAC stocks not being used in SE Asia operations.[40] Construction of new magazines, handling facilities, staging areas, and roads was far slower than the growth of the requirements depicted in Figure 38.

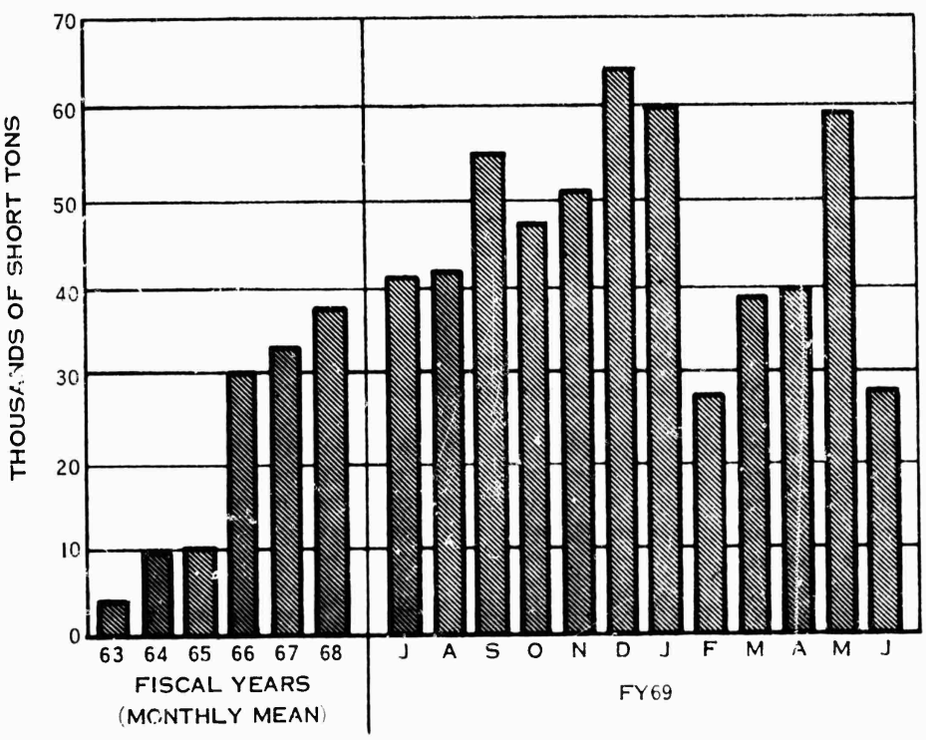

FIGURE 38. ORDNANCE RECEIPTS AND ISSUES, SUBIC BAY

Source: Commander, Service Force, Pacific, Operations of Service Force, U.S. Pacific Fleet, FY69, p. 8-26.

[40] Commander, Service Force, Pacific, Operations of Service Force, U.S. Pacific Fleet, FY66, p. 10-11.

d. Increase of the capabilities of the ship repair facility (SRF) also was time-consuming. Expansion of the SRF was expedited by the acquisition of machine tools made available by the closing of the New York Naval Shipyard. Nevertheless, the repair load greatly exceeded the capability of the SRF. (For further details, see the Maintenance Monograph.)

e. Difficulties were encountered initially in providing WESTPAC naval supply depots with the necessary supplies because it took months for adequate stock fund levels to be approved. Stock funds suffered because of the low ratio of sales to inventories. Many of the faster moving items had been transferred to the Defense Supply Agency, thus increasing the percentage of insurance items in Navy accounts. Many of the insurance items needed to support the numerous old and nonstandard equipments were out of production.

f. The requirement for repairs included battle damage, damage due to fires and explosions, and damage due to collisions and groundings. The advanced age of a large percentage of ships of the fleet added significantly to the workload of repair facilities ashore and afloat.

g. The personnel situation of the fleet increased the difficulties of maintaining fleet units in a high state of readiness. Unlike other wars, personnel ceilings prevented bringing the ships of the fleet up to wartime complements. Reservists were not called up to increase the base of mature and experienced personnel. The frequent turnovers created by the need for replacement of personnel serving 1-year tours in Vietnam resulted in extremely serious instabilities. Compounding the Navy's personnel and maintenance problems, the demands of building up the level of combat and logistic personnel in Vietnam caused a serious drain of trained personnel from all other Navy resources. This resulted in a lowering of the caliber and quantity of shipboard maintenance and a demand for a greater amount of more costly work to be done by repair facilities both in WESTPAC and in the United States.

h. The excellent U.S. naval facilities in Japan were of great value for repair of ships and aircraft of the fleet. Backed up by the extensive industrial base of Japan, their capabilities could be expanded by contracts when demand increased.

i. The shore activities supporting the fleet in WESTPAC greatly enhanced the cost-effectiveness of the Seventh Fleet. They reduced the time off the line of ships requiring in-port repairs and other services. The combination of existing shore activities and mobile support forces sustained an expanded Seventh Fleet without imposing any load on logistic facilities in South Vietnam or Thailand.

4. NAVAL AVIATION SUPPORT. In February 1965, the Navy committed 100 percent of the carrier aircraft in WESTPAC. After June 1965 the Navy, with minor exceptions, kept five attack carriers deployed to WESTPAC, with three on the line at Yankee Station in the Tonkin Gulf. In those mobile air bases, personnel, material, and facility resources were already available, organized, and supporting air operations prior to 1965. Extensive repair capabilities and moderate repair capacities existed in each carrier and at each supporting shore station. Capabilities and capacities were further developed during the SE Asia operations.

a. At the beginning of 1965, there was insufficient major aircraft repair and modification capability and capacity in WESTPAC to sustain high-tempo combat operations. A rapid buildup of extensive repair facilities was required. Japanese industrial assistance was expanded to provide support; however, for many situations Japan was too far removed from operations.

b. The Naval Air Station (NAS), Cubi Point, Subic Bay, was selected as the site best suited for rapid expansion of area repair capability and capacity. Aircraft carriers and other ships with aviation units returned periodically to Subic Bay. In addition, the Naval Supply Depot, Subic Bay, provided supply support for the 1st Marine Air Wing in-country and for ships of the Seventh Fleet. Basic aircraft maintenance facilities which were not available elsewhere in the area existed at Cubi Point. Therefore, NAS, Cubi Point, was augmented with Naval Aircraft Rework Facility (NARF) aircraft and engine repair teams, contractor aircraft and electronic countermeasures modification teams, and Naval Air Service Unit calibration teams to fill the gap. Beginning in June 1966, NARF repair teams from Cubi Point were placed in-country to

support Marine Corps air operations. Major spare parts inventories, support equipment and facility investments were also furnished.

c. Supply and maintenance support, in general, and features of such support responsive to the unique requirements of fleet aviation, in particular, are discussed in detail in the Supply Management and Maintenance Monographs. Problems with naval aviation support which are appropriate for discussion in this chapter did exist, however. Some of the management actions taken to solve these problems are presented to illustrate how the logistic system functioned.

(1) In January 1966, NSD, Subic Bay, was directed to assume from NSD, Yokosuka, aeronautical materiel support for Fleet Marine Air Wing units in RVN in order to shorten the pipeline.

(2) Commencing in February 1966, to improve range and depth of spare parts in WESTPAC, additional stocks of high-usage items for each aircraft type were pushed to carriers on station or outfitting for deployment. As a related measure Commander, Naval Air Force, U.S. Pacific Fleet (COMNAVAIRPAC), began positioning additional stocks of high-usage items for fleet (and Marine Corps) support at NAS, Cubi Point, and NSD, Subic Bay.

(3) In March 1966, an Air Maintenance Office and ready supply store at Cubi Point were established by the WESTPAC Aero Support Organization.

(4) On 7 May 1966, as the result of many actions, in particular those of COMNAVAIRPAC, a Travis AFB to Cubi Point to Da Nang MAC channel was inaugurated. Orginally requested by COMSERVPAC in September 1965 to meet the needs of the fleet and carry mail, this channel was urgently required to improve delivery of air cargo to the Seventh Fleet.

(5) In October 1966, emphasis continued on various programs to reduce not operationally ready rates attributable to parts shortages.

(6) On 22 November 1966, NSD, Subic Bay, was tasked to provide full supply support in aeronautical materiel to aircraft carriers operating in the SE Asia area and to the Jet Engine Overhaul Facility, NAS, Cubi Point, as directed by COMNAVAIRPAC. Previously, support had been provided only for the lesser range of items contained in the Aviation Consolidated Load List. NSD, Subic Bay, was also tasked by COMSERVPAC to provide full supply support in major aeronautical equipment and aeronautical materiel (including catapult and arresting gear) to carrier aircraft based ashore and shorebased naval and Marine Corps air units designated by COMNAVAIRPAC.[41]

(7) In February 1967, NSD, Subic Bay, inaugurated a new local requisitioning and delivery concept that gave top priority to aircraft requirements. This program encompassed all aircraft carriers in WESTPAC (plus the 1st Marine Air Wing in Vietnam). Response time at NSD, Subic Bay, was measured in hours, not days. If NSD, Subic Bay, could not supply the order, the requisition was relayed by transceiver through the AUTODIN circuit to NSD, Yokosuka, and then direct to the Aviation Supply Office in Philadelphia.[42]

(8) In July 1968 improved inventory decision rules for aviation consumable materiel were implemented at NSD, Subic Bay. The new rules permitted Variable Operating and Safety Levels (VOSL) consistent with the value of issues so as to provide the best possible support without increasing inventory investment or replenishment workload. The VOSL program was adaptable to second-generation automatic data processing equipment (IBM 1401).

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[41] Naval Supply Depot, Subic Bay, Command History, 1 January to 31 December 1966, February 1967, pp. 3-4.

[42] Naval Supply Depot, Subic Bay, Command History, 1 January to 31 December 1967, 24 May 1968, p. 6.

d. The materiel condition of naval aircraft in SE Asia was excellent during the buildup phase, 1965-66. As a result of intensive effort and of management actions such as those listed on the preceding page, aircraft readiness in SE Asia has been higher than elsewhere. For example, from November 1968 through May 1969 the average readiness of SE Asia aircraft was 2.2 percent higher than total Navy aircraft worldwide. In the case of the F-4 aircraft, to further illustrate, the equipment Not Operationally Ready—Maintenance (NORM) rate was 3 percent lower and the equipment Not Operationally Ready—Supply (NORS) rate 5 percent lower, than total Navy F-4 aircraft worldwide. The fact that the NORS/NORM rate was generally lower in SE Asia indicates that support measures carried out were effective for that particular area. Much of this support, however, has been at the expense of the remaining inventory.

e. There has been a slow downward trend in materiel condition of aircraft beginning with the SE Asia operations in FY 65. A variety of problems have caused the decline. Adverse environmental conditions and battle damage caused a failure rate greater than had been anticipated. Aircraft operating in SE Asia experienced more extensive use and more maximum weight launches/recoveries, and have spent a higher percentage of flying time being operated closer to their performance limit envelopes.

f. Replacement aircraft shortages have degraded combat capabilities. This problem is a result of a policy of procurement of "attrition only" since 1965, of inadequate pipeline, and an increase in process time at naval aircraft rework facilities resulting from many changes and modifications during rework, aircraft aging, severe corrosion, and increases in work content during aircraft rework. Also contributing to this increase in process time have been inadequate and aging plant equipment, shortages of spare parts and components, insufficient skilled labor around which larger work forces could be built, and failure to give management of rework facilities adequate authority over manpower, materiel, and capital investment.[43]

5. AMMUNITION. In October 1964, it became apparent that responsibilities for ammunition within the Pacific Fleet had become somewhat fragmented and were not optimally adapted to the dynamic conditions of warfare. The Commander in Chief, U.S. Pacific Fleet (CINCPACFLT), decided to concentrate ammunition logistic responsibilities under COMSERVPAC, as had been done in previous wars. This simplified ammunition logistics and contributed to more efficient management of ammunition for the fleet and Marine Corps aviation as the conflict grew. From the time sustained air operations began until the fall of 1968, marginal assets unprecedented expenditures in combat, and the high costs involved made ammunition the most critical problem of fleet logistics.

a. Air attacks against infiltration routes in SE Asia had started on 14 December 1964 and increased in February 1965. Air strikes in North Vietnam became a continuous campaign in March 1965. Starting on 19 February 1965, air support was provided within the Republic of Vietnam. Initially, the capacity of airfields in RVN was very limited and much of the air support had to be provided by carrier aircraft. From May 1965 until August 1966 one attack carrier was stationed at Dixie Station, off the southern part of Vietnam, in addition to carriers at Yankee Station in the Tonkin Gulf. (Figure 39 shows the locations of Yankee and Dixie Stations.) Thereafter, all the carriers normally operated in the north, with the fleet carrying out strikes against the increasingly well-defended targets in the Hanoi-Haiphong area, as well as strikes on the Ho Chi Minh Trail and, when required, south of the Demilitarized Zone. Figure 40 shows the air ammunition expenditures since April 1965.

b. To solve the air munition problem (described in detail in the Ammunition Monograph), additional funds were provided for air munitions in the FY 65 Supplemental Budget. This was based on the assumption that a shortage existed only in the low-drag bombs designed for high-performance aircraft. Shortly it became apparent that the total of both low- and high-drag bombs were in limited supply.[44]

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[43] Institute of Naval Studies of the Center for Naval Analyses, Study Number 18, Aircraft Pipeline Study, Phase I: Definition and Identification of Determinants, 6 December 1967.

[44] Commander, Service Force, Pacific, Operations of the Service Force, U.S. Pacific Fleet, FY 66, Chapter 10.

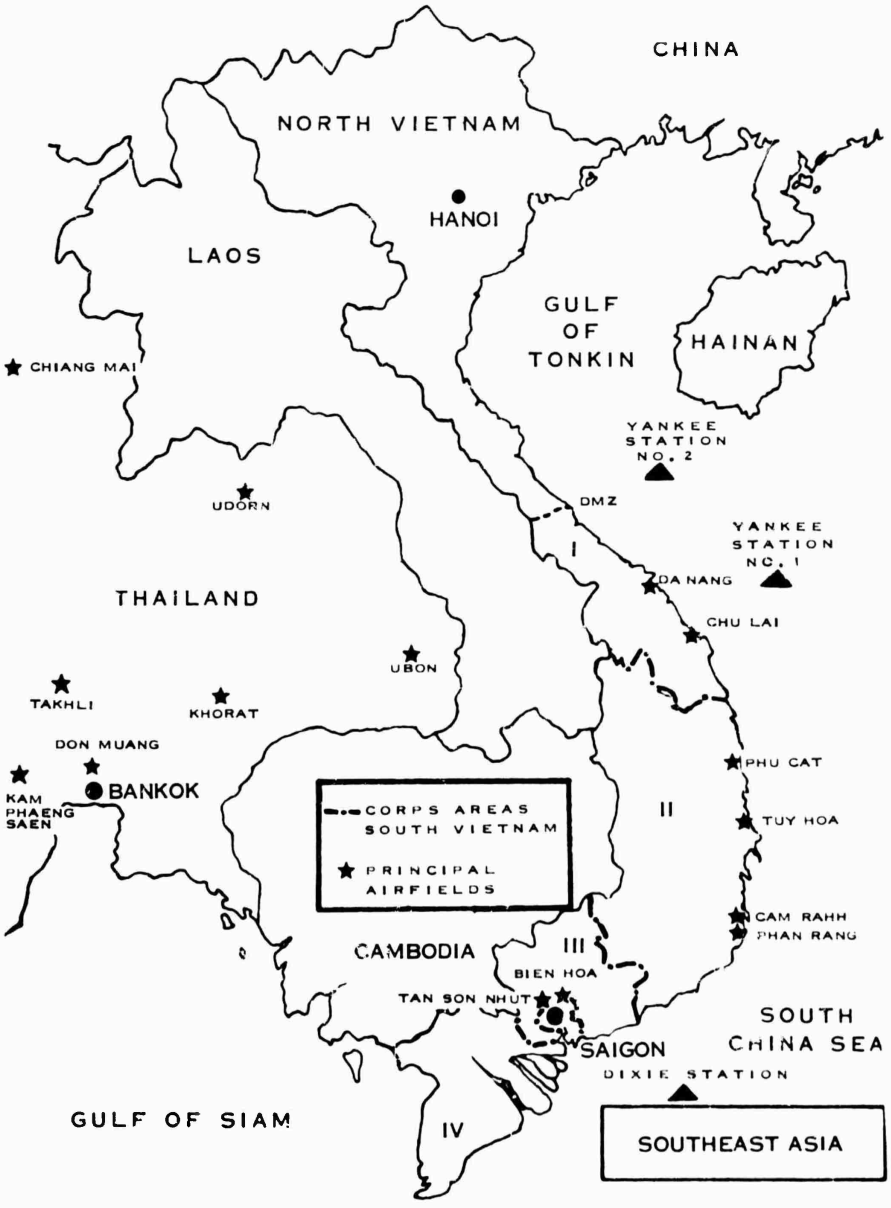

FIGURE 39. SOUTHEAST ASIA THEATER OF OPERATIONS

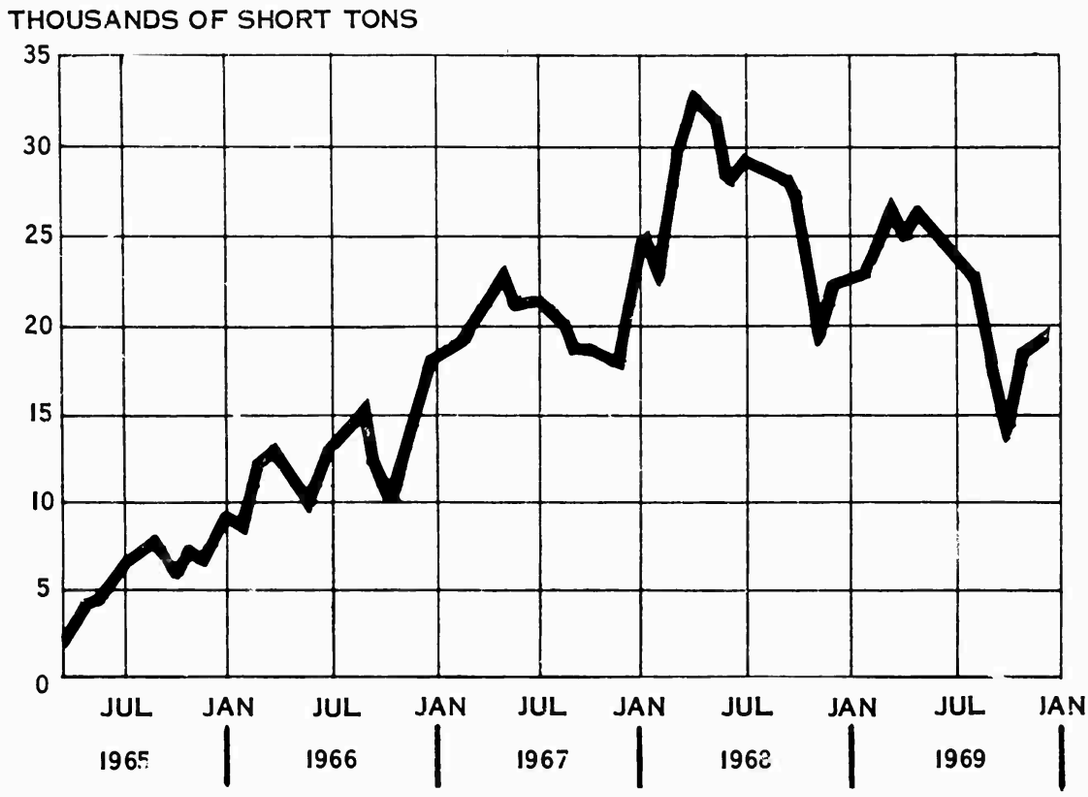

FIGURE 40. NAVY/MARINE AIR AMMUNITION EXPENDITURES

Source: Commander, Service Force, Pacific, Operations of Service Force, U.S. Pacific Fleet, FY 67, p. 12 1., updated through 1969.

c. In mid-1966, bombs that were optimum in size and effect on jet aircraft performance could be used on only a fraction of the missions. Expenditures of many types of air-to-ground weapons, at times asset limited, were closely controlled. Despite diversions of such weapons from other areas of the world the situation deteriorated. The lowest point was reached in the summer of 1966 when assets were further depleted by the need to transfer munitions to cover Air Force shortages which had become critical.

d. In April 1966, as a result of these shortages, CINCPAC established monthly allocations of critical air munitions and specified maximum average ordnance loads per sortie and monthly expenditure allocations for air munitions.[45]

e. Naval gunfire in support of forces in RVN started on 16 May 1965. As expenditures increased it became apparent that 5-inch ammunition was also extremely critical. With naval ships increasingly employed against shore targets in South Vietnam, many urgent actions were required to provide the ammunition needed. Funding and authorized production levels lagged increased requirements. Delays were encountered in the production of fuzes. It was necessary to ship assets from other areas, limit training expenditures, and convert antiair projectiles for use in shore bombardment.[46] There was a critical situation in 5"/38 caliber ammunition and

[45] Pacific Fleet Monthly Report, Pacific Area Naval Operations Review, April 1966, pp. II-2 and III-3.
[46] Commander, Service Force, Pacific, Operations of Service Force U.S. Pacific Fleet, FY 66, Chapter 10.

an even shorter supply of 5"/54 ammunition. There were occasions when 5"/54 caliber-gun ships scheduled for gunfire support missions had to be diverted because of ammunition shortages, and the shorter range 5"/38 guns substituted. Artificial restrictions on the employment of 5"/54-gunned ships led to the generation of usage data that were unrealistic for use in determining future requirements. Similarly, usage of other items in short supply was artificially depressed.

f. The initiation on 15 October 1966 of gunfire missions against waterborne logistic craft off the panhandle of North Vietnam and land lines of communications near the coast (Operation Sea Dragon), and enemy actions across the Demilitarized Zone and elsewhere, further increased expenditures. Also in October 1966 the Office of the Secretary of Defense formed a Directorate of Ground Ammunition, with authority to approve procurement and production schedules (see Chapter IV, Ammunition Monograph, JLRB Report). This required justification in detail and additional levels of review within the Department of the Navy. The tendency to base decisions on past experience and the timing of the budget cycle contributed to a particularly critical situation following the Tet Offensive of 1968.

g. To meet the increased ammunition requirements in 1965, immediate augmentation of ammunition ships in the Seventh Fleet, from 3 to 5, was required. To maintain the degree of support necessary for the subsequent step-up in the tempo of operations, six ammunition ships were needed in WESTPAC at all times. As an immediate partial solution to the shortage, in the fall of 1965 the decision was made to rotate an Atlantic Fleet ship on a continuing basis to SE Asia.

h. Intensive management within the Pacific Fleet and other actions in the Navy Department made possible optimum use of the limited assets of air and ship gun ammunition throughout the conflict.

7. SUMMARY

a. During the Vietnam era, the prevailing concept of mobile logistic support, complemented by the use of advanced bases, was employed to support the expanded Seventh Fleet which, in response to the Vietnam conflict, almost doubled in number of ships and increased its tempo of operations, particularly air operations and naval gunfire support. To provide strategically located maintenance capability, mobile logistic support units were repositioned to the South China Sea.

b. As the operations of the Seventh Fleet increased, the volume of ammunition, fuel, supplies, and provisions transferred at sea increased proportionally, in around-the-clock underway replenishment. Although the concept of Mobile Support proved valid, there were insufficient mobile logistic support units to furnish complete support to the fleet. In addition, the World War II underway replenishment ships were inefficient and hard pressed to meet the demands imposed on them because of slow transit speeds, low transfer rates, and unreliable and obsolete equipment. Some replenishment ships were rotated from the Atlantic Fleet, and others were reactivated or newly constructed. Newly constructed replenishment ships had high transit speeds, multiple composition of load, and helicopters for vertical replenishment. Far more efficient than the old, these new capabilities reduced transfer time and restrictions on the formation and maneuvering of the ships being resupplied.

c. Mobile logistic support was economically supplemented by facilities ashore. A major contribution to fleet support was made by U.S. naval logistic facilities ashore in the Philippines, Guam, and Japan. To avoid uneconomic overexpansion of the capabilities and capacities of these advanced bases, some fleet maintenance and repair was assigned to the commercial industrial facilities of Japan.

d. Fleet maintenance was made more difficult because many repair parts for old equipment were out of production. The drawdown on fleet maintenance personnel resources to meet in-country requirements further compounded fleet maintenance problems. Unlike previous wars, personnel within the fleet were not increased to wartime complement.

e. Many actions were required to provide adequate support to fleet and Marine Corps aircraft in WESTPAC. The facilities and manning at the NAS, Cubi Point, Philippines, were increased, supply support expanded, procedures and responsibilities modified, and improved distribution arrangements instituted. A state of aircraft readiness higher than for similar aircraft outside WESTPAC was achieved. There has been, however, a slow downward trend in the materiel condition of aircraft in the area, primarily because of battle damage, adverse environmental conditions, intense operations near maximum performance limits, and replacement aircraft shortages.

f. Ammunition posed the most critical logistic problem in supporting the fleet. Marginal assets and high expenditures of ammunition in air strikes and naval gunfire support led to shortages of some air and shipboard munitions. As a result of many extraordinary measures and close management by the fleet logistic system, the requirements of naval units in WESTPAC were met. Usage was, however, at times asset limited, and substitute munitions were used. These distorted usage rates for specific types of ammunition, and thus should be treated with caution in future planning.

g. The existing system for logistic support of the Seventh Fleet, with expansion, augmentation, and some modification, gave the fleet the mobility, reliability, and endurance required.

SECTION E

SUPPORT OF IN-COUNTRY NAVAL FORCES

1. INTRODUCTION

a. At the beginning of 1965, U.S. naval personnel in Vietnam were assigned to an advisory role under the Chief, Naval Advisory Group, Vietnam, or were employed in administrative or logistic support.

b. In March 1965, an active combat role for shallow-draft vessels on inshore patrol complemented the operations of the ships of the Seventh Fleet, naval patrols on the waterways of Vietnam, and joint Army/Navy riverine warfare. These combat roles placed unforeseen demands on the Navy logistic system. New types of combat craft had to be built; others were reconfigured by shipyards and repair facilities for their new jobs. Logistic ships and craft were reactivated or underwent major alterations to outfit them for repair, supply, personnel support, and other logistic tasks. In addition to these mobile support units, fixed bases were constructed at scattered locations along the coast and on the waterways. The logistic system of the U.S. Pacific Fleet made full use of its mobile support forces and its ship repair, supply, ordnance, and other shore facilities to support the new forces in addition to the existing fleet. Within the overall system, new organizations were created in Vietnam and new concepts evolved.

2. MARKET TIME

a. Operation Market Time, an anti-infiltration program, began on 11 March 1965. Initial U.S. operations were conducted by ships and patrol aircraft under Commander, Vietnam Coastal Patrol Force, Seventh Fleet (CTF 71). Logistic support of these units was similar to that of other comparable units of the fleet. The ships relied principally on the underway replenishment forces and on the facilities in Subic Bay. The Naval Station, Sangley Point, Republic of the Philippines, provided the main support for the aircraft.

b. The Market Time force, organized as Task Force 115, included fast patrol craft or "swift boats," patrol gunboats, coastal and ocean mine sweepers, radar picket escort ships, SP-2H Neptune and P-3A Orion aircraft, harbor defense units from the Navy, and patrol boats and cutters from the Coast Guard. In July 1965, the Chief, Naval Advisory Group, Vietnam, was designated as Market Time Commander, relieving CTF 71 of anti-infiltration operations.

3. GAME WARDEN. Operation Game Warden commenced in April 1966 to supplement Vietnamese Navy units patrolling the waterways of the Mekong Delta and the Rung Sat Special Zone. Game Warden forces eventually increased to 250 river patrol boats supported by 33 helicopters and 14 fixed-wing aircraft. Game Warden forces were under the operational control of Commander Naval Forces, Vietnam, an additional assignment given the Chief, Naval Advisory Group, Vietnam, in April 1966.

4. LOGISTIC SUPPORT OF MARKET TIME AND GAME WARDEN

a. As the Market Time force expanded, and the arrival of Game Warden forces was imminent, the Commander, Services Forces, Pacific (COMSERVPAC), developed a comprehensive plan for support of naval combatant craft in Vietnam utilizing in-country facilities and SERVPAC mobile and shorebased capabilities in the Western Pacific (WESTPAC).

b. The Naval Support Activity (NSA), Da Nang, established in October 1965, was available to discharge these responsibilities in I Corps Tactical Zone (CTZ). A new command, NSA, Saigon, was established in May 1966 to consolidate support for naval forces in II, III, and IV CTZ.

These forces included Market Time, with its associated harbor defense forces; Game Warden, with its mine-sweeping forces and their specialized craft; the riverine assault forces (see Section F); patrol air cushion vehicles; logistic craft; and Vietnamese and other free world naval forces.

(1) Basing. Primarily, shore basing was utilized for Market Time forces at Da Nang, Qui Nhon, Cam Ranh Bay, and Cat Lo. Long delays were encountered in construction of the last three, due to competition with larger projects having higher priorities. Marginal and austere capabilities were finally gained by self-help, but fully adequate capabilities were long in coming. As an example, the crane pad in the original plan for Qui Nhon was not completed until February 1967. Interim POL (petroleum, oil, and lubricants) facilities were functioning in February 1967, but operational difficulties were still being experienced. Similar delays were encountered at Cat Lo and Cam Ranh Bay.

(a) Some Game Warden bases were entirely afloat, some entirely ashore, and some a combination. A variety of craft, some self-propelled, were activated and converted to support river patrol boats. The Navy's Advanced Base Functional Component System, with changes to meet new requirements, was used as the basis for planning Game Warden bases ashore. These shore bases faced a host of problems. In addition to operational planning, other factors, sometimes conflicting, restricted the choice for Game Warden base locations. In the swamp-like terrain of the Mekong Delta, firm ground was at a premium. For protection against attack from landward, bases had to be located within the defensive perimeters of U.S. or RVN compounds. As in the case of bases supporting Market Time, extensive delays in construction of Game Warden shore bases were encountered. Bases were frequently constructed on a self-help basis, usually with several Seabee ratings supervising other general ratings. Construction would not have lagged behind requirements so far if additional Seabee personnel had been planned originally.

(b) In designing the base systems for Market Time and Game Warden, many factors had to be considered when deciding whether to provide a mobile base or construct one ashore. Despite the problems encountered with development of a shore base, not all factors favored mobile bases. Nevertheless, it was pointed out: "Afloat assets often have special advantages which warrant their continued utilization. They have flexibility, mobility, and residual values differing from those of fixed facilities. If in being, they need no capital investment, construction materials or construction cost. They provide assets which can be used elsewhere, if the need arises. All such factors must be evaluated in arriving at decisions concerning the facilities to be developed."[47] Subsequent events were to prove the wisdom of making most Game Warden bases mobile. Mobile bases permitted river patrol areas to shift as enemy tactics and areas of concentration shifted. Supplemented by austere Advanced Tactical Support Bases (ATSBs), they permitted waging an interdiction campaign (SEA LORDS*) in the smaller rivers and canals once Game Warden forces had substantial control of the use of the major waterways. As withdrawal of U.S. forces occurs, mobile bases can be moved out of Vietnam and retained as ready assets. The base system in December 1969 is shown in Figure 41.

(2) Naval Support Activity (NSA), Saigon. NSA, Saigon, under the command (less operational control) of COMSERVPAC and the operational control of Commander Naval Forces, Vietnam (COMNAVFORV), was assigned the mission of supporting all U.S. naval forces and bases in II, III, and IV CTZ and assisting fleet units as feasible. This involved operating bases to direct and control logistic lift, provide personnel administrative support, maintain and repair ships, craft and equipment, manage materiel, execute interservice support agreements, provide munitions, and furnish services to visiting fleet units and free world naval forces. Offshore backup support was provided principally by the Naval Base, Subic Bay, with additional support by other SERVPAC shore activities and mobile support forces of the Seventh Fleet.

[47] Commander, Service Force, Pacific, Letter, subject: Trip Report; Forwarding of, FF4-15 5050 Ser. 70M 01082, 24 June 1966.

* SE Asia Land-Ocean-River Delta Strategy

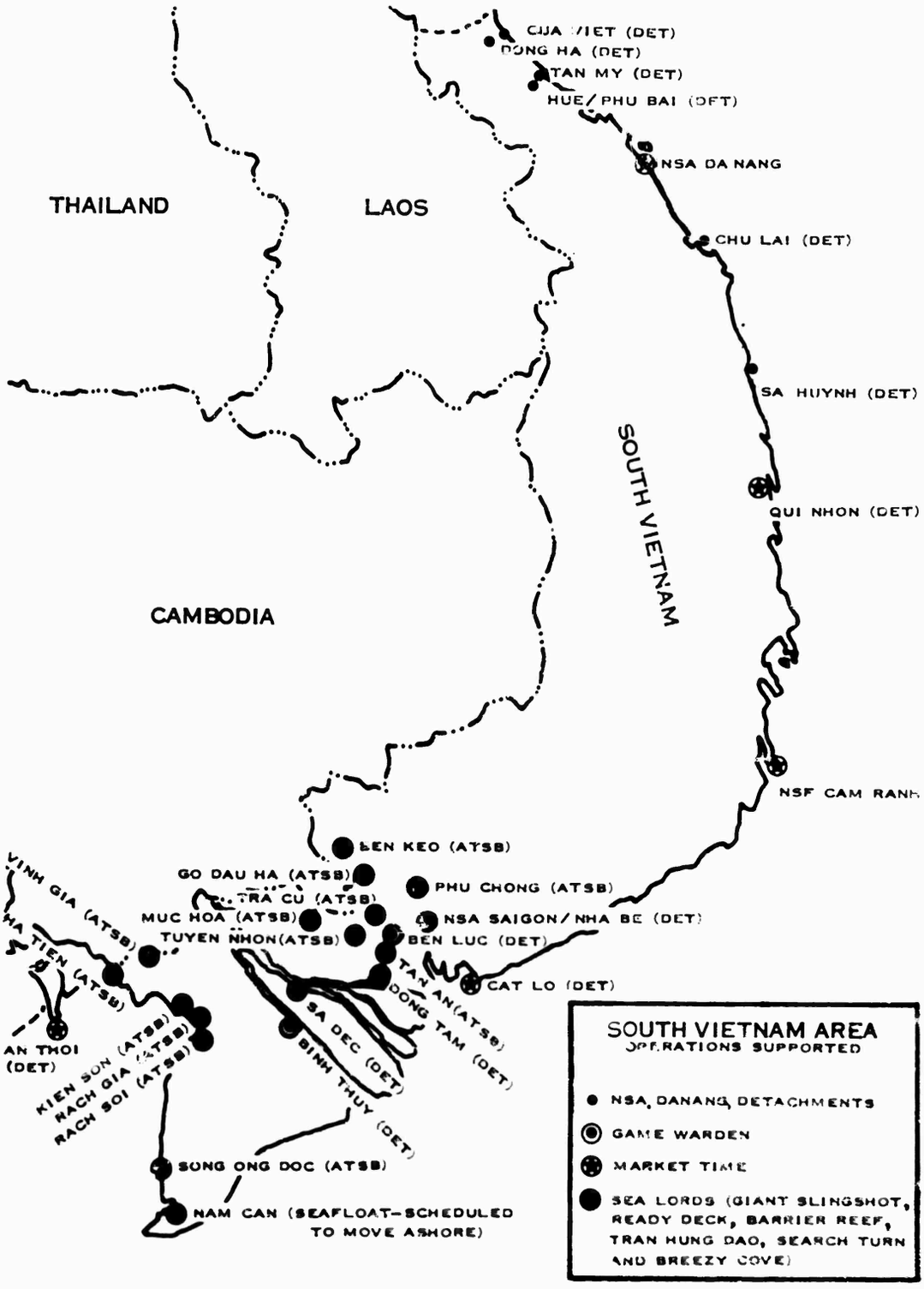

FIGURE 41. NAVAL BASES IN RVN (DEC 1969)

Source: Commander, Service Force, Pacific, Letter to Navy Member, Joint Logistics Review Board, Enclosure 8, 2 Jan 1970.

