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# LOGISTIC SUPPORT IN THE VIETNAM ERA



## MONOGRAPH 6

# CONSTRUCTION







A REPORT
BY THE JOINT LOGISTICS REVIEW BOARD

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

18 DEC 1970

SS
INSTALLATIONS AND LOGISTICS

MEMORANDUM FOR THE DIRECTOR, DEFENSE DOCUMENTATION CENTER

SUBJECT: Joint Logistics Review Board Report

It is requested that the attached three volumes, eighteen monographs and five classified appendixes, which comprise the subject report, be made available for distribution through your center to U.S. Government agencies. The following distribution statement is provided as required by Department of Defense Directive 5200.20 dated 24 September 1970, subject: "Distribution Statements on Technical Documents:"

DISTRIBUTION STATEMENT "B"

Distribution limited to U.S. Government agencies only; the report contains detailed staff advice, opinions and recommendations prepared for use by logistics managers; statement applied 15 December 1970. Other requests for this document must be referred to the Office of the Assistant Secretary of Defense (Installations and Logistics) ATTN: OASD (I&L) SD.

Enclosures (26)
As stated

Paul H. Riley

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

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# CHAPTER I
# INTRODUCTION

# CHAPTER I
# INTRODUCTION

1. BASIS FOR STUDY. Under its Terms of Reference, the Joint Logistics Review Board was tasked with directing particular attention to the functional area of construction.[1] This monograph addresses the entire construction process, which begins with base development planning at the contingency plan stage and progresses through completion of the physical construction of the facilities.

2. SIGNIFICANCE

a. Some aspects of the Vietnam conflict placed heavy reliance on construction, much of which was peculiar to that conflict. One important feature was the almost total lack of base facilities initially available in the Republic of Vietnam (RVN) to support a major U. S. effort. Consequently, the function of advanced base development and construction played a significant part in shaping strategy and tactics as well as logistics. The lack of facilities influenced military planning to a very considerable degree, particularly during the initial phases of the conflict. Ideally, military planning would develop firm requirements for logistical support of operational forces, but warfare situations can rarely be predicted with accuracy. The nature of the Vietnam conflict and the graduated strategy increased the uncertainties. Future conflicts in other underdeveloped areas of the world may produce similar situations.

b. The underdeveloped nature of Vietnam -- in particular, its lack of adequate ports and lines of communications -- placed a premium on rapid construction as a prerequisite to effective military actions and the logistic support of the forces deployed. The fixed-base enclave concept and the long duration of the war encouraged the development of a higher degree of construction of permanency than might be expected of other types of wars. Planning the development of construction capabilities and program implementation were complicated by the gradual nature of the buildup and the degree of fiscal and program controls. The lack of a declaration of war and failure to call up the Reserves resulted in extensive reliance on construction by contractors. Indigenous construction capabilities were extremely limited. The sheer magnitude of the total construction program, which totaled over $1.5 billion by the summer of 1968, was to cause extensive and sometimes detailed consideration at high levels.

c. The magnitude of the program requirements can be gauged by some statistics. In 1965 South Vietnam had one major port located in Saigon; by 1968 there were seven deep-water ports with 34 berths and many smaller ports for shallow-draft ships and craft. Three jet runways at three bases were expanded by 1968 to 15 runways at eight major air bases. In addition, there were more than 200 smaller airfields and almost 200 heliports. Major bases were built for complete tactical units. Major construction of storage depots, hospitals, communications sites, roads, and bridges was completed in record time. Figure 1 summarizes the vast military construction program authorized through 30 June 1968. Under highly adverse conditions of climate, terrain, civil unrest, unpredictable warfare, and despite constantly changing requirements, lack of trained workers, and distance from the industrial base, the contractors and engineer troops produced what was, in many ways, a modern construction miracle insofar as the total effort was concerned. While exploring the strengths that made this possible, this review will also identify causes of delays and other deficiencies.

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[1] Office of the Secretary of Defense, Memorandum, subject: Joint Logistics Review Board, 17 February 1969.

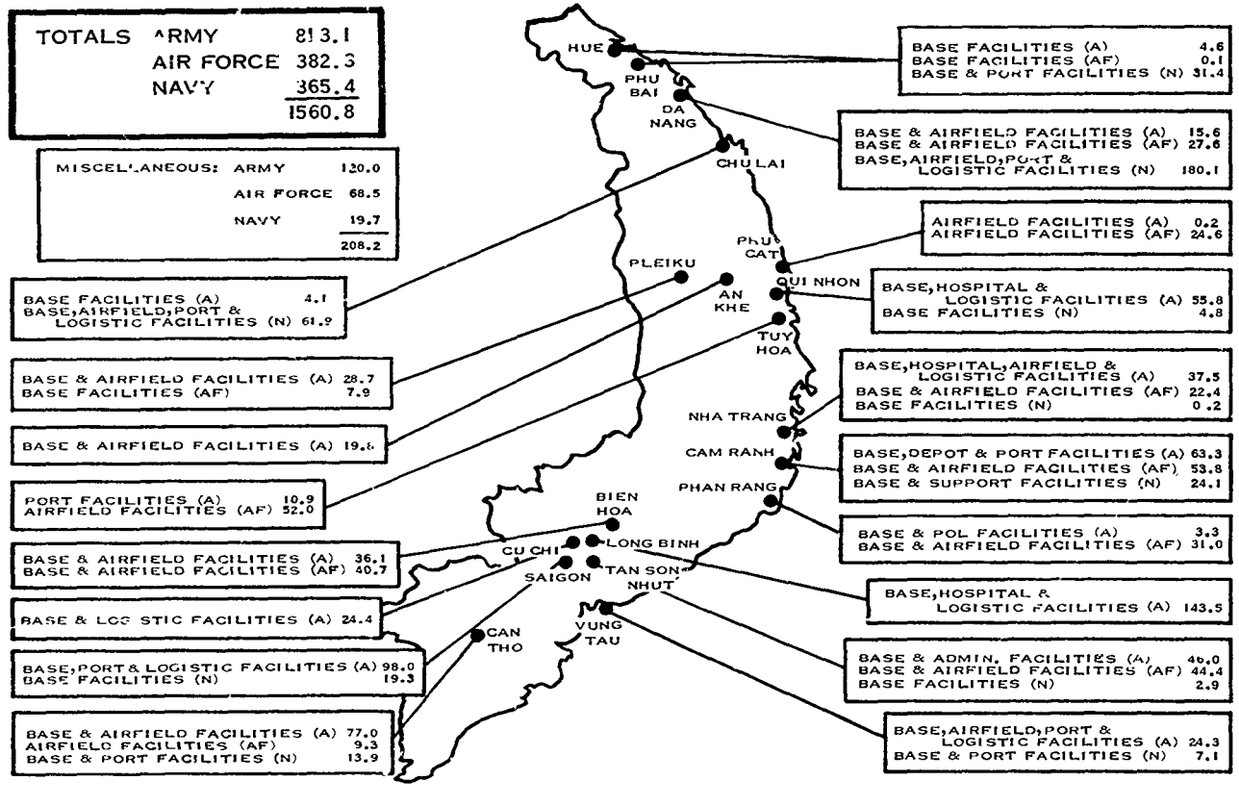


FIGURE 1. MILITARY CONSTRUCTION PROGRAMS, VIETNAM, 1 JANUARY 1965 THROUGH 30 JUNE 1968 (MILLIONS OF DOLLARS)
Source: Sharp-Westmoreland, Report on the War in Vietnam, 1968.

d. Vietnam has provided several construction innovations. The construction equipment deployed was the most sophisticated ever used in a combat theater. This was complicated by the remoteness of the area from major supply and distribution centers in the United States as well as the unusual nature of the conflict itself. Another unique feature was the use of civilian contractors for major construction of facilities in a combat area. The enclave concept -- i.e., support facilities are located in a relatively few fixed areas; troops deploy for specific operations then return to the enclaves upon completion of the operation -- was another peculiarity of the conflict in Vietnam. In addition, contingent construction was funded for the first time by military construction appropriations programmed through essentially peacetime procedures.

e. The facilities construction resulting from the 1965 buildup decisions generated requirements for far more troop construction units than existed on active duty in the Services. The decision not to call up Reserve and National Guard units severely limited the initial troop construction capability. As a result, the contractor construction capability already in-country was expanded. The magnitude of the contractor capability was so vast and diversified that it could more correctly be termed a construction industry. The maximum strength of the contractor's work force, attained in mid-1966, exceeded 51,000 personnel, of which less than 10 percent were U.S. nationals.

f. Although major reliance initially had to be placed on contractor construction capabilities, all Services started accelerated procurement and training programs to increase the number of construction units in their Active Forces. By the end of 1968 the buildup of nondivisional engineer units resulted in 28 Army, 12 Navy, and 5 Air Force battalions and squadrons, totaling approximately 40,000 personnel in Vietnam.

g. In general, it may be stated that the contractor built the larger, more complicated jobs in relatively secure areas, whereas the troops concentrated on lighter work in the more forward areas. There was, however, no sharp dividing line between work assigned to the contractor and that assigned to the troops. In a number of instances contractor personnel worked alongside troops on similar jobs. When contractors were not available, a number of jobs were turned over for troop accomplishment. Conversely, when the troops were required for more tactical support, work originally assigned to them was shifted to the contractor.

h. It should be noted that the construction skills learned by thousands of RVN personnel during the progress of the tremendous construction program may well be one of the most lasting benefits of U.S. assistance in Vietnam in the future economic development of the nation. Certainly the modern ports, roads, and other facilities will also greatly enhance this development. This is borne out by General Westmoreland's statement:

> "Every stage in the buildup of our armed forces here in Vietnam has required a proportionate buildup of the facilities to support them. This has involved the construction of entire harbors to get the goods of war into this country, logistical depots to store them and airfields and roads to use them.
>
> "But we are not only building to help the Vietnamese people to thwart aggression. Many of the harbors, airports, hospitals, road and support facilities we're building here will last many years beyond the present conflict.
>
> "When peace is restored and Vietnam is free to pursue her own destiny, these facilities will be turned over to the Vietnamese.
>
> "So in a very real sense we're building for peace in Vietnam. A great measure of credit goes to the engineers and constructors, both military and civilian, who are building not only today's requirements for our military endeavor, but tomorrow's needs for the Republic of Vietnam."[2]

[2] Officer in Charge of Construction, RVN, Progress Report Vietnam, 1 July 1966 to 31 December 1966, p. 23.

3. STUDY OBJECTIVES. The objectives of this monograph are as follows:

a. Determine the effectiveness and efficiency of advanced base facility planning, the approval process, controls, and construction management from the viewpoint of responding to the RVN contingency, and identify potential improvements.

b. Identify any changes that might improve readiness, responsiveness, and economy in construction and in the fulfillment of requirements for advanced base facilities in future contingencies.

c. Determine the optimum roles of troop and contractor construction in a conflict similar to Vietnam.

4. SCOPE

a. This monograph consists of a review and analysis of the overall base development planning and programming for advanced base facilities and the coordination and execution of their construction in RVN. Special emphasis was placed on the identification and formulation of requirements, the approval and funding process, the development and deployment of capability, and the execution, control, and responsiveness of the overall effort in terms of timely satisfaction of user requirements.

b. The review focused primarily on construction within Vietnam and included exterior efforts of particular significance to the Vietnam conflict.

c. Maintenance of facilities constructed in Vietnam, a construction-related function, has been reviewed in a separate monograph.

d. A number of excellent management-oriented construction studies and comments on them were analyzed to identify lessons learned and potential policy and procedural changes for managing future operations. The ever-changing requirements in a combat environment coupled with these management studies provided the vehicles for measuring the management accomplishments in terms of how adequately and promptly user needs were satisfied. The studies were used as departure points, and additional information was collected from the records of the Services and unified commands and augmented through personal interviews and discussions.

5. ORGANIZATION OF MONOGRAPH. This monograph is composed of 10 chapters. Chapter II contains background information. Chapters III through IX sequentially develop the functional areas of the monograph from planning and programming to the completion of facilities construction. In addition, the responsiveness of the total construction effort in meeting the requirements generated by the military operations in Vietnam is examined. Chapter X provides an overview of the construction function and summarizes the major lessons learned and the resulting recommendations.

# CHAPTER II

# CONSTRUCTION OVERVIEW

# CHAPTER II
# CONSTRUCTION OVERVIEW

1. BACKGROUND. The military engineers of the Vietnam era faced management problems that have historically plagued construction in support of combat, e.g., the acquisition of military constructors, the use of civilian construction workers, the balance of effort between combat support and combat-service support, the adjustment of construction forces to meet changing demands, and the provision of money and materials. These facets of construction management represent but a few of the many functions that comprise the system that aims to provide the right skill at the right place at the right time with the right materials to build the right facility at the right price. The system of construction management that evolved to accomplish this has become a complex and extensive arrangement of policies and administrators. The following list represents a portion of the management machinations involved. It provides an appreciation of the order of magnitude of effort required to justify (program) and construct (execute) a facilities complex.

a. Determine facility requirement.

b. Match requirement against assets.

c. Prepare program documents for the deficiency.

d. Justify requirements through channels to the appropriate level of approval authority.

e. Identify and justify the funds required.

f. Arrange for the site surveys, design, and specifications.

g. Determine the most responsive and timely construction force.

h. Provide construction direction for troop construction or request proposals for contract work.

i. Have monies apportioned.

j. Obtain requisite real estate.

k. Arrange for an orderly and timely input of work force, equipment, and materials.

l. Schedule in accordance with priorities, capabilities, and weather.

m. Ensure that the builders meet contract and/or regulatory provisos.

n. Determine progress so that the customer can schedule occupancy; payments can be made; and assets can be scheduled for future work.

o. Maintain continuing and complete records of work progress, monies expended, assets available, and equipment furnished.

p. Provide for the well-being of the construction force.

q. Provide for communications, transportation, and security of the constructors.

r. Continuously assess the total program to provide for prompt adjustment of commitments to meet changing conditions, such as fluctuations in mission, policies, security threat, and weather.

2. MILITARY CONSTRUCTION MANAGEMENT FROM 1941 TO 1964. The following brief review of construction management from World War II up to the buildup in Vietnam provides a basis for comparing the Vietnam era management procedures with those practiced during this period.

a. World War II. Even though the United States was quickly developing a wartime posture by 1941, much remained to be done to attain the full war footing precipitated by the Japanese attack on Pearl Harbor.

(1) Army. The Army completed approximately $125 million of construction per month from mid-1940 until the onset of war; then the tempo surged up to a peak of $720 million in July of 1942. A total of $10.6 billion was constructed in the United States from June 1940 to May 1946. Figure 2 shows this effort in dollars and manpower. An additional $5 billion was expended in the continental United States (CONUS) for war-related construction such as essential civil works improvements to rivers and harbors and facilities for the Manhattan Project. Army forces overseas placed approximately $10 billion worth of work.[1]

(2) Navy. The Navy's construction program increased at a rate that paralleled the Army's from mid-1940 to May 1945. The Department of the Navy was appropriated $8.6 billion (Table 1) plus obtaining $1.85 billion from other sources. Table 2 lists the disposition of construction funds as of 30 September 1945.

(3) All Services. Overseas bases, for all Services, required expenditures in excess of $13 billion. The combined total of the Services, worldwide, was well over $36 billion as compared to a funded program of approximately $4 billion for Vietnam ($0.7 billion procurement monies for industrial plant expansion included).

b. Korean War. During the Korean War the Army had responsibility for construction ashore within South Korea. The program was executed by troops with minimal contractor effort. The single Service alignment permitted centralized technical coordination of the program by General MacArthur's staff engineer without impinging on the prerogatives of the Services. The construction troops consumed materials at the rate of approximately $1 million per day during FY 51 and FY 52. This included field fortifications, particularly fighting and living bunkers built by the combat troops occupying them. Elsewhere, the scope of the contract program expanded (as indicated in Table 3) both in the Far East in support of combat operations and in the balance of the globe in support of collective security arrangements.

c. The Construction Scene - 1964. The policies and procedures of defense management had undergone major changes since 1961.

(1) Construction Authorization Policies. The Secretary of Defense established the Five-Year Force Structure and Financial Program (FYFSFP) (presently known as the Planning, Programming, and Budget System) as the management analysis system for developing the estimates to be submitted for legislative authorization. The FYFSFP includes a construction annex that provides the basis for such estimates. The procedures established to obtain

[1] Department of the Army, Office Chief of Engineers, Fact Sheet, ENGEX-P, subject: World War II Construction by U.S. Army Corps of Engineers, 26 March 1970.

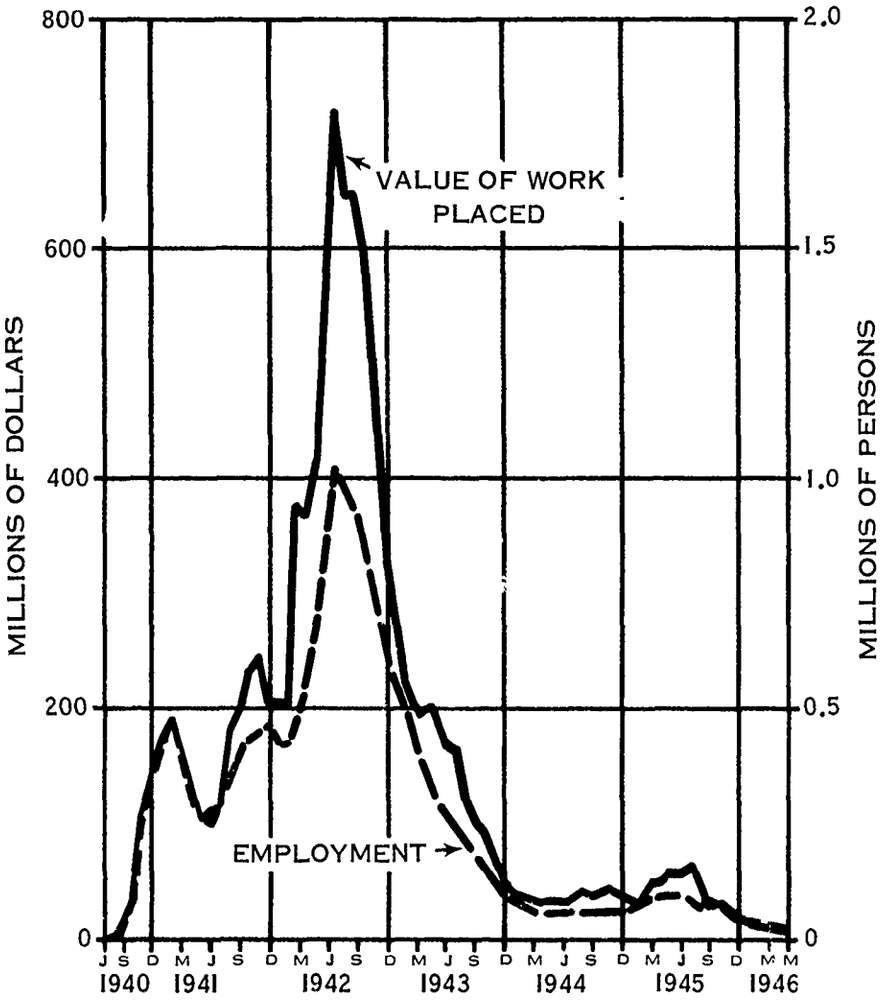


FIGURE 2. ARMY CONSTRUCTION IN CONUS, JULY 1940 - MAY 1946

Source: Department of the Army, Final Report of the Army Service Forces, Logistics In World War I—1947, 1950.

TABLE 1

AUTHORIZED APPROPRIATIONS FOR PUBLIC WORKS, BUREAU OF YARDS AND DOCKS

| Date | Act | Total Authorized |
|---|---|---|
| 1 July 1940 | As per active accounts | $176,752,579 |
| 11 June 1940 | Naval Appro. Act 1941 | 97,640,262 |
| 26 June 1940 | First Suppl. Nat. Defense Appro. Act 1941 | 202,654,000 |
| 9 Sept. 1940 | Second Suppl. Nat. Defense Appro. Act 1941 | 87,825,000 |
| 8 Oct. 1940 | Third Suppl. Nat. Defense Appro. Act 1941 | 18,000,000 |
| 17 Mar. 1941 | Fourth Suppl. Nat. Defense Appro. Act 1941 | 189,162,500 |
| 5 Apr. 1941 | Fifth Suppl. Nat. Defense Appro. Act 1941 | 17,075,000 |
| 6 May 1941 | Naval Appro. Act 1942 | 132,273,194 |
| 3 July 1941 | Second Deficiency Appro. Act 1941 | 49,265,000 |
| 25 Aug. 1941 | First Suppl. Nat. Defense Appro. Act 1942 | 294,528,500 |
| 28 Oct. 1941 | Second Suppl. Nat. Defense Appro. Act 1942 | 400,000 |
| 17 Dec. 1941 | Third Suppl. Nat. Defense Appro. Act 1942 | 334,665,000 |
| 7 Feb. 1942 | Naval Appro. Act 1943 | 975,722,566 |
| 28 Apr. 1942 | Sixth Suppl. Nat. Defense Appro. Act 1942 | 799,250,000 |
| 6 Aug. 1942 | Contract Authorization Act | 974,634,000 |
| 22 Sept. 1942 | War Contributions | 63,113 |
| 31 Mar. 1943 | Suppl. Naval Appro. Act 1943 | 239,740,400 |
| 24 Apr. 1943 | War Contributions | 1,811 |
| 26 June 1943 | Naval Appro. Act 1944 | 939,243,005 |
| 11 Sept. 1943 | War Contributions | 47,653 |
| 22 Sept. 1943 | War Contributions | 24,208 |
| 28 Jan. 1944 | Contract Authorization Act | 281,060,000 |
| 22 June 1944 | Naval Appro. Act 1945 | 1,436,991,460 |
| 31 Oct. 1944 | War Contributions | 97 |
| 25 Apr. 1945 | First Deficiency Appro. Act 1945 | 114,300,000 |
| 29 May 1945 | Naval Appro. Act 1946 | 1,274,008,413 |
| Total | | $8,635,327,801 |

Source: Department of the Navy, Building the Navy's Bases in World War II, Vol. 1, U.S. Government Printing Office, Washington, D.C.