(a) The quantity and quality of personnel assigned to NSA, Saigon, were insufficient to cope with expanding responsibilities and workload as U.S. forces built up in Vietnam. Although never fully up to allowance in numbers and rates, NSA, Saigon, was able to fulfill its manifold and widespread tasks due to the dedication of assigned personnel.

(b) The supply management problems of NSA, Saigon, were complicated by the scattered, inadequate warehouses available in Saigon. Initially, boat repair parts were stocked at the Naval Supply Depot, Subic Bay, for delivery to Vietnam by air and surface shipments. Problems arose when the new patrol craft were placed in operation in Vietnam with their support requirements based on engineering estimates. In many cases, required parts proved to be in short supply until stock levels were attained based on actual consumption factors. Intensive management actions were required at all echelons to obtain adequate parts, which were shipped by air directly to Saigon. The NSA, Saigon, exercised centralized control of the parts at all the detachments and redistributed them by air to meet the many emergencies. By August 1967, the storage situation in Saigon had improved so that support by Subic Bay was no longer required. A step in the supply chain was eliminated by requisitioning directly from the Naval Supply Center, Oakland, California. Further improvements were achieved when semipermanent facilities were constructed at Nha Be near Saigon and a Maintenance Data Collection System was instituted.

c. Inadequacies in facilities maintenance support of naval bases were solved by assigning to NSA, Saigon, a Construction Battalion Maintenance Unit (CBMU) similar to the one assigned NSA, Da Nang, for I CTZ. In addition to performing normal public works functions, its personnel accomplished emergency construction and battle damage repair.

d. Success of support at scattered bases ashore and afloat was enhanced by water and air lift under the operational control of NSA, Saigon, which supplemented lift acquired through the Traffic Management Agency. Two small supply ships and numerous small logistic craft made deliveries to bases along the coast and up the waterways. Aircraft made regular runs and were kept busy with emergency lifts of repair parts and personnel. NSA, Saigon, could not have performed its mission adequately without this small sealift and airlift capability immediately responsive to its requirements.

5. SUMMARY

a. When the unexpected requirement arose for small, shallow-draft combat craft for inshore and river patrol, the Navy lacked craft appropriate for the task and bases in-country from which to operate them. This required purchase or construction of new craft, the reactivation, and often modification, of old ships and craft, and the development of concepts for their support.

b. The system of bases developed was a combination of shore and afloat facilities. Shore bases were constructed after multiple environmental problems and operational difficulties had been overcome. Afloat bases used in Game Warden operations proved advantageous because of their inherent mobility and flexibility for meeting new requirements. The use of the Navy's Advanced Base Functional Component System expedited completion of naval bases, afloat and ashore.

c. During the first 2 years of the buildup, base construction generally lagged behind requirements. This was largely the result of priorities and the lack of organic naval capabilities for such work outside of I CTZ. Subsequently, provision was made for naval construction personnel for both facilities maintenance and emergency construction capability through the temporary use of personnel from Mobile Construction Battalions and the organization and deployment of Construction Battalion Maintenance Units.

d. Naval Support Activity, Saigon, and its detachments were established to provide logistic and administrative support to naval forces in II, III, and IV CTZs. Support in I CTZ was provided by NSA, Da Nang. Maintenance support was most demanding. Intensive management at all echelons was required to obtain repair parts, particularly for the new combatant craft. Absence of usage data for these new craft, coupled with the adverse environment, resulted in

spare parts usage beyond that expected. The limited airlift and sealift capability under the operational control of NSA, Saigon, proved vital in providing the widely scattered and often remotely based forces with supplies, repair parts, and critical personnel.

e. Support provided by in-country naval activities was supplemented by mobile support units assigned to the Seventh Fleet and by shore activities in WESTPAC. For example, in the case of Market Time forces, ships received significant mobile support and backup support from the Naval Base, Subic Bay. Aircraft likewise received support from Sangley Point, Philippines. Overall, the existing logistic system designed to support the Seventh Fleet proved flexible, responsive, and adaptable to support of coastal and riverine warfare in the Vietnam environment.

SECTION F

SUPPORT OF RIVERINE OPERATIONS

1. BACKGROUND

a. The Mobile Riverine Force (MRF), organized in early 1967, was initially composed of a brigade of the 9th Infantry Division and a Navy task force. The MRF was a joint Army-Navy strike force. The ships of Support Squadron 7 formed a self-contained and mobile base with Army combat units and service and support units based on the ships. The Navy's riverine assault craft provided troop lift and close combat support for the Army riverine units assigned to the MRF. The riverine force was operationally independent of fixed support bases and had all its normal fire support embarked or in tow. It provided great flexibility and markedly increased operations capabilities in the previously inaccessible areas of the Mekong Delta. The logistic support of riverine operations serves as an excellent example of effective joint logistic operations. It is treated separately because of the innovative support arrangements that were devised.

b. Initial planning called for afloat support utilizing a nonself-propelled barracks ship for interim messing and berthing. When the barracks ship proved insufficient for the number of Army personnel assigned, another barracks ship was assigned. In addition, a 600-acre "island" base was built at Dong Tam by an Army engineer battalion and a detachment of Seabees among inundated rice paddies by dredging fill from the bottom of the Mekong River. The purpose of this base was to provide the force a home ashore in addition to the Mobile Riverine Base (MRB) afloat.

c. The logistic support plan provided for in-country support of two River Assault Groups on an interim basis while proceeding with concurrent plans for the ultimate support of one River Assault Group, with the assault force and another collocated with the Army brigade at Dong Tam. As an interim solution, a light repair ship was diverted from Market Time and Game Warden to provide support to the mobile force and the Ship Repair Facility, Yokosuka, converted a large lighter to a repair, berthing, and messing barge to provide support at Dong Tam.

d. Logistic support was provided to the naval element of the MRF by the Naval Support Activity, Saigon, which in turn exercised overall operational responsibility for the logistic support of the MRF. The combat service support mission was accomplished by a combination of Army and Navy organizations and supply systems.

2. EQUIPMENT

a. Navy ships provided the Army with an afloat base for command and control, troop billeting and messing, and combat service support. Army and Navy boats provided the Army with means of tactical transportation, fire support, combat resupply, command and control, and medical support.

b. The assault support patrol boat was the only boat specifically designed for riverine operations. It had limitations. Because of a low freeboard and lack of buoyancy, it was easily swamped. The armor plating in the hull was penetrable by recoilless rifle and rocket rounds. The other boats (e.g., armored troop carrier, and command control boats) were converted landing craft modified to meet the need of the riverine force.

c. Equipment authorizations for Army units operating as part of the MRF required modification. These consisted essentially of the deletion of vehicles, field kitchen equipment, tentage, and selected heavy crew-serviced weapons and the addition of outboard motorboats and improved communications equipment.

d. Landing craft authorized the Army transportation boat company in support of the MRF underwent a variety of alterations, all based on the boats' habitual employment. These alterations consisted of building superstructures in the deck wells to accommodate working space or troop billets. In addition, special purpose modifications were made to accommodate brigade and artillery battalion command posts, detainee and prisoner temporary stockade and interrogation facilities, and a transportation company orderly room and dayroom. Other landing craft, used as prime movers for artillery barges and for artillery resupply and storage, had jerry-built structures erected for crew accommodations.

3. SUPPLY SUPPORT

a. The Navy provided the primary means of supply transport to the MRF utilizing a water line of communications. Supplies for the Dong Tam base were moved from Saigon by Army truck units as well as from Vung Tau using Army and Navy boats along the inland waterways. The supply effort in support of the mobile riverine brigade was one of joint Army-Navy interest and responsibility.

b. Army and Navy logistic support activities at Vung Tau were the principal transshipment points for supplies for the MRF. A Navy liaison division of the Naval Support Activity, Saigon, assisted by an Army liaison team from the 9th Infantry Division Support Command, was located at Vung Tau. The mission was to process requisitions from the Mobile Riverine Base (MRB) and expedite the flow of material.

c. Supplies drawn at Vung Tau were loaded aboard a supply LST and transported on a weekly schedule to MRB. A support LST provided backup support for the ships of the MRF as well as storage space for a portion of the Army unit load of equipment plus a 10-day resupply of ammunition.

d. Resupply within the brigade during combat operations varied according to the operational requirements and transportation space available. Unit requests for resupply were normally processed through the joint tactical operations center to the Navy logistics officer who arranged for the assembly of the required materiel. Means of delivery to the requesting units included resupply by boat, helicopter, or a combination of the two.

4. MAINTENANCE

a. Initially, the major repair and maintenance asset of the MRF was a light repair ship. Prior to departure from CONUS, its shop spaces and tooling were reconfigured to provide a broad range of capabilities to repair and maintain all ships and craft of the MRF and to overhaul all self-propelled craft. Additionally, ship spaces were configured and tooled for Army repair and maintenance use.

b. At the Dong Tam base a repair, berthing, and messing barge furnished shop space and heavy machinery required for patrol craft overhaul and a floating crane provided the required heavy lift capability. Two pontoon drydocks permitted underwater hull repairs.

c. A division support organization provided support maintenance to the mobile riverine brigade. This team operated aboard the Navy support maintenance repair ship. Its mission was to provide direct support maintenance, within its capability, for all Army equipment assigned to a riverine brigade. Items of equipment requiring direct support maintenance beyond the capability of the team were evacuated by boat or helicopter to Dong Tam.

5. MEDICAL SERVICES. Medical support for riverine operations was a joint Army-Navy effort. Each infantry battalion of the MRF had an assigned Army surgeon and medical platoon that accompanied troops on operations. Located in each barracks ship in the MRB was a medical treatment facility or sick bay. The 9th Infantry Division Medical Battalion provided a medical team to support a jointly operated medical treatment facility. Dental treatment within the MRB was a Navy responsibility.

6. SUMMARY

a. Support provided the MRF continually met or exceeded standards established throughout the rest of RVN despite the adverse climatic conditions and the remote locations of the operating forces. Logistic forces of the Army and Navy operated in close cooperation and, with the basic flexibility inherent in the organizations and procedures of both Services, complemented each other throughout.

b. Logistic support was responsive. The support of the Mobile Riverine Force provides an excellent example of the effectiveness of joint logistic operations at the tactical level.

SECTION G

SUPPORT OF I CORPS TACTICAL ZONE

1. INTRODUCTION. Military operations in the five northernmost provinces of the Republic of Vietnam (RVN), designated as the I Corps Tactical Zone (I CTZ), were generally similar to, and an extension of, operations in the provinces to the south. On the other hand, the logistics of the I CTZ area had basic features distinctive from elsewhere in-country as a result of the large-scale commitment of Marine forces, of the ensuing assignment to the Navy of major responsibilities for logistic support, and of the eventual addition of large Army elements to the ground force population.

a. This situation was a logical consequence of circumstances at the time. The early 1965 requirement for U.S. ground combat forces in the northern part of the RVN, an area lacking in port facilities, had been met by initial deployment of self-sustaining Navy/Marine amphibious units of Seventh Fleet. Naval units ashore, including Marine aviation, were then rapidly built up to a major force as part of a countrywide buildup under new United States commitments. At that time, the Army, not authorized to mobilize Reserve units, could not have deployed forces to I CTZ, or supported them there, in a comparably responsive time frame except at the cost of Army buildup further south. Later, when a new enemy front along the Demilitarized Zone (DMZ) required reinforcement of the I CTZ area by Army forces, they were integrated into the existing I CTZ logistic support relationships, avoiding a complicated and potentially disruptive realignment of forces and logistic responsibilities at a tactically critical time.

b. The geography of I CTZ dictated considerable dependence on coastal and river lines of communication, supplemented by in-country air lift and organic helicopter lift. The I CTZ zone tended to be isolated with the Annamite Mountains plunging to the coast in the Hai Van Pass area, north of Da Nang, and at the southern boundary of the zone. The combat base enclaves, from which main forces operated, and the transportation of supplies by land, severely limited both physically and tactically, were typical of other areas in RVN. Large tonnages of cargo were moved laterally in shallow-draft ships and craft to logistic support complexes on the coast, inland by the Perfume River to Hue-Phu Bai, and by the Cua Viet River to Dong Ha. Great reliance was also placed on airfields with C-130 capability and small tactical air facilities throughout the area for resupply operations both in coastal areas and inland. The result was a resemblance to island logistics.

c. The permanent nature and extensive degree of naval force involvement in I CTZ was neither planned nor conventional. In reviewing how the two naval services developed base complexes ashore, established vital port facilities, created new Navy and Marine logistic units, and used existing logistic support resources, lessons may be drawn as to future application of strengths and avoidance of weaknesses in such circumstances. Areas of naval interest that are assessed include organizational changes, Navy-Marine relationships, the performance of the Navy Advanced Base Functional Component (ABFC) system, the contributions of the Seabees, the temporary use of mobile fleet assets, and the importance of shallow-draft ships and craft by reason of coastal geography.

d. Although all of the military services operated extensively in I CTZ, this section focuses on Navy aspects of I CTZ logistics unique to the area, and omits parallel Army and Air Force experiences that did not impact on Navy/Marine logistic operations. Even though many of the Army experiences in I CTZ were common to operations reviewed in Section C, the integration of Army operations into the existing I CTZ posture in 1967 and subsequent years provided a significant test of overall logistics responsiveness, effectiveness, and economy. As for Air Force operations in I CTZ, Da Nang was a key air base and figured prominently in the air war. Intratheater airlift operations extended to airfields throughout the area; however, the

logistic aspects of these Air Force operations were not essentially different from those elsewhere in RVN. Section H reviews Air Force operations country-wide and incorporates the experiences and lessons of I CTZ in its general review.

e. The following review of logistic support of U.S. forces in I CTZ begins with a discussion of planning for and assignment of logistic responsibilities in the area. Next follows a review of events through March 1967, which predominantly involved Navy and Marine forces, and from April 1967 onward, when there was also significant Army involvement in I CTZ operations and logistics.

2. ASSIGNMENT OF SUPPORT RESPONSIBILITIES. With the buildup of U.S. forces in the I CTZ, a basic logistic support issue was the question of Service responsibilities for support of all forces in the area. Actual events created support requirements in I CTZ far beyond any previously planned or anticipated capabilities of naval forces.

a. Planning for Logistic Responsibilities. Contingency planning had recognized the possibility of deployment of naval forces to the northernmost provinces of the RVN and dependence on over-the-shore logistics in that area but had not envisioned the extent or duration of Navy and Marine logistic responsibilities.

(1) Commander in Chief, Pacific (CINCPAC), planning for operations in mainland SE Asia provided for sea and air deployment to Da Nang of an air-ground expeditionary force from Seventh Fleet Marine elements with possible further commitment of Marines up to corps strength in Vietnam. Logistic planning called for initial self-sufficiency of these forces through the Navy and Marine logistic systems. Definition of the anticipated Navy role in I CTZ logistic support was provided in plans prepared by CINCPACFLT and his naval subordinates in response to the CINCPAC plan. This planning envisioned provision of shallow-draft vessels and lighterage, deployment of Navy Nucleus Port Crew and of Cargo Handling Battalion personnel, and participation by elements of the Seventh Fleet Amphibious Force in the logistic operations at minor ports and beaches.

(2) Navy and Marine planning was thus oriented on the conventional temporary nature of commitment of amphibious units. The possibility of prolonged land operations by Marine units, such as in World War II or Korea, was not reflected; nor was there indication of need for a permanent Navy logistic base ashore. These views were not questioned in the planning review process, since they were consistent with normal roles and missions, and since guidance promulgated in CINCPAC and supporting plans did not suggest the actual extent of the naval logistic response that would in fact be required beginning in 1965. Furthermore, apart from the SE Asia contingency planning process, established procedures did not exist within the Department of the Navy for a preplanned logistic response to the support tasks that were assigned to naval forces in I CTZ in 1965.

b. Preliminary Logistic Posture in Area. The limited logistic support system in existence in the I CTZ area at the time of the initial Marine landings depended on out-of-country deployments for expansion.

(1) Headquarters Support Activity (HSA), Saigon, provided rations, POL, and limited common item support to over 4,000 U.S. Army, Air Force, and Marine Corps personnel, conducting advisory and air support operations throughout I CTZ. There was no supply depot, nor were warehouses, substantial stocks, or additional logistic personnel available to support additional forces.

(2) Port operations at Da Nang, which would prove to be most critical during the buildup, relied on the limited productivity of Vietnamese stevedores provided through HSA, Saigon, contract and controlled by a MACV military representative. Although adequate for the limited requirements of MACV activities in I CTZ prior to March 1965, the existing throughput capability could not support any major increase in military requirements. The most critical factor was the absence of deep-water piers. Ships had to be off-loaded in an open roadstead exposed to heavy seas and seasonal weather that sometimes halted operations.

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c. Basic Decisions on Actual Support. The initial Marine force of 7,000 had been rapidly increasing and the emerging national decision to undertake a country-wide buildup of U.S. forces signified the possibility of a major and prolonged rather than limited and temporary commitment in the RVN. This turn of events raised the question of ultimate responsibility for logistic support of U.S. forces in the I CTZ since the actual requirements were developing beyond the planned naval capabilities. CINCPAC assigned the task to the CINCPACFLT, already deeply involved by prior planning. By the end of July 1965, authorization had been granted for establishment of an advanced naval base at Da Nang. The III Marine Amphibious Force (MAF) was then deployed along 110 miles of shoreline with an air and ground force of about 27,000 naval personnel, supplemented by offshore fleet support.

(1) Sequence of Events. Minimum time was available for logistic preparations as the decision to initiate deployment of combat forces to Vietnam had been reached rapidly. Requested on 22 February 1965 by the Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV), the initial deployment was recommended by CINCPAC on 24 February and by the Joint Chiefs of Staff on 4 March. The Secretary of Defense approved on 7 March, and the landing of the first ground combat units began in a matter of hours.

(a) The brigade landed by sea and air at Da Nang on 8 March 1965. Deployment of air elements began 10 April with the arrival at Da Nang of an initial fighter/attack squadron from Japan. By 18 April, less than 60 days after COMUSMACV's request, a brigade air and ground team with over 7,000 personnel had been established at Da Nang and was fully operational without significant logistic deficiencies.

(b) Planning actions underway would lead to the deployment to Chu Lai of another Marine brigade-size force with an accompanying Naval Mobile Construction Battalion, landing the first week in May, to establish a base and a Marine tactical airfield. The fact that the Marine force could have over 15,000 personnel in I CTZ by May 1965, with an approved force composition that would soon approach 30,000, lent urgency to resolution of the issue of ultimate support responsibilities.

(2) Basic Decisions. Following review of the situation, CINCPAC directed, on 24 April 1965, that "military logistics operations at ports and beaches for the support of U.S. Forces and attached third country forces in the Da Nang-Chu Lai area would be accomplished using Navy sources," and that CINCPAC operations plans would be modified accordingly.[48] Tasks included U.S. military port operations, development of port and beach facilities, establishment and operation of base supply depots at the water terminal for common item support, in-transit service, loading and unloading of ships, in-transit storage, and port clearance. The basic decision was followed by a series of amplifying directives, supplemented by formal and informal interservice support agreements, so that the Navy's primary logistic support responsibilities were extended throughout the I CTZ and were balanced with concurrent responsibilities of the Army, Marine Corps, and Air Force, as discussed below.

(a) These naval responsibilities required development of a specific new logistic response, since the Marines were not organized to undertake base operating tasks and CINCPACFLT did not have an organic capability to discharge this requirement. Alternatives were explored during April and May, including both proposals for Navy augmentation of III MAF and for creation of a Naval Support Activity (NSA), Da Nang. The latter was eventually considered the best solution. However, before final resolution, the Chief of Naval Operations (CNO) on 14 May 1965 again raised the question of ultimate primary logistic responsibility in I CTZ with the Chief of Staff, Army.[49] In reply, Department of Army considered the basis for assignment of responsibilities to the Navy, namely, that Navy/Marines were the dominant force in the area and were capable of providing their own support, which appeared valid.[50]

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[48] Commander in Chief, Pacific, Message 241945Z April 1965 (SECRET).
[49] Chief of Naval Operations, Message 141904Z, May 1965 (SECRET).
[50] Department of the Army, Message 152104Z, June 1965 (CONFIDENTIAL).

(b) On 17 July 1965, the Secretary of the Navy approved the establishment of Naval Support Activity (NSA), Da Nang, under the command of CINCPACFLT, to be exercised through Commander, Service Force, Pacific Fleet (COMSERVPAC), with the mission, "To conduct military logistic operations at ports and beaches for the support of U.S. Forces and attached Third-Country forces in assigned areas." This activity was an in-country extension of the Service Forces, Pacific Fleet, supported by and integrated with the rest of the PACFLT logistic force, although under the operational control of the MACV naval component commander.

d. Service Responsibilities in I CTZ. Over a period of time following CINCPAC's 24 April 1965 directive, a series of amplifying CINCPAC and COMUSMACV directives defined the extent of the Navy's primary logistic support responsibilities in I CTZ, and each of the other Services assumed supplementary tasks.

(1) The Navy was assigned responsibility for military logistics operations at ports and beaches throughout I CTZ, including development of port and beach facilities, and depots and auxiliary facilities not included within boundaries of installations funded for and operated by other component commanders. The Navy also assumed administrative and logistic support responsibilities for MACV advisors in I CTZ. It was directed to establish and operate necessary base supply depots for common supply items in support of all U.S. and third-country forces, as well as to provide in-transit support for Service-peculiar supply items which remained separate Service responsibilities. Other responsibilities, such as the operation of a joint real estate office and the administration of a civilian personnel program, were added later.

(2) Other responsibilities were assigned among all the Services, and a pragmatic balance of shared logistic support functions was achieved in I CTZ. Navy POL terminal and distribution systems were augmented by similar Marine and Army operations. The Navy was only partially responsible for area support in respect to common-user land transportation and facilities maintenance, since concurrent responsibilities rested with the other Services in non-secure areas, or as a result of mutual agreements, or, in regard to distribution of supplies, beyond base depots in port areas. Additionally, all of the Services participated in coordinated base development through the service component commanders and provided various logistic support functions within individual installation boundaries as required by specific situations. When relocation of large Army forces to I CTZ occurred, responsibilities for support of these units were shared by the Army and Navy under COMUSMACV-established procedures. Based on the actual locations of Army and Marine units, which differed during specific periods, additional procedures for accomplishment of various logistic support functions were mutually agreed to among the Services concerned.

(3) Thus circumstances produced prolonged naval commitments to Service tasks which were neither normal nor anticipated, but nevertheless were within the broad scope of established Service roles and missions. In response, the Navy and Marine Corps initially adapted the basic amphibious concept of task-organized Marine forces supported by the Navy in a beachhead area. They also drew on the advanced base concept, refined in World War II, whereby stockpiled functional components could be used as building blocks to tailor a forward base complex in support of naval operations. Despite the capabilities and flexibilities inherent in these concepts, neither precedent nor established naval doctrine completely provided for the situation and challenges of I CTZ. A result was that new Navy and Marine logistic activities were created in-country as logistic relationships evolved between the naval services. The Army and Air Force logistic support commitments in I CTZ, in contrast, were conventional and recognized as possible requirements, so that the logistic responses of these Services were generally in accordance with previously established concepts and procedures.

3. GENERAL SCOPE OF SUPPORT REQUIREMENTS. The nature of the logistic response required in I CTZ was determined not only by the total size of United States and Free World Military Assistance Forces (US/FWMAF) to be supported, but also by the type, tempo and locale of tactical operations. There was a common fundamental problem for all Services of establishment of ports, support bases, air facilities, and lines of communications.

a. Forces To Be Supported. Force levels in I CTZ had reached 50,000 by the end of 1965, doubled during 1966, and reached a peak of 205,000 in 3 years. Figures 42 and 43 show the total strengths to be supported, the relative distribution of the Services during the force buildup, and the effect of the Army deployments in I CTZ in 1967 and 1968.

b. Scope of Tactical Operations. All of the U.S. Services operated in I CTZ. Logistic support requirements were satisfied in part by the individual Service logistic systems and also impacted, to varying degrees, on the Navy's general logistic support responsibilities in the area.

(1) There had been a high level of air operations at the Da Nang airbase before the buildup, and further increases in the Air Force operations created a need for expanded facilities and sustained resupply rates. The Air Force was logistically self-sufficient except for rations and POL. However, Air Force resupply operations directly affected Navy port operations at Da Nang. Army operations in I CTZ during 1965 and 1966 were essentially limited to widespread advisory activities and operations of Army aviation units. Navy operations in I CTZ consisted of development and operation of the advanced base complex to discharge area logistic support responsibilities, plus Market Time operations in coastal waters, supported in I CTZ by Navy shore facilities.

(2) The dominant factor in I CTZ logistics through March 1967 was the steady buildup of III Marine Amphibious Force (MAF) in combat bases, and the tempo and extent of Marine operations. When the 9th Marine Expeditionary Brigade landed, its initial mission was defensive. However, as the U.S. commitment changed, the Marine role was soon expanded into three simultaneous balanced and mutually supporting efforts: a program of large unit operations was aimed at attrition of enemy main force and regular units, a counter-guerrilla campaign was directed toward rooting out and destroying the guerrilla network, and a system of comprehensive Revolutionary Development Programs helped the Government of RVN to consolidate local government controls and assist the peasant in improving his life. During 1965, III MAF expanded its area of ground operations to 950 square miles; by the end of 1966 this was extended to 1,700 square miles, populated by over one million Vietnamese. Operations of the 1st Marine Aircraft Wing, as a component of III MAF, complemented and supported ground operations in I CTZ. For example, during 1966 it flew over 60,000 fixed-wing sorties and over 400,000 helicopter sorties, of which about 120,000 were logistic troop and cargo lifts, providing a new logistic support capability on a scale previously unknown. Total sorties exceeded 760,000 by 1968.[51]

c. Dynamics of Base Development. Navy planning for support of I CTZ was based initially on an estimated military population of 48,000 and logistic support requirements, including cargo off-loading, of an estimated 60,000 measurement tons (MTONS) per month.[52] These original planning estimates were soon overtaken by actual events and continuing adjustments were required as the I CTZ military population continued to increase and spread geographically. As noted, eventual population exceeded 200,000; monthly port throughput at Da Nang reached 600,000 MTONS by June 1968, a tenfold increase over initial plans.

(1) The Da Nang area, already an important Air Force base of operations, became the site of major Navy and Marine support complexes with the bulk of each Service's logistic support personnel and facilities in I CTZ located there. Chu Lai became the site of a Marine airfield and a focal point of logistic support activity. With the introduction of Army forces in April 1967, port and base facilities were expanded south of Chu Lai to support them.

(2) In northern I CTZ, III MAF originally had a force of approximately 2,000 in the Hue/Phu Bai area. Operational requirements led to continuing strength increases at Phu Bai. The opening of a new enemy front along the DMZ forced a large shift of III MAF strength farther northward. This required development of a major support base at Dong Ha. Table 19 illustrates the changing dispositions of III MAF forces and reflects the shifting character of support

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[51] Fleet Marine Force, Pacific, Operations of U.S. Marine Forces, Vietnam, (U) December 1966, pages 64-65; December 1968, p. 74 (SECRET).

[52] Commander, Service Force, Pacific, Operations of Service Force, U.S. Pacific Fleet, FY 66, (U) p. 6-3 (SECRET).

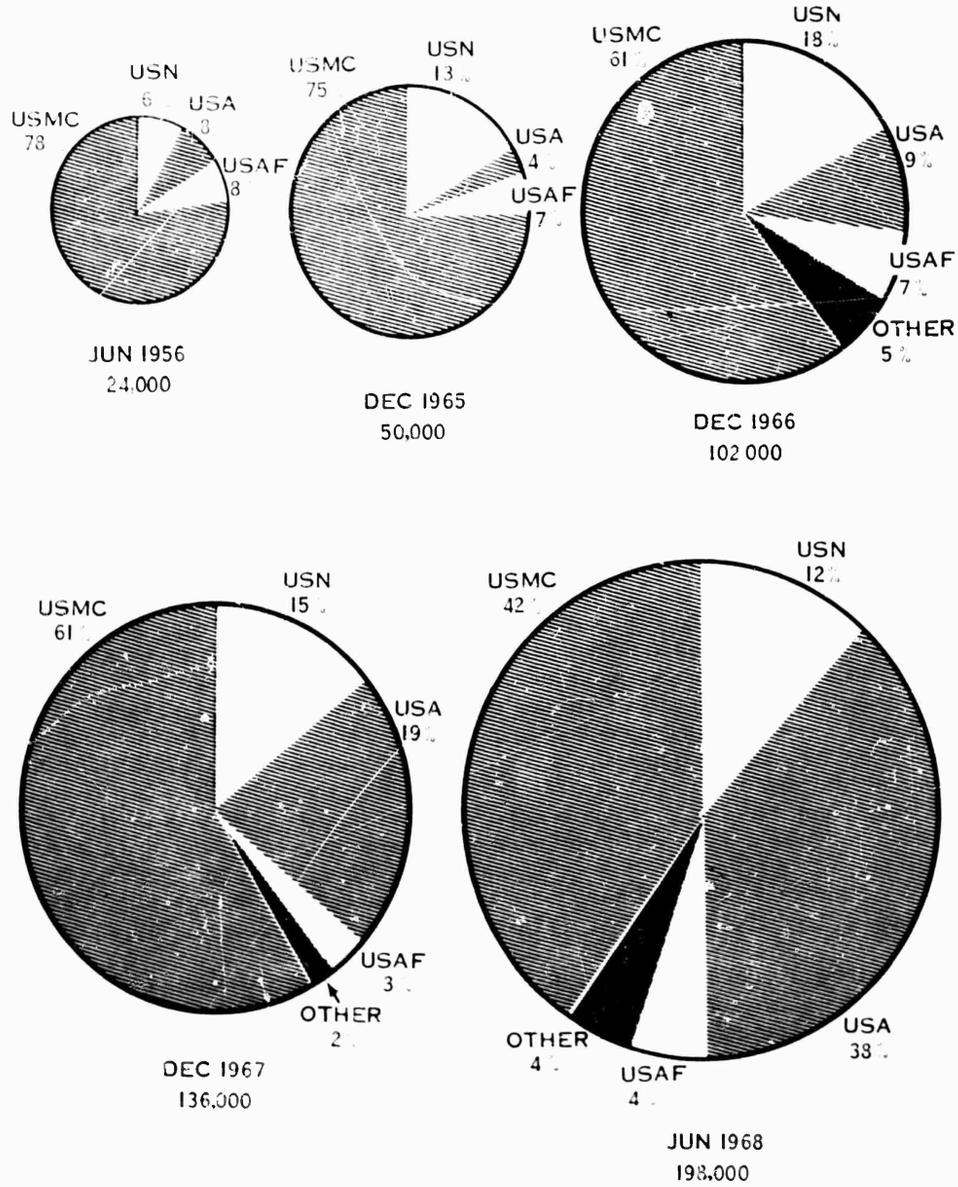

FIGURE 42. U. S. FREE WORLD MILITARY ASSISTANCE FORCES, I CORPS TACTICAL ZONE

Source: Joint Chiefs of Staff and Service Force, Pacific, Operational Reports, Consolidated from J-3.

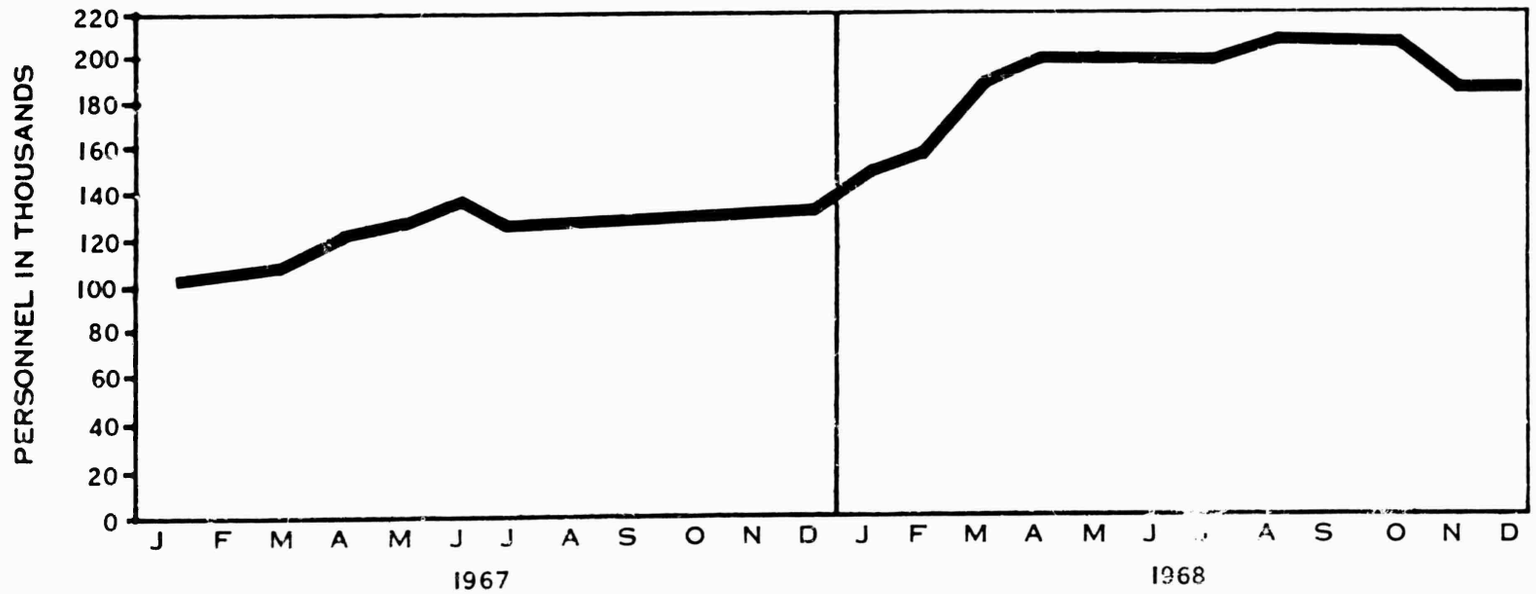

FIGURE 43. GROWTH OF I CTZ MILITARY POPULATION, 1967-68

Source: Commander, Service Force, Pacific, Operations of Service Force, U.S. Pacific Fleet, FY 68, p. 4-12; Service Force, U.S. Pacific Fleet Command History, 1968, p. IV-85.

requirements. Army deployments into northern I CTZ in 1968 contributed to new and critical demands for port and base support facilities in the area.