TABLE 2

AUTHORIZATIONS RELEASED AND VALUE OF WORK DONE, ACCORDING TO FACILITIES, AS OF 30 SEPTEMBER 1945

| Classification | Appropriations "Public Works, BuY&D" Authorizations released | Appropriations From other sources Authorizations released | Combined totals Authorizations released | Combined totals Reported value of work done |
|---|---|---|---|---|
| Shipbuilding and repair facilities | $ 165,136,074 | $1,035,540,687 | $1,200,676,761 | $1,097,778,755 |
| Fleet facilities | 262,896,550 | 6,110,422 | 247,796,791 | 225,966,784 |
| Aeronautical facilities | 1,643,091,611 | 56,832,472 | 1,661,253,832 | 1,601,383,121 |
| Ordnance facilities | 738,989,058 | 133,913,193 | 869,344,481 | 774,469,784 |
| Storage facilities | 539,419,948 | 4,167,816 | 536,987,227 | 486,782,403 |
| Structures for naval personnel | 530,638,646 | 17,723,853 | 608,212,499 | 556,507,038 |
| Marine Corps facilities | 183,384,382 | 12,875,095 | 196,259,477 | 183,423,863 |
| Radio facilities | 33,899,258 | 5,470,165 | 38,633,063 | 34,924,081 |
| Hospital facilities | 202,820,667 | 9,421,915 | 211,094,382 | 182,801,868 |
| Section and frontier bases | 10,623,932 | 35,538,272 | 46,162,204 | 45,170,792 |
| British bases | 73,289,733[1] | 59,730,165 | 133,019,898 | 131,428,159 |
| Advance bases | 2,637,880,879 | 172,490,847 | 2,810,371,726 | 2,254,720,940 |
| Defense housing | 2,734,200 | 84,232,386 | 86,966,586 | 83,774,481 |
| Naval working fund | — | 208,192,600 | 208,192,600 | 139,290,894 |
| Structure not otherwise classified | 264,310,346 | 11,904,078 | 274,997,990 | 227,536,648 |
| Not distributed | 22,569,147 | — | 22,569,147 | — |
| Sub-total | 7,297,394,698 | 1,854,143,966 | 9,152,538,664 | 8,025,959,611 |
| Prior accounts | 97,134,579 | — | 97,134,579 | 97,069,311 |
| Total | $7,395,529,277 | $1,854,143,966 | $9,249,673,243 | $8,123,028,922 |

[1]Total of funds so used.

Source: Department of the Navy, Building the Navy's Bases in World War II, Vol. 1, U.S. Government Printing Office, Washington, D.C.

TABLE 3

MILITARY CONSTRUCTION APPROPRIATIONS

(Millions of Dollars)

| Fiscal Year | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| 1951 | 500 | 500 | 1,230 | 2,230 |
| 1952 | 1,230 | 800 | 2,450 | 4,480 |
| Total | 1,730 | 1,300 | 3,680 | 6,710 |

authorization and appropriation included the requirement for major construction projects to be supported by DD Form 1391, Military Construction Line Item Data, for each line item proposed.[2] The Services were operating under the provisions of this policy at the onset of the Vietnam buildup and with certain modifications they were applied throughout the conflict. The submission of these requirements by the Services was in accordance with their basic responsibility to "Develop, garrison, supply, equip, and maintain bases and other installations, including lines of communication, and provide administrative and logistical support for all forces and bases." Such submissions were to ". . . be prepared on the basis, among other things, of the advice of commanders of forces assigned to unified and specified commands; such advice, in the case of component commanders of unified commands, will be in agreement with the plans and programs of the respective unified commanders."[3]

(2) Status of Construction Troops. The historical pattern of restructuring active forces between wars to maximize combat elements at the expense of combat support and combat service support units held true in the post-Korean period. Planning was based on the assumption of mobilization of Reserve and National Guard units to make up the deficiencies in the case of major contingencies. The Army had no dedicated units in its active force structure to meet the requirement for "providing military troop construction support to the Air Force overseas."[4] The prebuildup status of military construction forces in the CONUS and Pacific Command (PACOM), available for commitment, consisted of 23 Army and 10 Navy independent (force type) battalion/squadron equivalents.

## 3. COMMAND RELATIONSHIPS AND RESPONSIBILITIES

a. The Commander in Chief, Pacific (CINCPAC) exercised operational command of forces ashore in Vietnam through the subordinate unified command of Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV), and of fleet, air, and ground elements in support of offshore and out-of-country, combat-related activities through the PACOM component commanders. Logistics responsibilities paralleled the command arrangement, which states in part:

> "Authority And Control. The commander of a unified or specified command is authorized to exercise directive authority within his command in the field of logistics

[2] DOD Instruction 7040.4, Military Construction Authorization and Appropriations, 25 October 1962.

[3] DOD Instruction 5100.1, Functions of the Department of Defense and its Major Components, 31 December 1958, as amended.

[4] DOD Directive 1315.6, Responsibility for Military Troop Construction Support of the Department of the Air Force Overseas, 5 February 1967, paragraph IIIa.

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 . . . . This authority extends to the coordination, as necessary of:

"Acquisition, storage, movement, distribution, maintenance, evacuation and disposition of materiel.

"Movement and evacuation of personnel.

"Acquisition or construction, maintenance, operation and disposition of facilities.

"Acquisition of furnishing of services.

"He will exercise such coordination as is appropriate through the commanders of the Service components and the commanders of other subordinate commands."[5]

b. Specific responsibilities assigned to a unified commander, with regard to base development, included:

(1) The planning and development of bases "in accordance with approved joint and Service plans."

(2) ". . . coordination of real estate requirements and construction of facilities within his command. He shall establish priorities for construction projects."[6]

c. Technical matters relating to construction were channeled through the staff engineers of the unified and component commands concerned. The Joint Chiefs of Staff required CINCPAC to be "the focal point for and coordinate all pertinent construction requirements" and instructed CINCPAC to submit project packages directly to the appropriate Service keeping the Joint Chiefs of Staff and others advised.[7] This was consistent with basic responsibilities of the unified commander, whereby:

". . . Commanders of commands established by the Secretary of Defense are responsible for --

"The formation of integrated base development plans for their commands as integral parts of command plans:

"Coordination of the base development planning of their component commanders as provided in the logistic responsibilities assigned by the Unified Command Plan; and

"Provision of copies of base development plans to the cognizant Military Department for review in accordance with established procedure."[8]

Figure 3 shows how this submittal procedure eventually evolved.

d. The roles of the various PACOM headquarters and construction agencies in funding and executing the program are shown in Figure 4. The centralized directive authority reflected for COMUSMACV was specifically established by the Deputy Secretary of Defense on 6 January 1966 (see Appendix A for full text). Chapter V addresses this method of management as a significant subject.

e. The pertinent PACOM contingency base development planning was done in accordance with the guidance found in the Joint Strategic Capabilities Plan, Joint Strategic Objective Plan, the Unified Command Plan, Joint Chiefs of Staff directives, and related Service doctrines. The joint plans were general in nature with the supporting component plans providing more detail. Chapter III and Appendix H assess the efficacy of these plans.

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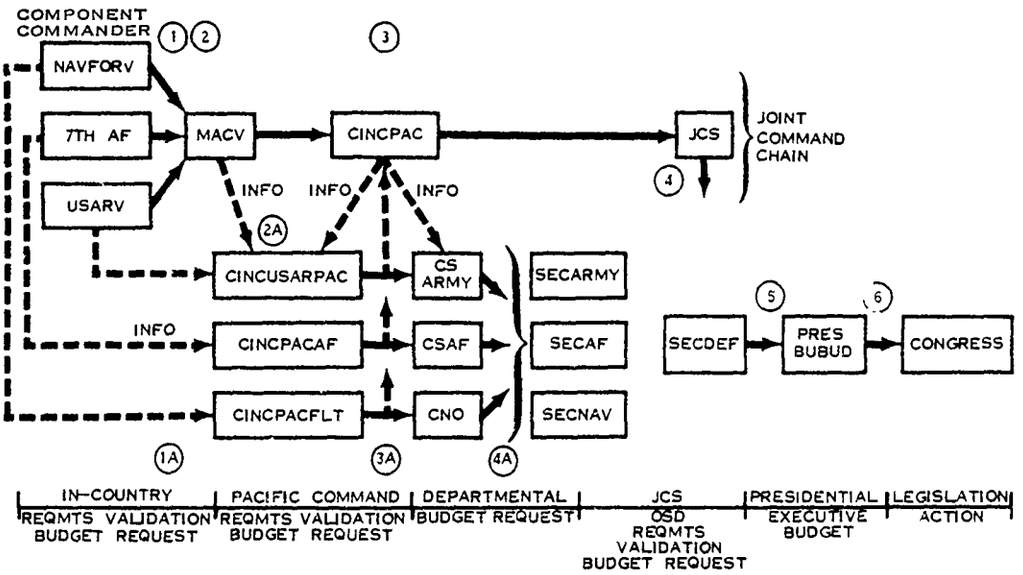
[5]Joint Chiefs of Staff, Publication 2, Unified Action Armed Forces (UNAFF), paragraph 30603, November 1959, as amended.

[6]Ibid, paragraph 30608.

[7]Joint Chiefs of Staff, Message 032200Z September 1964 (CONFIDENTIAL).

[8]Joint Chiefs of Staff Publication 3, paragraph 060203.




1. COMPONENT COMMANDERS SUBMIT REQUIREMENTS TO MACV BASED UPON SECDEF APPROVED DEPLOYMENTS.

1-A INFO TO RESPECTIVE SVCE CINCPACS

2. REVIEW AND COMMENT TO CINCPAC ON COMPONENT COMMANDERS SUBMITTALS. CINCPACS. (VALIDATION OF PROGRAM)

2-A INFO TO RESPECTIVE SVCE

3. CINCPAC REVIEW AND COMMENT TO JCS ON MACV PROGRAM VALIDATION IN LIGHT OF RESPECTIVE SVCE CINCPACS COMMENTS.

3-A SVCE CINCPACS REVIEW AND COMMENT TO SVCE HQ ON RESPECTIVE COMPONENT COMMANDERS SUBMITTAL IN LIGHT OF MACV PROGRAM VALIDATION. INFO TO CINCPAC.

4. JCS SUBMITS JCS VALIDATED PROGRAM TO SECDEF.

4-A SVCE HQS SUBMIT RESPECTIVE BUDGET REQUEST TO SECDEF.