TABLE 19

DISPOSITION OF III MARINE AMPHIBIOUS FORCE
(Approximate Strengths)

Month, Year	Da Nang	Chu Lai	Phu Bai	DMZ	Total
March 1965	4,300	-	-	-	4,300
March 1966	29,000	20,300	3,800	-	53,100
March 1967	32,500	23,800	11,000	10,500	77,800
March 1968	35,100	6,100	17,000	29,400	87,600
March 1969	48,300	6,100	2,800	26,700	83,900

Source: Headquarters, Marine Corps, Command Center Chronology of III MAF Buildup.

4. LOGISTIC COMMAND CONTROL. Logistic responsibilities were exercised in Service chains of command, as described in Chapter 3. COMUSMACV exercised operational control and area coordination authority over these forces and their logistic resources through his component commanders.

a. On 6 May 1965, III Marine Amphibious Force (MAF) was activated and the Commanding General assumed the role of MACV Naval Component Commander (NCC) and maintained it during the critical first year of the buildup. During the first year of operations, NCC differed from the Army and Air Force component commands because logistic responsibilities for naval support activities, and corresponding control, were not centralized at the component command level. The Naval Advisory Group, Saigon, and the Market Time forces were specifically excluded from subordination to CG III MAF and reported directly to COMUSMACV. In-country logistic responsibilities relating to these activities were met through the Navy chain of command. Headquarters, Support Activity, Saigon, was an additional naval activity in RVN, logistically responsive to COMUSMACV separately from both the Naval Advisory Group and the NCC.

b. Unlike his counterpart tactical commanders in Field Force I and Field Force II, who were supported in their respective areas by the Army's 1st Logistical Command, CG III MAF not only influenced logistics as a consumer but also had considerable responsibilities for area development. Because of his dual tactical and logistic roles, CG III MAF established an organization for discharge of his NCC responsibilities, separate from his other III MAF staff functions. Through this mechanism the needs of commands and capabilities of support resources in I CTZ were integrated.

c. On 1 April 1966, Commander, Naval Forces, Vietnam, was established in Saigon as senior Navy commander within MACV and senior naval advisor to COMUSMACV, succeeding to the position of NCC at the time, and providing COMUSMACV with a single naval subordinate for logistic matters. CG III MAF's responsibilities for I CTZ coordination and his dominant interest in I CTZ logistic support remained as before.

5. ESTABLISHMENT OF NAVY LOGISTIC ORGANIZATION—I CTZ. The Navy employed existing fleet elements to provide an initial, temporary logistic support capability in the I CTZ until an NSA could be developed and manned; simultaneously, naval troop construction units were deployed to assist in support of the buildup. The fleet was well prepared for amphibious operations and frequent exercises had provided adequate training; however, comparable attention had not been given the logistic aspects of follow-on phases. Amphibious exercises had been short in duration. Logistic planning for development of advanced bases and provision of follow-on logistic support was not conducted.

a. Task Group 76.4

(1) During the early stages of the 1965 buildup, and before NSA, Da Nang, was activated, sustained Navy support was provided by the conventional fleet Task Group 76.4 of the Seventh Fleet, designed to conduct logistics-over-the-shore (LOTS) operations. This group, composed primarily of amphibious elements, was gradually augmented by logistic support units such as Nucleus Port Crew and Cargo Handling Battalion One detachments; Mobile Support Unit Three, a source of small craft, and Cargo Handling Battalion Two. The Cargo Handling Battalion elements were highly suited to the tasks of training and supervising other military or Vietnamese groups in cargo handling operations; however, Nucleus Port Crew (NPC) personnel were intended for use at established port facilities rather than for operations in an undeveloped area.

(2) Following authorization for establishment of NSA, Da Nang, a transition from a fleet-supported LOTS operation to an advanced base operation ashore was accomplished without disruption of logistic support.

b. Naval Support Activity, Da Nang

(1) NSA, Da Nang, became the hub of the Navy logistic support effort in I CTZ. It was activated with only 39 of its original allowance of 170 officers and 3,477 enlistees and would not be 100 percent onboard until March 1966.[53] Within 4 months the scope of responsibilities led to assignment of a Navy flag officer as commander. Without mobilization, NSA, Da Nang, had to be built by the drawdown of scarce skills from total Navy resources. Each individual billet had to be identified, justified, and ultimately manned under procedures which caused capability in-country to substantially lag behind requirements. By the end of FY 67, the 7,850 NSA, Da Nang, military personnel had caught up to within 7 percent of current authorized strength. However, later buildup of total forces in I CTZ again required expansion, peaking at approximately 11,000 military personnel in FY 68. In addition, the civilian allowance reached levels of approximately 10,000 personnel.

Figure 44 shows the extent of NSA, Da Nang, detachments. The first was established during February and March 1966 at Chu Lai, and detachments at Tan My in May 1966 and Dong Ha in November 1966 were followed by others at Hue and Cua Viet in February and March 1967, respectively, completing the original NSA, Da Nang, logistic posture. Those at Wunder Beach and south of Chu Lai were established later to support the Army deployments into I CTZ.

c. Seabees. The deployment of Naval Mobile Construction Battalions to SE Asia provided a wide range of Navy engineering and construction capability, as well as a critical early addition to other Service engineer units and contractor assistance available for development of a logistics base in South Vietnam. The services of Seabees were indispensible in I CTZ, for, in addition to valuable, and in some cases critical, support of the Marines and other forces, they were "a key to development of the off-loading sites and other facilities without which NSA, Da Nang, could not have carried out its mission."[54] Although the Seabee efforts were only a part of the massive overall construction effort discussed in detail in the Construction Monograph, their role in the Navy logistics response in I CTZ warrants particular note.

(1) Three Naval Mobile Construction Battalions had been deployed to I CTZ by June 1965, followed by a fourth in September 1965. There were 8 battalions in I CTZ by the end of 1966, and eventually a peak deployment of 12 battalions. Based on prior experience that productivity and morale were enhanced by keeping the battalions intact, the Navy initiated a rotation schedule of 8 months deployed and 6 months at home port. New battalions were activated in the United States to build a rotation base capable of maintaining the increasing number of battalions required in-country. Figure 45 shows this buildup. Rotation of personnel was accomplished by air, with tools, equipment, and supplies remaining in-country.

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[53] Ibid., p. 6-2.
[54] Ibid., p. 8-7.

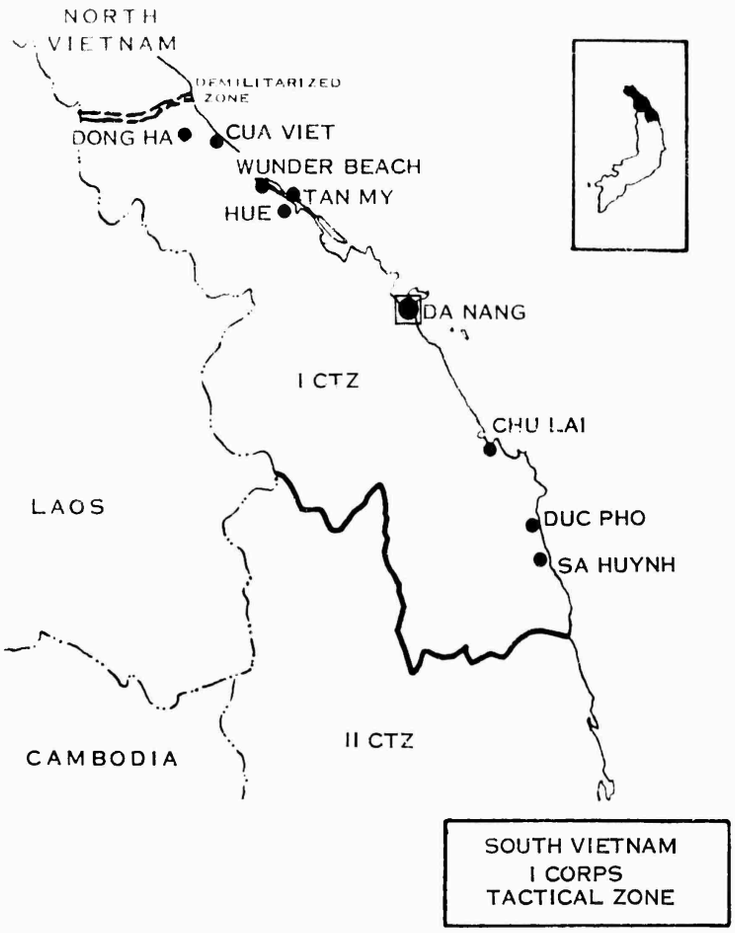

FIGURE 44. NSA, DA NANG, AND DETACHMENTS IN I CTZ

Source: Commander, Service Force, Pacific, Operations of Service Force, U.S. Pacific Fleet, FY 68, p. 4-2.

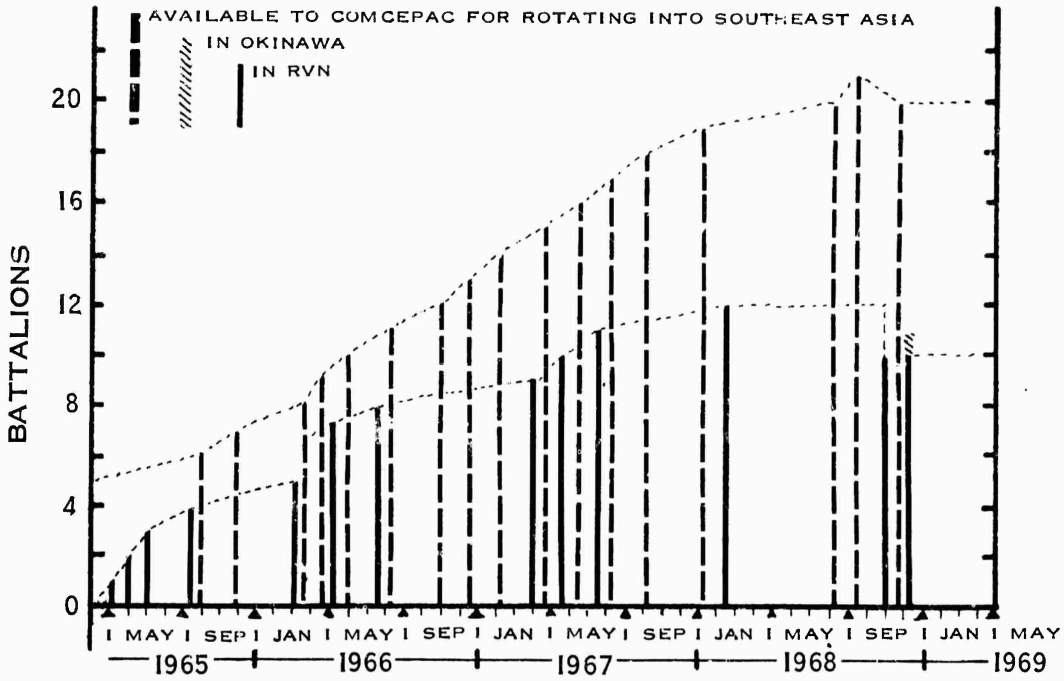

FIGURE 45. BUILDUP OF PACIFIC SEABEE FORCES

(2) Seabee details numbering usually less than 30 men each from a parent battalion also supported Army, Air Force, Special Forces, and allied units operating in the more remote areas of I CTZ. In May 1967, a newly activated Naval Construction Battalion Maintenance Unit was deployed to I CTZ to meet a need for public works support to Navy units in tactical areas and to airfields with a C-130 capability outside the combat base enclaves.

(3) The extensive Seabee efforts were integrated, through the Naval Component Commander (NCC), with the overall in-country construction effort under the MACV Director of Construction. The NCC exercised operational control of the battalions through the 3d Naval Construction Brigade in Saigon and the 30th Naval Construction Regiment (NCR) at Da Nang, plus the 32d NCR when established in August 1967. Operational control of the Construction Battalion Maintenance Unit in I CTZ, in view of its special function, was given to the Commander, NSA, Da Nang.

6. ESTABLISHMENT OF MARINE CORPS LOGISTIC ORGANIZATION. The eventual logistic organization of III Marine Amphibious Force (MAF) resulted from the incremental deployment of Fleet Marine Force, Pacific (FMFPAC), ground and aviation logistic support elements from Okinawa and Japan, augmented by deployments of FMFPAC personnel from California bases. Each enclave was provided with a Logistic Support Group or Unit. These were centrally managed from Da Nang and integrated, in March 1966, into a Force Logistic Command.

a. First Year Developments. In accordance with established amphibious doctrine Marine combat forces deployed to Vietnam were accompanied by logistic support forces tailored to, and under operational control of, the combat unit. After arrival in Vietnam, these elements were consolidated into logistic support units, under control of the Force Logistic Support Group (FLSG) at Da Nang.

(1) Because of the incremental buildup of Marine tactical units, there was a corresponding fragmented deployment of logistic support units and personnel. As the incremental logistic elements arrived, personnel, supply, and equipment assets were redistributed among the three base complexes. The III MAF logistic forces were not standard Table of Organization

units, but included elements of units from CONUS, Okinawa, and Hawaii. As a result, organizations were staffed by personnel who had not previously operated as a unit.

(2) The normal organizational structure of Marine combat service support units was intended to permit them to be task-organized among landing teams for amphibious operations. The degree of fragmentation experienced during the deployments to Vietnam had not been envisioned, nor had the burden of simultaneously supporting division and wing units in Okinawa, Japan, and a remote objective area. The CG, FMFPAC, had assessed the logistic capability of III MAF as critical at the end of 6 months. By the end of the first year, he reported the logistic condition as sound and improving. By August 1966, he termed the logistic position of Marines in the Far East as excellent.[55]

b. Force Logistic Command. The III MAF logistic organization that gradually evolved during the initial year in I CTZ was the Force Logistic Command (FLC). It was a structure never before employed in the Marine Corps.

(1) As III MAF strength passed the 50,000 mark in March 1966 and the 1st Marine Division was phasing from CONUS into the Chu Lai area, the expanding needs of the force led to the establishment of the FLC on 15 March 1966. It was a provisional command, created by expansion of the previously existing FLSG arrangement and, as shown in Figure 46, consisted of a headquarters at Da Nang, functional FLSGs at Da Nang and Chu Lai, and a Force Logistic Support Unit at Phu Bai. The mission of the FLC, as the internal support agency, was to provide sustained logistical support to III MAF organizations, to provide staff augmentation and self-sustaining mobile logistic support elements in support of tactical forces up to and including brigade size when deployed independently, and to provide logistic support to other organizations as directed.

(2) Evolution of the basic structure was not completed until February 1967 when the flag of the California-based 1st Force Service Regiment (FSR) was received. At this point the strength of the FLC was 5,500 personnel. The FLC task organization employed the assets of one full-strength FSR, two Marine division service battalions, one force separate bulk fuel company, and an augmentation of approximately 300 billets. The divisional service battalions became the Logistic Support Groups and the organization of the 1st FSR provided the framework for the headquarters and the heavy logistic activities of the FLC. By adapting existing Tables of Organization to the particular requirement in I CTZ, the Marine Corps had sought to retain a flexibility for later reconstructing all, or a portion of, the original organizations and to preserve the essential amphibious character of Marine forces deployed. Figure 47 shows the III MAF logistic posture by December 1968.

(3) The aviation elements within III MAF were supported through normal, well established relationships with the naval aviation supply and maintenance system. The FLC provided the additional logistic support which would normally be available to deployed wing elements through an FSR.

c. 3d Force Service Regiment (FSR), Okinawa

(1) The 3d FSR on Okinawa remained under the operational control of the deployed Marine team in I CTZ until 20 August 1965. By that time III MAF strength exceeded 30,000 and operational control of the FSR was transferred to CG FMFPAC in Hawaii. Additional elements of the 3d FSR accompanied successive tactical deployments. A provisional organization of the FSR elements remaining in Okinawa was developed to provide a limited depot capability for supply and maintenance support. As the 3d FSR was gradually modified by the new organization, local civilian hire augmentation was provided and permanent warehouses and shops were developed. As a side effect, the need to tailor the 3d FSR structure to the particular circumstances of a limited war in Vietnam created a corresponding but deferred problem of restoring a mobile combat service support capability on Okinawa or elsewhere for the post-Vietnam era.

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[55] Fleet Marine Force, Pacific, Operations of U.S. Marine Forces, Vietnam, November 1965, p. 37; March 1966, p. 48; August 1966, p. 54 (SECRET).

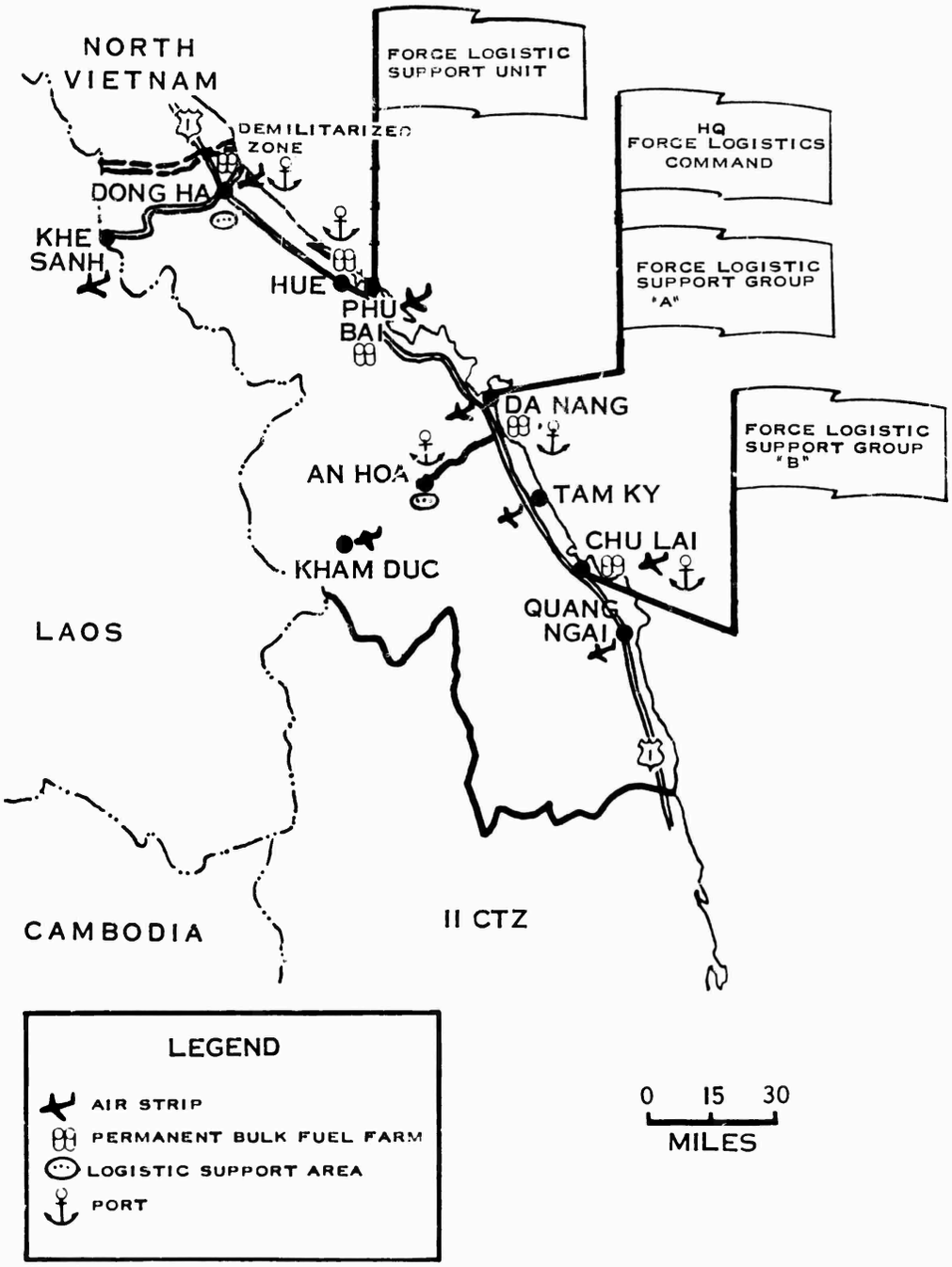

FIGURE 46. III MARINE AMPHIBIOUS FORCE LOGISTIC POSTURE, SEPTEMBER 1966

Source: Fleet Marine Force, Pacific, Operations of U.S. Marine Forces, Vietnam, September 1966, p. 37.

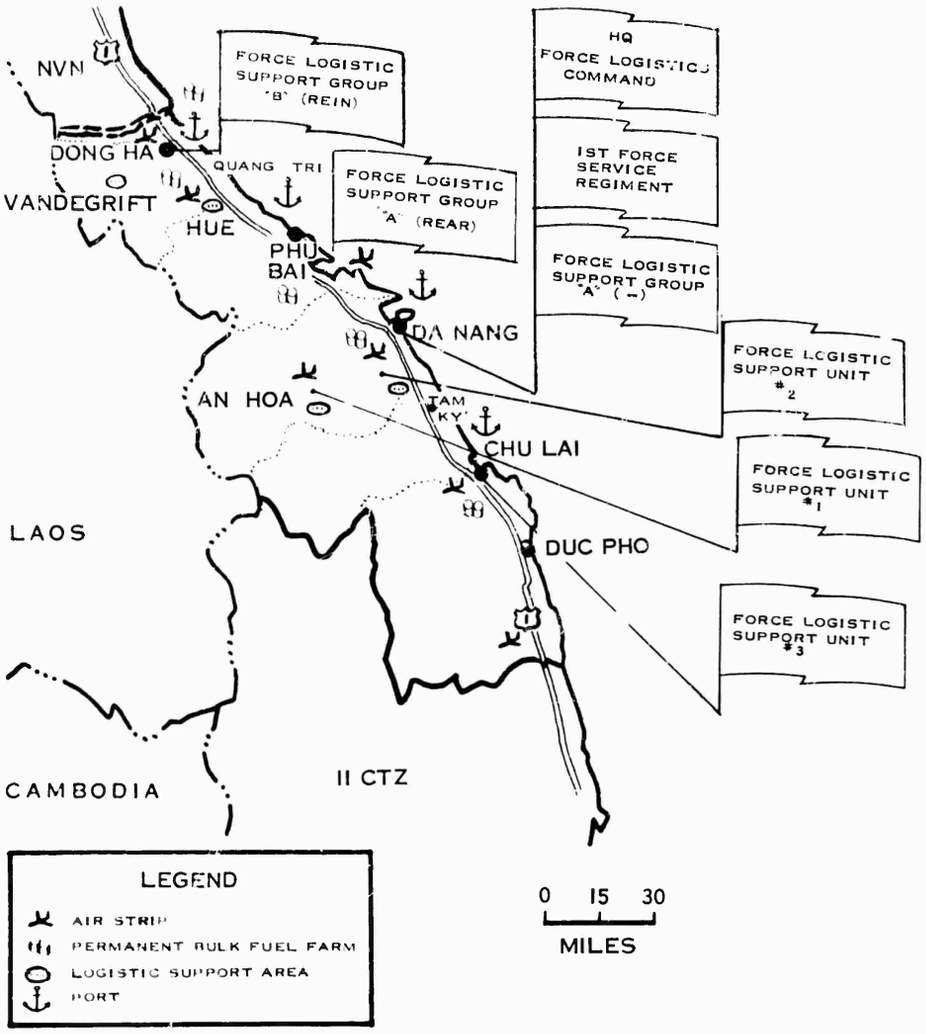

FIGURE 47. III MARINE AMPHIBIOUS FORCE LOGISTIC POSTURE, DECEMBER 1968

Source: Fleet Marine Force, Pacific, Operations of U.S. Marine Forces, Vietnam, December 1968, p. 92.

(2) Among its other functions, a noteworthy use of 3d FSR was to rehabilitate battalions returning from Vietnam in an intratheather unit rotation program. Arriving units received rest, personnel replacements, and repair or replacement of equipment. The program had begun in mid-1965 and 11 battalions, approximately half of III MAF strength, had been rotated to Okinawa before the increased pressure of DMZ operations in early 1967 prevented continuation of the program. The program had been possible due to the ability to interchange III MAF battalions with those of the 9th Marine Amphibious Brigade, which was based on Okinawa as a CINCPAC amphibious reserve.

7. DEVELOPMENT OF AREA SUPPORT CAPABILITIES. Successful support of forces in I CTZ depended on the timely development of port facilities and support base complexes, as well as their effective use in the conduct of logistic support operations.

a. Coastal Operations. The bulk of heavy, large volume, routine resupply stocks were delivered to Da Nang, creating a need in I CTZ for substantial backloading and extensive coastal resupply operations. Figure 48, showing monthly cargo movement at Da Nang, illustrates the high percentage of backloading required on a continuing basis. Figure 49 shows the relative distribution of backloaded cargo to I CTZ minor ports during mid-1968, when forces to be supported had reached about 200,000.

(1) This situation led to high demand for LSTs and LCUs, as discussed in the Transportation Monograph, to provide a capacity for coastal transit and ramp deliveries. Delivery of cargo across exposed beaches during periods of bad weather was a problem throughout the area. In the northern I CTZ, hydrographic conditions limited the effective employment of LSTs. The prime means of water transit was by LCU and similar craft until dredging and ramp construction permitted use of LSTs.

(2) River transits both to Hue and to Dong Ha were over shallow, serpentine waterways with frequent strandings on sand bars despite loading below capacity. Such transits were restricted during the extreme dry season to high-water periods. Silting of the channels, always a dredging problem, became extreme during the monsoon season.

(3) The restrictive hydrographic conditions were further limited by seasonal monsoons, with high seas and swells doubling the normal transit time of 7 to 8 hours to Hue and 12 to 14 hours to Dong Ha, and sometimes forcing empty lighterage to be held in the river mouths for days awaiting abatement of weather conditions.

b. Port Throughputs. Port operations in I CTZ prior to March 1965 were confined to Da Nang. New port capacity had to be created sufficient to receive and sustain the force buildup. This requirement was successfully met.

(1) Da Nang became the major port of entry by air. Airlift throughputs are discussed in Section H of this chapter as well as in the Transportation Monograph. Airfields were constructed at Duc Pho and Chu Lai in the south and Phu Bai and Quang Tri to the north. Numerous other air strips, many capable of handling C-130's, were also developed farther inland, as illustrated in Figure 47.

(2) Da Nang also became the major seaport of I CTZ. Additional minor port capabilities were developed at locations shown in Figure 44. These were equally vital for the effective distribution of supplies. As a specific instance, Figure 50 illustrates the timely and effective development of support capability in the underdeveloped provinces north of Da Nang. The total I CTZ seaport throughput, which had risen to 277,000 MTONS in June 1966, reached 500,000 MTONS monthly during 1967, and exceeded 800,000 MTONS per month in 1968, as shown in Figure 51.

(3) As the volume of sealift cargo mounted, the Navy reduced the use of military personnel for cargo handlers, while still retaining some military stevedoring capability for a training nucleus and for a basic level of self-sufficiency. On 1 April 1966, NSA, Da Nang, contracted with the Korean Express-Kuang Nam Enterprises for at least 70,000 MTONS per month

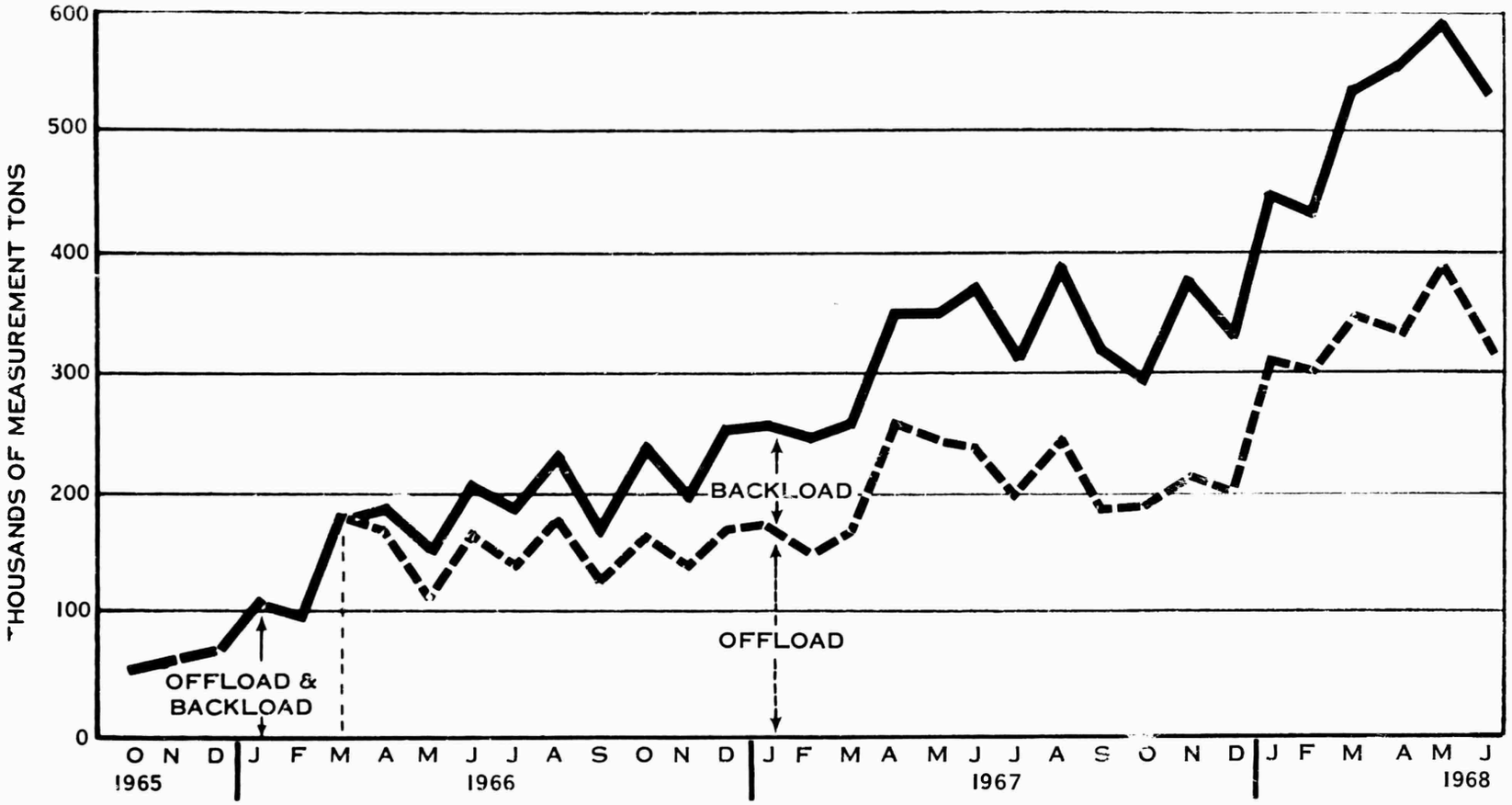

FIGURE 48. MONTHLY CARGO MOVEMENT AT NAVAL SUPPORT ACTIVITY, DA NANG

Source: Commander, Service Force, Pacific, Operational Reports.

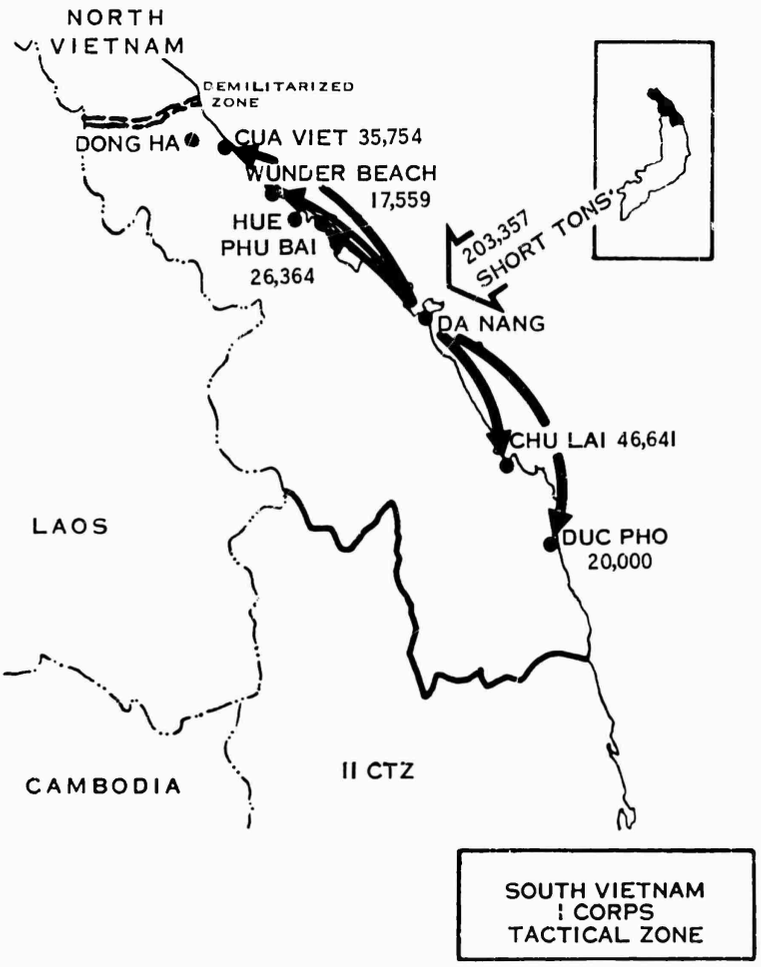

FIGURE 49. LOGISTIC SEA LINES IN I CORPS TACTICAL ZONE (SHORT TONS OF CARGO DELIVERED TO DA NANG AND AMOUNTS BACKLOADED AND DELIVERED TO DETACHMENTS), JUNE 1968

Source: Commander, Service Force, Pacific, Operations of Service Force, U.S. Pacific Fleet, FY 68, p. 4-10.