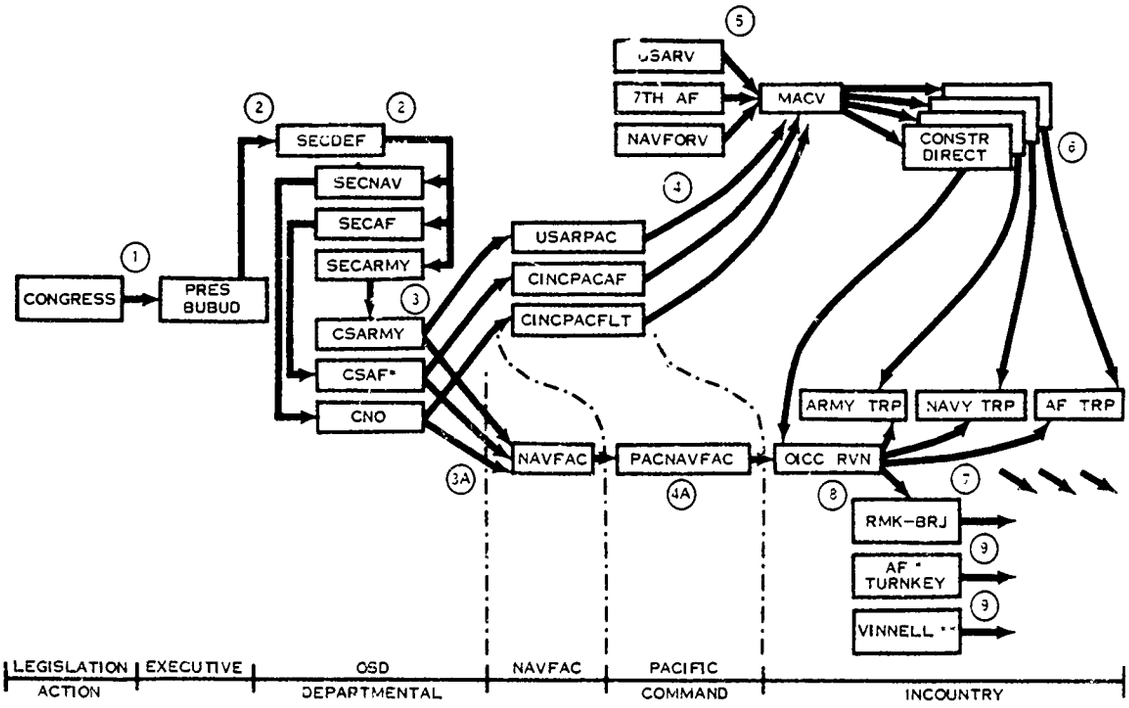
5. SECDEF SUBMIT VALIDATED PROGRAM BUDGET REQUEST TO BUBUD PRESIDENT. (AFTER JOINT OSD BUBUD HEARINGS).

6. BUBUD, PRESIDENT SUBMIT SUBJECT REQUEST TO CONGRESS.

NOTE - JOINT COMMAND CHAIN VALIDATES REQUIREMENTS.
SERVICE CHAIN PREPARES BUDGET REQUEST

FIGURE 3. REPUBLIC OF VIETNAM MILITARY CONSTRUCTION PROGRAM REQUIREMENTS AND BUDGET CHANNELS

Source: Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), 19 June 1968 (SECRET).




1. AUTHORIZATION OF PROGRAM AND APPROPRIATION OF FUNDS
2. APPORTIONMENT OF PROGRAM AND FUNDS
3. ALLOCATION OF PROGRAM AUTHORITY INFO JCS & CINCPAC

3-A. ALLOCATION OF FUNDS

4. ASSIGNMENT OF PROGRAM AUTHORITY

4-A. ASSIGNMENT OF FUNDS

5. REQUESTS FOR ISSUANCE OF CONSTRUCTION DIRECTIVES
6. ISSUE CONSTRUCTION DIRECTIVES
7. CICCRVN ISSUE FUNDS TO OTHER CONST AGENTS TO FINANCE CONST DIRECTIVES
8. CICCRVN ISSUE NIP (OBLIGATION AUTHORITY) TO CPAF CONTRACTOR
9. COMPLETES FACILITIES AND TURN OVER TO USING COMMAND FOR BENEFICIAL OCCUPANCY

* FUNDING DIRECTLY FROM CSAF TO PROJECT TURNKEY

** FUNDING THRU CICC RVN TO USARV AND THENCE TO VINNELL

FIGURE 4. REPUBLIC OF VIETNAM MILITARY CONSTRUCTION PROGRAM FUNDING AND EXECUTION CHANNELS

Source: Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), 19 June 1968 (SECRET).

4. THAILAND SITUATION. The construction management situation in Thailand varied to some degree from RVN. The major facilities requirements were primarily to support the Air Force in its combat role with secondary requirements to provide logistic and Military Assistance Program (MAP) facilities for all the Services. The Commander, United States Military Assistance Command, Thailand, exercised coordinating authority over the construction program other than MAP, over which he had full authority. The components had normal cognizance over the projects required in support of Vietnam operations. The Navy Facilities Engineering Command's Officer in Charge of Construction in Bangkok managed the contract construction execution in coordination with the Air Force Regional Civil Engineer, Thailand, and the Army Engineer Regional Liaison Office, Bangkok. At various times, engineer troops of all the Services performed construction in addition to that performed by the contracting effort. In general, the scope and complexity of the program did not require the extraordinary management procedures established in RVN. The expansion of the airfield facilities at Ubon, Takhli, Udorn, Nakhon Phanom, and Korat; the construction of the Utapao Royal Thai Air Force Base; the extension and improvement of the land lines of communication; and the development of the Sattahip port complex are examples of some of the significant construction works accomplished during and subsequent to the buildup.

# CHAPTER III

# PLANNING AND READINESS

# CHAPTER III
# PLANNING AND READINESS

1. AREA OF INVESTIGATION. Base development planning prior to and during the buildup in Vietnam is reviewed below with particular emphasis on areas in which there is a potential for improvement during future contingencies. Three projects are reviewed to show the effects of the graduated buildup and the effects of new and changing requirements on the planning process. The problem of construction standards is addressed, and the evolution of cantonment standards for the Military Assistance Command, Vietnam (MACV), is analyzed to identify potential areas for improvement. Finally, the Service systems for providing packaged facilities, or functional components, as a means for expediting, planning, and simplifying supply of construction materials and equipment are reviewed.

2. IMPORTANCE OF BASE DEVELOPMENT PLANNING. The Vietnam conflict provides a vivid example of the difficulties of planning for a future contingency and the ways in which it may develop changing requirements. At the same time, it is clear that the responsiveness and performance of the total construction system in a contingency is dependent on a complete and feasible logistic plan. To the extent that such a plan can be developed in advance, the role of the engineer planner becomes simple and clear -- to develop plans that provide essential information concerning the command to which he belongs in order to define, in specific terms, the quantity and types of facilities required in the area of operations under study. The importance of this is reflected in the following statements of military engineers involved in or reviewing the Vietnam construction experiences.

a. A base development plan "must provide, on a timely basis, data as to construction material requirements, construction unit and effort requirements, requirements for premobilization and pre-D-day actions, provisions for maximum use of local resources, maximum joint use of planned facilities by all services in an area, phased requirements for facilities weighed against construction capabilities, and uniform standards for all services in an area."[1]

b. "In order to provide a smooth, orderly program of facilities construction, thorough logistic planning should have been accomplished 18 to 24 months before the Vietnam buildup began."[2]

c. "It is essential that contingency planning for future trouble spots including adequate definition of requirements and development of supporting base facility plans. This is particularly imperative in view of the long lead time required to provide such facilities."[3]

3. PLANNING

a. Contingency Plans

(1) Under the Joint Chiefs of Staff/unified command planning process, the Commander in Chief, Pacific (CINCPAC) had produced a plan for contingencies in Vietnam. Commanders under his operational control, MACV and the Pacific Command (PACOM)

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[1] U.S. Army Military Engineering Study Group, Military Engineering in Support of U.S. Army 1967 - 1975 (U), February 1968, Vol. II, Part I, p. C-11-A-2 (SECRET).

[2] Ibid., Vol. III, p. C-11-2 (SECRET).

[3] Brig. Gen. D.A. Raymond, USA, Observations on the Construction Program RVN, 1 October 1965 through 1 June 1967 (U), p. 10 (CONFIDENTIAL).

component commanders, had prepared supporting plans. A detailed summary of the base development aspects of the planning is in a classified supplement, Appendix H. The following are highlights of the plan as it existed at the start of 1965.

(a) Phase I (Alert) had been placed in effect by CINCPAC in 1964. In this phase the Service component commanders were directed to accelerate planning, programming, and training actions necessary to ensure readiness of logistic systems and capabilities to support the plan.

(b) In support of the CINCPAC plan, the Commander, United States Military Assistance Command, Vietnam (COMUSMACV), was tasked with planning and conducting joint operations on the mainland. The Commanders in Chief of the U. S. Army, Pacific (CINCUSARPAC), the Pacific Fleet (CINCPACFLT), and the Pacific Air Force (CINCPACAF) were responsible for deploying combat and support forces to the SE Asia area in support of operations. They were directed to ensure that U. S. logistic forces in the area of operations were responsive to the logistic requirements and to provide logistic units for full support of their component forces.

(c) COMUSMACV was responsible for the coordination and control of logistic support in the objective area, including the establishment of priorities. COMUSMACV's plan specified construction priorities as:

1. Airfields
2. Main supply routes
3. Railroads
4. Port facilities
5. Logistic base and support facilities.

(d) CINCPAC's plan specified that facilities to be constructed would be austere and that only essential operations and support facilities needed immediately would be included in the construction program. Supporting plans were to include real estate and facility requirements.

(e) For the specified force levels (Phase II called for 64, 000 troops), Service doctrines, and the stated operational concepts, the basic plan and all supporting plans were adequate as far as base development was concerned; i. e., the plans were responsive to the requirements for operations and were detailed to the degree that the type and scope of facilities needed could be defined and the capabilities of supporting the construction program could be assessed.

(f) The CINCUSARPAC operation plan had tasked the U. S. Army, Ryukyu Islands (USARYIS) to accomplish the required base development planning for Army forces designated for deployment to the theater of operations in Phase II. A comprehensive base development plan resulted, incorporating austere construction standards. The resultant USARPAC base development plan highlighted a number of factors bearing on the adequacy of the plan. These included the need for additional engineer troops, the requirement to expand the base development plan prior to commitment of additional forces beyond those planned, the need for certain military and Department of State actions related to real estate (see Chapter VII), and the need to pre-position construction materials in the theater.

(g) The CINCPACFLT operation plan highlighted the lack of logistic support capabilities, extremely limited transportation facilities, the necessity to use small coastal ports and shallow-draft lighterage, and the possibility of expanding the port of Saigon. The Navy

plans were consistent with the basic plan. They did not encompass base development plans ashore such as would be required with the unforeseen assignment of specific logistic responsibilities in I Corps Tactical Zone (CTZ) by CINCPAC and the prolonged deployment of the Marines.

(h) The Air Force operation plan was adequate for Phase II and envisaged use of planned and constructed Military Assistance Program (MAP) facilities.

(i) In a series of reviews subsequent to the publication of the CINCPAC plan the deficiencies in logistic support capabilities were identified. These reviews resulted in submittals to the Secretary of Defense in early 1965 of appraisals of the logistic capabilities with summaries of problem areas to include those identified in the USARYIS base development plan. The rapid movement of events during this period makes it difficult to differentiate between actions that were taken in response to requirements generated by the operations plans and those taken to respond to decisions occurring prior to and during the buildup. It is pertinent to this discussion to note, however, that there is no evidence to show that the recognized requirement to pre-position construction materials in the theater had been translated into specific requirements for bulk construction materials or, more importantly, key items with comparatively long lead times for procurement, such as landing mat, piers, hospitals, and larger generators.

(2) The CINCPAC operation plan was basically sound, but the specifics of the base development plans of the Services were to be almost nullified by the fact that the buildup was greatly different from that planned. For instance, although the PACOM Army component base development plan was adequate to meet planned requirements, it was developed within specific force level parameters and a fixed concept of operations -- based on only one set of factors. As a result, when the scale of operations deviated substantially from the specified force level on which the plan was based, the usefulness of the existing base development plan was seriously degraded. There remained little more than a catalog of existing assets, climatic data, topographic information, and meaningless deficiencies in construction effort. The desirability of a base development plan that can be applied to a wide variety of situations and force compositions is clearly apparent. Action had been initiated to identify construction deficiencies in plans for logistic support, but, mostly because of the rapidity with which events subsequently moved, corrective action had not, in many cases, been initiated.

b. Planning During Buildup

(1) The in-country base development planning capabilities of the Army and the Navy were not substantial at the beginning of the buildup. Prior to the arrival of the 18th Engineer Brigade in September 1965, the Army's primary planning capability existed in the small engineer section of Headquarters, 1st Logistical Command. The task that evolved required establishment of substantial base development planning elements in the engineer sections of both United States Army, Vietnam (USARV), and the 1st Logistical Command. In the case of the Navy, the Headquarters, Support Activity, Saigon, had extremely limited capabilities in the Public Works Department, which was, at the start of 1965, engaged in minor construction projects in support of its mission. Capabilities in I CTZ were increased with the arrival of the III Marine Expeditionary Force (MEF) and the 30th Naval Construction Regiment in May 1965. After the Commanding General, III MEF, was designated Naval Component Commander, his staff was augmented by a small planning group from the Pacific Division of the Bureau of Yards and Docks.[4] The Air Force, initially, had a small civil engineer directorate in the 2d Air Division, with the major portion of the engineer function being accomplished at Thirteenth Air Force in the Philippine Islands and Pacific Air Force (PACAF) Headquarters in Hawaii. The 2d Air Division eventually grew into the Seventh Air Force with a full civil engineer staff, and additional capability became available when the regional civil engineer

[4] Director, Pacific Division, Yards and Docks, Report to CINCPAC, 30 July 1965.

office was established in Saigon in 1965 to accomplish coordination with the U. S. Navy Officer in Charge of Construction, Republic of Vietnam (OICC, RVN). The initial MACV capability was limited to the Engineer Division in J-4. The division was subsequently expanded, separated from J-4, and redesignated the MACV Directorate of Construction. [5]

(2) One essential element, and the starting point of the planning sequence, was deficient -- a statement of the force level to be supported. If the force level is known and firm, the facilities required under the concept of operations to support the combat and logistic troops can be computed. A projection then determines the funds and construction effort needed to support the construction program. Following determination of the facilities required, the engineer planner accomplishes "master planning" -- the determination of which facilities will be constructed in what part of the area of operations and the siting of facilities on installation plans.

(3) What, then, made the determination of facility requirements and construction of the facilities so complicated? Factors appearing worthy of discussion are the deployment program that evolved, in-country redeployments, the types of operations, and inadequate engineer intelligence.

(a) The Deployment Programs. The major decisions establishing the force levels for SE Asia were based on a series of events that came to a climax between late 1964 and early 1965. The strategy of graduated military actions led to a step-by-step buildup of U. S. forces in Vietnam. These forces totaled 81,000 in July 1965 and reached 184,000 by December of the same year. They were to peak at 543,000 in February 1969. This concept was the basis for six separate Secretary of Defense deployment programs, which were implemented by a series of actual troop deployments of lesser size. The six approved deployment programs for RVN and the cumulative buildup of forces that took place between June 1965 and June 1969, together with a chronology of major deployments, are summarized in Volume II. Each incremental increase in the force level generated another cycle of the master planning, funding, and construction process. Rarely was there lead time to develop the logistic support that would be required.

(b) Redeployments Within Vietnam. Another factor that had considerable impact on the construction requirements in-country was the redeployment of troops within Vietnam. Some major examples are the following:

1. A series of redeployments northward was necessitated by the increased pressure that the enemy was exerting on units below the Demilitarized Zone (DMZ). The redeployments began with the shifting of Marine units from the Da Nang area to the northernmost sector of I CTZ to counter invasion by a North Vietnamese division. On 12 April 1967, Task Force OREGON was formed as a provisional division by shifting Army units to southern I CTZ. This enabled Marine reinforcement of units in the northernmost provinces when the 1st Marine Division turned over responsibility for the defense of the Chu Lai Air Base and the logistic complexes to Task Force OREGON. During the early months of 1968, and particularly during the Tet Offensive, the enemy action in northern I CTZ reached a feverish pitch. Because of the increased action, a MACV forward command post opened at Phu Bai on 9 February 1968 to control the deployment of all joint U. S. combat and logistic forces in that area. In March 1968, COMUSMACV formed the Provisional Corps, Vietnam (later designated XXIV Corps), which had operational control of units in the areas from the DMZ south to the Hai Van Pass including elements of several Army units moved to I CTZ from II and III CTZs.

2. In mid-January 1967, major elements of an infantry division shifted from III CTZ to establish a joint Army-Navy base in the Mekong Delta for the Mobile Riverine Force. The base, named Dong Tam, was a 600-acre island created among inundated rice paddies by dredging fill material from the Mekong River.

[5] Brig. Gen. D.A. Raymond, op. cit. pp. 8,9.

3. Operation MOOSE (Move Out of Saigon Expeditiously) resulted from COMUSMACV's concern with the growing concentration of U. S. forces in Saigon and his decision that U. S. units and installations were to be moved out of metropolitan Saigon in an accelerated fashion. Key elements in Operation MOOSE were the relocation of MACV Headquarters to Tan Son Nhut, relocation of Headquarters, USARV and Headquarters, 1st Logistical Command to Long Binh, the relocation of Seventh Air Force elements from Tan Son Nhut to other air bases, and relocation of elements of the Naval Support Activity (NSA) from Saigon to Nha Be. Since consolidation of MACV elements into a single facility had been planned at a downtown site where earth moving was underway, shifting to the Tan Son Nhut site meant loss of site preparation effort only. However, resultant displacements of USARV, the 1st Logistical Command, NSA, Saigon, and others generated additional requirements at a time when available construction capability was already overcommitted.

(c) Types of Operations. The countrywide nature of the guerrilla-insurgency warfare and the inadequate land lines of communication produced main enclaves with islandlike logistics. The existence of these main bases generated an extraordinary demand for a more permanent type of construction than is normally envisaged. Special types of operations peculiar to the Vietnam conflict contributed to unexpected demands for construction at scattered locations. Examples of these new types of operations that had a significant effect on construction requirements were MARKET TIME, GAME WARDEN, and the Mobile Riverine Force (see Chapter IV, Volume II). The U. S. buildup at Nha Be typified the manner in which GAME WARDEN construction requirements increased during 1966. In May, the GAME WARDEN facilities consisted of a tent city and a pontoon pier within a small Vietnamese compound. A total of 157 Navy men with 10 river patrol boats, 4 minesweepers, and 4 small landing craft was supported. In June 1966, when the force expanded to 3,000 men with 20 river patrol craft and 12 minesweepers, a large covered lighter had to be assigned as an interim afloat berthing and repair facility for support of operations. A major river base would be constructed for the forces, which would continue to expand, and for the headquarters of NSA. This would require a major project of filling in the land and constructing many more facilities.[6]

(d) Engineer Intelligence

1. The Joint Chiefs of Staff Special Military Construction Study Group concluded that "currently, intelligence in support of base development plans is provided on an ad hoc basis to meet stated requirements of users. There is no programmed effort in the intelligence community to meet specified schedules for production and maintenance of intelligence in support of base development planning."[7]

2. The need for up-to-date hydrographic surveys was highlighted in particular. "For the first 18 months of the program, dredging requirements vis-a-vis time exceeded capability . . . for the most part, hydrographic data for design of channels and ports was non-existent or outdated. Due to the long lead time involved in mobilizing dredge plant in RVN, it became necessary to contract for the plant concurrently with the initiation of hydrographic survey and designing. The fit of the fleet to the jobs was necessarily based on incomplete data. In most cases it was satisfactory. In others, such as the inability of the dredge Bess to pump the abrasive material at Dong Ba Thin, it was not satisfactory."[8]

3. It should be noted that the need extended to operations as well as port development: 'Maps of Hydrographic Information -- In order to provide logistic support

[6]Commander, Service Forces, U. S. Pacific Fleet, Operations of the Service Force, U. S. Pacific Fleet, FY-67 (U), pp. 5-12 (CONFIDENTIAL).

[7]Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), 19 July 1968, p. 35 (SECRET).

[8]Brig. Gen. D. A. Raymond, op. cit., p. 53.

from the sea it is obviously necessary to have good, and current information on harbor facilities, beach gradients, tidal data, meteorological data, etc. In the case of the east coast of Da Nang and Chu Lai there was also incomplete information on the littoral immediately inshore of logistics loading areas."[9]

4. The monsoon season, heavy rains, and seas created frequent changes caused by shifting sands and silting.

(4) In order to sample the process for recognizing new or changed construction requirements, three construction projects have been analyzed: [10]

a. Qui Nhon MARKET TIME Facility (Figure 5).

b. Bien Hoa Parallel Runway (Figure 6).

c. USARV Complex at Long Binh (Figure 7).

In each case, the Service that needed and justified the project established a construction requirement based on the known force level. The OICC started design on each project, but, in each instance, the scope was changed by the using Service because of changed conditions. Each scope change necessitated more design effort. In addition, each time the scope had to be changed, a cost problem arose, which in the case of the Bien Hoa runway and the Qui Nhon MARKET TIME facility resulted in an underfunding of the project. It is apparent that a process was inbeing to provide needed facilities, but its responsiveness required firm scope and criteria statements from the using Service.

(5) Major changes in requirements in a rapidly changing war are inevitable. Planning must minimize time and effort in meeting these requirements. This indicates the importance of designs in-being to meet the more common requirements, and avoidance of specially tailored designs wherever practicable. Special attention must be given in planning to the requirements for engineer intelligence such as hydrographic surveys.

4. FUNCTIONAL COMPONENTS. The experiences of the Vietnam conflict emphasize the importance of functional component systems.

a. Navy System

(1) The Navy had in existence at the start of the buildup a system that had been developed in World War II to meet the needs of campaigns that resulted in island hopping and the requirements for rapid establishment of a wide variety of bases that, in turn, served forces and support functions of varying composition and size. This was the Advanced Base Functional Component (ABFC) System for the establishment of naval advanced bases.

(2) In the ABFC system a functional component contained the technical personnel and equipment for the performance of a task, including, as pertinent, workshops, housing, vehicles, boats, shop and office equipment, and a 30- to 90-day initial supply of consumables. Provisions were made for tailoring individual components and integrating them into an overall base plan. Standard units, consisting of a grouping of advanced base functional components, were arranged to establish an advanced naval base of any type envisaged. Standard units to meet approximately average requirements were set up for planning, training, and assembly requirements. Provisions were made for echeloning, assembly, and training of personnel, and assembly of material. The system set forth responsibilities with respect to maintenance and use of the system. It identified shipping cubes and weights.

[9] Written comments of Vice Admiral Blackburn, Commander, Seventh Fleet in 1965, to Vice Admiral Hooper, April 1969.

[10] Naval Facilities Engineering Command, Construction Problems and Achievements, 13 April 1967.