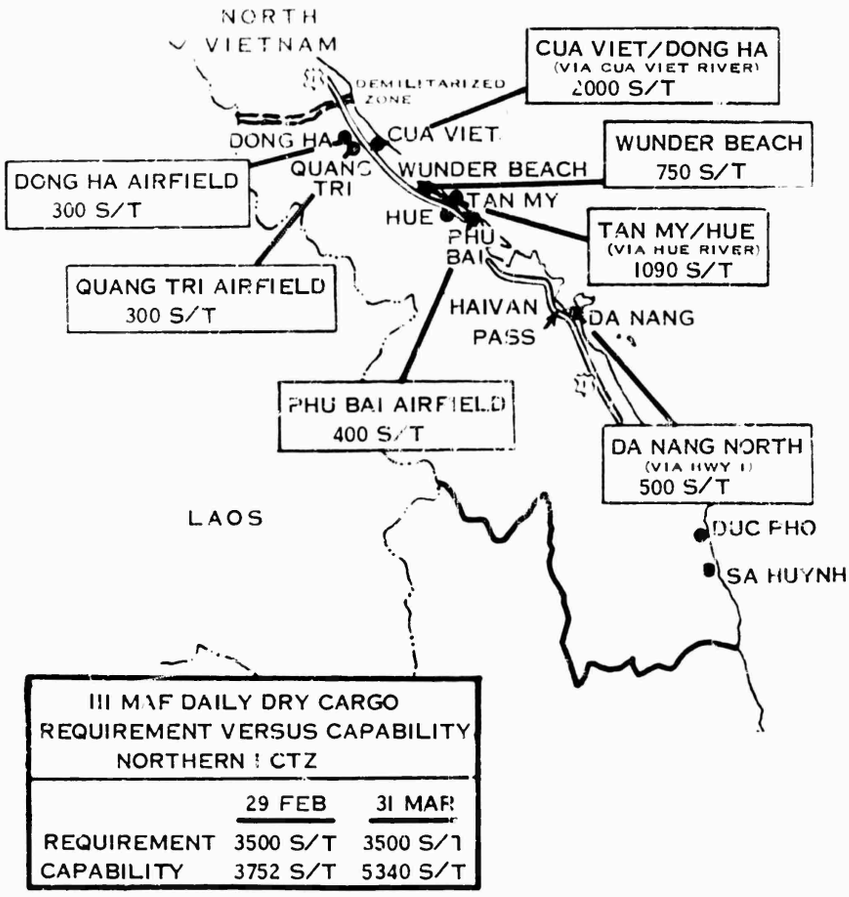

FIGURE 50. NORTHERN I CORPS TACTICAL ZONE DAILY DRY CARGO THROUGHPUT CAPABILITY (31 MARCH 1968)

Source: Fleet Marine Force, Pacific, Operations of U.S. Marine Forces, Vietnam, March 1968, p. 51.

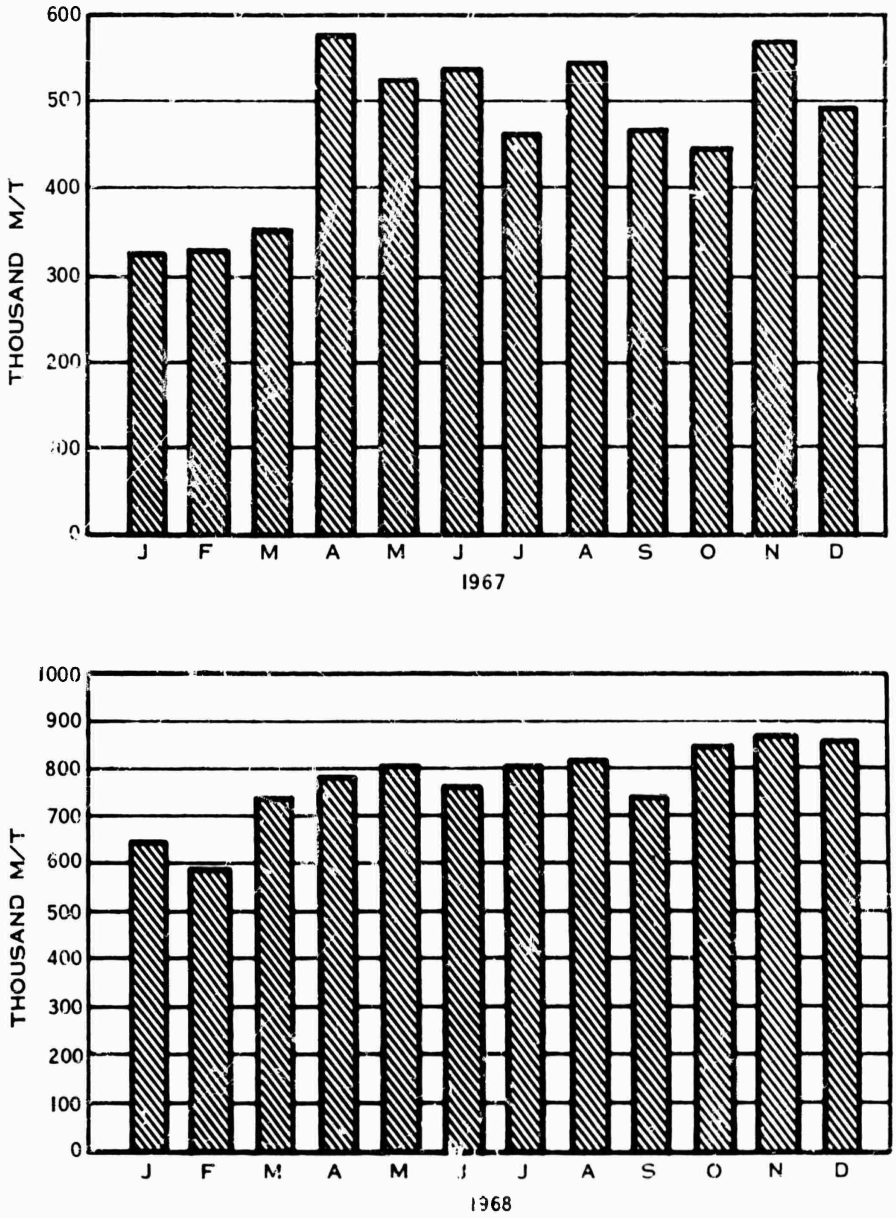

FIGURE 51. TOTAL I CORPS TACTICAL ZONE THROUGHPUT, NAVAL SUPPORT ACTIVITY, DA NANG, AND DETACHMENTS

Source: Service Force, U.S. Pacific Fleet, Command History 1967, p. IV-29 and Command History, 1968, p. IV-87.

cargo off-load. The company provided its own equipment and lighterage. While the contract rate was not reached until February 1967, rather than August 1966 as originally scheduled, it continued to increase and shortly reached and exceeded a monthly rate of 100,000 MTONS. This contract and the training of local Vietnamese permitted reduction in Navy stevedore personnel while new cargo off-load records were being established and total throughput was increasing. Figure [illegible] shows cargo throughput and cargo handling personnel utilization at Da Nang.

c. Da Nang Military Port

(1) Early Port Congestion. The most significant factor affecting cargo throughput was the absence of deep-water piers; this was aggravated by bunched arrivals of ships, insufficient off-loading sites, limited lighterage, and personnel shortages. The need to off-load in the open roadstead, exposed to heavy weather, often resulted in shut-down operations. The fall and early winter of 1965 were critical periods. Port congestion, which reached a maximum of 72,634 MTONS, was a matter of concern. By mid-January 1966 off-loading of ships was current. By February the average number of days required to discharge MSTS hatch-type ships had been reduced to 3.7 days compared to 7.2 days in January and 11.8 days in December 1965.[56] Besides improved efficiency and resources, other measures to resolve the situation included unitized all-weather packaging, loading of ships for single port discharge, segregation and block storage of cargo to be backloaded to Chu Lai, and improved reefer scheduling. A limited program also had been started for off-loading cargo from deep-draft ships at Naval Base, Subic Bay, Republic of the Philippines, for transshipment to Da Nang and Chu Lai by LST. Steps had been taken to increase Subic Bay's capabilities in this area, and four fleet LSTs were assigned to the Subic Bay-Da Nang/Chu Lai shuttle, which was later phased out as the situation eased.

(2) Use of Temporary Assets. Pending development of shore facilities, early logistic capabilities at NSA, Da Nang, were highly dependent on use of certain fleet assets. For example, one or two attack transports provided long-range communications and billeting for up to about 1500 men; a dock landing ship (LSD) provided a boat haven and limited boat repair facilities; numerous fleet craft provided lighterage. In August 1965, three barracks ships, accommodating a total of over 2000 personnel, were activated and arrived at Da Nang between October 1965 and March 1966. To supplement fleet refrigerator lighters, a chartered refrigerator ship provided afloat storage until June 1966 when ashore storage became adequate. MSTS tankers supplemented bulk POL storage. In the fall of 1965, direct cargo movement from shipside to overland delivery point was provided by the load of 20 Army amphibious lighters with their accompanying maintenance teams. Although the fleet units were useful in meeting demands for temporary billeting, lighterage, and port operations, the tasks were outside the concept of their normal employment.

(3) Port Development. By early 1967, the military port facilities in Da Nang were essentially completed, providing the logistic capabilities necessary to match the expansion of forces to be supported. Prior to 1 February 1966, critical requirements for emergency ramp and staging area construction had been met by Seabee resources. Subsequently, the MACV assignment of first priority facilitated port development. Two deep-draft piers were completed 15 October 1966, built with contractor-constructed sections made in the Philippines and specially designed for rapid emplacement. A DeLong pier originally scheduled for July 1966, delayed by offshore rock removal, was put into use 1 January 1967. This provided a total capability to off-load six ships simultaneously. Additional port development requirements included extensive dredging, improvement of roads and bridges, construction of LST/LCU ramps, a shallow-draft pier, and quay wall sites. Much was accomplished by late 1966, but substantial improvements continued to be made through 1968.

d. Other I CTZ Ports. Minor ports were developed with emphasis on construction of unloading ramps, POL storage facilities, and constant dredging operations. Chu Lai was

[56] Commander, Service Force, Pacific, Message 090354Z, March 1966 (CONFIDENTIAL).

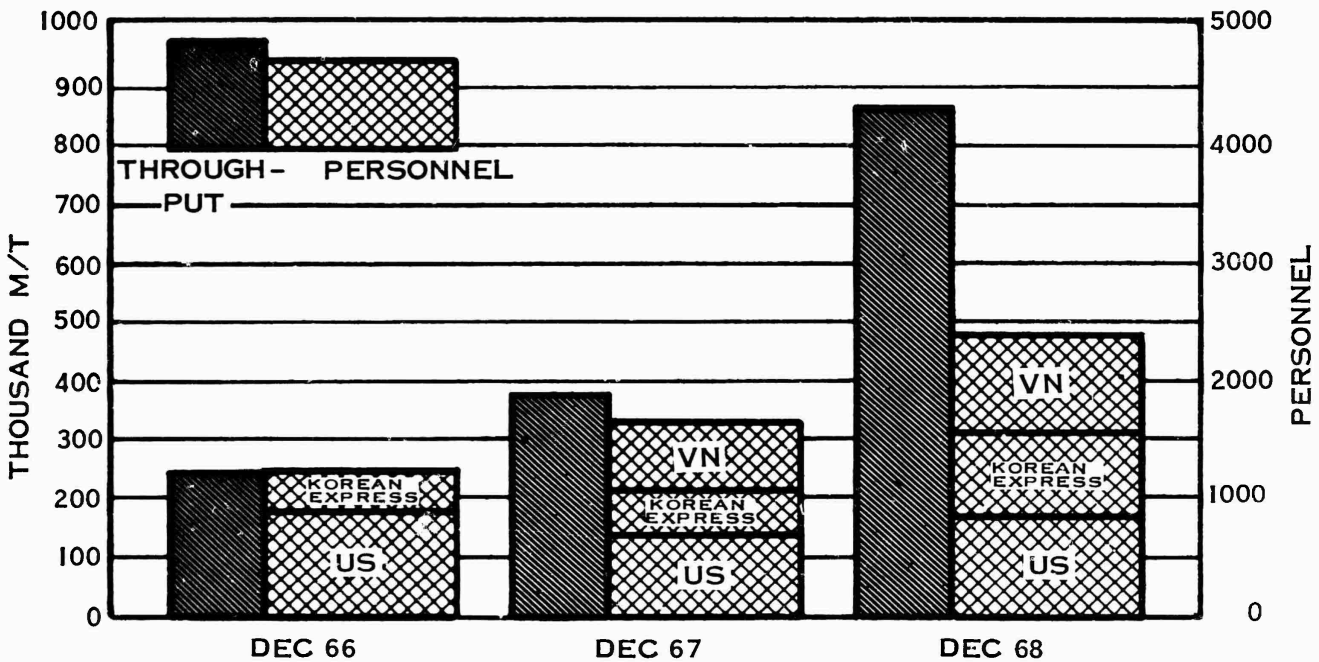

FIGURE 52. CONTRACTOR CARGO HANDLING, NAVAL SUPPORT ACTIVITY, DA NANG

Source: Service Force, U.S. Pacific Fleet, Command History 1968, p. IV-88.

developed into an all-weather port. Support facilities in the northern coastal area were not initially as critical as Chu Lai, but were complicated by the hydrography.

(1) The problem of dredging at Chu Lai had been recognized in mid-1965. However, the delivery of dredges was delayed by nonavailability from Vietnamese sources and mechanical breakdowns. After commencement of dredging at Chu Lai in November 1965, weather and equipment limitations restricted progress. The chanrel became available in February 1966. With completion of ramp facilities in May 1966, Chu Lai averaged a port throughput of over 50,000 MTONS monthly. In April 1967, the peak cargo throughput was 145,000 MTONS. Because of the relatively small forces originally in the Hue/Phu Bai area, the average monthly throughput as of March 1966 was only 750 short tons (STONS). However, the need to support the area by sea had been recognized and Tan My, at the mouth of the Perfume (Hue) River, became the port site. By the end of 1966, Tan My and Hue had acquired ramps, POL, and other facilities. Cargo from Da Nang was delivered both on Tan My and directly to Hue, averaging about 8,000 MTONS monthly by February 1967.

(2) Logistic support by NSA, Da Nang, to Dong Ha had begun in early August 1966. A 30-day stockage level was provided to sustain six battalions and supporting forces, over 7,000 men, along the DMZ. By March 1967, dredging inside the river mouth at Cua Viet had provided a high-tide channel for LSTs. It was necessary to transfer cargo to smaller craft for the river passage to Dong Ha. With this new all-weather capability, 29,000 M/TONS of cargo were off-loaded in the same month. The original port development phase in I CTZ was completed, with sufficient capability to support anticipated forces. Subsequent Army deployments were to generate additional requirements.

e. Base Facilities. Despite the magnitude of the tasks involved, enough base facilities were developed to sufficiently sustain the personnel and the operations of all of the ground and air military forces in I CTZ. The problems encountered in base developments and results achieved were generally common throughout RVN, and are discussed in detail in the Construction and Facilities Maintenance monographs. The importance of two aspects of I CTZ base development warrants their review: use of the Navy's Advanced Base Functional Component (ABFC) system, also employed by the Navy in other areas of Vietnam, and the extensive use of Seabees. The responsiveness and effectiveness of both concepts were reaffirmed in I CTZ.

(1) Advanced Base Functional Component (ABFC) System

(a) The Navy ABFC system provided for development of advanced naval bases by employing modular building packages of men and materiel. Each was a grouping of personnel, equipment assemblies, and essential structures designed to perform a specific task, e.g., Radio Station, Small Air Base Magazine. Navy publications described the capability of each of the components, listed the required numbers of personnel, and noted the types of materiel and equipment included in the component, together with the summarized tonnage and shipping space required. The procedures for calling forward components, assuring that they were assembled completely, and controlling their shipment as units were well established. Stocks of materiel and equipment for the ABFCs had not been modernized, much of it remaining since World War II, but the concept proved sound.

(b) An Advanced Base Division on the SERVPAC staff was established on an ad hoc basis in August 1965. The first functional components were ordered the following month, based on known requirements. This was a pull system, requiring CNO release of specific war reserve materiel, or directed procurement. The ABFC system contained over 300 types of components. Initially, 96 various components were ordered and eventually 145 ABFCs were utilized at NSA, Da Nang.[57]

[57] Office of the Deputy Chief of Naval Operations for Logistics, Briefing, subject: Navy Advanced Base Functional Component System, 7 August 1969.

(c) The system avoided the need to design many new buildings, thereby saving several months in design efforts, and additional time savings were achieved through avoidance of procurement delays. Construction time was reduced since buildings were pre-engineered and prefabricated for troop construction. While mobilized personnel were not available to man the components as originally intended, the fact that specific personnel requirements were already identified greatly facilitated use of the existing manning process.

(2) Seabee Operations. Mobile construction battalion activities in I CTZ covered a wide and shifting range of effort. For example, the first battalion deployed to Da Nang in 1965 undertook construction of the first 200-bed increment of the advanced base hospital, rebuilt portions destroyed in a Vietcong attack, and completed a missile site, roads, POL storage, and camp facilities. The Seabees, after landing at Chu Lai and starting with bare coastal terrain, constructed an expeditionary airfield receiving Marine aircraft within 25 days.

(1) During 1966, the Seabees built cantonments for 31,300 men in addition to constructing open, covered, POL, and refrigerated storage; roads; harbor facilities; airstrips and helicopter pads; and utility installations. During 1967 runways and taxiways were completed at Chu Lai, additional cantonments, utilities, storage facilities, roads, bridges, and critically needed port facilities were constructed.

(2) To facilitate construction, Seabee Tactical Support Functional Components (STSFC) were assembled at Da Nang and in California. They included such assemblies as bridges, airfield kits, water distribution systems, and combat support hospitals. Release of the STSFCs by authority of Commander, 3d Naval Construction Brigade, provided rapid response to urgent, unforeseen requirements.

8. III MAF LOGISTIC SUPPORT OPERATIONS. The functioning of the Marine Corps supply and maintenance essentially adhered to basic Service concepts which had been previously established and proven sound in practice. Some innovations, such as the Marine version of Red Ball and the development of ground and aviation equipment rebuild programs, were adopted. During 1965, Marine logistic installations faced varied problems, many of which are inherent in large buildup. These problems were reflected in high deadline rates of equipment and the accumulation of unidentified supply stocks. Prior to development of Marine units from Okinawa, Army sources had provided approximately 27 percent of Marine requirements for class II and IV items. Subsequently Army resources could no longer meet the Marine needs. This created temporary shortages pending Marine pipeline fill and exemplified the conflict between peacetime efficiency and assured combat support.[58] Limited availability of MSTS and Navy shipping hampered the flow of supplies and equipment from Okinawa. In August 1966, MSTS lifted 5,603 MTONS of Marine cargo from Okinawa to Vietnam, out of 12,944 MTONS requested. CG FMFPAC noted that the sea transport shortfall then was probably the greatest Marine logistic problem.[59]

a. Out-of-Country Support. Marine logistics in I CTZ were supported by a number of separate pipelines and support activities out-of-country, which varied in geographic routing according to functional and commodity categories. Navy support in-country, originally through NSA, Saigon, and later through NSA, Da Nang, provided partial supply support and diverse services to III MAF. Additional out-of-country support was provided from Navy facilities in Japan and the Philippines, and direct support from CONUS via the 3d FSR on Okinawa.

(1) Navy. The source of Marine ground ammunition was the Naval Ordnance Facility in Sasebo, Japan, and for air ordnance the Naval Magazine, Subic Bay. NSA, Da Nang, provided rations, POL, and common supply items from CONUS or from Naval Supply Depots at Subic Bay or Yokosuka. The latter depots also were sources of aviation supply from the Marine Wing. Maintenance rebuild support was provided by the Public Works Center, Yokosuka.

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[58] Headquarters, U.S. Marine Corps, Study, Compendium of Logistic Support, Experiences in RVN (Predeployment period through April 1966), p. III-81 (SECRET).

[59] Fleet Marine Forces, Pacific, Operations of U.S. Marine Forces, Vietnam, August 1966, p. 44 (SECRET)

(2) Marine Corps. The Commanding General, Fleet Marine Force, Pacific (CGFMFPAC) had responsibility for ensuring needed support. His units were logistically dependent on separate, non-Fleet Marine Force elements of the Marine Corps support establishment, particularly the Marine Corps Supply Centers. CGFMFPAC discharged his responsibility by direct control of the 3d FSR on Okinawa and through necessary coordination with Navy and Marine sources in WESTPAC and CONUS.

b. Supply. The III MAF supply system was controlled by a single Force Logistic Command Inventory Control Point at Da Nang, which was successively automated as more sophisticated equipment and support personnel became available. The 3d FSR was responsible for all fiscal accounting for III MAF, under a system established to relieve major Marine commands of this responsibility.

(1) Mount-Out Supplies. The Marine units deployed to Vietnam had pre-positioned mount-out supplies which they carried with them, turning them over to the Force Logistic Support Group on arrival. The 60 days of mount-out and mount-out augmentation thus moved to I CTZ were added to other supplies available for issue, although at this time the tempo of operations precluded a 100 percent physical inventory of the assets received. Resupply severely strained resources during the early days. However, circumstances did not require implementation of established procedures for resupply by 30-day automatic push increments from CONUS. Further, some war readiness assets, representing automatic resupply for units committed to combat, were released from protected status into the regular operating stocks in CONUS to help the pipeline, as they were pulled by units in I CTZ.

(2) POL. Essentially, the POL system supported III MAF well. However, there were specific problems, such as the lack of certain widely used oils and greases which aggravated maintenance during early 1965 and the need for constant effort by the Navy to keep the offshore fuel lines in place and operating. The 10,000-gallon capacity collapsible bladders used initially were gradually replaced by semipermanent 10,000 barrel bolted steel tanks. The Marine bladders were then relocated to forward areas to satisfy new tactical support needs.

(a) Bulk fuel delivery systems included direct delivery by bouyant and bottom-laid offshore lines from tankers; delivery to Marine 5,000-gallon refuelers from Navy craft; direct piping from Navy fuel tanks to Marine bladder farms, and deliveries from landing craft with 10,000 gallon bladders installed. Commercial tankers and trucks were also used. Later methods included river deliveries by 50,000- to 70,000-gallon barges towed by landing craft. Distribution was supplemented in emergencies by 500-gallon collapsible pods delivered by helicopters or C-130s.

(b) III MAF personnel ran bladder farms and tank truck distribution systems at Marine combat bases and airfields, and through early 1967, also ran bladder tank farms for NSA, Da Nang. To meet III MAF needs for greater POL support capability, a separate bulk fuel company was activated in CONUS and joined the Force Logistic Command in January 1967, assuming responsibility for internal Marine fuel distribution.

(3) Ammunition

(a) Ammunition storage facilities were limited from the very beginning. Waivers of safety criteria were necessary to permit maintaining the required 45-day stock level. By mid-1967 the 34,000-short ton capacity restriction was under waiver; in 1969, even though capacity had been expanded, waivers were still required. Space restrictions and security considerations acted to concentrate storage. The increased explosion hazard became a problem and losses due to enemy action and fire were costly in terms of money and readiness.

(b) In the area of personnel, the FLC manpower capability for the handling of ammunition was inadequate. The Marine manning standards, normal for amphibious operations, were able to support tactical operations but were insufficient to provide care in storage, cyclic inventories, and other tasks required at a large semipermanent supply point. Increased manning in this area was constrained by in-country manpower ceilings. Additional detail is provided in the Ammunition Monograph.

(4) Marine Corps Red Ball Procedures. In September 1965, special procedures were initiated as a temporary extension of the regular supply system, to intensify follow-up action on critical supply items and to accelerate delivery of materiel. It was distinct from the Army Red Ball system, although it used the same name, and was managed by FMFPAC. Only items of combat essential equipment qualified for Red Ball treatment. Once an item was nominated, agencies in the supply channel had 24 hours in which to forward the item by air, if air transportable, or to forward a Marine Red Ball priority dispatch to the next echelon. At first, the list of qualified items grew steadily, until more stringent criteria were established. The use of the system reached a peak in mid-1966, a time of increased tempo of operations in the northern I CTZ. By early 1967, the volume of items handled as Red Ball declined to a low level as routine logistic support became more responsive. Figure 53 reflects the changing need for use of this temporary supply procedure.

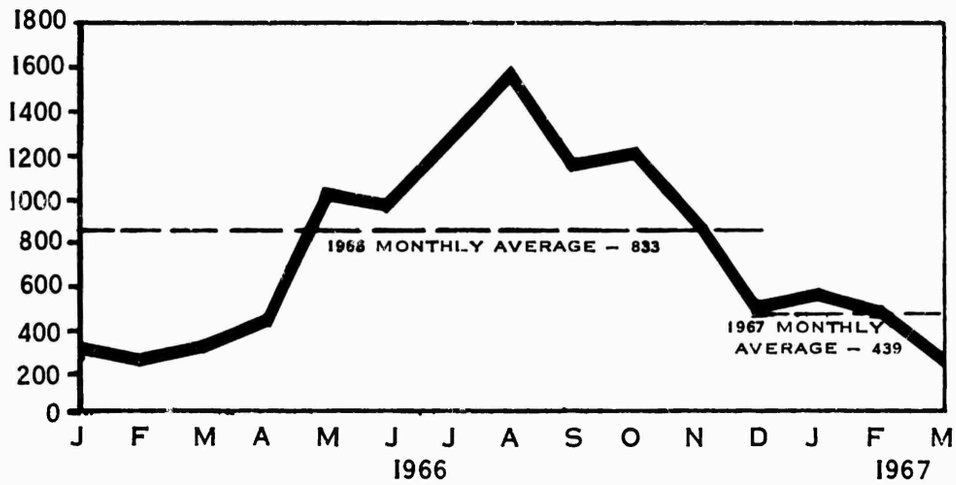

FIGURE 53. STATUS OF RED BALL SYSTEM, FLEET MARINE FORCE, PACIFIC

Source: Fleet Marine Force, Pacific, Operations of U.S. Marine Forces, Vietnam, March 1967, p. 57.

c. Maintenance. Due to the effects of climate, sustained usage, and rapidly increasing numbers and types of equipment, maintenance was a problem from the outset. The initial Marine concept for maintenance in Vietnam provided for performance of organizational (1st and 2d echelon) and some intermediate level (3d echelon) maintenance in-country, additional intermediate (4th echelon) at the better equipped Marine shops in Okinawa, and depot maintenance (5th echelon) in the United States. By the end of 1965, about 5,000 items had been evacuated from Vietnam for repair, and there were over 4,000 vehicles in III MAF whose deadline rates sometimes peaked well above acceptable rates.

(1) Because of the long pipelines, shortage of shipping, and limitations of maintenance float items available as replacement items, maintenance policy was modified in early 1966 to be more responsive to III MAF. In April 1966, selected fourth echelon maintenance was authorized in-country, and the 3d FSR in Okinawa began performing limited depot maintenance. These capabilities were expanded as requirements increased. During the period 1965-68 the 3d FSR completed over 143,000 Tactical Equipment Repair Orders (TEROs), 98.7 percent of the total received, in support of III MAF.[60]

[60] Headquarters, 3d Force Service Regiment, Fleet Marine Force, Pacific, Briefing, Subject: 3d FSR Command Briefing for Joint Logistic Review Board, Okinawa, 18 September 1969.

(2) In 1965, mounting maintenance problems led to use of special assistance teams from out-of-country to provide urgently needed help in the various commodity areas and at all echelons of maintenance. Also, as new equipments were introduced in 1966 and later years, special teams were temporarily deployed to provide preliminary assistance. Technical Assistance Teams for each commodity area conducted detailed local analysis of maintenance problems and overall usage of equipment, leading to improved equipment capabilities. Contact Instruction Teams provided comprehensive instruction in all echelons of maintenance.

(3) A ground equipment repair and rebuild program established in 3d FSR in mid-1966 provided a major rebuild capability, using facilities in Okinawa and, through the Navy Public Works Center at Yokosuka, Japan, using Japanese civilian contractors. Ground equipment of Marine aviation elements also was incorporated in the program. Hundreds of pieces of equipment were rebuilt annually, and in the FY 70 schedule for rebuild, there were almost 900 items of equipment, over 90 percent to be rebuilt in Japan or Okinawa.[61] Similarly, a Progressive Aircraft Rework program provided for extensive rework of all Marine Wing aircraft after 15 months to 24 months in service. The rebuild was accomplished by Japanese contractors at aircraft plants in Japan. Routine intermediate level maintenance and structural repair to battle-damaged aircraft was a function of the Marine Aircraft Groups, supplementing tactical squadron organizational maintenance.

d. ADP. Beginning with the first Marine deployments to Vietnam, mobile data processing platoons were sent to Vietnam with second-generation (IBM 1401) equipment, to become part of the service battalions of the two divisions, the wing service group, and the force service regiment nucleus of the FLC. Introduction of the third-generation (IBM 360) series computers to the FLC and to the 3d FSR on Okinawa in early 1967 permitted major improvements in logistic controls by providing, for the first time, fully automated procedures. Upgrading of computer capabilities and expansion of management programs continued through 1969. Despite problems of climate, personnel, and demands that quickly saturated equipment, early development of even limited capabilities was valuable.

9. LOGISTIC RESPONSE TO ARMY DEPLOYMENTS, 1967-68. In April 1967, as the third year of U.S. military ground and air operations in I CTZ began, a new logistic phase also started when U.S. Army forces were deployed to the area.

a. Task Force OREGON, the Army deployment to I CTZ during April and May 1967, brought nine battalions into the Quang Ngai-Chu Lai area in southern I CTZ from the II and III Corps areas.

b. Later, an enemy buildup at the end of 1967 preempted COMUSMACV plans for movement of the 1st Cavalry Division into northern I CTZ to strike enemy bases in early 1968. During January and February 1968, COMUSMACV again reinforced the I CTZ, this time in corps strength, by hasty redeployments of the 1st Cavalry Division (Air Mobile) and the 101st Airborne Division from other corps areas. There were also additional deployments from CONUS. By April 1968, the total forces in I CTZ were 31 Army and 21 Marine maneuver battalions, an overall increase of 34 maneuver battalions in 12 months.

These operational decisions had far reaching logistic impacts. With the increase in force levels and tactical engagements, meshing the Army, Navy, and Marine logistic systems into an effective coordinated overall system, without fundamental changes either in the systems themselves or assigned Service responsibilities was a significant logistic accomplishment.

Response to TF OREGON

(1) Army. Army engineer and transportation units developed temporary over-the-beach resupply capability to support TF OREGON. By September 1967, when the task force was designated as the 23d (Americal) Division, the engineers had completed a small, sheltered,

[61] Ibid.

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shallow-draft coastal port at Sa Huynh and an all-weather airfield at Duc Pho capable of handling C-130 aircraft. To supplement buildup ashore, the Army moved reefer and POL barges to Duc Pho to provide ready afloat storage.

(a) The Qui Nhon Support Command in northern II CTZ area provided retail support and Army-peculiar items for Army forces in I CTZ, including ammunition. The 80th General Support Group deployed from Qui Nhon to Danang where it was established as the Danang Sub-Area Command. It then deployed necessary logistic support task forces to support the division in southern I CTZ and all nondivisional units in I CTZ as well.

(b) Until NSA, Da Nang, capabilities could be increased to satisfy demands of 29,000 new Army personnel, the Army depot at Qui Nhon provided support.

(2) Navy. TF OREGON created the first requirements for major logistic support operations south of Chu Lai. NSA, Da Nang, assisted over-the-beach operations at Duc Pho, installing offshore fuel lines and a causeway. It also began ration and POL support in southern I CTZ, and adjusted common supply support as Army requisitions were selectively switched over from Army sources. By May 1967, NSA, Da Nang, was supporting a military population in I CTZ of over 130,000 persons.

(3) Marine. Introduction of TF OREGON resulted in more of III MAF logistic support shifting north to Dong Ha from Chu Lai. Supply levels were adjusted accordingly and maintenance facilities at Dong Ha were upgraded.

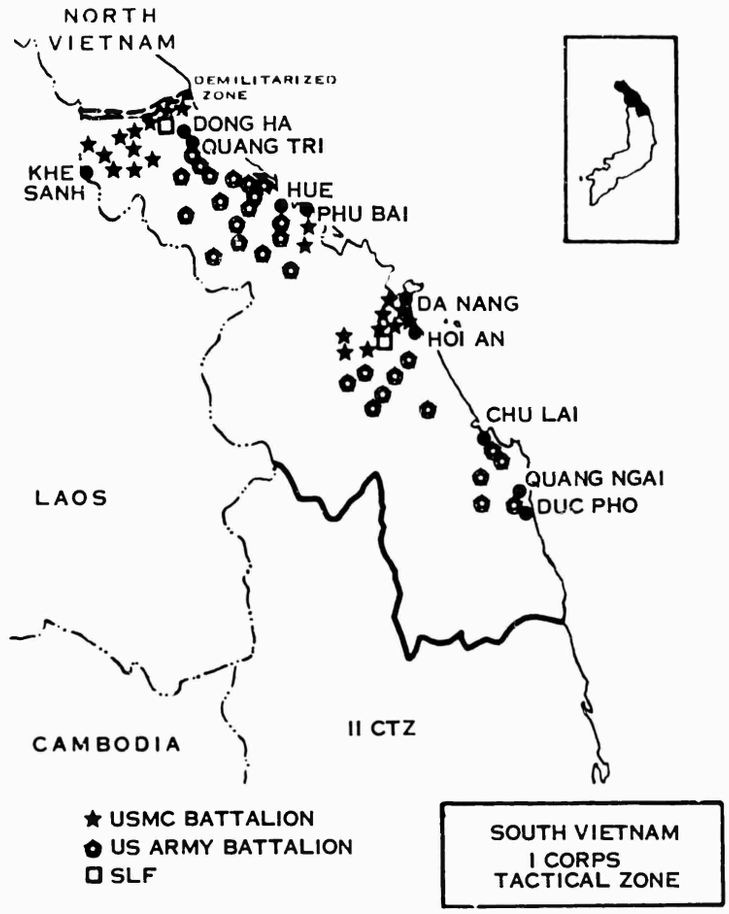
b. Response to 1968 Deployments. With the large-scale introduction of Army forces into I CTZ, the resulting dispersion of intermixed Army and Marine units throughout the area, and extension of previous Navy support responsibilities in I CTZ to Army units, there evolved a coordinated operation of separate but mutually supporting Service logistic systems.

(1) Force Disposition. Operational considerations dictated the intermingling of Service forces in I CTZ. Figure 54 illustrates the situation. Vietnamese units of the ARVN I Corps were also distributed throughout the area. New Navy operations included establishment of detachments in southern I CTZ.

(2) Coordinated Logistic Operations. The approach to logistic operations during 1968 was one of adapting to the situation and coordinating Service efforts as necessary. Support arrangements and procedures were also readjusted as force dispositions were changed.

(a) Generally, resupply operations were based on proximity to sources, rather than on Service channels, e.g., III MAF provided rations to all units in the Quang Tri/Dong Ha area while the Army provided similar support to all units in the Hue Phu Bai area. POL distribution systems were similarly adapted to the situation. The POL bladder farm at the Army logistic operation at Wunder Beach was run by Marines, just as they had done at Cua Viet and Tan My for the Navy. Fixed pipelines north of Hai Van Pass, constructed and initially operated by the Seabees, were subsequently operated and maintained by the Army. Ammunition stocks were delivered to I CTZ by both Navy and Army systems. In northern I CTZ, Marine and Army distribution units shared ammunition supply points. Personnel, equipment, and lighterage of the 1st Logistical Command assisted NSA, Da Nang, in port operations during the early deployments, and temporary Army augmentation of III MAF's logistic command facilitated initial support of the reinforcing Army divisions until the Da Nang Support Command was fully functioning.

(b) Base development planning was expanded to incorporate the new requirements created by the Army forces, and by the shifting of logistic emphasis to northern I CTZ. Interservice conferences established procedures to incorporate Army construction requirements into I CTZ coordinated area planning under COMUSMACV. USARV sent engineer support to northern I CTZ with the deploying forces.



NOTE: SPECIAL LANDING FORCES ASHORE ALMOST CONTINUOUSLY SINCE JANUARY 1969. BOTH SLFS COMMITTED IN DMZ AREA FROM LATE JANUARY TO EARLY JUNE.

FIGURE 54. III MARINE AMPHIBIOUS FORCE INFANTRY BATTALION LOCATIONS, JULY 1968

Source: Fleet Marine Force, Pacific, Operations of U.S. Marine Forces, Vietnam, July 1968, p. 23.

(c) In effect, the logistic response to requirements in I CTZ during 1968, a critical year for COMUSMACV and the US/FWMAF forces, was characterized by a flexible and coordinated functioning of the separate Service logistic systems; they were responsive to operational requirements, without need for disruptive changes to Service responsibilities and procedures.

10. SUMMARY. Military operations in I CTZ were generally similar to operations in the provinces to the south. Logistic support in the area had some distinctive features because of the large-scale commitment of Marine forces, the assignment to the Navy of major logistic responsibilities, and the ultimate addition of large Army elements to the area military force.

a. The continuing nature and degree of naval force involvement in I CTZ was neither planned nor conventional. While contingency planning had recognized the possibility of deployment to the northernmost provinces of RVN, this planning was oriented to the conventional, temporary nature of the commitment of amphibious units. The prolonged involvement of the Marine Corps in a land campaign and the requirement for a permanent Navy logistic base ashore was not reflected in the plans.

b. Following the deployment of the initial Marine force in March 1965, and the emerging national decision to undertake a country-wide force buildup for a major prolonged campaign, it appeared that the actual logistic requirements in I CTZ were developing far beyond the planned naval capabilities. There were no established procedures for the extensive Navy support of prolonged nonamphibious joint operations involving large Marine forces and the delays associated with organizational decisions at times impacted adversely on the naval logistic response in the I CTZ area.

(1) Prior to the eventual establishment of the Navy organization ashore in I CTZ, provision of an adequate and timely interim logistic support capability was accomplished by diversion of Navy personnel, ships, craft, and equipment from fleet operations to temporary logistic support of shore-based operations in the area, and similar interim use of Marine and some limited Army resources.

(2) The amphibious capability of Navy and Marine forces for sustained logistics-over-the-shore operations in the I CTZ area during 1965 contributed significantly to the rate of logistic buildup achieved in RVN.

c. Primary logistic responsibilities for the support of operations in the I CTZ area was assigned to CINCPACFLT on 24 April 1965 and required the development of a naval advanced based complex in that area and creation of a specially tailored Navy logistic organization ashore. There were some problems inherent with this assignment and these included delays in manning and the fact that planned support requirements were exceeded by as much as a factor of ten.

(1) The Navy's Advanced Base Functional Component System provided an effective, efficient response which contributed significantly to the planning for and satisfaction of I CTZ logistic support requirements, even though some of the materiel and equipment was severely outdated.

(2) Deployment of Naval Mobile Construction Battalions to RVN provided a troop construction capability which was vital to the timeliness and adequacy of base development.

(3) Logistic support requirements in I CTZ created a critical need during 1965 and 1966 for the earliest possible availability of deep-water piers, lighterage, logistic service craft, dredges, and shallow-draft coastal lift capability. In addition, the severe weather conditions and inadequate facilities contributed to an early port congestion problem, which was alleviated by January 1966.

d. The logistic support structure of Marine Corps forces in RVN, initially deployed in task organizations designed for amphibious operations, evolved during the first year of buildup and operations into a new organizational structure tailored to prolonged land operations while maintaining the inherent amphibious character of its component elements.

e. The Marine Corps logistic support base on Okinawa increased the responsiveness and effectiveness of support to III Marine Amphibious Force and reduced administrative, logistic, and fiscal tasks and related manpower requirements in Vietnam.

f. When Army combat and logistic support units of Corps strength reinforced the I CTZ at critical periods during 1967-68, there was no disruption of logistic support operations despite the major increase in military population and the need to integrate large-scale operations of an additional Service. The logistic support responsibilities of the separate Service components provided sufficient flexibility for effective and coordinate execution of support functions.

g. During the period 1965-69, military port facilities, support base complexes, and extensive service support capabilities developed in the I CTZ have provided adequate and timely support to the deployment and sustained operations of over 200,000 United States and Free World Military Assistance Forces in a dynamic combat environment.

SECTION H

SUPPORT OF AIR FORCE OPERATIONS

1. INTRODUCTION. During the Vietnam era the Air Force logistic system, described in Chapter 3, provided the support required by USAF forces in SE Asia without major changes to the system. CONUS depots provided wholesale supply support, depot level maintenance, and area assistance to newly activated bases in SE Asia in the same manner as that provided CONUS bases. The basic problem imposed by the buildup of USAF forces and continuing combat operations was the redirection of supply flow and the establishment or expansion of long lines of communication. This section describes how the logistic system responded to the growing requirements of USAF units in SE Asia.

2. USAF LOGISTIC POSTURE AT START OF 1965

a. Initial Forces. In January 1965, in addition to the personnel assigned to the Military Advisory Group, the Air Force had the equivalent of 10 tactical squadrons in South Vietnam and Thailand which had been conducting limited supporting air operations for approximately 2-1/2 years. Later, when U. S. forces were committed directly into the conflict, the USAF forces levels increased rapidly and made unprecedented demands on the Air Force Logistic System.

b. SE Asia Basing. The Air Force units in SE Asia at the beginning of 1965 were located at three bases in the Republic of Vietnam (RVN) and two bases in Thailand. The airfields utilized in RVN were the only jet-capable airfields in-country. They were already crowded and existing facilities were very austere, in a poor state of repair, and had very little capability to accommodate additional USAF forces. In Thailand, on the other hand, there was some capability to receive additional forces since only two of the country's five jet-capable airfields were used by USAF flying units. All five Thailand airbases were utilized by the Royal Thai Air Force and, except for runways and parking aprons, there was only marginal capability to accommodate additional USAF forces. Essentially all deploying forces would require interim facilities in order to become operational.

c. Support from Clark Air Base. Prior to the buildup in SE Asia, all USAF units were primarily supported by and through Clark Air Base, Republic of the Philippines. There had been some materiel pre-stocked in Thailand, but very limited stocks had been positioned in South Vietnam. All conventional (nonjet) aircraft units (i. e., A-1E, C-47, 0-1, and C-123) were permanently assigned in RVN. They possessed their own maintenance capability and received their supply support through the only in-country base supply, located at Tan Son Nhut, Saigon. Heavy repair beyond unit capability was performed at Clark AB. All jet aircraft in SE Asia were on a temporary duty status from PACOM or CONUS resources. In accordance with the USAF policy for supporting deployed forces, these units were supported through the combined efforts of the parent wing and Clark AB.

d. Forward Operating Base/Main Operating Base (FOB/MOB Concept)

(1) Early in 1965, the USAF designated six bases in the Far East as MOBs. These permanent bases, located at Clark Air Base, Republic of the Philippines; Kadena and Naha, Okinawa; and Tachikawa, Yokota, and Misawa, Japan, were already in operation with established maintenance and supply systems. They had the capability, with little augmentation, to support the deploying forces. In January 1965, there were three FOBs in RVN, located at Bien Hoa, Da Nang, and Tan Son Nhut, with maintenance detachments assigned. As additional tactical units deployed, new FOBs were established and the units assigned for support purposes to the MOB that supported their particular aircraft or weapons system.

(2) This method of providing forward support was known as the FOB/MOB concept. (It was never intended that the FOB/MOB concept of providing support could or would continue indefinitely.) FOBs performed all maintenance within their capability and relied on the MOB for the heavy maintenance support that was beyond their capability. This allowed heavy expensive equipment to be kept out of the combat environment and permitted aircraft to undergo heavy maintenance without threat of hostile attack. Thus, the FOBs could concentrate on minor maintenance and the conduct of operations while the heavy maintenance requirements were being fulfilled by the MOB.[62]

e. Initial Base Supply System. In January 1965 the only supply activity serving RVN and Thailand was the manual account at Tan Son Nhut. It was established in 1962 with approximately 1,000 line items and in 1964 had grown to 24,000 line items and was rapidly becoming unmanageable. Individual bases had small sub-base supply activities that drew supplies through the Tan Son Nhut account.

f. War Readiness Spares Kits. All tactical units deploying to SE Asia were equipped with War Readiness Spares Kits (WRSK). These kits were air transportable and provided a 30-day supply of spare and repair parts for a particular weapon system. Units operated out of these kits, requisitioning replacement parts to maintain the desired kit levels. Later as base supplies and Base Equipment Management offices were established, supply support was provided by the base supply and the kits of individual units were reconstituted.

g. War Reserve Materiel. In addition to the WRSK deployed with the tactical units in PACOM, the Air Force had pre-positioned war reserve materiel in the theater to support contingency operations. With the exception of air munitions, review disclosed no critical shortages in PACOM war reserve stocks on 1 January 1965. Using tonnage as the sole criteria, PACAF had 39,500 tons of major air munitions (120-day supply at the rate then estimated) on hand against a war reserve materiel requirement of 29,700 tons (90-day supply). The war reserve air munitions stocks would later prove to be totally inadequate. At average consumption rates, in 1965 a 90-day air munition supply was 46,650 tons, and in 1966 a 90-day supply was 91,098 tons. Detailed description of war reserve materiel can be found in Chapter VI, Logistics Planning Monograph.

3. LOGISTIC IMPACT OF DECISIONS FOR U.S. AIR OPERATIONS

a. Decisions Affecting Buildup of USAF Forces. Early in 1965, three decisions set the stage for greater USAF involvement in SE Asia. First, in late January 1965, COMUSMACV requested and obtained approval to use jet aircraft against the enemy in support of South Vietnamese troops, under emergency conditions. The second decision involved the authorization in March 1965 to strike targets in North Vietnam. The third decision influencing the USAF logistic requirements was the introduction of the B-52 into combat operations on 18 June 1965.

b. Main Operating Bases on Mainland SE Asia

(1) As mentioned earlier, the initial USAF deployments to SE Asia were squadron-size units on temporary duty (TDY) status. Although the tactical fighter squadron was the basic combat unit, it owned no weapon system assets. In CONUS, when located with its parent wing, the squadron consisted of a command element and combat crews. The tactical fighter wing, on the other hand, was a self-sufficient unit possessing all weapon system assets and all maintenance and other supporting personnel. When ordered to deploy, the parent wing assigned to the squadron the personnel and materiel resources necessary to attain the desired capability. Under the Forward Operating Base Main Operating Base (FOB/MOB) concept, the support responsibility was divided between the FOB and MOB as dictated by the facilities at the FOB. The CONUS unit provided appropriate personnel and equipment to the MOB to offset the increased workload. Because of the distance between FOBs and MOBs and marginal communications, management of the support elements was difficult, but the support requirements were met in full measure and all tactical squadrons were able to overfly their monthly flying hour program.

[62] USAF Logistic Plans and Policies in South East Asia - 1966 (SHO-TS-67), 31 October 1967 (TOP SECRET).

(2) As the conflict escalated late in 1965, the USAF deployment policy for tactical units was changed from TDY to permanent change of station (PCS). With the buildup of units and materiel, it became increasingly apparent that it was no longer practical to rely on the six MOBs located so far from FOBs on the SE Asia mainland. The limited supply and maintenance capability of the forward bases resulted in higher than normal not operationally ready supply (NORS) rates. Shuttling aircraft between MOBs and FOBs was excessively time-consuming and reduced operational flying hours. Therefore, it was decided that the system support should be closer to the actual operational bases.[63]

(3) The change to PCS deployments involved the deployment of tactical fighter wings possessing complete combat and support capability. With adequate base facilities, these wings were able to operate in the same manner as in CONUS. As facilities became available in RVN and Thailand, functions were transferred from the MOBs to the FOBs. The transition to MOB status was complete when all functions had been transferred and the communication lines had been established with CONUS depots. A total of eight bases in RVN and Thailand had been established as MOBs by March 1966. As force levels increased and new bases were completed, they were activated as MOBs.

(4) Based on SE Asia experience, the FOB/MOB concept is considered practical and can effectively support combat operations for short periods of time. However, an extended major conflict requires provision of MOB capability at forward locations at the earliest practical time.

c. Expansion of Base Supply Accounts. Related to the change from the FOB/MOB concept to MOBs on the mainland was the problem of providing adequate supply support. At the outset of 1965, Tan Son Nhut at Saigon had the only major supply account in RVN or Thailand. Concurrent with establishment of MOBs, action was taken to establish 16 new base supply accounts (see Figure 55). Each base supply requisitioned directly from the Air Materiel Areas. Requisitioned items were shipped directly to the requesting base supply from the depots rather than through Clark Air Base. Early in FY 65, the SE Asia base supply and equipment management accounts had grown to the point that manual accounting methods could not accomplish the work load. Accounts were mechanized, using Punch Card Accounting Machines (PCAM) to expedite supply transactions. Although limited in capability, the PCAM system was initially able to provide Air Force aircraft excellent supply support. However, by December 1965 the support picture had changed to the point that no aircraft in-theater were operating at or below the Air Force not operationally ready supply (NORS) standard of 5 percent (see Figure 56). Supply systems at this time were strictly ordering, receiving, and issuing activities. Stock control was practically nonexistent and very little effort was available or used to control or reduce the size of supply accounts. As new weapon systems were added, initial supply support lists were provided and special levels of spares were laid in. As specific types of aircraft were relocated in-theater, no system was available to identify the items applicable to that aircraft from the losing account and transfer them to the gaining base supply account. The expedient was to add the initial supply support list at the gaining base, thereby generating excesses and distorting the theater consumption data. The excesses this generated were reported to the Pacific Asset Redistribution Center, located at Don Muang, Bangkok, where they were in turn redistributed within the theater or reported back to CONUS for disposition.[64]

(1) Computer System. Late in 1965 a decision was made to equip all base supply activities with the second-generation UNIVAC 1050-II computer. The first of these computers was placed in operation at Cam Ranh Bay on 11 April 1966 and, by November 1967, 15 computers were in operation. Conversion to automated supply accounting procedures was a major step in the ability of the Air Force to provide adequate supply support to its combat forces. The UNIVAC 1050-II is the computer used worldwide in the USAF Standard Base Supply system and is compatible with ADP equipments used at the AMAs, the IBM 360-40 and IBM 7080. Deploying personnel were trained on the equipment and utilized the same procedures in SE Asia

[63] Ibid.
[64] Thirteenth Air Force Presentation to Joint Logistic Review Board at Clark Air Base, 11 September 1969 (SECRET).

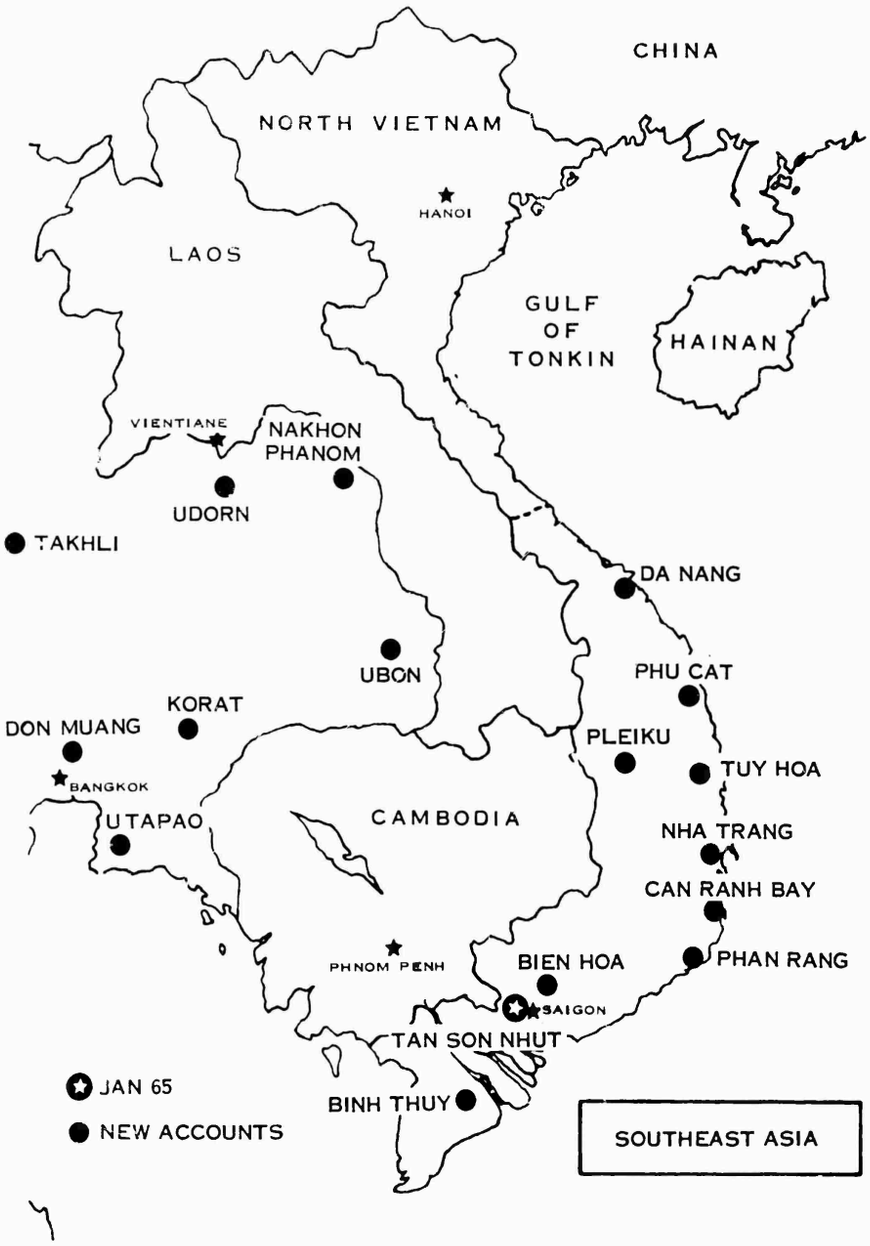


FIGURE 55. SOUTHEAST ASIA BASE SUPPLY BUILDUP

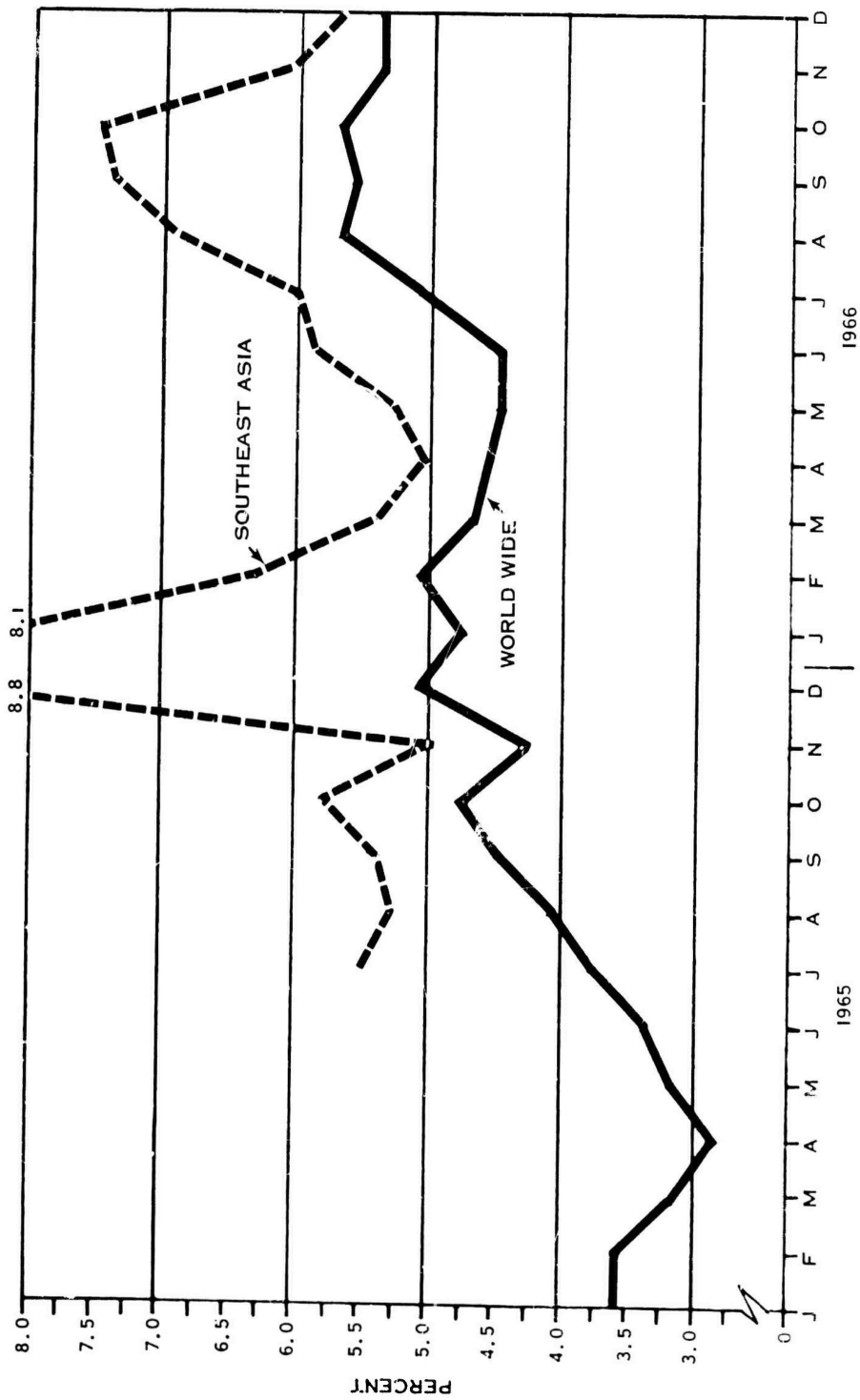


FIGURE 56. AIRCRAFT NOT OPERATIONALLY READY—SUPPLY (NORS) RATES

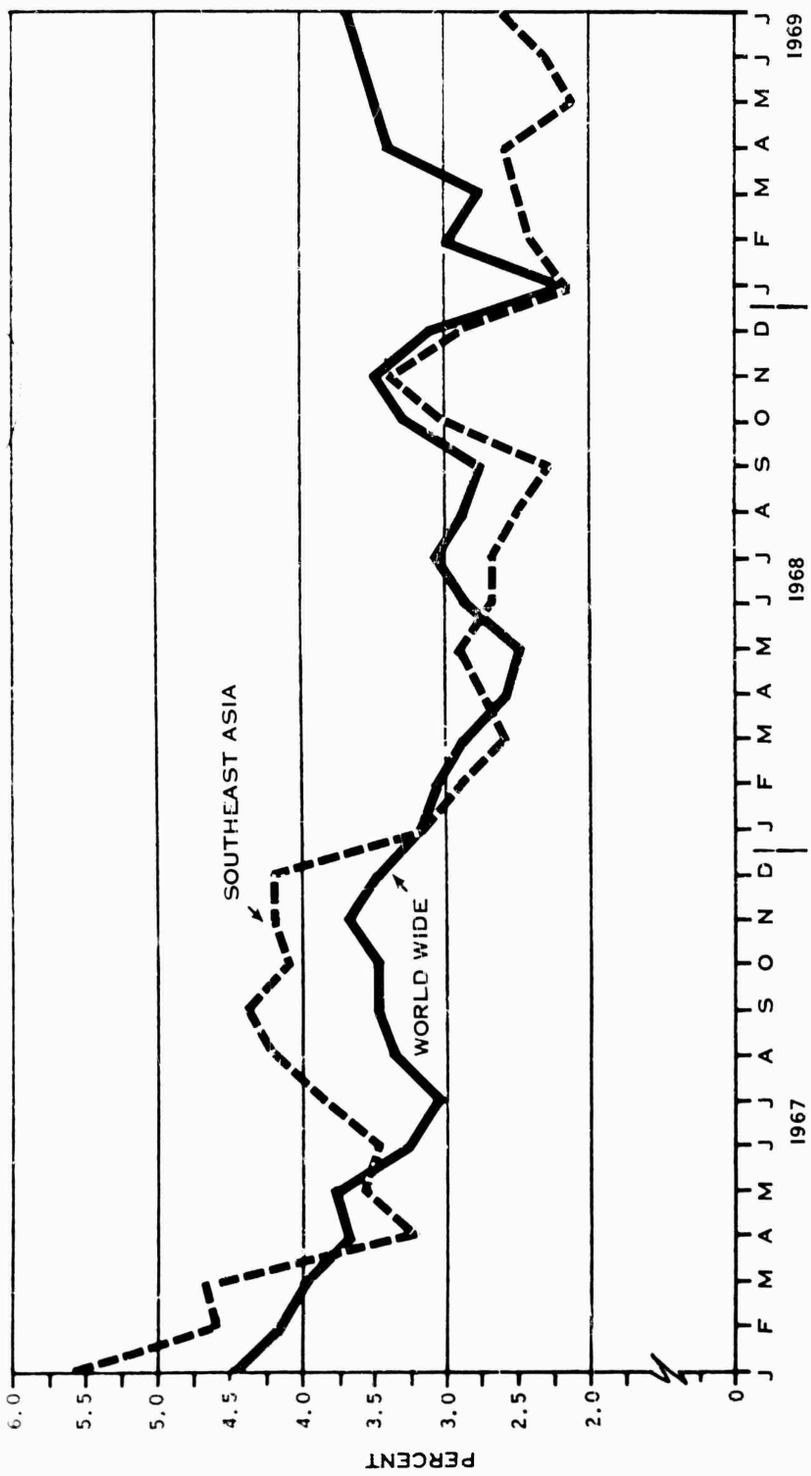


FIGURE 56. (Continued)

as in CONUS. By the use of AUTODIN, the computers in-country were able to transact business directly with the supporting activities in CONUS. Problems such as timely requisitioning, reconciliation of requisitions, and lack of asset visibility were greatly reduced when the supply activities in SE Asia became able to communicate directly with the activities of the Air Force Logistics Command, Defense Supply Agency, and General Services Administration.

(2) Warehousing. In the early stages of the Vietnam conflict adequate warehousing was not available in RVN and Thailand. Large quantities of valuable assets requiring covered storage were located in open storage areas. Because of the heavy rains, mud, and lack of cover, packaging deteriorated rapidly, often resulting in damaged or unidentifiable material. In addition, unsecured storage permitted unauthorized withdrawal of property and outright pilferage. New warehousing was made available about the same time as the computers became operational. The combination of identifying property, entering asset data into the computers and providing adequate warehouse space very quickly put the Air Force in the position of knowing what and where its assets were.[65]

d. Special Procedures. Special procedures were established for high-priority aircraft and direct support equipment. For example:

(1) The Air Force Logistics Command (AFLC) designated certain weapon system control points to receive critical requisitions by transceiver or electrical message directly from forward bases. In addition, special AMA points of contact were established to handle problems which could not be resolved under normal procedures.

(2) The AFLC organized a Logistics Activation Task Force (LATAF) with branches in each AMA to supervise all aspects of the buildup and to ensure that newly activated SE Asia bases possessed the material needed to support operational units.

e. Maintenance and Supply Assistance Teams. Early in 1965 as the Air Force support base was expanding in SE Asia, many problems were encountered in supply and maintenance areas that were beyond the capability of the assigned forces. In April 1965, AFLC dispatched the first specialized teams to SE Asia to provide assistance. The skilled personnel required for the assistance teams were readily available in the various AMAs since the AMAs were responsible for specific weapons systems and were intimately familiar with all facets of each particular system. However, the personnel were civilians and could not be deployed to the combat theater unless they volunteered for such duty. Under the circumstances prevailing in SE Asia, all requirements were met, but there is no assurance that under future circumstances the same degree of civilian participation can be expected.

(1) Rapid Area Supply Support (RASS) Team. During the period June 1965 through October 1968, AFLC dispatched 63 teams (2,792 personnel) to SE Asia to assist with supply problems. These teams provided the temporary skilled manpower needed to inventory, identify, and warehouse property, install computers, and convert to computer operations. The size of each team and the period of TDY depended upon the work to be accomplished. The assistance provided by these teams significantly improved the efficiency of the supply functions in the theater.

(2) Rapid Area Maintenance (RAM) Teams. RAM teams were organized by AFLC to provide heavy maintenance support that exceeded the capability of the combat units. Their work included on-site repair of crash or battle damage or preparation of damaged aircraft for shipment to repair facilities offshore or in CONUS. The specific requirements of each job dictated the team composition. Although the total number of personnel deployed is not known, the requirement grew from a total in-country authorization of 77 on December 1965 to 114 on October 1968 to 144 on September 1969. By August 1969 RAM teams had expeditiously repaired and returned to service 887 crash and battle damaged aircraft, prepared 100 aircraft for shipment to contractor repair facilities, prepared 74 aircraft for one-time flight to repair facilities,

[65] Thirteenth Air Force Presentation to the Joint Logistics Review Board at Clark Air Base, 11 September 1969 (SECRET).

and salvaged 19 aircraft. The magnitude and importance of the work accomplished by these teams can be appreciated by considering that the acquisition value of the above aircraft was $1,779,020,480.

f. Air Munitions. During the first year of major combat operations the Air Force flew more sorties and dropped more air munitions than in any single year of the Korean War. In 1965, 148,751 tons of munitions were expended compared to a peak expenditure of 146,163 tons against communist forces in Korea in FY 53. During the Vietnamese conflict there were times when the theater air munitions were in short supply causing some curtailment of air operations and employment of extraordinary munitions management procedures. In spite of these temporary shortages, by 30 November 1969 the Air Force had expended 28.7 percent more air munitions in SE Asia than the combined Air Force expenditure during World War II (both theaters) and the Korean War.[66]

(1) The source of munitions support during the buildup and early operational periods was War Readiness Materiel (WRM) stocks established for just such a contingency. The January 1965 gross tonnage inventory was over three times the Secretary of Defense's Logistics Guidance objective. Qualitatively, however, these stocks consisted primarily of general purpose bombs remaining from the Korean War. Many items of modern munitions designed for high-speed, jet aircraft delivery were seriously short of requirements. Significantly, the B-52 requirements (average 27 tons per sortie) were not included in Logistics Guidance computations until FY 60. This was a major factor in the developing air munitions problems, which grew to major proportions in early 1966.

(2) In mid-1965, the Air Force adopted a policy of strict allocation of certain munitions to each major command pending expansion of munitions production. Late in 1965 redistribution was directed from war reserve materiel storage around the world. In October 1965 action was taken to repurchase 18,000 bombs previously provided U. S. allies under the military assistance program.[67]

(3) Prior to April 1965 Clark Air Base was the primary link for air munitions support. Munitions were unloaded at Subic Bay, moved to Clark Air Base for storage, and returned as needed, to Subic Bay for surface shipment to Vietnam. This inefficient method led to a direct CONUS-to-user system, Project "Special Express," which bypassed Clark Air Base as a supply point.

(4) Special Express. At the request of the Air Force in April 1965, the Military Sea Transportation Service (MSTS) assigned five ships for the exclusive purpose of transporting Air Force air munitions from the Naval Ammunition Depot, Concord, California, to South Vietnam. As munitions expenditure increased, the number of Special Express ships was increased until a total of 19 was reached in June 1966. After arriving in SE Asia, these ships served as floating depots that could be selectively off-loaded and moved from one port to another as requirements dictated. This flexibility was essential for the support of Air Force operations during the period when total assets and storage capability were limited. Although Special Express satisfied the Air Force need for munitions, it caused port congestion and increased port workload due to multiple hatch openings and closings. On 28 January 1967, Special Express was discontinued at the direction of the Joint Chiefs of Staff. A more detailed discussion of the Special Express concept can be found in Chapter VI of the Ammunition Monograph.

(5) Expanding force levels and increasing munitions expenditure caused a great deal of turbulence in the funding process. Funds were provided through several emergency budget submissions and by reprogramming actions. Although necessary funds were made available, the efficiency of the procurement and production of munitions was reduced because of the incremental contracting requirements. The FY 65 and FY 66 munitions budgets portray typical funding actions, as shown in Table 20.

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[66] U.S. Air Force Management Summary - Southeast Asia, 9 January 1970.

[67] U.S. Air Force, Logistics Plans and Policies in Southeast Asia, 1965 (SHO-TS 67), 12 June 1967 (TOP SECRET).

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TABLE 20

AIR FORCE MUNITIONS BUDGET
($ Millions)

Fiscal Year	President's Budget	Supplemental	Approved by Congress	Reprogrammed Funds	Total
1965	165.0	105.0	270.0	21.5	291.5
1966	284.7	761.5	1046.2	173.8	1220.0

Source: U.S. Air Force, Director of Supply/Services, Munitions Division.