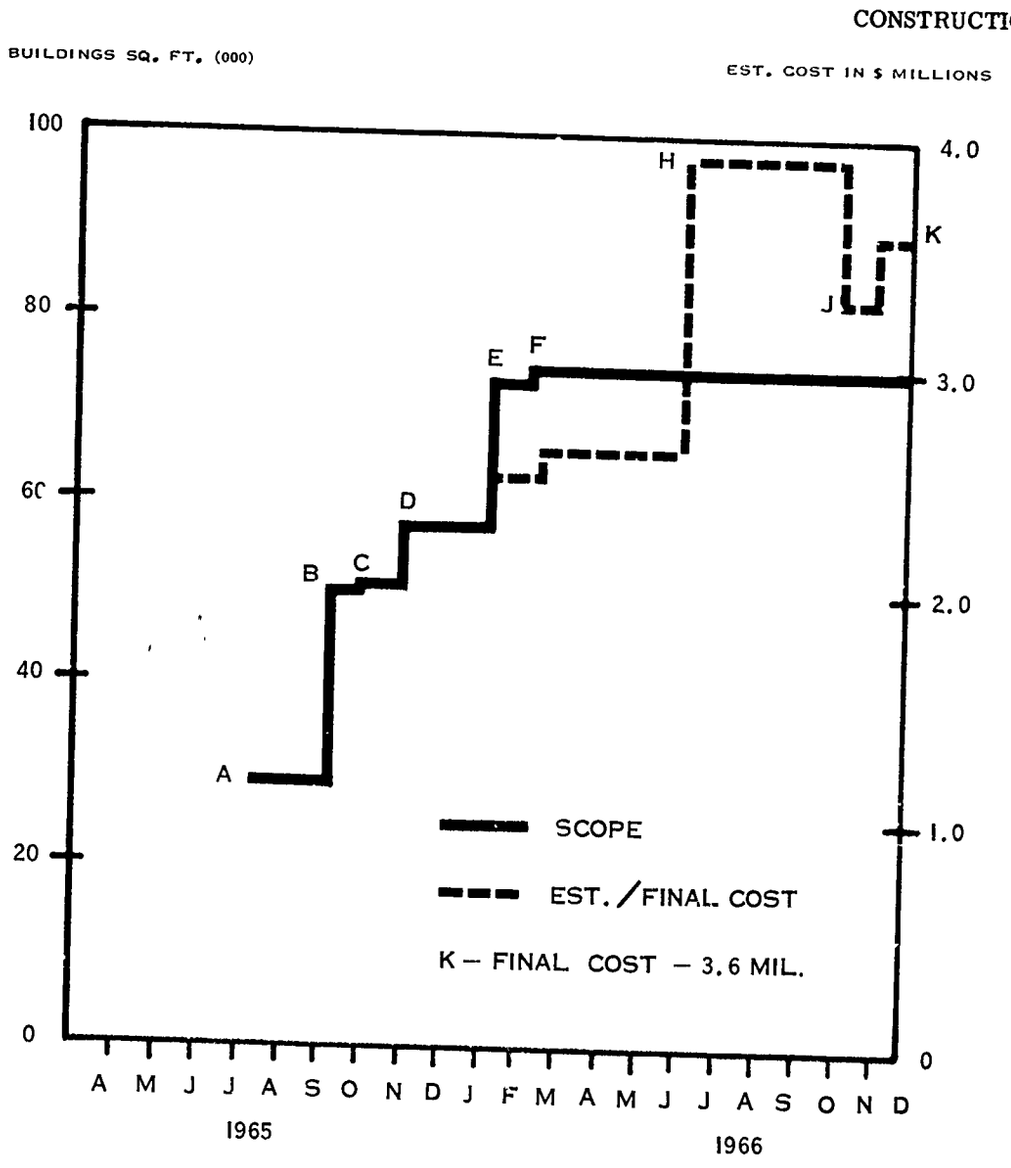


FIGURE 5. QUI NHON MARKET TIME FACILITY—CHRONOLOGY OF USER-DIRECTED CHANGES

NOTES TO FIGURE 5:

| ITEM | DATE | ACTION | USER EST. | FUNDS ASS'N'D | OICC EST. |
|---|---|---|---|---|---|
| | | | (Millions of Dollars) | | |
| A | Aug 65 | Navy assigned funds and established scope. OICC started design. | 1.7 | -- | -- |
| B | Oct 65 | Navy authorized major scope increase, assigned funds and approved more austere criteria. OICC added to design. | 1.6 | 0.5 | -- |
| C | Nov 65 | Navy increased shop and POL scope. OICC added to design. | 1.6 | 0.5 | -- |
| D | Dec 65 | Navy increased pier and shop scope. OICC added to design. | 2.0 | 0.5 | -- |
| E | Feb 66 | Base loading increased. Navy authorized expanded scope. Design not complete due to continued instability of project. OICC provides cursory estimate. Construction underway. | -- | 0.5 | 2.6 |
| F | Mar 66 | Navy added scope in communications and security features. OICC changed cursory estimates. | -- | 0.5 | 2.7 |
| G | Apr 66 | Navy increased funding. Construction continuing. | -- | 2.3 | 2.7 |
| H | Jun 66 | Design complete. Construction 50% complete. OICC provides revised CWE. | 2.3 | 2.3 | 3.9 |
| I | Jul 66 | Navy increased funding to OICC's April estimate. | 2.7 | 2.7 | 3.9 |
| J | Oct 66 | Navy and OICC reviewed project, cut ancillary features. OICC revised complete estimate. Project 75% complete. | 3.2 | 2.7 | 3.2 |
| K | Nov 66 | Navy reprogrammed funds to match CWE. Project useably complete. | 3.4 | 3.4 | 3.6 |

Source: NAVFACENGCOM Files.

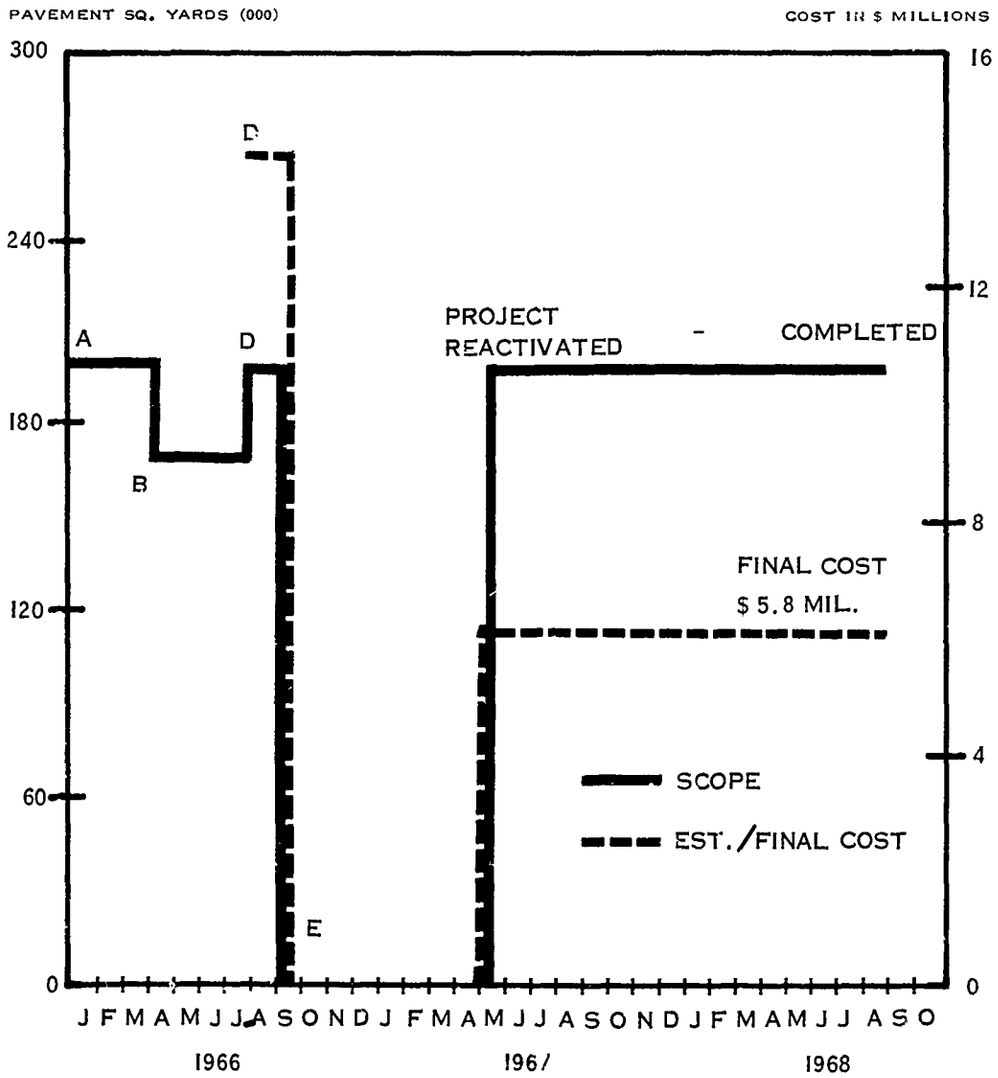


FIGURE 6. BIEN HOA PARALLEL RUNWAY--CHRONOLOGY OF USER-DIRECTED CHANGES

NOTES TO FIGURE 6:

| ITEM | DATE | ACTION | USER EST. | FUNDS ASS'N'D | OICC EST. |
|---|---|---|---|---|---|
| | | | (Millions of Dollars) | | |
| A | Jan 66 | Air Force authorized design and provided scope and criteria. OICC authorized start of design and directed contractor to mobilize. | 6.5 | -- | -- |
| B | Apr 66 | Air Force assigned funds to MACV with slight scope adjustment. All equipment required is procured and enroute from CONUS. | 6.5 | 6.5 | -- |
| C | May 66 | MACV issued construction directive to OICC. | 6.5 | 6.5 | -- |
| D | Jul 66 | OICC completed design and provided cost estimate to MACV and AF. | 6.5 | 6.5 | 14.2 |
| E | Sep 66 | Due to underfunding of overall AF program under the full funding requirements, AF withdrew funds (except for $200,000 in road work already completed). Project in deferred status. | 14.2 | -- | 14.2 |

Additional information: The project was subsequently reactivated and the OICC, RVN, directed a contractor start in May 1967. The project was completed in September 1968. The high OICC estimate of July 1966 resulted from the reduced total program base against which mobilization was to be distributed. With the allocation of the remaining 66S funds (held by the Secretary of Defense) as well as the 67S funds, this problem was essentially eliminated and the total original scope was accomplished for $5.8 million. Not only was this below the initial estimate of the user ($6.5 million) but it was completely funded with 66S funds withheld by the Secretary of Defense.