(6) KC-135's and conventionally configured B-52's were deployed to Andersen AFB, Guam, in February 1965 for use in bombing operations in SE Asia. In June 1965 at the request of COMUSMACV the first B-52 strike was launched against Vietcong base camp areas in South Vietnam. Due to the success of this mission, the Strategic Air Command was directed to maintain a capability to fly 12 B-52 sorties per day. From this initial requirement, the sortie rate continued to increase until it reached 1800 sorties per month in February 1968. Since the overall average bomb load of the B-52 is 27 tons per sortie, and their use in the conventional role had not been anticipated, the introduction and increasing use of B-52's was probably the greatest single factor that accelerated bomb consumption and the resulting air munitions shortage.

(7) In April 1966 COMUSMACV advised the Secretary of Defense that munitions shortages were adversely affecting air operations. Shortages were attributed to marginal theater assets, delivery of incomplete rounds, inadequate munitions accounting, lagging production, late arriving ships, and civil disturbances in Vietnam.

(8) Extraordinary measures were taken to centralize the control of critical air munitions within the Office of Secretary of Defense, the Joint Chiefs of Staff, and CINCPAC. CINCPAC also considered it necessary to reallocate air munitions resources within PACOM, under the authority extended to commanders of unified commands by JCS Pubs.

(9) In order to compute air munitions allocations for the remainder of 1966, CINCPAC divided the total tons of air munitions forecast to be available each month by the total number of sorties required. The result was a weighted average tactical aircraft loading factor of approximately 1.66 tons per sortie. Each Service was then assigned specific aircraft loading, either above or below this average factor, depending on targets and aircraft characteristics. Allocations of munitions to the component command were then made based on these computations. Except for B-52's, the average loads ranged from 2.4 tons per sortie against NVN to 1.3 tons per sortie in RVN.[68]

(10) As the air munitions shortages evolved during April 1966, CINCPAC was faced with the prospect of either reducing the sortie rate or load per sortie. However, in June 1966 CINCPAC was directed by the Joint Chiefs of Staff to reduce sortie rates rather than have aircraft flying with reduced loads.

(11) In early 1966 incomplete rounds (bombs without all components) were continuing to arrive in RVN. For example, 1,030 of 3,983 MK83 (1000-pound) bombs arrived in June 1966 without tail fins. With the inauguration of the CRAMSHIP concept (loading ships out in CONUS with complete rounds, i.e., all components) rapid improvement was achieved and the

[68] U.S. Air Force, Logistic Plans and Policies in South East Asia, 1966 (SHO-TS-67), 31 October 1967 (TOP SECRET).

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percentage of incomplete rounds received in-country was reduced from 39 percent in June 1966 to less than 6 percent by the end of the year.

(12) Despite the substantial rise in expenditures, the USAF munitions inventory continued to increase during 1967 because of the gain in production. Table 21 illustrates the simultaneous rise in production, expenditures, and inventory.

(13) Essentially, the air munitions crisis ended in February 1967 and subsequent munitions resupply actions were able to be handled in a relatively routine manner.

g. Petroleum, Oil, and Lubricants (POL). The tremendous increase in U. S. Air Force tactical operations in SE Asia was reflected by the consumption of jet fuel and aviation gasoline (see Table 22).

(1) The Air Force relied on the Army and the Navy to supply terminal storage and in-country distribution of POL. By August 1969, 1,624,200 barrels of bulk storage capacity had been constructed with another 230,000 barrels under construction, with completion scheduled for early 1970.

(2) Pending construction of permanent facilities, temporary facilities in the form of portable hydrant systems were provided. These "bladder systems" are air transportable and

TABLE 21

U. S. AIR FORCE MUNITIONS INVENTORY
(Average per Month in Thousands of Tons)

Status	FY 66	FY 67	FY 68
Production	11.5	59.2	71.6
Expenditures	24.5	43.6	64.6
SE Asia Inventory	67.6	132.8	140.0

TABLE 22

U. S. AIR FORCE POL CONSUMPTION

Country	1964	1965	1968*
Jet Fuel (Barrels)			
Vietnam	167,200	2,587,000	12,900,000
Thailand	276,400	2,627,000	17,800,000
Aviation Gasoline (Barrels)			
Vietnam	240,700	471,000	1,712,000
Thailand	52,000	94,000	1,090,000

*By 1968 the consumption of aviation fuels had stabilized.

can be assembled in 1 day after delivery. In January 1965, 25 of these systems were in the worldwide Air Force inventory, 6 already in SE Asia. As operations expanded all 25 of these systems and additional storage bladders were committed to SE Asia.

(3) Early in 1965 CINCPAC recommended floating storage in Subic Bay, to provide backup for the commercial terminal at Nha Be, near Saigon. By early April 1965, two tankers were on station, loaded with aviation fuels as well as POL products for the Army. The USAF paid about $4,000 per day for its share of the storage costs.

(4) Resupply in isolated bases and operational areas was accomplished using C-130 aircraft equipped with 6,000-gallon bladder systems and C-123 aircraft with 2,000-gallon bladders. Cargo aircraft were also utilized to move 55-gallon drums and 500-gallon collapsible bladders to forward areas. The use of the bladder-equipped aircraft to transport bulk POL was a significant innovation in improving logistic mobility in remote, underdeveloped areas of operation.

(5) Storage and distribution limitations also existed in Thailand. USAF stocks were stored with those of the Royal Thai Air Force (RTAF) except at Bangkok, where commercial facilities were used. Base tanks belonged to RTAF while commercial storage in the Bangkok area (2,800,000 barrels) was owned by private firms. Distribution within the country was provided by rail and Thai Government-operated trucks. In early 1965, to facilitate the supply of POL to forces up-country in Thailand, construction of a tactical pipeline from Si Racha to Korat was proposed, but was denied by the Thai Government. However, a concession was granted for construction of a short pipeline between the port at Sattahip and U-Tapao Air Base.

(6) It should be noted that the POL support of Air Force units and operations was effective and that no combat operations were curtailed because of a shortage of POL. A complete study and evaluation of POL support in SE Asia can be found in the POL Monograph.

4. FORCE BUILDUP AND BASE DEVELOPMENT

a. Buildup in Southeast Asia. At the beginning of 1965, the U.S. Air Force had been conducting various operations in SE Asia for about 3 years. There were approximately 9,500 Air Force personnel in SE Asia (6,604 in RVN and 2,943 in Thailand) and a total of 94,741 personnel and approximately 1800 aircraft by the end of 1968. A summary of the buildup is shown in Figure 57.

b. Construction

(1) As the planning for increased force levels proceeded, it was apparent that the existing jet-capable airfields (RVN-3, Thailand-5) would require extensive upgrading and that at least six new air bases (RVN-4, Thailand-2) would be required to provide bed-down facilities for the deploying forces (see Figure 58). The existing airfields required a variety of improved or additional facilities.

(2) To support the initial buildup two new bases, Cam Ranh Bay and Phan Rang, were required. Cam Ranh Bay became operational in October 1965 and Phan Rang in March 1966. AM-2 aluminum matting was used for the initial runways and concrete runways were then constructed while combat operations were underway. The other four bases were completed as programmed: U-Tapao, Thailand, in June 1966, Tuy Hoa in November 1966, Nam Phong, Thailand, (bare base horizontal construction only) in January 1967, and Phu Cat in May 1967.

(3) Although many problems had to be resolved, the necessary minimum facilities were available when the combat units deployed. All units were able to commence combat operations immediately after arriving in the theater. In some cases, the programmed deployment dates were tailored to the base availability dates. In these cases, if the bases had been completed earlier, the units were ready and could have been deployed.

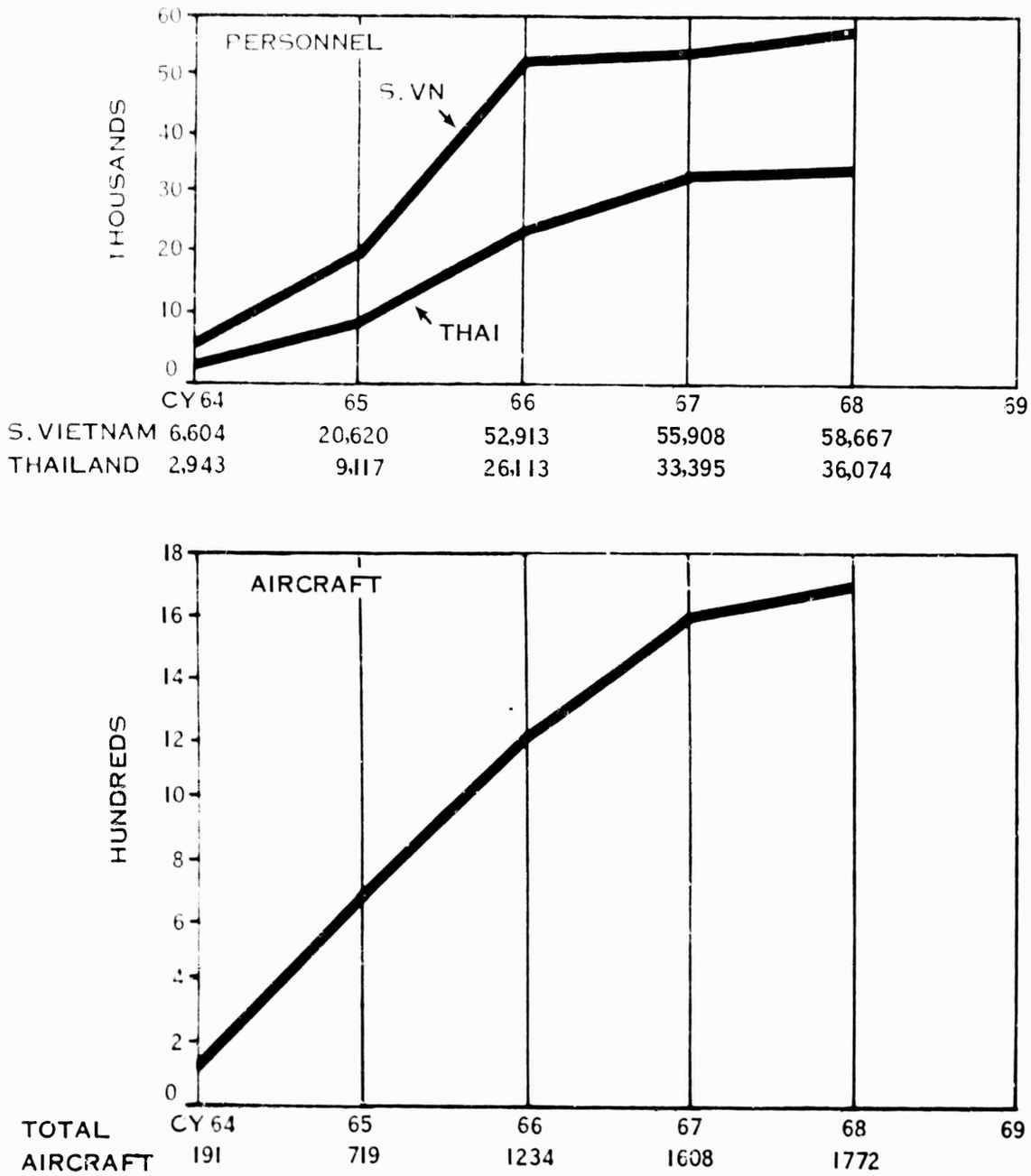

FIGURE 57. USAF PERSONNEL AND AIRCRAFT BUILDUP IN SOUTHEAST ASIA (END OF CALENDAR YEAR)

(4) By February 1966, there was considerable doubt on the part of the Air Force as to whether construction forces would be released from other high-priority work to construct a new base at Tuy Hoa in time to receive approved USAF forces. Accordingly, the Secretary of the Air Force proposed needed airfields. This project, known as Turn Key, was approved by the Secretary of Defense in May 1966. The Turn Key project specified that the contractor would provide complete base construction, shipping, logistics, port facilities, and communications, with the real estate and security being provided by the U. S. Government. On 31 May 1966, a contract was awarded to Walter Kidde Constructors, Inc., to build a complete airbase at Tuy

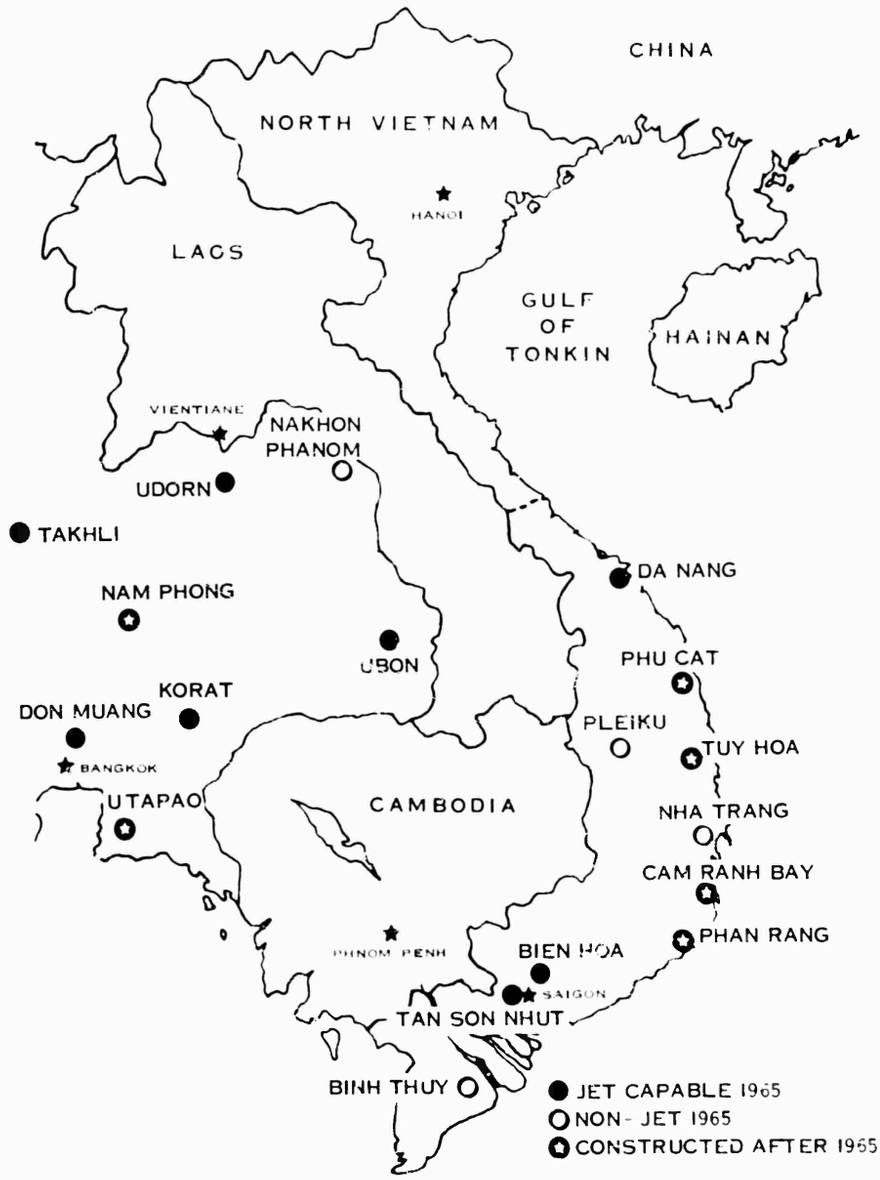

FIGURE 58. SOUTHEAST ASIA BASES AVAILABLE TO U.S. AIR FORCE

Hoa, with the proviso that the contractor would not divert or degrade any existing in-country construction resources.

(a) On 10 June 1967 Tuy Hoa was completed 2 weeks ahead of schedule. The total contract cost is given in Table 23.

(b) The success of Turn Key demonstrates one method of obtaining additional construction capability, in a combat theater, when all construction resources are already committed to equally high-priority projects.[69]

(c) Base Rights. It should be noted that airfield construction in Vietnam was initiated without a formal base rights agreement between the United States and the Saigon Government. The agreements for base siting and construction were negotiated between MACV and the RVN military. When changes occurred in the RVN military command or in the civilian government, uncertainties were introduced into the base development planning. In the case of Thailand, the United States signed a formal military assistance agreement with the Thailand Government. Specific arrangements, however, were made by the military commands of the two nations. Several delays were encountered in both countries because of inability to reach timely agreements on real property.

(d) Army Engineer Support. In accordance with Department of Defense directives and a joint Army/Air Force regulation, the Army is responsible for "providing military troop construction support to the Air Force overseas" and for providing "the number of troop units, by tape, in the Active Army, and reserve components of the Army . . . to satisfy mutually agreed upon (Air Force) requirements." Accordingly, the Secretary of the Air Force requested, in July 1965, assignment of specific Army engineer units to the Air Force component in RVN. The request was not honored, however, on the grounds that Army engineer units deployed to RVN came under control of the unified command and that the Air Force requirements would be met by MACV from its overall construction resources. Subsequently, Army engineer units, as was the Navy's construction contractor, were directed to construct Air Force projects on a case basis.

e. Initial Bed-Down Capability. Interim facilities were required to bridge the gap until fixed facilities could be constructed. Two projects provided these interim bed-down facilities:

(1) Harvest Eagle. Harvest Eagle housekeeping and station sets, known as Grey Eagle prior to 1968, proved to be exceedingly important during the early stages of the buildup. Four sets, pre-positioned in PACOM, were immediately available for use in SE Asia. In all,

TABLE 23

PROJECT TURN KEY, FINAL CONTRACT AMOUNT ($)

Work	Cost	Fee	Total
Construction	48,089,386	3,115,000	51,204,386 (Net Cost)
Engineering	1,623,758	55,000	1,678,758
Nonconstruction	3,794,672	20,600	3,185,272
Total	53,507,816	3,190,600	56,698,416

[69] U.S. Air Force, Logistic Plans and Policies in South East Asia, 1966 (SHO-TS-67), 31 October 1967 (TOP SECRET).

10 Harvest Eagle sets were used on eight different bases in RVN and Thailand. Each set supports 4,400 personnel and is comprised of four 1,100-man kits. These sets provided the initial housekeeping, messing, and electrical power support that was necessary until fixed facilities were completed. They were employed on bare bases (a base with a runway and water supply) and to augment the facilities already in-being on established bases. As fixed facilities became available the Harvest Eagle assets that had not been expended were either added to base operating stocks or returned to WRM stocks. When Harvest Eagle sets were committed, PACAF took action to expeditiously reconstitute the PACAF WRM level of four sets. The prudence of reconstituting the WRM was demonstrated when three sets were used in support of air units deployed to Korea in response to the PUEBLO incident in January 1968.

(2) Project Bitterwine. The buildup of USAF forces in South Vietnam and Thailand was considerably more complicated than simply moving Tactical Wing personnel and equipment into the combat theater. Since no CONUS bases were inactivated, the Air Force was faced with a requirement to build and equip a number of new air bases in SE Asia. To accomplish the task of equipping the new facilities, Project Bitterwine was established by PACAF and AFLC in the fall of 1964. The project was designed to program and furnish necessary industrial equipment and included the equipment necessary to outfit approximately 30 different shops or activities on a given air base, interim facility structures, aircraft spares, and general supplies to the appropriate SE Asia base prior to the arrival of combat units. A variety of functional packages was developed to provide for the needs of a 4,000-man base supporting a combat wing. Equipment lists were complemented with additional packages that were peculiar to the specific type aircraft being supported. Packages were also developed covering the entire scope of normal administrative base support. By using this building block concept, AFLC was able to define the total SE Asia requirement early enough to identify on-hand assets and accomplish timely and economical procurement of the remaining equipment. The packages, for a given base, were then automatically shipped as they were required, to meet the planned operational date. By April 1967 when Project Bitterwine was terminated, 23 USAF bases and activities supporting SE Asia had been developed. This required the procurement and shipment of 1,525 functional packages valued at $82.5 million.

f. Aircraft Revetments and Shelters. In order to reduce the vulnerability of aircraft, it was determined, in early 1965, that the most practical method of providing protection to the growing USAF combat force was to install prefabricated revetments that would provide three-sided protection to a height of 16 feet.

(1) In June 1965, a contract was awarded for prefabrication of kits, at an initial cost of $9,690 per unit. With design improvements, the last contract awarded in 1969 was for $3,774 per unit. A total of 1,873 kits were shipped to SE Asia at a cost of $17.7 million.

(2) To meet the need for additional protection, an overhead shelter was designed for use with existing revetments. The shelters were built by installing a prefabricated steel shell inside a revetment then covering the shell with concrete. At a total cost of $7.7 million, 574 steel shells were shipped to RVN (including 166 shelters for USN use at Da Nang and Chu Lai). Erection of the first USAF units was completed in December 1968.

g. Increasing USAF Civil Engineering Capability. All USAF bases and wings have an organic civil engineering capability to provide for base facility maintenance, construction planning and programming, and on-base minor construction. Faced with the massive facility maintenance problems associated with the rapid buildup of USAF forces, the base civil engineering squadrons were simply not capable of accomplishing all of the needed work. To reduce the increasing in-country work backlog and accomplish various minor construction projects, the Air Force deployed specialized military Civil Engineering Units.

(1) Prime BEEF Teams. In 1964 the Air Force originated Project Prime BEEF (Base Engineering Emergency Forces) by directing all USAF major commands to organize their base civil engineering personnel so that civil engineering teams, with a predetermined capability, could be deployed to meet emergency situations, either in CONUS or in overseas areas. The first Prime BEEF teams were deployed to South Vietnam in August 1965. They were used to

construct protective revetments for aircraft at Tan Son Nhut, Bien Hoa, and Da Nang. Between August 1965 and December 1967, 59 Prime BEEF teams (1,800 personnel) were deployed to SE Asia on a temporary duty basis. These teams installed water, fuel, and sewer systems, and constructed barracks, messing facilities, hangars, and aircraft revetments on all SE Asia air bases.

(2) Red Horse Squadrons (Rapid Engineer Deployable Heavy Operations Repair Squadron, Engineer). The Air Force is responsible for maintaining "a capability for the emergency repair of bomb-damaged air bases within the organic capability of air installation resources."[70] Because it considered its Base Civil Engineering Squadron not capable of performing this mission and because it could not obtain the assignment or dedication of engineer units, the Air Force requested approval for the activation, training, and deployment of Red Horse Squadrons to SE Asia. A total of six squadrons were deployed with the first two going to Cam Ranh Bay and Phan Rang in January 1966. Each Red Horse Squadron was a mobile unit of 400 men, with the skills and construction equipment required to provide combat engineering support to Air Force tactical units in the combat theater. The Red Horse Squadron was not intended to duplicate any existing engineering capability. Rather, it filled the gap between the operation and maintenance responsibilities of the Base Civil Engineering Squadron and the heavy construction capability of an Army Construction Battalion. Heavy repair and rapid support of combat units was the particular mission of these squadrons. When they deployed to SE Asia the Chief of Staff of the Air Force stated that the squadrons would "supplement but not supplant" the construction capability of the Army and Navy. For additional information on Red Horse Squadrons see the Construction Monograph.[10] In addition to providing the Air Force with a needed organic troop construction capability, the Red Horse Squadrons also provided MACV with an additional construction resource for the accomplishment of MILCON-funded construction.

(3) Prime BEEF teams and Red Horse Squadrons relieved much of the pressure on other construction agencies and provided much-needed operational and housekeeping facilities much earlier than could have otherwise been provided.

5. SUMMARY. The Air Force Logistic System existing at the beginning of the Vietnam conflict provided effective support for forces in SE Asia using the same policies and procedures in the combat theater as in CONUS and other areas of the world. The only changes were those of emphasis or priority, the establishment of long lines of communication, and the redirection of supply pipelines.

a. Four major operational decisions in 1965 established the magnitude and direction of the USAF logistic effort. First was the approval in January for use of USAF jet aircraft in direct support of RVNAF in South Vietnam. Second was the decision in March to strike targets inside North Vietnam. Next was use of B-52 aircraft in the conventional role beginning in June. Finally, in September, the decision was made to change from a temporary duty (TDY) to a permanent change of station (PCS) deployment status for forces already in-country and those scheduled for future deployment.

b. The Forward Operating Base/Main Operating Base (FOB/MOB) logistics concept employed initially provided austere but adequate support for the TDY units in-country, backed up by offshore MOBs in Japan, Okinawa, and the Philippines where major repair, scheduled maintenance, and inspections were performed.

c. The PCS decision encompassed a change in maintenance concept wherein each in-country base became a MOB with maximum base self-sufficiency. Facilities and other support capabilities were developed to permit the wings to operate the same as in CONUS. The transition from FOB to MOB was complete when all supporting functions had been developed or transferred and lines of communications with CONUS depots established.

d. Supply support for the FOB/MOB concept was provided primarily through the Clark AB account. The only active base supply account in RVN was at Tan Son Nhut. To support the

[70] DOD Directive 1315.6, 5 February 1967, paragraph III b.

MOB concept and the newly developed bases, 16 new base supply accounts were established. Initial stocks were provided by the appropriate Air Materiel Area for each weapon system supported. Follow-on supply support and stock balancing was accomplished in accordance with standard Air Force procedures.

(1) The manual accounting procedure initially used was quickly oversaturated and was replaced by Punch Card Accounting Machines (PCAM) to expedite transactions. The volume of activity continued to increase and, by December 1965, nearly all weapon systems in SE Asia were exceeding the USAF acceptable standard rates for aircraft not operationally ready supply (NORS). Stock control procedures and records had seriously deteriorated. Duplicate requisitioning occurred and, because of low asset visibility, little or no in-country lateral support was accomplished. Excesses were generated and theater data consumption was distorted.

(2) Beginning in April 1966, each new account was equipped with standard computers, the accounts previously established were converted, and, by November 1967, all SE Asia accounts were automated. Problems involving requisitioning, reconciliation, and asset visibility and reporting were greatly alleviated.

(3) Air Force excesses were generated in 1965-1966 by the turbulence of the buildup period, lack of adequate warehousing, and inadequate accounting. When the supply accounts were automated and warehousing provided, local excesses were identified and reported for redistribution within the theater or to AMAs for disposition.

e. Air munitions for the rapidly escalating operational requirements in 1965 and early 1966 were drawn from War Readiness Materiel (WRM) pre-stocked for just such contingency needs. The worldwide inventory at the start of the Vietnam buildup considerably exceeded the tonnages authorized in the Secretary of Defense Logistics Guidance; however, the very high tactical expenditure rates and the constantly expanding use of the B-52 (not included in Logistics Guidance computations until FY 67), combined to create shortages of some types of air munitions, causing some curtailment of air operations during early 1966. Special procedures for munitions delivery (Special Express), ship loading (CRAMSHIP), inventory and consumption reporting, transfer of assets between Services, and intensive commodity management at all levels were implemented. By February 1967 munitions production had achieved parity with consumption and, since that time, worldwide inventory has shown continuous improvement.

f. Base development in SE Asia, with exception of Tuy Hoa, was accomplished by contractor under the management of the Navy Officer in Charge of Construction and by Army Engineers.

(1) In May 1966 the Secretary of Defense approved a proposal that USAF negotiate directly with an American contractor to build Tuy Hoa Air Base. This project, called Turn Key, specified that the contractor provide complete logistics, shipping, port facilities and communications to build and turn over a complete air base. The contractor could not divert or degrade any in-country resources. The contract was completed two weeks ahead of schedule. The success of this effort demonstrates one method of obtaining additional construction capability in a combat theater.

(2) To provide for initial bed-down pending completion of fixed facilities and to establish initial operational capability, two USAF supply projects were used successfully.

(a) Project Harvest Eagle housekeeping and station sets provided temporary housing, messing, electrical power, and other cantonment support.

(b) Project Bitterwine provided necessary industrial equipment and general supplies prior to the arrival of combat units.

(3) To provide an in-house airfield repair capability, to reduce the in-country work backlog, and to accomplish various minor construction projects, the Air Force deployed specialized military civil engineering units.

(a) "Prime BEEF" teams were designed to accomplish such specific tasks as installation of fuel, water, and sewer systems, and construction of barracks, messing facilities, hangars, and aircraft revetments.

(b) Six Red Horse Squadrons capable of both vertical and horizontal construction were activated, trained, and deployed to SE Asia. The efficacy of these units is attested by the fact that four of the squadrons have been incorporated in the Air Force base line forces for retention after the Vietnam War.

(4) Many problems were encountered in base acquisition and construction and, in some cases, tactical unit deployment dates were dictated by base availability dates; however, necessary minimum facilities were ready on their arrival and combat operations could commence within hours.

SECTION I

SUPPORT OF REPUBLIC OF VIETNAM ARMED FORCES AND FREE WORLD MILITARY ASSISTANCE FORCES

1. INTRODUCTION

a. In addition to the support of U. S. forces in Vietnam, which at a time approached 550,000 personnel, the Services provided logistic support in varying degrees for the Republic of Vietnam Armed Forces (RVNAF) and for Free World Military Assistance Forces (FWMAF). These forces grew from some 570,000 RVNAF and a few hundred FWMAF personnel on 1 January 1965 to nearly a million RVNAF and almost 66,000 FWMAF by mid-1969. In total, then, the U. S. military logistic system provided some degree of support for over 1.6 million personnel in Vietnam, two-thirds of whom were non-U. S.

b. This section is concerned with this latter two-thirds of the total personnel supported, the non-U. S. forces, in order to make this consideration of logistic response in SE Asia complete. Specific consideration is given to the forces supported, U. S. responsibilities to each, and the methods by which this support was provided. A separate brief overview of the current RVNAF Improvement and Modernization (Vietnamization) Program is included only for the purpose of providing an insight as to the magnitude to which these support requirements have grown and is presented is more detail in the Foreign Assistance and Financial Management Monographs.

2. FORCES SUPPORTED AND U. S. RESPONSIBILITIES

a. Republic of Vietnam Armed Forces (RVNAF)

The Republic of Vietnam Armed Forces (RVNAF) can basically be separated into two distinct elements, the regular forces consisting of the Army (ARVN), Navy (VNN), Air Force (VNAF) and Marines (VNMC), and the territorial forces which included the Regional Forces (RF) and Popular Forces (PF). Additionally, there were the paramilitary forces which include the Civilian Irregular Defense Group (CIDG), National Police, Kit Carson Scouts, Armed Propaganda Teams and others, and the Peoples Self Defense Force (PSDF). Although the paramilitary forces and the PSDF were not, strictly speaking, a part of the RVNAF, they are considered together here because of the U. S. logistic support requirements.

(1) Army of the Republic of Vietnam (ARVN)

(a) The ARVN was by far the largest component and grew from just over 200,000 on 1 January 1965 to over 400,000 by the end of 1969.

(b) U. S. logistic support responsibilities included the supply of equipment, munitions, repair parts and general supplies, backup maintenance support, construction, calibration services, delivery of POL from the contractor or port to base and field depots, deep-draft shipping terminal service, limited coastal discharge and loading service, and some highway transportation service. In addition, some 1,500 logistic advisors were provided at staff, logistic unit, and field activity level, and extensive formal training programs were provided Vietnamese personnel, to include attendance at CONUS schools.

(2) Vietnamese Navy (VNN)

(a) The VNN grew from a force of less than 8,000 in 1965 to over 30,000 personnel in 1969.

(b) Basic U. S. support responsibilities were as outlined for ARVN, with a major effort devoted to the inspection, modification, conversion, and overhaul of Vietnamese ships and craft in-country and in offshore naval ship repair facilities. Additionally, technical assistance was provided to assist the VNN in establishing shipyard rebuild capabilities in Saigon.

(3) Vietnamese Air Force (VNAF)

(a) Total supported VNAF strength increased from 9,000 to over 36,000 by the end of 1969.

(b) In addition to the general responsibilities noted under ARVN, aircraft and armaments, air munitions, and heavy maintenance of aircraft and ancillary equipment were provided by the U. S. logistic system.

(4) Vietnamese Marine Corps (VNMC)

(a) The VNMC was the smallest and generally the most stable of the four Services, increasing in size only from 6,100 to 11,500 men.

(b) The VNMC was employed principally in ground operations as a part of the General Reserve. As such, the U. S. logistic support responsibilities were essentially the same as for the ARVN.

(5) Regional Forces/Popular Forces (RF/PF)

(a) These territorial forces were primarily responsible for the security of local areas. The RF, organized in companies, operated at province and district level with a strength that increased from 96,000 in 1965 to 260,000 by the end of 1969. The PF were organized into platoons at the village and hamlet level with a strength of 168,000 in 1965 increasing to 210,000 by the end of 1969.

(b) RF/PF logistic support requirements were comparatively small because of the limited equipment used by these units and the environment in which they operated. Basic U. S. logistic responsibilities, however, were included within the ARVN support requirements.

(6) Paramilitary

(a) From a 1965 strength of about 64,000, paramilitary forces grew to over 198,000 by 1969.

(b) Specific logistic support provided through U. S. military channels varied significantly for each element of the paramilitary forces. For those common military supply items used by the RVNAF, the ARVN was responsible for providing support to the paramilitary forces, thereby establishing U. S. logistic responsibility. In addition, the Civilian Irregular Defense Group (CIDG), organized in 1961, was fully supported by the 5th Special Forces Group using a separate logistical channel.

(7) Peoples Self-Defense Force (PSDF)

(a) Established following the 1968 Tet Offensive, the PSDF grew to over three million. Over 400,000 of the PSDF were armed with available small arms, including a large number of World War II rifles and carbines that became excess to RVNAF requirements as newer weapons were provided.

(b) U. S. military logistic responsibilities were created to the extent of the ARVN responsibility for providing and maintaining these weapons and providing ammunition therefor.

b. Free World Military Assistance Forces (FWMAF)

(1) Republic of Korea (ROK)

(a) The ROK forces represent the single largest free world force with a strength of over 48,000 organized into two Army divisions and a Marine brigade plus a small ROK Navy contingent.

(b) The United States provided the full range of logistic support for these forces with supply support provided either through normal Service or military assistance channels, depending on the item provided.

(2) Thailand

(a) Thai forces represent the next largest free world contingent with an Army division as well as small detachments from the Royal Thai Air Force and Royal Thai Navy. Total forces supported exceeded 11,500 by August 1969.

(b) As in the case of the ROK, full logistic support was provided these forces through Service and military assistance channels.

(3) Australia/New Zealand

(a) The first free world nation to provide assistance to Vietnam was Australia. From a training advisor detachment of 30 men in 1962, the Australian commitment grew to 7,600, including an infantry regiment with supporting troops, a bomber squadron, and a guided missile destroyer. The New Zealand contingent numbered about 550 men organized into an artillery battery and an infantry company with reinforcing engineer and support personnel.

(b) U. S. logistic support was provided these forces for common items on a reimbursable basis, to include underway replenishment and shipyard repair.