Source: NAVFACENGCOM Files

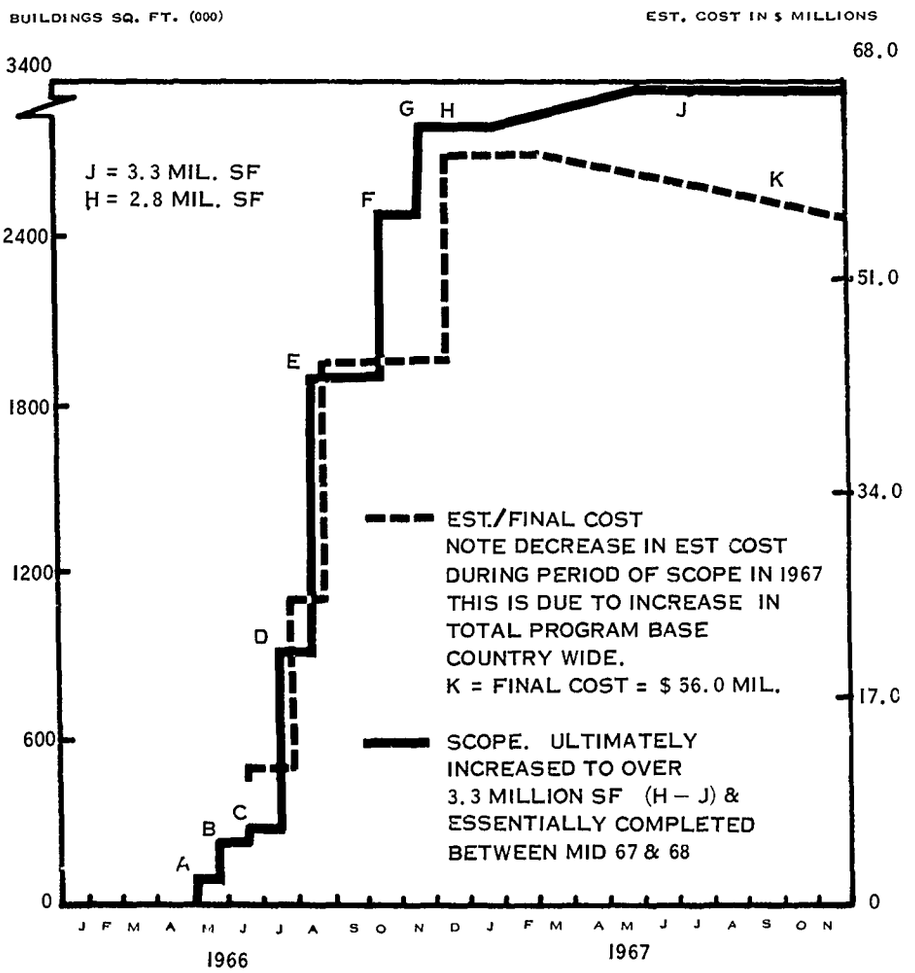


FIGURE 7. LONG BINH HEADQUARTERS COMPLEX FOR USARV AND 1ST. LOG
CHRONOLOGY OF USER-DIRECTED CHANGES
66S PROGRAM ONLY

NOTES TO FIGURE 7:

| ITEM | DATE | ACTION | USER EST. | FUNDS ASS'N'D | OICC EST. |
|---|---|---|---|---|---|
| | | | (Millions of Dollars) | | |
| A | May 66 | Initial MACV design and construction directive issued. OICC authorized start of design and construction. | 3.2 | 3.4 | -- |
| B | May 66 | Revised MACV construction directive issued. Design effort revised by OICC. | 12.2 | 12.4 | -- |
| C | June 66 | Revised MACV construction directive issued, again increasing scope. OICC revised design and construction efforts. | 12.0 | 12.0 | 12.1 |
| D | Jul 66 | Revised MACV construction directive issued doubling project scope. OICC increased design and construction effort. | 21.8 | 21.8 | 25.9 |
| E | Aug 66 | Revised MACV construction directive again tripled scope of project. Total scope now about 20 times the initial project magnitude. OICC continued design and construction efforts. OICC estimate is prelimary in advance of design completion. | 41.0 | 41.0 | 45.1 |
| F | Oct 66 | Revised MACV construction directive issued, again increasing scope. OICC revised design and construction effort. | -- | 55.5 | -- |
| G | Nov 66 | Revised MACV construction directive issued, again increasing scope. OICC revised design and construction effort. | -- | 55.7 | -- |
| H | Dec 66 | Updated OICC estimate. Design still not complete. Construction well underway with 2,000-man work-force. | 62.0 | 55.7 | 62.0 |

Additional Information: The headquarters building was ready for beneficial occupancy in May 1967. Punch list deficiencies were being completed in January 1968. The air conditioning system was completed in the summer of 1968 -- the delay in this feature resulted from a user decision to use available air conditioning equipment in the 1st Logistical Command headquarters building and defer completion of the USARV building.

Source: NAVFACENGCOM Files.

The materials might or might not be in stock. The components represented preplanning in that the material was identified and listed. Specific standby procedures to obtain, assemble, and ship component materials were available. Designs and instructions for assembly were provided.[11] An excerpt from the basic instruction and a sample of a standard unit is contained in Appendix B.

b. Army System

(1) The Army system in existence at the start of the buildup was the Engineer Functional Component System (EFCS), which had been developed in its present form early during the Korean War. The EFCS was the basic tool for the construction of facilities in the theater of operations, and it was used to supply two-thirds of the construction material for the Army troop construction program in SE Asia. Unlike the Navy system, the EFCS provided for the construction of facilities only. It did not include the system for deployment of troop units with their equipment and supplies, which, in the Army, was independent of, although coordinated with, requirements for facilities construction. This basic difference between the systems reflected the difference in the timing for construction of facilities. The Navy system provided for the deployment of units with material or prefabricated packages that were used to provide facilities of a specified life or degree of permanency. An Army unit (or cellular team) deployed with organic tentage and items such as vans. Construction of facilities was accomplished after arrival in RVN and firm establishment of unit locations. This difference stemmed from deployment expectations -- the Army intends to live under canvas until a long-range requirement develops, whereas the Navy does not envision deployment ashore and construction of facilities unless a valid long-range requirement exists.

(2) The EFCS is based on a building-block concept made up of items, facilities, equipages, and installations that may be combined as required to provide the necessary facilities. Implementing manuals provide construction drawings, bills of materials, construction estimates, and logistic data such as cost, weight, and cubage.[12]

c. Air Force System. The Air Force developed the bare-base concept in 1966 to provide mission-associated material packages for short-range requirements. The concept recognized the need for more permanent and sophisticated facilities only after a deliberate determination had been made that there would be a protracted need for the deployed air units in the theater of operations. Maximum retrievability and functional utility are features of this system. The facilities are of fixed size since they are tailored to support a specific unit. The material is maintained in a flyaway status in order to minimize response time lags.

d. Functional Components Systems in Vietnam

(1) The Special Military Construction Study Group found that, although the functional components (FC) systems were used in planning, experiences in Vietnam and inferences drawn from interviews conducted by the group indicated a lack of:

> ". . . inclusion of modern equipment and pre-engineered/pre-fabricated elements in FC designs, commensurate with modern technology,
> ". . . general acceptance by the user of facilities specified by FC systems,
> ". . . adequate coverage by the systems to meet new and evolving operational needs of the Services,
> ". . . a key to translate facilities expressed in FC terms into DOD category codes,
> ". . . cross referencing between Service systems,
> ". . . commonality among the Services of criteria, standards, and designs."[13]

[11]Office of the Chief of Naval Operations, Instruction P4040.22C, 15 October 1963.

[12]Department of the Army, Office Chief of Engineers, Information Brief, subject: The Engineer Functional Components System and its Application in SE Asia, 6 October 1969.

[13]Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), July 1968, p. 46 (CONFIDENTIAL).

(2) Functional components are an inbeing vehicle by which material requirements can be stated either to fill current requisitions or for translation into war readiness materiel (WRM) stockage objectives.

(a) Although the Services have different bases for maintaining stocks of WRM, the fact that some stocks were on hand and could be used immediately added to the troop and contractor capabilities to meet RVN construction requirements. The WRM program's usefulness, responsiveness, and readiness were degraded by:

> ". . . insufficient quantities of materials held in stock to make complete functional component assemblies, and to provide specific items, and
> ". . . over age condition (to the point of obsolescence in some cases) of many items which resulted in non-usability, reduced utility and installation/construction/maintenance difficulties."[14]

(b) Chapter 6 of a Deputy Assistant Secretary of Defense (Properties and Installations) publication concerns functional components and states in part: "It is the policy of DOD that a maximum of facility requirements in an area of contingency operations be met through the utilization of these components."[15]

(3) Additional factors basic to addressing the development of a joint functional components system in entirety are:

(a) Service research and development (R&D) programs

(b) Air Force and Army use of prefabricated and preengineered structures in Korea in 1968

(c) Lack of standardization in existing Service systems

(d) Planning factors.

(4) The research and development programs of the Services include many projects that may ultimately improve responsiveness through rapid deployment and installation of packages with inherent retrievability aspects -- landing mat is an example. The Services' requirements for landing mats differ significantly due to types of aircraft and anticipated duration of use. As a result, each Service can have an R&D project for landing mats with gross differences in the areas of research and objectives. The need for establishing an information exchange point is evident.

(5) The successful use of preengineered and prefabricated buildings in RVN and by the Army and Air Force in Korea in 1968 indicated an area of great potential for improving construction readiness and responsiveness. Many areas of consideration, however, stem from funding for stocks to meet requirements in future contingencies, i.e., operations and maintenance (O&M) versus military construction (MILCON) funded procurement, reimbursement, and financial accounting procedures.

(6) A standardization problem exists in nomenclature and dimensioning of the definitive drawings for facilities that have been prepared by the individual Services. This is an area where commonality should be attainable, but in many cases terms and dimensions vary. For example, the facility used to confine prisoners is described in the definitive drawings as a Navy "brig," an Army "cell block," and an Air Force "confinement facility"; the Air Force

[14] Ibid., p. 49.
[15] Office of the Assistant Secretary of Defense (Properties and Installations), Base Development for Contingency Operations, December 1968, p. 6-1.

specifies 5740 square feet for 32 persons, the Army 2200 square feet for 27 persons, and the Navy 960 square feet for 10 persons.[16]

e. Summary

(1) Functional components with firm designs and some nucleus of assets provide a valuable means of assisting planning and responding promptly to the need for facilities at the start of contingencies and during dynamic warfare.

(2) Actions now being taken recognize this importance.

(3) The tasks and environment of the operations of the Services introduce specialized needs.

(4) The fullest exchange of information among the Services in this area, starting with concepts and research and development, is of major importance.

(5) The Joint Chiefs of Staff, in tasking the Construction Board for Contingency Operations with exchanging information concerning results of Service functional components and retrievable concept R&D programs, have taken a healthy first step in this direction.

## 5. PREENGINEERED STRUCTURES

a. The physical construction in RVN was partly a process of converting bulk raw materials into facilities. The construction industry in our nation long ago conceived preengineering and prefabrication techniques, because standardization held forth the opportunity to minimize design requirements, and ease of erection could increase productivity of the work force. Although labor unions have slowed adoption of these techniques in the civilian sector, the Services do not have such a constraint in the theater of operations.

b. From a military application viewpoint, a prefabricated package for a facility can be deployed at least as rapidly as individual construction materials, and relocatability can reduce additional material requirements for support of in-country redeployments. The shortage of engineer construction units and trained personnel that could result from a decision to forego national mobilization in a future Vietnam size contingency indicates that greater use should be made of the construction industry's newest technology.

c. Preengineered and prefabricated commercial type facilities were used extensively in RVN to satisfy shop and warehouse requirements in logistics and air base complexes. They were also used to satisfy administrative requirements in the large complexes, such as MACV Headquarters and the USARV/1st Logistical Command Headquarters, as well as in smaller complexes, such as the Da Nang Supply Depot where real estate and time limitations dictated rapid erection of multistory structures. Their use in Vietnam was restricted by the availability of military supply agency stocks and the production capacity of the industrial base in the United States.

d. The Air Force, seeking an alternative to the bulk material conversion process, has developed a modular relocatable facilities concept, which envisions the use of preengineered and prefabricated structures. This system is not to be confused with the "bare-base" system, which provides air transportable packaged facilities designed for short-term support of operations from a forward airstrip. The relocatable facilities provide an alternative between either operating from austere field facilities or embarking on a major vertical construction program. The Air Force contends that selective theater of operations construction will provide a sturdy, comfortable, reasonably maintenance-free facility that can be retrieved and stored until needed at another location.[17]

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[16] United States Army, TM 5-302, Construction in the Theater of Operations; U.S. Air Force, ATM 88-2, Air Force Design Manual, Definitive Designs of Air Force Structures; U.S. Navy, NAVFAC, P-140, Advanced Base Drawings.