(4) Republic of the Philippines

(a) Filipino medical, engineer, security and civic action teams, operating primarily in Tay Ninh Province, numbered some 2,000 personnel at peak strength.

(b) Logistic support for these personnel was provided through U. S. Service channels.

3. METHOD OF SUPPORT

a. Organization

(1) The execution of logistics support functions for RVNAF was essentially accomplished within the RVNAF organizational structure. The Deputy Chief of Staff, Logistics, of the Vietnamese Joint General Staff, was the principal logistician who also held the position of Commander of the Central Logistics Command. He directly controlled and commanded the ARVN technical services and logistical organizations. The technical services, through subordinate base depots, provided supply and maintenance support to ARVN and, for common items, to VNN and VNAF. In addition, five area logistic commands, also under command of the Cental Logistics Command, provided direct and general support on an area basis. Aircraft-peculiar support was provided by a VNAF depot wing. Peculiar support for ships and craft was the responsibility of VNN and a subordinate shipyard and supply center.

(2) The basic point of interface between this RVNAF structure and the U. S. logistic system was through the U. S. advisory organization. Both the Navy and Air Force had an advisory group under direct command of the U. S. component commander with logistic advisors collocated with their Vietnamese counterparts at the appropriate staff and unit level in the VNN and VNAF organizations. The Army advisory group, however, was directly under the command of MACV

and the logistic advisory personnel at Joint General Staff, technical service, area logistic command, and ARVN and RF/PF unit level were in the MACV-CINCPAC-JCS command line rather than in component command channels.

b. Funding

(1) As of 1 January 1965, funding for RVNAF requirements was provided through the Military Assistance Program (MAP). In accordance with MAP procedures, five-year country programs were developed and submitted with detailed justifications. After annual congressional approval of worldwide MAP programs, the Assistant Secretary of Defense (International Security Affairs) issued funded MAP orders for individual country programs to supply implementing agencies. These agencies either released the supplies or, in most cases, initiated procurement action since most MAP items were not standard in the U. S. supply system. This funding system continued into March 1966, to include support of FWMAF deployed to Vietnam.

(2) In March of 1966, the rapidly increasing requirements resulted in establishment of a more responsive system known as Military Assistance, Service Funded (MASF). Under MASF procedures, military assistance support provided to Vietnam was funded in military department budgets. Incident to this realignment was the transfer of FY 66 and prior year Vietnam MAP unexpended balances to military department appropriations.

c. Requirements

(1) The change from MAP to MASF funding procedures did, in fact, improve the Service capabilities to provide timely logistic support to RVNAF and FWMAF. Sizable financial resources of the Services were made available to respond to new or changed requirements. These funds, however, were provided by diversion or reprogramming from other valid requirements which, at best, was a marginal substitute for the timely identification of requirements with specific funding therefor.

(2) The steady increase in the tempo of operations, together with the growing RVNAF force levels and the increasing FWMAF commitments, made logistic requirements for support of these forces highly volatile. These requirements were met by virtue of the priority assigned these forces. However, this normally resulted in the diversion of assets from other sources for payback from subsequent new procurement.

(3) This turbulence had the greatest impact on the U. S. Army which was responsible for funding and providing everything that was the logistical responsibility of the ARVN, i. e., everything but ship and aircraft related materiel. This was compounded by the command alignment which retained the Army advisory organization under MACV despite the fact that fiscal and logistical functions were a Service responsibility. The magnitude of the program, coupled with the lack of directive authority through Service channels, made execution of the program cumbersome and time consuming. As late as mid-1969, review and reporting procedures were sketchy and the Department of Army, although responsible for the program, had limited capability to manage it. Special procedures were adopted to improve these management needs.

d. Supply and Maintenance

(1) Supply support for RVNAF and FWMAF generally was provided through normal Service supply channels.

(a) ARVN supplies provided by the U. S. logistics system moved through two different channels. For standard U. S. items, requisitions were placed on CONUS supply sources. However, for MAP-peculiar items, all requisitions were placed on the MAP depot in Japan, which supplied the item, if available, or forwarded to the appropriate CONUS supply agency for direct shipment.

(b) VNN requisitioned and received repair parts and spares as well as naval ordance through normal U. S. Navy supply channels.

(c) In the case of VNAF, the depot at Bien Hoa requisitioned and received supplies directly from the appropriate CONUS Air Materiel Area in accordance with standard USAF procedures. Helicopter repair parts were similarly provided except that the Air Materiel Area further requisitioned on the U. S. Army Aviation Systems Command and then transshipped the supplies to VNAF.

(d) The United States-provided supplies for FWMAF were provided from in-country supply activities for standard U. S. items or by ARVN for MAP peculiar items.

(e) Air and ground munitions were provided by special Vietnam Ammunition Procedures (VAMP) that were operating prior to 1965. These procedures established a forecasting, reporting, and movement system that ensured a steady flow of munitions from CONUS direct to the 2 ARVN ammunition depots.

(2) Maintenance requirements in excess of RVNAF capabilities were scheduled through U. S. facilities in-country as well as offshore. FWMAF maintenance requirements in excess of organic capabilities were integrated into the U. S. system.

(3) Overall, the RVNAF supply and maintenance system has been reasonably self-sufficient and has adequately supported the RVNAF combat forces with only minimum reliance on the U. S. logistic system in-country. Increased U. S. logistic workload attributable to this support was primarily in the CONUS supply activities, intertheater transportation activities, and CONUS and offshore maintenance facilities. This workload was substantial as evidenced by the dollar value of the support provided. Despite the unpredicted workload, support has been provided as required; however, the unscheduled requirements and resultant short lead times have resulted in some degradation of efficiency of the supporting U. S. logistic systems.

4. RVNAF IMPROVEMENT AND MODERNIZATION PROGRAM

a. Although improvement of RVNAF has been a continuing objective of the U. S. Military Assistance Program, the large-scale introduction of U. S. forces beginning in 1965 and the requirement to deploy and support these U. S. forces took priority through 1967. With U. S. deployments largely completed, initiation of the Paris peace talks and the prospect of negotiated U. S. and North Vietnamese force withdrawals lent renewed emphasis to the improvement of RVNAF beginning in 1968.

b. From a beginning 1968 force level of 685,000, approved RVNAF force levels increased to over 950,000 with an FY 71 planning level of just under one million. Increases were in the VNN and VNAF to permit increased assumption of support missions performed by U. S. forces, and in ARVN logistic units to make the logistic base more self-sufficient. Numerically, the largest portion of the increase was in the RF/PF which have the mission of local security. Other changes included activations and reorganizations of combat and combat support forces in order to provide better balance and improved self-sufficiency in these areas.

c. In addition to these force increases, extensive modernization of equipment in the hands of existing units has been accomplished. Illustrative of this are the 740,000 M16 rifles, 10,000 M60 machine guns, 1,000 armored personnel carriers, 32,000 AN/PRC-25 radios, 34,000 M-series vehicles and over 100 UH-1H helicopters that have been shipped, all of which are the most current models in the U. S. inventory. Additional quantities of materiel have been or are scheduled to be turned over by U. S. units being withdrawn from Vietnam, particularly by the Navy, which is turning over a large number of coastal surveillance and general support ships and craft, and the Army, which is turning over the equipment of several helicopter companies to the VNAF.

d. Because of the magnitude of the program, special monitoring procedures have been developed and specific management offices established at all echelons. Experience of the U. S. logistic system during the buildup period provided useful direction in this regard. For example, strict input controls have been established based on RVNAF capability to receive and use the materiel, and supply management capabilities have been improved by the introduction of a third-generation IBM 360/40 computer system.

e. The equipment and modernization of this growing RVNAF force have been accomplished with minimum impact on the logistic support of U. S. forces in RVN. However, the necessity to support and maintain this increasingly complex equipment will place a demand on the in-country U. S. logistic system for the foreseeable future until an adequate RVNAF logistics base is developed, especially for the depot level rebuild and overhaul of ships, aircraft, electronics, tracked vehicles, and other complex equipment.

5. SUMMARY

a. The U. S. military logistic system has provided the total logistic support for the Republic of Vietnam Armed Forces (RVNAF). During the era these forces expanded from about 550,000 in 1965 to over 1,115,000 in 1969.

b. Standard Military Assistance Program (MAP) programming and funding procedures were used initially. By early 1966, the rapidly increasing requirements demanded a more responsive system. Military Assistance Service Funded (MASF) procedures, which incorporated the RVNAF programs and funding requirements as elements of the U. S. counterpart service programs and budgets, were implemented in March 1966.

c. The interface between the RVNAF and the U. S. logistical system was the U. S. advisory organization. Both the Navy and Air Force had an advisory group under direct command of the U. S. component commander with logistic advisors collocated with their Vietnamese counterparts at staff and unit levels. The Army advisory group, however, was directly under COMUSMACV and advisory personnel were under unified command lines, rather than Service channels. This adversely affected the U. S. Army's capability to manage the support program.

d. Growing RVNAF force levels and steady increases in the tempo of operations combined to create requirements turbulence. Resulting short response times and the priorities assigned these forces frequently resulted in diversion of assets from U. S. forces and programs, to be repaid from subsequent new production.

e. Air and ground munitions were provided by special Vietnam Ammunition Procedures (VAMP), which provided a forecasting, reporting, and movement system that ensured a steady flow of munitions from CONUS.

f. Overall, the RVNAF logistic system has been reasonably self-sufficient with only minimum reliance on U. S. in-country resources. Increased U. S. logistic workload was experienced primarily by CONUS supply activities and intertheater transportation agencies.

g. Beginning in early 1968, with U S. deployments largely completed and the initiation of the Paris peace talks, the continuing U. S. objective of RVNAF improvement took on renewed emphasis and additional priority. Extensive modernization of equipments is a major part of this program. RVNAF improvement and modernization is being accomplished with minimum impact on logistic support of U. S. forces. However, continued support and maintenance of this increasingly complex equipment will place demands on U. S. logistic systems in the foreseeable future.

h. Free World Military Assistance Forces with a maximum strength of some 66,000 have also been supported in varying degrees by the U. S. military logistic system. Australian and New Zealand forces have been provided common-item support on a reimbursable basis whereas Korean, Thai, and Filipino forces were fully supported either through normal Service or MAP channels.

SECTION J

SUMMARY

1. Because of the wide range of logistic responses discussed in this chapter, individual summaries have been included at the end of each section.

2. Overall, it can be stated that logistic support provided the combat forces in SE Asia was adequate and responsive to the needs of the combat commanders. The many critical problems associated with the rapid expansion of force levels and combat operations in this distant underdeveloped area led to a number of inefficient and costly actions. In responding to these problems, many valuable lessons were learned and identified in this report for application to future conflicts.

CHAPTER 5

IMPACT OF THE VIETNAM CONFLICT ON READINESS IN OTHER AREAS OF THE WORLD

SECTION A

INTRODUCTION

1. PURPOSE

a. Preceding chapters of this volume have addressed the Vietnam War, logistic posture at the start of the conflict, logistic responsibilities and systems during the Vietnam era, and logistic response in SE Asia. The Terms of Reference for the Joint Logistics Review Board (JLRB) require additionally that "The Board will examine the . . . factors that affected (1) the responsiveness of logistic support to U. S. combat forces in Vietnam; and (2) their impact on readiness in other areas of the world."

b. This chapter provides an unclassified summation of the major impacts of the Vietnam conflict on the unified and specified commands, the military services, and the Defense Supply Agency (DSA) that affected their capability to carry out peacetime and contingency missions, including general war. Appendix A to this volume, classified SECRET and bound separately, contains a more detailed account of specific actions that have been taken and the impacts of those actions as reported by the commanders of unified and specified commands, the Army, the Navy, the Marine Corps, the Air Force, and the DSA.

2. APPROACH. In response to a request by the JLRB, each of the military services, the DSA, and the unified and specified commands provided assessments of major impacts on their mission capability resulting from support of the Vietnam conflict. Events occurring in the traditionally recognized logistic functional areas were reported. Other functional areas that impinge on and influence the degree of efficiency of logistic support, i. e., force structuring, operations, personnel, training, communications, and financial management, were also addressed as appropriate. This chapter and the classified appendix highlight these reported events and the resulting circumstances in each command, Service, and the DSA, evaluating and equating their special significance for each of these organizations as well as their effect on conditions in areas of the world other than SE Asia. The result is an overview of major impacts on mission capability attributable to support of the Vietnam conflict.

SECTION B

BACKGROUND

1. NATIONAL POLICY CONSIDERATIONS. This review is of events that have occurred against a backdrop of national policy and actions invoked to manage U. S. participation in the Vietnam conflict. It appears that the major reasons for readiness difficulties evolved from the following national policy considerations: the conflict would be of short duration; implementation of national emergency power was not required; the application of U. S. military resources would be controlled in graduated response to developing enemy actions; and excess resources would not be generated in the magnitude that resulted from World War II and the Korean War.

2. FORCE DEPLOYMENTS

a. As developments in Vietnam generated a need for more forces and resources, the United States responded with a series of positive but controlled increases in military strength. The initial buildup in 1965 was predicated on the premise that the conflict would be of short duration. Forces, mainly Pacific Command Reserves, were deployed on a temporary duty basis with minimum in-country support and dependence on offshore capabilities as a primary logistic base.

b. The fallacy of temporary duty deployments soon became apparent. Conceptual changes occurred that resulted in a series of incremental increases in U. S. military strength and in the beginning of a comprehensive and sophisticated logistic support structure.

c. Each incremental deployment of combat forces was accomplished only after a thorough analysis of requirements versus available resources and of alternative courses of action and risks inherent in each. This detailed analysis by the Office of the Secretary of Defense, the Joint Chiefs of Staff, the Services, and the commanders involved resulted in decisions being made at the highest level.

d. Remaining general-purpose forces available for contingency requirements became smaller with each successive deployment to SE Asia. Soon it became necessary either to levy demands on commanders of other unified commands and the CONUS training base or to mobilize some of the Reserve and National Guard forces to support the ever-increasing needs of the SE Asia conflict. Although the state of national emergency that was declared during the Korean War was still technically in effect, no general mobilization of Reserves was implemented. The decision was made to draw down on forces in being, as necessary, to create new combat support and combat service support forces and to expand the training base.

3. MATERIEL. Materiel resources required to sustain the continually expanding combat consumption in SE Asia were drawn initially from war readiness materiel (WRM) pre-stocked worldwide against such contingency requirements, and by levies against assets of other commands and programs. As the CONUS industrial base became responsive to the new military demands and the pipeline to the combat theater filled, the drawdown on other areas of the world diminished and some reconstitution of assets in WRM and other stocks was possible. However, a Department of Defense (DOD) policy has been to program industrial production at levels only slightly higher than the current consumption in SE Asia. This policy was designed to preclude the generation of excess supplies and equipment in the magnitude that occurred after World War II and Korea. The policy was implemented by means of intensive high-level management and control of procurement and production programs through both funding constraints and directed asset distribution.

4. FUNDING. As the U. S. defense budget rose from $52 billion in FY 64 to $81 billion in FY 69, increasing concern developed at the national level for funding the Vietnam conflict. Inevitably, funding constraints impacted on other areas of military requirements that had to be recognized as lesser priorities to meet the demands of commitments in SE Asia. Deferrals and reprogrammings have been necessary procedures as a part of severe periodic budget reviews.

SECTION C

MAJOR IMPACTS

1. SCOPE

The commitment of resources to Vietnam and funding problems have impacted throughout DOD. Each commander of a unified or specified command and each Service has encountered impacts of varying degree and duration. The areas experiencing the greatest impact have been personnel, equipment, war consumables (particularly munitions), and funding.

2. PERSONNEL. Fulfilling the high priority personnel requirements for the Vietnam conflict has resulted in one of the more significant degrading impacts on readiness of forces in other areas of the world. This degradation has been experienced by all commanders of unified and specified commands, including the Pacific Command outside SE Asia, and in all the military services. The commands and Services have undergone overall shortages of experienced and skilled personnel, which has added to the training requirement and downgraded maintenance and logistic support capability. Severe deficits in middle management supervisors have existed in both officer and enlisted grades, and excessive personnel turbulence has reduced command management effectiveness and efficiency. The following factors have contributed to these problem areas and the resultant downtrend in personnel readiness: insufficient trained personnel available at the beginning of the buildup; no substantial Reserve personnel callup to add to the assets of qualified skilled specialists of middle management officer and noncommissioned officer grades; limited capacity of the CONUS training base to train highly skilled specialists in time to fulfill worldwide requirements; no extension of existing terms of enlistment; short-tour policy, i.e., 12 months in SE Asia and 13 months in Korea; attrition of experienced personnel resources through expiration of term of service and casualties; and the necessity to provide replacements for SE Asia returnees while simultaneously filling personnel requirements for expanding the training base, effecting unit activations, and sustaining other overseas areas. All of these factors have not applied equally to all the military services, but each of the Services has been affected by most of them to some degree.

a. Army. Prior to the SE Asia buildup, the Army training base was geared to normal peacetime requirements. As the buildup progressed, rapid expansion of the training base was required. This expansion created the need for additional experienced personnel and qualified instructors. The only source of trained and/or experienced personnel that could be made available within the time frame required, without mobilizing Reserve components, was commands outside SE Asia. Drawdown of these personnel from the several Army component commands had significant impacts on readiness within the unified commands. As forces were deployed to SE Asia, personnel levies were placed against the component commands to furnish personnel required to bring deploying units up to strength. For example, during the first 6 months of 1966, nearly 30,000 enlisted personnel were withdrawn from U.S. Army, Europe, for assignment to SE Asia or to CONUS in direct support of SE Asia requirements. In some instances, entire tactical units were withdrawn from a commander of a unified command for deployment to SE Asia. The combat service support units assigned to Vietnam were not withdrawn as units from other unified commands. Some of these units came from other Pacific Command areas and the Strategic Army Forces (STRAF); and others, made up of personnel withdrawn from all areas, were either activated in CONUS for deployment to Vietnam or in some cases activated in South Vietnam. An extended period of low retention rates also contributed to shortages in middle managers and critical skills. Authorization for a general or selective callup of the Reserve force would have helped alleviate this shortage, but Reserve callups were limited to those made in April 1968 shortly after the PUEBLO crisis and the Tet Offensive. This lack of authorization for a general Reserve callup was particularly significant in view of the shortfall in combat service support units

existing in STRAF at the time the buildup began in Vietnam. The policy then was that a major portion of the combat service support units needed to fill total sustaining support increments would be included within the Army Reserve components. Nonavailability of these Reserve units has made it necessary to draw down STRAF combat service support units and to activate new units to meet the support requirements in SE Asia. The relatively large number of 2-year enlistees, low retention rates, and the short-tour policy have resulted in extreme personnel turbulence in all commands as they have been called on to furnish replacements for SE Asia returnees. One of the major personnel problem areas has been in aviation personnel. Owing to the unprecedented use of helicopters in Vietnam, worldwide drawdowns of Army aviation personnel were made and on 31 December 1969 the situation had not been alleviated.

b. Navy. The Navy was faced with manning newly created river and coastal patrol forces and major support activities in Vietnam, and with manning reactivated ships and craft required for SE Asia operations. The Atlantic Fleet suffered the brunt of the drawdowns for meeting these SE Asia requirements but the Navy Shore Establishment and First Fleet units were also called on to furnish some of the required personnel. An initial fleetwide numerical shortage in personnel was soon corrected, but the requirement to man SE Asia units with experienced and skilled senior enlisted personnel impacted heavily on the furnishing commands. Shortages resulted in trained and experienced petty officers and other hard-skill personnel, such as boatswain's mates, electronics technicians, diesel enginemen, aviation ordnancemen, and equipment operators. Shortages in these and similar skills, particularly in higher pay grades of E-5 and above, have persisted for most of the Vietnam era. Personnel turbulence was created within the fleet because ships deploying to SE Asia required near-full complements of personnel with sufficient active duty time remaining to complete a combat tour. A general screening of nondeploying ships to obtain the required personnel resulted in excessive transfers between ships and many hardships that took their toll in morale and lowered retention rates.

c. Marine Corps. The rapid buildup resulted in a shortage of officers. Many staff noncommissioned officers from aviation technical fields were subsequently commissioned and assigned to other occupational fields to relieve the acute officer shortage. In addition, a myriad of new equipments, many of which were highly sophisticated in the technical sense, were introduced, which required long-lead-time training. The result has been serious shortages of experienced technicians at the noncommissioned officer level in Marine Corps aviation units and the technical level of expertise has slowly declined over the past 3 years. Supply support deficiencies in Marine Corps aviation are related in part to a shortage of supply personnel for inventory control purposes. Increases in the range and depth of stocks and the number of supply transactions complicate this situation. The number of trained personnel around which new ground units were built, particularly the 5th Marine Division, and the fleshing out of the 1st Marine Division, which was manned at less than table of organization strength, required the qualitative drawdown of trained personnel from the 2d Marine Division and many non-Fleet Marine Force (FMF) activities. Expansion of manpower requirements at Marine Corps bases and of support facilities providing training, staging, and logistical support for SE Asia has prompted a further drawdown in the form of FMF personnel augmentation to these support facilities.

d. Air Force. The Air Force commitment of airlift, fighter, and attack aircraft units and the activation of some 20 new Special Operations and Tactical Air Control squadrons (units particularly suited to this kind of conflict) drew down air crews and support personnel from all other areas. Extraordinary actions were required to provide 100 percent SE Asia manning while still maintaining the policy that no personnel would be required to do an involuntary second tour until all others with similar qualifications had served a tour. The number of officers eligible for overseas was extremely limited in many specialties. It became necessary to waive assignment restrictions, substitute grade levels, and conduct training while enroute overseas. The first and principal impact occurred in the air crew specialties. Although maintaining a policy of 1 year or 100 combat missions for normal-tour completion, most fighter crews were completing 100 missions in 6 to 7 months. To meet this high turnover rate on a single-tour basis the Chief of Staff of the Air Force directed a program (PLACE GATE) to reassign pilots from support functions to cockpit duties. This resulted in the loss of many highly qualified middle managers (majors and lieutenant colonels) in all support specialties, but particularly in maintenance and supply. To partially offset this impact, the Secretary of the Air Force established a selective

retention program (STOP LOSS). This program specified a case-by-case review of the qualifications of all regular officers in the grades of colonel and below who had requested retirement or separation. Those possessing critically needed skills were retained on active duty for a period of 1 year beyond the release date requested.

e. Logistics Personnel (All Services). Personnel with logistic specialist skills were in great demand in SE Asia. The primitive industrial environment in Vietnam at the beginning required an unprecedented effort to establish the necessary logistic base to support the combined U. S. military and nation-building efforts. The great demand for military personnel qualified and experienced in management of such support functions as port and terminal operations, POL, supply management, maintenance, and procurement was difficult to meet because of the civilianization of these billets within CONUS. Military personnel with these skills had to be withdrawn from other areas.

f. Summary. Despite personnel shortages and troop withdrawals, none of the commanders of unified and specified commands stated that his command was downgraded to the extent that he could not carry out his mission or survive the initial stages of a major contingency in his area. However, most of the major contingency plans call for a rapid augmentation of forces and supplies shortly after the initiation of hostilities. Conducting this augmentation in a timely manner would have posed a serious problem because of the involvement of forces in Vietnam. This involvement had reduced the number of units available to the Commander in Chief, Strike Command, for use in his mission of augmenting other commanders of unified and specified commands and had also downgraded the Strike Command quick reaction capability. If a major augmentation requirement had developed that had priority over SE Asia operations, it is doubtful that forces could have been withdrawn from Vietnam and redeployed to a new theater rapidly enough to meet the requirements of the receiving command.

3. EQUIPMENT

a. Each unified and specified command and military service has encountered impacts, to varying degrees, on the status of both major operational equipments and supporting items. In general, these impacts can be categorized as follows:

(1) Lateral redistribution of authorized equipment was required to provide initial and sustaining support for forces in SE Asia and to reconstitute the strategic reserve capability.

(2) Delays in modernization, and obsolescence of major equipment occurred as a result of the relative priorities afforded to SE Asia.

(3) Increased maintenance efforts and demands for spares and replacement parts were required to maintain over-aged equipments at higher utilization rates and with generally reduced maintenance float or not operationally available factors.

(4) Deferred and delayed maintenance, modification, and overhaul occurred owing to higher priorities afforded SE Asia, limited depot and industrial facilities, and underfunding.

b. Most of the initial drawdown of major equipment has been rectified; however, there are some areas of continuing concern.

(1) Both the European Command and the Pacific Command (other than SE Asia) are still constrained in modern helicopter assets.

(2) European Command's support of wartime over-the-beach requirements had virtually been eliminated by deployments of landing craft and lighterage to SE Asia.

(3) The Department of the Army has been unable to fully reconstitute Department of the Army Forward Depot (DAFD) or Department of the Army Forward Floating Depot (DAFFD) assets formerly located in the Pacific Command, or to fill existing shortages of European Command pre-positioned Reforger, 2 + 10, and theater reserve (TR-1/TR-4) stocks.

c. Because of high attrition and the priority of support to continually expanding operational activities in SE Asia, all Services have encountered delays in modernization of forces in other areas of the world. Typical examples are as follows:

(1) U.S. Army, Europe, has yet to receive full issue of the new family of radios (AN/VRC-12).

(2) Since 1965 SE Asia deploying units have had priority for assignment of the newest available Navy aircraft and not until July 1969 was a fully modern carrier air wing, equipped with the newest fighter and attack aircraft, assigned to the Sixth Fleet.

(3) The U.S. Air Force, Europe, WILD WEASEL electronic countermeasures (ECM) requirement originally programmed for the second quarter of FY 67 was not operational until the third quarter of FY 70.

(4) It was only in FY 69 that any significant modernization of the Marine Corps motor transport fleet (multifuel) outside SE Asia could be accomplished.

d. The Services accumulated extraordinary backlogs of major overhaul and modification work. The following are examples of this problem:

(1) Navy ship maintenance and overhaul funding for FY 67, FY 68, and FY 69 averaged 85 percent of requirements causing deferral of some overhauls and reduction in scope of those overhauls that were conducted. In addition, for FY 70 the Navy has a backlog of deferred maintenance of $251.8 million for naval aircraft, engines, components, missiles, and support equipment.

(2) Because of dollar and facility limitations and the priority of effort directed to SE Asia support, Air Force aircraft depot work for other commands has been reduced to 70 to 90 percent of requirements for combat forces and 50 to 70 percent in support areas. Of major concern is a large backlog of operational capability aircraft modifications that have been completed on the SE Asia fleet but not on the aircraft of other commands.

4. WAR CONSUMABLES, PARTICULARLY MUNITIONS

a. The initial support for the SE Asia buildup and the provisioning of war consumables for the rapidly expanding combat operations was drawn primarily from WRM that had been pre-stocked worldwide. Dependence on WRM, particularly munitions, diminished after 1966 when industrial production generally achieved parity with SE Asia consumption. All Services and unified and specified commands have reported impacts of varying degrees on combat readiness and sustaining capability for general-purpose forces in other areas of the world because of drawdowns.

b. The following are typical examples of munitions drawdowns:

(1) During 1965, directed shipments of 81mm mortar and 105mm ammunition reduced to dangerous levels the U.S. Eighth Army, Korea, stocks of these items.

(2) Pacific Air Forces, during 1965 and 1966, shipped approximately 65 percent of their WRM munitions from NE Asia to SE Asia. Although partially replaced in 1968 by emergency actions in response to the PUEBLO incident, Pacific Air Forces WRM munitions still are considerably below authorized levels.

(3) Providing ship fills of ammunition to units deploying to the Pacific Fleet and the Sixth Fleet as well as restoring fills to ships returning from the Pacific Fleet significantly reduced the capability of the Atlantic Command to provide sustained munitions support to a contingency developing within its area during 1966 and 1967.

(4) Owing to a 1965 DOD decision to hold inviolate the WRM munitions of the European Command, the only significant withdrawal from Europe occurred in 1968 when emergency shipments of 175mm ammunition to Vietnam were directed.

c. During the third quarter of FY 67 munitions production surpassed SE Asia consumption and a stockpile of Joint Chiefs of Staff reserves was constituted in CONUS for application to other theater needs in order of priority. Since that time the munitions picture, both air and ground, has steadily improved. For example, the Air Force Worldwide Air Munitions Status Report for 1 July 1969 reflects that munitions production exceeds usage by approximately 20,000 tons per month and that a substantial and growing inventory now exists.

d. The complete buildup of war reserve stocks to authorized levels is controlled by the Secretary of Defense Logistics Guidance on production and distribution. This guidance is designed to preclude the buildup of excess stocks at the termination of Vietnam hostilities, which occurred following World War II and the Korean War. This policy envisions the postwar application of assets in the pipeline and production to replenish authorized WRM and operations and training stocks. Serious production and modification problems continue, however, for both the Navy and the Air Force with some of the newer cluster bomb units (CBU), air-to-air missiles (AAM), air-to-ground missiles (AGM), and surface-to-air missiles (SAM).

e. Beneficial impacts in the munitions area would include improved inventory, modernization of inventory through introduction of new and better items and consumption of older and obsolete items, a hot production base, a full pipeline to WESTPAC, and improved procedures for commodity control and management.

f. Similar beneficial impacts have resulted in other WRM stocks, since some of the early drawdowns were of stocks that were approaching their shelf life and have now been replaced by fresh stock.

5. FUNDING. The high priority that was necessarily afforded to the Vietnam conflict for funding support impacted on all logistic functional areas and at every echelon within DOD. It is difficult to identify those funding constraints that were solely attributable to SE Asia or to quantify the impact of such constraints on the readiness of forces. Yet funding or the lack thereof has affected all aspects of logistics and of readiness. Although defense funding increased considerably, the cost of the rapid increase in deployments and operational consumption of the SE Asian war has exceeded the increased funding. This has caused extensive reprogramming and deferral of previously approved programs in all military services, particularly during the earlier budget years. Starting with FY 67, after the initial buildup in Vietnam, more of the combat consumption sustaining costs have been included in the budget submissions and appropriations. This has reduced the reprogramming actions to some degree, but requirements for other than SE Asia programs have been consistently underfunded. Funding constraints have necessitated intensive resource management and, in many cases, have resulted in only enough new production to replenish attrition in Vietnam. This has led to delays in reconstituting some war reserve materiel that had been withdrawn from other areas for use in Vietnam, and in extensive deferred maintenance of equipment and facilities. Some principal areas of continuing concern in all Services and commands resulting directly from funding limitations include the following:

a. Obsolescence and deterioration of major weapons systems and supporting equipment because of the cumulative effect of deferred maintenance, modifications, and overhauls.

b. A growing backlog of deferred improvements and maintenance projects for real property facilites.

SECTION D

SUMMARY

1. Support to the Vietnam conflict during the 1 January 1965 to 31 December 1969 time frame resulted in withdrawals of personnel, equipment, and supplies from unified and specified commands in areas outside SE Asia which reduced their mission capability and operational readiness by varying amounts. In spite of this reduction, all of the affected commands maintained a condition of readiness sufficient to accomplish the initial requirements of their war missions. The risks incurred in permitting the above drawdowns were considered at the highest national level and accepted on the premise that the United States would not become engaged in another major contingency during the Vietnam conflict.

2. The Vietnam conflict absorbed the bulk of the CONUS Strategic Reserve forces normally assigned to Strike Command for contingency needs as well as major Navy and Marine forces from both the Pacific and Atlantic Fleets. The force commitment was such that a major European Command contingency or a large-scale communist incursion in NE Asia would have required not only mobilization of Reserve and National Guard forces but diversion of major naval, air, and ground combat and support forces and materiel from SE Asia in accordance with national objectives and priorities.

3. The concept of worldwide pre-positioning of war-reserve supplies and equipment to support major contingencies proved to be sound and enabled the United States to support buildup requirements in Vietnam until production was able to catch up with combat consumption. Large amounts of the war reserve supplies that were utilized in Vietnam were obsolescent stocks, which replaced with modern supplies, have resulted or will result in an improvement in readiness posture over that existing prior to 1965. However, modernization has been delayed by the magnitude of the SE Asia commitment and its high equipment attrition rate. A substantial portion of the major combat equipment outside SE Asia is over-aged and obsolescent. Continued delays in overhaul and modification of these over-aged equipments have created unprecedented demands on organizational and intermediate level maintenance capability and excessive consumption of spares and replacement parts.

4. Finally, the high funding priority necessarily accorded SE Asia has caused austere funding to occur elsewhere. Delays of both new construction and maintenance programs for real property facilities have been experienced in commands outside SE Asia. The accumulated effects of these delays have resulted in reduced operational efficiency and inflated costs.

CHAPTER 6
SUMMARY

CHAPTER 6

SUMMARY

A. INTRODUCTION. This chapter presents highlights of the logistic support effort during the Vietnam era and the more important lessons learned from that experience. The initial or principal discussions of specific topics have been structured in accordance with the five major chapters of this volume. Comprehensive summaries are included in Chapters 1, 2, 3, and 5. Several of the lessons learned represent a synthesis of facts and observations and are described in more than one chapter. These findings are also analogous in many respects to those described in the monograph summaries, Volume III, and in Volume I of the Joint Logistics Review Board report.

B. ENVIRONMENT

1. By early 1965 the United States was committed to conflict in support of an underdeveloped country on the other side of the globe. The relatively inexperienced South Vietnamese Government was faced with a formidable indigenous guerrilla force that was increasingly augmented by North Vietnamese. Years of warfare and lack of both education and elementary technical skills had inhibited national and economic development. The facilities available were grossly inadequate to the logistic needs of the sophisticated U. S. forces that began to be deployed to South Vietnam on an extensive yet piecemeal basis. Ports, roads, airfields, modern communications, and logistic operating facilities were all lacking in numbers, capabilities, and quality. Cultural, economic, geographic, and climatic factors added additional dimensions to the nature and scope of operations. The proximity of enemy sanctuaries in Cambodia and Laos, the jungle environment, and the geographic and climatic conditions each in its own way enhanced the impact of guerrilla operations on free world forces and placed special demands on the logistic support of those forces.

2. For a variety of political considerations, the U. S. military commitment in this environment was one of graduated response. The continuance of the state of national emergency declared in the Korean War permitted the use of the National Priorities and Defense Materials System and the Military Urgencies Systems for industrial contracts. However, major restrictions existed because there was no declaration of war, no national mobilization, and no callup of Reserves until the limited steps at the time of the Tet Offensive of 1968. Political, economic, and social considerations in South Vietnam and in the United States led to extraordinary controls at the Washington level and to tight limitations on many specific resources, incremental funding, and the requirement for detailed approval of personnel ceilings and manning levels, at times down to the unit level. These controls and limitations had a major impact on logistic support in times of emergencies and surges in combat operations, and had an unstabilizing effect on long-term programs. As the conflict developed, U. S. forces became involved in both guerrilla and conventional warfare and at the same time were required to advise and assist the Vietnamese in securing, reorganizing, and strengthening their nation.

C. LOGISTIC POSTURE: 1 JANUARY 1965

1. Planning prior to the buildup of U. S. forces in Vietnam was basically sound and thorough in comparison with most contingency plans. It provided a basis for many of the actions taken, even though—as is invariably the case—the situation and action that actually developed differed considerably from that envisaged.

2. A major planning assumption, that the Reserves would be mobilized, was to have serious consequences when it did not materialize. This assumption applied to other major

contingency plans as well. In fact, the Army's active force structure was uniquely oriented toward combat units and, hence, many logistic units existed principally in the Reserves. Thus, to the extent that Reserves were required, planning was invalid. In the case of the other Services, day-by-day operations more nearly approximated those in time of war and adjustments to meet the needs of the conflict could be made more readily.

3. Subsequent events proved that the logistic planning and programming for support of combat operations in Vietnam permitted critical shortfalls. For example, although there had been an appraisal of the logistic capabilities required to support operational concepts, action had not been taken to alleviate all shortfalls identified prior to the execution of combat operations. Consequently, credible requirements for logistic resources had not been fully established and supported in the Planning, Programming, and Budgeting Systems. Another important logistic problem was in establishing adequate port capabilities. The deficiency in port capability had been emphatically recognized in an operational plan of the Commander in Chief, Pacific (CINCPAC), but the planning had not progressed to the point where the need for port construction was recognized and resources were programmed.

4. When the escalated phase of the conflict began, several allies, particularly the Republic of Vietnam Armed Forces (RVNAF), were equipped with many items of obsolescent and nonstandard equipment. Although the need to modernize and replace this equipment to improve combat effectiveness and facilitate its support through U. S. logistic systems was recognized at an early date, the modernization program was generally deferred because of higher priorities until early 1968, when there was renewed emphasis on RVNAF improvement. During the interim period, when modernization was on a case-by-case basis, the increased RVNAF force levels and the tempo of operations created turbulence in requirements and occasional diversions of assets from U. S. forces and programs.

5. Notwithstanding, the logistic posture of U. S. military services on 1 January 1965 was generally good. Most authorized forces were at full strength and were equipped with modern weapons systems maintained at high states of readiness. The significant logistic shortfalls that did exist involved primarily certain items of war reserve stocks and over-aged ships.

6. When tested by the rapid buildup of deployed combat forces in Vietnam in 1965 and early 1966, the logistic posture revealed both strengths and weaknesses. The weaknesses did not materially constrain combat operations, but they did contribute to inefficiencies. The balanced forces of the Navy, Marine Corps, and Air Force permitted a rapid response with relatively few problems, whereas the rapid expansion of the Army resulted in initial shortages of both logistic units and experienced logistic personnel. War reserve stocks proved invaluable and many items remaining from the Korean War, which had previously been identified as excesses, were used to fill urgent requirements. The tremendous task of moving vast tonnages of equipment and supplies and large numbers of personnel halfway around the world was performed effectively by Military Sea Transportation Service sealift and Military Airlift Command airlift resources, with augmentation by commercially chartered ships and aircraft as required. Of future significance, however, is that much of the surface movement was accomplished by ships of World War II vintage that were approaching the end of their useful life. Major lessons learned were:

a. Planning must provide not only for a realistic appraisal of the logistic capability to support operational concepts, but also for the establishment of identified critical logistic resource shortfalls as credible requirements in the Planning, Programming, and Budgeting System.

b. Planning must provide for specific consideration of the need to modernize and to furnish logistic support to allied forces.

c. The force structure of the active duty components of the Armed Forces must be designed to provide quick reaction to emergency situations. To respond promptly to limited wars of the scope of the Vietnam conflict, an appropriate balance between combat and support units must exist in order to preclude reliance on national mobilization or a callup of Reserves.

d. An adequate transportation capability, with a proper balance between sealift and airlift resources, is essential to the successful support of forces deployed in overseas areas. Since the bulk of this materiel must be transported by surface means, an adequate and responsive sealift must be in-being. Such a capability is dependent on a modernized Military Sea Transportation Service nucleus fleet, backed by access to the resources of an adequate U. S. Merchant Marine.

D. LOGISTIC RESPONSIBILITIES AND SYSTEMS

1. A review of major logistic responsibilities and the test of supporting the Armed Forces in the Vietnam conflict have confirmed the soundness of the present assignment of basic logistic responsibilities within the Department of Defense. Fixing primary responsibility and authority for logistic support in the heads of the military departments ensures that operational forces of a Service, with their unique roles, missions, and operating environment, are adequately supported wherever they may be assigned or transferred. Providing unified commanders with directive authority in the field of logistics permits adjustments in logistic responsibilities of the military departments and Services to improve efficiency, promote economy, and meet emergencies within an operational command. Published descriptions of the logistic responsibilities of the Office of the Secretary of Defense, the Joint Chiefs of Staff, the military departments and Services, the unified and specified commands, the Defense Supply Agency, and the General Services Administration are comprehensive and well defined. However, they are scattered through numerous documents, are hard to trace, and therefore are sometimes not sufficiently understood. It would be useful to have a description of basic responsibilities compiled in one publication, as discussed in section B of Chpater 3, and given broad distribution.

2. Experiences in the Vietnam conflict once again highlighted the fundamental differences in Service roles, missions, and operating environments, and provided proof of the basic logistic strengths in Service organizations and procedures. The Naval Mobile Logistic Support Force and the amphibious capability of the Navy and Fleet Marine Force provided the capability for immediate response to the contingency. The peacetime operating procedures of the Navy and the Air Force were rapidly translated to wartime operations without significant change; the effort primarily consisted of adapting to far higher activity rates. The Army's transition from peacetime to wartime operations was, by contrast, far more difficult because of heavy reliance on Reserve units which were not activated. However, the flexibility and capability of Army units permitted them to operate in ways that had not previously been foreseen. Incomplete standardization of systems and procedures handicapped Army logistic operations overseas. During the height of the buildup, the Army on a worldwide basis, was reorganizing logistic units from a technical service structure to a functional organization, which added to instability.

3. Review of Vietnam logistics indicated that the initial overall structure of Service wholesale logistic systems was satisfactory. The Military Standard Requisitioning and Issue Procedure (MILSTRIP), linked with the Uniform Materiel Movement and Issue Priority System (UMMIPS) and with the Military Supply and Transportation Movement Procedures (MILSTAMP) which employed the Defense Communication Agency's Automatic Digital Network (AUTODIN), proved invaluable to logistics processes during this era. The efficiency and effectiveness of these procedures was forthcoming due to difficulties in extending these sophisticated procedures beyond the depot and base level in-theater. Performance would have been considerably improved had up-to-date DOD-oriented procedures and computer programs been available, along with automatic data processing equipment for early positioning in the combat area. During this era each of the Services expended considerable effort in developing and refining logistic systems to provide better interface with continental United States mechanized systems and to improve logistic processes.

4. The nature and scope of operations in Vietnam created problems in the area of joint logistics. The Commander in Chief, Pacific, found it necessary early in the buildup to coordinate the allocation of scarce in-theater resources such as transportation, construction, munitions, and war reserves. There had been little precedent for actions of this nature prior to the Vietnam War despite the fact that the commanders of the unified commands are given directive authority

in the logistics area. The impacts of logistic decisions by these commanders in Vietnam demonstrated the need for ensuring the capability for utilizing this authority, particularly in the early stages of a conflict.

5. The Vietnam conflict exposed some major lessons to be learned in the area of logistic responsibilities and systems.

a. The responsibility of the military departments and services for support of forces assigned to unified commands is essential to effective and efficient operations. The Service logistic systems are generally well tailored to the roles, missions, and normal operating environments of their forces.

b. It became increasingly important that the unified commander exercise his authority to coordinate certain logistic functions. He must maintain a nucleus staff of logistics talent ready to act when necessary, particularly in the areas of ammunition, construction, transportation, and allocation of scarce resources.

c. The Army needs a standardized worldwide logistic system capable of rapid and orderly expansion from a peacetime to a wartime basis.

d. For contingency operations, each Service needs automatic data processing system packages compatible with the continental United States system with which they must interface. These packages should include mobile automatic data processing equipment, proven programs, data transmission equipment, and trained personnel, and must be capable of rapid expansion to meet unforeseen requirements. Plans should provide for early deployment of packages adequate to meet forecasted in-country logistic management requirements.

E. RESPONSIVENESS

1. The logistic support provided the 23,000-man U. S. advisory force in RVN prior to January 1965 was limited and based on the expectation of an early withdrawal. It was upon this basis, however, that the rapid deployment of U. S. forces began in the spring of 1965. By 31 December 1965, U. S. forces in-country had grown to 184,314 men. The rapid buildup and the environment created a host of logistic problems. The significant and long-lasting problems resulted from the delay in deploying an Army Logistical Command and an Army Engineer Group as specifically recommended in late 1964. These key elements of the logistic forces were deployed in an incremental fashion concurrently with combat forces. The delay in providing this logistic force had repercussions for several years. The history of operations in Vietnam, with its complex combination of environmental factors, clearly demonstrated the need for the early introduction of a senior logistician with an adequate staff. Events proved that a higher level of logistic expertise and experience should have been reflected in planning activities and in the logistic support decisions during the initial stages of the buildup.

2. The transfer of responsibility for all common support in II, III, and IV Corps Tactical Zone areas from the Navy to the Army was delayed and, in fact, took place during the most critical point in the buildup when logistic management problems were at a peak and the need for stability was vital.

3. The permanent nature and degree of naval force involvement in the I Corps Tactical Zone was neither planned nor conventional. While contingency planning had recognized the possibility of deployment to the northernmost provinces of RVN, this planning was oriented to the conventional, temporary nature of the commitment of amphibious units. The prolonged involvement of Marine forces in a land campaign and the requirement for a permanent Navy logistic system is designed to support naval forces afloat and Marine amphibious operations, it proved to be adaptable to the assigned mission of providing common support in I Corps Tactical Zone and support of unanticipated in-shore surveillance, river patrols, mobile riverine forces, and other in-country Navy operations. The logistic system of the Pacific Fleet was able to sustain fleet operations in support of the Vietnam conflict effectively with normal procedures, deployment of additional mobile support forces, and expansion of existing facilities.

4. The amphibious capability of Navy and Marine forces for sustained logistics over-the-shore operations in the I CTZ area during 1965 contributed significantly to the rate of logistic buildup achieved in RVN. The logistic support structure of Marine Corps forces, initially deployed in task organizations designed for amphibious operations, evolved during the first year of the buildup into a new organizational structure. A Force Logistic Command was established in March 1966 as a provisional organization under the command of the Commanding General, Fleet Marine Force, Pacific, and the operational control of the Commanding General, III Marine Amphibious Force. The structure was tailored to meet the requirements of extended conflict while maintaining the inherent amphibious character of its component elements. It was designed to take advantage of the enclave-type operation and to make optimum use of available logistic assets, facilities, and real estate. The internal elements of this organizational structure could be altered from time to time to accommodate the relocation of forces in I Corps Tactical Zone.

5. The Marine Corps logistic support base on Okinawa increased the responsiveness and effectiveness of support to the III Marine Amphibious Force and reduced administrative, logistic, and fiscal tasks and related manpower requirements in Vietnam.

6. The Air Force concept of forces in-being permitted rapid response to requirements. The practiced techniques of mobility and the forward-operating-base/main-operating-base method of deployment were utilized. Combat units, with their attendant operating and support personnel, equipment, and preassembled supply readiness kits were moved by air to Vietnam from offshore bases and from the continental United States on temporary duty. They initially received their main operating base support from Clark Air Base, or from their established home bases in the Western Pacific. As the war progressed and the necessity for protracted involvement became clear, the forward operating bases were provided with augmented supply and maintenance resources to convert them into main operating bases. Units were then assigned to Vietnam and Thailand and received normal support directly from the continental United States. Surges in supply and transportation workloads during the buildup and depot level maintenance of crash- or battle-damaged aircraft were accomplished by depot teams as an expansion of the Air Force depot area assistance effort. The Air Force concept of direct support of combat units from the continental United States, backed up by procedures standardized on a worldwide basis and by a responsive depot system, worked well in the Vietnam era.

7. On an overall basis, the construction accomplished in Vietnam was generally responsive to operational requirements. However, a substantial backlog of work existed throughout the era and contributed to inefficiencies in logistic support operations. Because of the changing nature of military operations, the constraints involved, and the need for support in forward areas, an extensive military construction effort was required. Many of the required military units had to be activated, equipped, and trained in the continental United States prior to deployment. The sheer magnitude of the construction efforts made the delay of facilities inevitable and, although the effort in Vietnam was generally responsive to operational requirements, there was degradation of the efficiency of logistic support operations until operating facilities could be developed. Lack of suitable ports and depot complexes during the buildup particularly created problems. Demands for critical construction resources became so acute that a Director of Construction was established under the Military Assistance Command, Vietnam, in February 1966. Subsequently, the control and coordination problems which had previously plagued the effort were overcome and additional resources were provided. However, it was not until late 1968 that facilities were reasonably adequate to support all operations.

8. Proper logistic planning and preparation for support operations were severely restricted by the limited time between deployment decisions and actual deployments. In the Army, particularly, there was a shortage of personnel with critical logistic skills in the wholesale supply and maintenance areas. In addition, required logistic units were not available in sufficient numbers and types in the active force structure.

9. There was a lack of adequate port facilities to support the buildup, and the construction effort was unable to keep pace. As a consequence, severe port congestion problems were encountered during the latter part of 1965 and early 1966. The high demurrage costs and the shortage of critically needed shipping made relief of the extreme congestion a high priority item.

Other factors compounded the difficulties. Supplies were both pushed to the theater and requisitioned in spite of the limited capabilities there to receive, store, and issue the materiel. There were also inadequate means of providing the necessary control, coordination, and visibility of both supplies and requisitions in process and en route. Consequently, the limited logistic capabilities in Vietnam were rapidly saturated, exacerbating the port backlogs; supplies were offloaded and placed wherever space could be made available; stock records became invalid; deadline rates climbed and materiel on hand but unidentified was re-requisitioned. This situation contributed greatly to the excesses that were generated in Vietnam.

10. In January 1965 the communications capabilities both in and to Vietnam were marginal at best. Communications facilities were expanded and improved throughout the Vietnam era and eventually fulfilled logistic requirements. The war resulted in logistic communications demands which, for the most part, had not been anticipated nor planned. Consequently, there were some delays in providing satisfactory support to logistic users. For example, the vital, high-quality data links with automatic switching required to support automatic data processing for logistic purposes were not available until mid-1968.

11. Initial petroleum, oil, and lubricants (POL) support was provided to U. S. advisory units by commercial sources. The combined military and commercial effort that was eventually developed to support the buildup of forces was consistently responsive to the needs of operational commanders. Nevertheless, there were problems involving contract administration and reimbursement accounting.

12. The United States provided a large portion of the total logistic support for the Republic of Vietnam Armed Forces as well as for the civil sector of the Government. Although this support has been responsive and effective, it developed in a rather fragmented and unplanned fashion. Lack of coordination among various U. S. agencies regarding the arrival and disposition of military, civilian governmental, and commercial cargos aggravated port congestion problems. Early planning and definition of responsibilities could have eased or eliminated many of the problems that were experienced.

13. The preceding paragraphs have concentrated primarily on the buildup phase of Vietnam operations because it was then that the most severe and critical problems were experienced. By late 1968, most of the difficult problems had been resolved. However, continuing problems of concern to the logistician have been the high levels of in-country stockage of supplies and of resources established to support major maintenance in the combat theater. Recent techniques such as the increased use of containers and concepts such as inventory-in-motion have increased logistic efficiency. The use of container and roll-on/roll-off ships proved highly effective in reducing ship turnaround time and permitted movement of cargo with fewer personnel and facilities. Nevertheless, an objective appraisal of the logistic situation as it developed and still exists indicates that much remains to be done.

14. As a result of experience gained in the Vietnam conflict, the following lessons are indicated.

a. A requirement to establish a major landbased logistic complex for support of a contingency operation creates a demand for the early provision of a senior logistician and supporting staff to provide the necessary in-country logistic management capability.

b. Construction will be a major problem in any war in an underdeveloped area; the magnitude of this task must be anticipated. Planning and implementation must provide the capability for coordination and control at the unified command level. The planning, programming, and funding procedures should be designed for flexibility in an emergency situation. Pre-engineered, prefabricated, relocatable facilities should be employed to the maximum extent possible.

c. It is inevitable that the lack of adequate port facilities in underdeveloped areas will pose major difficulties for military operations. Priorities for port construction should be anticipated and a dredging capability provided. In view of the need to provide fixed port facilities

as soon as possible, prefabricated port structures should be acquired and maintained in war reserves.

d. Communications planning must address automatic data processing system digital data transmission requirements explicitly. Heavy-duty mobile transportable equipment must be developed to provide required high-quality circuits, switching, and terminal facilities for AUTODIN.

e. Containerization offers major opportunities in both simplifying and speeding logistic support. Efforts to exploit containerization should be expedited.

f. Methods for reducing the requirements for in-country logistic resources and activities must be vigorously pursued. Simply stated, "Don't do anything in-theater that can be done outside the area of combat." Reduction of in-theater stockage levels and rotation of reparables out-of-theater are means to this end. Air transportation should be used for routine supply of low-demand items as well as for high-dollar critical items like aircraft engines.

F. IMPACT OF THE VIETNAM CONFLICT ON READINESS IN OTHER AREAS OF THE WORLD

1. The circumstances of the Vietnam conflict and certain political and economic policies led to withdrawal of personnel, equipment, and supplies from unified and specified commands in areas outside of Southeast Asia, which reduced their mission capability and operational readiness. The risks incurred by these drawdowns were considered and accepted at the highest national levels.

2. Despite personnel shortages and troop withdrawals, none of the unified and specified commanders stated that his command was downgraded to the extent that he could not carry out his mission or survive the initial stages of a major contingency in his area. However, most of the major contingency plans call for a rapid augmentation of forces and supplies shortly after the initiation of hostilities. Conducting this augmentation in a timely manner would have posed serious problems because of the involvement of forces in Vietnam. In the case of a major requirement that had priority over Southeast Asia operations, it is doubtful if forces could have been redeployed from Vietnam to a new theater rapidly enough to meet the demands of that situation.

G. EPILOGUE

1. Experience during the Vietnam era reaffirmed the importance of logistics to combat operations. Overall logistic support in Southeast Asia was highly effective and responsive to the needs of the operating forces despite the many difficult problems that were encountered. This support, however, was not always provided in the most efficient and economical manner. In the final analysis, major techniques evolving from the Vietnam era are the need to reduce in-theater stocks, the application of the maintenance philosophy of modular replacement, the use of containerization to reduce port problems, and the use of prefabricated structures of all types.

2. Lessons learned as a result of a review of these experiences, other than those that reflect technological advances, tend to reinforce similar lessons that were learned during World War II and Korea. Many of these lessons can truly be considered principles of logistics.

APPENDIX A

IMPACT OF THE VIETNAM CONFLICT ON READINESS IN OTHER AREAS OF THE WORLD

(This appendix is classified and is bound separately.)

APPENDIX B

LIST OF ACRONYMS AND ABBREVIATIONS

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AAC	Alaskan Air Command
AB	Air Base
ABCC	Airborne Command and Control
ABFC	Advanced Base Functional Component
AC&W	Air Control And Warning
ACR	Armored Cavalry Regiment
ADC	U.S. Air Force Aerospace Defense Command
ADP	Automatic Data Processing
AF	Air Force
AFB	Air Force Base
AFLANT	U.S. Air Forces, Atlantic
AFLC	Air Force Logistics Command
AFRES	Air Force Reserves
AFSC	Air Force Specialty Code
AGE	Aerospace Ground Equipment
AGM	Air-to-Ground Missile
AID	Agency for International Development
AIM	Air Intercept Missile
ALCOM	Alaskan Command
ALL	Authorized Load List
ALOC	Air Lines of Communication
AMA	Air Materiel Area
AMC	Army Materiel Command
AMMC	Aviation Materiel Maintenance Center
ANG	Air National Guard
AOG	Gasoline Tanker

APC	Armored Personnel Carrier
AO	Acquisition Objective
ARADCOM	Army Air Defense Command
ARVN	Army of the Republic of Vietnam
ARLANT	U. S. Army Atlantic
AS	Air Station
ASD	Assistant Secretary of Defense
ASP	Aircraft Supply Point
ASPR	Armed Services Procurement Regulation
ASW	Antisubmarine Warfare
ATAC	Army Tank and Automotive Command
ATC	Air Training Command
ATSB	Advanced Tactical Support Base
AUTODIN	Automatic Digital Network
AUTOVON	Automatic Voice Network
BDE	Brigade
BEMARS	Backlog of Essential Maintenance and Repair
BENELUX	Belgium, Netherlands, Luxemburg
BLT	Battalion Landing Team
BPU	Base Production Units
CBU	Cluster Bomb Unit
CEC	Civil Engineer Corps
CG	Guided Missile Cruiser
CIDG	Civilian Irregular Defense Group
CIGCOREP	Counter-infiltration, Counter-guerrilla, Concept and Requirements Plan
CINC	Commander in Chief
CINCAL	Commander in Chief, Alaska
CINCAFSTRIKE	Commander in Chief, U. S. Air Forces, Strike Command
CINCARSTRIKE	Commander in Chief, U. S. Army Forces, Strike Command

CINCLANT	Commander in Chief, Atlantic
CINCLANTFLT	Commander in Chief, Atlantic Fleet
CINCONORAD	Commander in Chief, North American Air Defense Command
CINCONAD	Commander in Chief, Continental Air Defense Command
CINCPAC	Commander in Chief, Pacific
CINCPACAF	Commander in Chief, Pacific Air Forces
CINCPACFLT	Commander in Chief, Pacific Fleet
CINCSAC	Commander in Chief, Strategic Air Command
CINCSTRIKE	Commander in Chief, Strike Command
CINCUNC	Commander in Chief, United Nations Command
CINCUSAREUR	Commander in Chief, U. S. Army, Europe
CINCUSNAVEUR	Commander in Chief, U. S. Naval Forces, Europe
CIP	Commodity Import Program
CLS	Closed Loop Support
CMC	Commandant, U. S. Marine Corps
CMD	Command
CNARESTRA	Chief of Naval Air Reserve Training
CNO	Chief of Naval Operations
COCOAS	CONARC Class One Automated System
COD	Carrier Onboard Delivery
COMCBPAC	Commander, Construction Battalions, Pacific Fleet
COMNAVAIRPAC	Commander, Naval Air Forces, Pacific Fleet
COMPHIBPAC	Commander, Amphibious Forces, Pacific
COMSERVPAC	Commander, Service Force, Pacific Fleet
COMUSMACV	Commander, U. S. Military Assistance Command, Vietnam
CONAD	Continental Air Defense Command
CONARC	Continental Army Command
CONUS	Continental United States
COSMOS	Centralization of Supply Management Operations

CPAF	Cost Plus Award Fee
CPX	Command Post Exercise
CRAF	Civil Reserve Air Fleet
CRUDESPAC	Cruiser-Destroyer Force, Pacific Fleet
CSAS	Common Service Airlift System
CTF	Commander Task Force
CTZ	Corps Tactical Zone
CVA	Attack Aircraft Carrier
CVS	Antisubmarine Aircraft Carrier
CY	Calendar Year
DA	Department of the Army
DAC	Department of Army, Civilian
DAFD	Department of Army Forward Depot
DAFFD	Department of the Army Forward Floating Depot
DCA	Defense Communications Agency
DCS	Defense Communication System
DCSC	Defense Construction Supply Center
DCSLOG	Deputy Chief of Staff for Logistics
DCSOPS	Deputy Chief of Staff for Operations
DD	Destroyer
DDPC	DCSLOG Data Processing Center
DECM	Defensive Electronic Countermeasures
DESC	Defense Electronics Supply Center
DEP REP	Deployment Reporting System
DFSC	Defense Fuel Supply Center
DGSC	Defense General Supply Center
DISC	Defense Industrial Supply Center
DIV	Division
DMZ	Demilitarized Zone
DOD	Department of Defense

DPSC	Defense Personnel Support Center
DSA	Defense Supply Agency
DSSP	Direct Supply Support Point
DSU	Direct Support Unit
DWT	Division/Wing Team
EASTPAC	Eastern Pacific Ocean
ECM	Electronic Countermeasures
ETS	Expiration of Term of Service
EUSA	Eighth U. S. Army
EWO	Electronic Warfare Officer
FAC	Forward Air Controller
FLC	Force Logistic Command
FLSG	Force Logistic Support Group
FLT	Fleet
FMF	Fleet Marine Force
FMFLANT	Fleet Marine Force, Atlantic Fleet
FMFPAC	Fleet Marine Force, Pacific Fleet
FOB	Forward Operating Base
FOL	Forward Operating Location
FRELOC	Relocation of all U. S. Military Forces from France
FSA	Forward Support Activity
FSN	Federal Stock Number
FSR	Field Service Representative; (Marine Corps) Force Service Regiment
FWMAF	Free World Military Assistance Force
FY	Fiscal Year
GAO	General Accounting Office
GCA	Ground Controlled Approach
GOCO	Government-Owned, Contractor-Operated
GSA	General Services Administration

GSU	General Support Unit
HF	High Frequency
HPA	Head of Procuring Activity
HSA	Headquarters, Support Activity
HSAS	Headquarters, Support Activity, Saigon
HUK	Antisubmarine Hunter-Killer Group
IBOP	International Balance of Payments
ICBM	Intercontinental Ballistic Missile
ICCV	Inventory Control Center, Vietnam
ICP	Inventory Control Point
I&L	Installations and Logistics
INST	Instruction
IO	Inventory Objective
IRAN	Inspect, Repair as Necessary
ISA	International Security Affairs
ISSA	Interservice Support Agreement
ISSL	Initial Supply Support List
ITACS	Integrated Tactical Air Control System
JCS	Joint Chiefs of Staff
JLRB	Joint Logistics Review Board
JMRO	Joint Medical Regulation Office
JSCP	Joint Strategic Capabilities Plan
JSOP	Joint Strategic Operations Plan
JTB	Joint Transportation Board
KATUSA	Korean Augmentation to the U. S. Army
LANDFORCARIB	Landing Force Caribbean
LANDFORSIXTHFLT	Landing Force Sixth Fleet
LANT	Atlantic
LANTCOM	Atlantic Command
LANTFLT	Atlantic Fleet

LATAF	Logistics Activation Task Force
LCU	Landing Craft, Utility
LCM	Landing Craft, Mechanized
LCOP	Logistic Control Office, Pacific
LOC	Lines of Communication
LOTS	Logistics-Over-The-Shore
LOG	Logistics
LPH	Amphibious Assault Ship
LSA	Logistic Support Activity
LSD	Landing Ship, Dock
LST	Landing Ship, Tank
MAAG	Military Advisory and Assistance Group
MAC	Military Airlift Command
MACV	Military Assistance Command, Vietnam
MAF	Marine Amphibious Force
MAG	Magazine
MAP	Military Assistance Program
MATS	Military Air Transportation Service
MASF	Military Assistance Service Funded
MCA	Military Construction Army
MCP	Military Construction Program
M-DAY	Mobilization Day
MDL	Military Demarkation Line
MDS	Model-Designator-Series
MEAFSA	Middle East/Southern Asia and Africa South of the Sahara
MED	Mediterranean
MEF	Marine Expeditionary Force
MER	Multiple Ejection Rack
MEU	Marine Expeditionary Unit
MHE	Materials Handling Equipment

MIDA	Major Items Data Agency
MILCON	Military Construction
MIMMS	Marine Corps Integrated Maintenance Management System
MINEPAC	Mine Force, Pacific Fleet
MIRP	Military Interdepartmental Purchase Requests
MLSF	Mobile Logistic Support Force
MMA	Materiel Management Agency
MOB	Main Operating Base
MOS	Military Occupational Specialty
MRB	Mobile Riverine Base
MRF	Mobile Riverine Force
MRAPCON	Modified Radar Approach Control
MSB	Major Support Base
MSC	Mine Sweeper, Coastal
MSO	Mine Sweeper, Ocean
MSTS	Military Sea Transportation Service
MTON	Measurement Ton
MTMTS	Military Traffic Management and Terminal Service
MUMMS	Marine Corps Unified Materiel Management System
NAPALM	National Automatic Data Processing Program for AMC Logistics Management
NAS	Naval Air Station
NATO	North Atlantic Treaty Organization
NAV	Naval
NAVAIRLANT	Naval Air Forces, Atlantic Fleet
NAVAIRPAC	Naval Air Forces, Pacific Fleet
NAVEUR	Naval Forces Europe
NAVORD	Naval Ordnance Systems Command
NAVSHIPS	Naval Ship Systems Command
NCC	Naval Component Commander

NCR	Naval Construction Regiment
NDRF	National Defense Reserve Fleet
NMC	Naval Material Command
NMP	National Maintenance Point
NORAD	North American Air Defense Command
NORM	Not Operationally Ready—Maintenance
NORS	Not Operationally Ready—Supply
NPC	Nucleus Port Crew
NSA	Naval Support Activity
NSD	Naval Supply Depot
NSFO	Naval Special Fuel Oil
NVN	North Vietnam
OAWRR	Other Acquisition War Reserve Requirements
OICC	Officer In Charge Of Construction
OJCS	Office of the Joint Chiefs of Staff
OJT	On-the-Job Training
O&M	Operating and Maintenance
OPLAN	Operation Plan
OPCON	Operational Control
OR	Operationally Ready
OSA	Overseas Supply Agency
OSD	Office of the Secretary of Defense
PAC	Pacific
PACAF	Pacific Air Forces
PACOM	Pacific Command
PAMPA	Pacific Command Movements Priority Agency
PARC	Pacific Area Redistribution Center
PCAM	Punch Card Accounting Machine
PCS	Permanent Change of Station
PDD	Principal Distribution Depot

PEMA	Procurement of Equipment and Missiles, Army
PF	Popular Forces
PHIBPAC	Amphibious Forces, Pacific Fleet
PLL	Prescribed Load List
POL	Petroleum, Oil, and Lubricants
PRA	Projected Requisitioning Authority
PSDF	Peoples Self-Defense Force
PSYWAR	Psychological Warfare
PWRR	Pre-positioned War Reserve Requirements
PWRS	Pre-positioned War Reserve Stocks
RAF	Royal Air Force
RF	Regional Forces
RAM	Rapid Area Maintenance
RASS	Rapid Area Supply Support
RDT&E	Research, Development, Test and Evaluation
REDCAPE	Readiness Capability
REDCON	Readiness Condition
R&M	Replacement and Modernization
RMK	Raymond-Morrison-Knudsen
ROK	Republic of Korea
ROKA	Republic of Korea Army
RSA	Remote S[illegible]ge Activity
RTAF	Royal Thail[illegible] Air Force
RTU	Replacement Training Unit
RVN	Republic of Vietnam
RVNAF	Republic of Vietnam Armed Forces
SAC	Strategic Air Command
SACLANT	Supreme Allied Commander, Atlantic
SAM	Surface-to-Air Missile
SAPOV	Sub-Area Petroleum Office, Vietnam

SASM	Special Assistant for Strategic Mobility
SASSY	Supported Activities Supply System (Marine Corps)
SCN	Ship Construction, Navy
SE	Southeast
SEABEE	U. S. Navy Mobile Construction Battalion
SEAL	Sea-Air Land
SEATO	Southeast Asia Treaty Organization
SECDEF	Secretary of Defense
SERVPAC	Service Force, Pacific Fleet
SIOP	Single Integrated Operations Plan
SISM	Standard Integrated Support Management System
SOUTHCOM	Southern Command
SRF	Ship Repair Facility
SSB	Single Side Band
SSD	Specialized Support Depot
STAR	Speed Through Aerial Resupply
S/T	Short Ton
STRAF	Strategic Army Forces
STRICOM	Strike Command
STRIKE	Strike Command
SUBPAC	Submarine Force, Pacific Fleet
SVN	South Vietnam
TAC	Tactical Air Command
TASCO	Theater Army Support Command
TDA	Table of Distribution and Allowances
TDY	Temporary Duty
TERO	Tactical Equipment Repair Order
TFW	Tactical Fighter Wing
TMA	Traffic Management Agency
T/O	Table of Organization (USMC)

TOE	Table of Organization and Equipment
TO/TD	Table of Organization/Table of Distribution
TRANSPAC	Trans-Pacific
TRS	Tactical Reconnaissance Squadron
TRUMP	Total Revision and Upgrading of Maintenance Procedures
UCP	Unified Command Plan
UE	Unit Equipment
UMMIPS	Unified Military Movement and Issue Priority System
URL	Unrestricted Line
USA	U. S. Army
USAF	U. S. Air Force
USAAPSA	U. S. Army Ammunition and Procurement Supply Agency
USAFE	U. S. Air Force, Europe
USAFSO	U. S. Air Force, Southern Command
USARL	U. S. Army, Alaska
USAREUR	U. S. Army, Europe
USARHAW	U. S. Army, Hawaii
USARJ	U. S. Army, Japan
USARPAC	U. S. Army, Pacific
USARSO	U. S. Army, Southern Command
USARSTRIKE	U. S. Army Forces Strike Command
USARV	U. S. Army, Vietnam
USARYIS	U. S. Army, Ryukyu Islands
USCINCEUR	U. S. Commander in Chief, Europe
USCINCMEAFSA	U. S. Commander in Chief, Middle East/Southern Asia/ Africa South of the Sahara
USCINCSOUTH	U. S. Commander in Chief, Southern Command
USEUCOM	U. S. European Command
USMC	U. S. Marine Corps
USN	U. S. Navy

USNAVEUR	U.S. Naval Forces, Europe
USNAVSO	U.S. Naval Forces, Southern Command
USOM	U.S. Overseas Mission
USPACAF	U.S. Pacific Air Forces
USPACFLT	U.S. Pacific Fleet
USSR	Union of Soviet Socialist Republics
VAMP	Vietnam Ammunition Procedures
VC	Vietcong
VN	Vietnam
VNAF	Republic of Vietnam Air Force
VNMC	Republic of Vietnam Marine Corps
VNN	Republic of Vietnam Navy
VOSL	Variable Operating and Safety Levels
WESTPAC	Western Pacific
WRAMA	Warner-Robins Air Materiel Area
WRM	War Readiness Materiel
WRSK	War Readiness Spare Kits
WW	World War

APPENDIX C

BIBLIOGRAPHY

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BIBLIOGRAPHY

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