[17] Construction Board for Contingency Operations Briefing, subject: The Air Force Modular Relocated Facilities Program, 6 August 1969.

(1) The designs of 93 U.S. manufacturers were surveyed, and 3 were found to meet closely the requirements for quick assembly by troops and unskilled labor, easy demountability, and a minimum of nonrecoverable parts. Field tests proved the desirability of placing the bolted, rigid, steel-frame-and-plywood wall and partition structures in the A.' Force supply system.[18]

(2) The concept experienced a real test when, following the PUEBLO crisis in 1968, deployed Air Force personnel were faced with spending a Korean winter in tents. The decision was made to meet this urgent requirement with modular relocatable facilities. Upon authorization of the FY 68 Supplemental Military Construction Program for Korea, an existing procurement contract was modified. The first modular units were available approximately 1 year earlier than if the facilities had been designed and constructed in the conventional manner.[19]

e. In summary:

(1) Preengineered structures have a significant potential for future contingencies.

(2) The Joint Chiefs of Staff have tasked the Construction Board for Contingency Operations to examine in detail the use of preengineered units that can be retrieved and relocated. The results of this examination should provide valuable guidance for future programs in this area.

6. STANDARDS

a. The question of construction standards in Vietnam was raised as a problem even before the deployment of major units. Brigadier General Osmanski, MACV J-4, during the period 30 March 1962 to 28 February 1965, identified such standards as an unresolved problem in his tour completion report, dated 28 February 1965.[20]

b. As noted previously, CINCPAC had specified austerity in his contingency plan. On 8 February 1965, the Deputy Assistant Secretary of Defense (Properties and Installations) requested that "the Department of the Navy, as executive agency for construction in Vietnam, assume responsibility for design and construction standardization in this geographic area and apply this principle to the maximum extent possible." Cooperation and assistance of the Departments of the Army and the Air Force were requested. The reasons highlighted were:

> "Construction in Vietnam should be held to minimum essentials consistent with functional needs for a limited tenure. . . . Many opportunities for economies should be available by using similar designs for repetitive, common items. . . . For reasons of economy and to expedite the general design and construction effort."

The use of completed designs of one Service was prescribed "in cases where requirements are compatible and advantages in reduced construction costs and time may be achieved." It was "not intended that standarization of facilities should delay the initiation of construction already scheduled against critical completion dates," nor was it "intended that design funds (would) be uneconomically applied simply to attain uniformity without realizing other practical benefits."[21]

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[18] Ibid.

[19] Ibid.

[20] United States Military Assistance Command, Vietnam, Command History 1964, (U), p. 150 (TOP SECRET).

[21] Office of the Assistant Secretary of Defense (Properties and Installations), Memorandum, subject: Design and Construction Standards for Facilities in Vietnam Under the Military Construction Program, 8 February 1965.

c. On 27 May 1965, the Secretary of Defense signed individual letters to each of the Service secretaries transmitting the military construction approvals contained in Public Law 89-18. Each of these letters contained the following statement:

> ". . . In general, designs will be held to an austere minimum consistent with functional requirements, and the quality of facilities should be reasonably uniform for all Services, particularly where more than one Service is located at the same installation. Following this principle, costs for similar facilities constructed by the same methods at the same locations are expected to be comparable between Services."

d. Following these guidelines, COMUSMACV published on 4 June 1965 Directive Number 415-1, which assigned responsibility for development of construction standards to the Deputy Officer in Charge of Construction, SE Asia, and published the first general guidance on standards. Following establishment of the MACV Directorate of Construction in February 1966, the responsibility for the establishment of standards was transferred to the Director of Construction (MACV-DC). The 20 October 1966 revision to Directive 415-1 prescribed three cantonment standards "based on expected tenure of occupancy." These standards, which, with minor modifications, were to prevail for the remainder of the war, were as follows:

> "Field: Cantonments for forces whose activities are such that they may be characterized as essentially transient."
>
> "Intermediate: Cantonments for forces subject to move at infrequent intervals. Anticipated duration of occupancy: 24-48 months."
>
> "Temporary: Cantonments for forces not expected to move in the foreseeable future."

The regulation prescribed, in an annex, what these standards were for various types of facilities and provided for exceptions when approved by COMUSMACV. Examples of these standards as extracted from the annex, are shown in Table 4.

e. Brigadier General Raymond had the following to say regarding standards:

> "At the initiation of buildup, construction was underway to a limited scale on both U.S. and MAP support facilities which were permanent in nature. Obviously these standards could not be continued in view of the urgency and magnitude of the new program visualized. Not only would the effort and the time required to provide them have been unacceptable, but the cost would have been prohibitive. Accordingly, standards were developed to minimize cost and construction time. Three factors played a predominant role in standards determination: The mission of the unit for which the facilities were to be provided; the permanency of a unit in a given location; and the philosophy of the service. It became quite apparent at the outset that there could be no single standard for all purposes and that reconciliation of service philosophies would be difficult."[22]

General Raymond further observed:

> "Initial attempts at reconciliation of standards within RVN sought to establish a common denominator which would have had the effect of lowering standards of the Air Force and the Navy and raising those of the Army and Marine Corps. As might be expected, this step was only partially successful."

[22] Brig. Gen. D.A. Raymond, op. cit. pp. 12, 13.

TABLE 4

STANDARDS FOR FACILITIES

| Facility | Temporary | Intermediate | Field |
|---|---|---|---|
| Troop Housing | Austere wood buildings; 1-&-2 story barracks | Austere wood huts; tents with wood frame & floors | Austere wood huts; Class IV tents with wood frames and floors |
| Mess Halls | Preengineered metal or wood building | Preengineered metal or wood building | Wood building; tents |
| Dispensary | Preengineered metal or wood building | Preengineered wood or metal building | Wood building; tents |
| Electricity | Central power and distribution | Nontactical generators | Nontactical generators; TOE generators |
| Water Supply | Piped water distribution | Point supply with limited distribution | Point supply |
| Sewage | Waterborne | Consolidated treatment; burn-out latrines | Burn-out latrines |
| Roads | Paved | Stabilized | Dirt |

He concluded:

> "Common standards of construction must be established prior to the initiation of a construction program, with strong controls, particularly through funding levels, starting in the programming phase."[23]

f. The problem of establishing standards in RVN was complicated by variations in philosophies on the subject as well as the peculiar characteristics of the war.

(1) Both the Army and Marine Corps ground combat units have traditionally been equipped and trained to operate in a field environment with facilities of minimum standards. With the development of the advanced types of jet aircraft now in the inventory of the Services, it became necessary to develop concurrently more sophisticated technical equipment. As a result, the fixed bases, as differentiated from expeditionary flying fields from which Air Force and Marine tactical fighter units operate, have become sophisticated industrial activities with facilities constructed to necessarily high environmental standards.

(2) During and following World War II, the Navy utilized the ABFC system as a planning tool. During the Vietnam operations, the Navy used many elements of the system from full components to individual structures. These tended to be austere in view of the limited updating since World War II, e.g., the Da Nang hospital was housed in quonset huts.

[23] Ibid, p. 145

The Army's functional component system was used extensively for ordering construction materials. Again, the failure to update the materials lists had the effect of making the structures built from the materials ordered more austere than might otherwise have been the case. This experience emphasizes the interrelationship between standards and functional component systems

(3) A totally unanticipated rise in cantonment standards came into being, since the Vietnam contingency was unique in the way combat operations were conducted from a series of base camps and enclaves. The outgrowth was a degree of permanency and a higher standard of living for combat troops than was possible in any other war in our nation's history. This rise in standards had a major impact on construction requirements.

(4) The almost complete elimination of B rations and the large-scale use of frozen foods, fresh fruits and vegetables, and dairy products such as milk and ice cream created increased requirements for cold storage facilities that nullified planning factors based on previous experience.

(5) To preclude erosion of individual efficiency by the tropical environment, air conditioning was justified for specific parts of the cantonment areas, e.g., administrative and planning areas, certain medical facilities, and billets for night-flying aircraft pilots. This type of requirement was not envisioned in initial planning, and considerable time elapsed before a policy was formulated. In addition, many delays were experienced in completing facilities because of the long lead time required to procure and ship this type of equipment to RVN.

(6) To combat inflation in RVN, the service exchange systems marketed a variety of household items never before available in a theater of operations. In addition, many items not available from the exchange system could be ordered by mail from a private source or a mail-order house. As a result, television sets, room-size air conditioners, electric percolators, hot plates, small refrigerators, toasters, and electric blankets became commonplace in the newly constructed living quarters. The unprecedented requirements for electrical power necessitated unplanned procurement of electrical generators and either unscheduled original design or redesign of power distribution systems.

(7) General Raymond observed that the problem of standards in the construction program had been "a vexing one," particularly in application to cantonments. He further observed that in-theater application of standards must seek equity among the Services to the maximum extent possible. To this end he suggested the following:

> "All fixed installations, e.g., depots, ports, hospitals, airbases, etc., should be authorized the same standards.
>
> "All collocated activities of two or more Services should be authorized the same standards, regardless of other considerations.
>
> "The 'field' standard should be considered only an interim one with upgrading to at least intermediate and a continuing authorization on a permissive basis by the theater commander.
>
> "Funding should be authorized on the basis of only the two highest standards. Each Service should be authorized funds based on a theater commander approved split, percentage wise, between these standards. Each Service request for funds should be based on the same authorized unit cost applied to the theater commander authorized split. In the final analysis the most effective control of standards is through funds allocated."[24]

g. The Joint Chiefs of Staff Special Military Construction Study Group observed that, with the exception of those cases where problems became too large to be ignored, the overall question of standards was not addressed by the Secretary of Defense, the Joint Chiefs of Staff,

[24] Ibid, p. 114.

or the Services. Normal guidance by the foregoing agencies consisted of terms such as "minimum essential" and "austere," both of which are subject to varying interpretations. The study group concluded:

> "Construction standards for planning and/or execution of a construction program in support of contingencies are not uniform between Services and/or unified commands.
>
> "Variations in construction standards in Vietnam resulted in wasted resources and morale problems.
>
> "Uniform standards for all Service and unified commands can be developed by the Joint Chiefs of Staff in close correlation with a joint functional component system and an expanded DOD category code.
>
> "Uniform standards must be used in the planning and execution of construction in support of contingencies, if problems are to be based only on operational requirements.
>
> "Standards should be the minimum essential to meet operational requirements and all Services should strive to achieve, but not to exceed prescribed standards."

The study group recommended:

> "That the Joint Chiefs of Staff develop uniform construction standards in conjunction with a functional component system and an expanded DOD category code.
>
> "That the Joint Chiefs of Staff review contingency plans and base development planning directives to ensure that prescribed standards and controls are promulgated by unified commands."[25]

h. In establishing the Construction Board for Contingency Operations, the Joint Chiefs of Staff included in the terms of reference wording identical to these recommendations except that the Board is responsible for "development of proposed construction standards. . . ."[26]

i. In summary:

(1) The development of appropriate standards for construction prior to the development of a contingency situation would be a considerable value in improving the effectiveness and responsiveness of the construction program.

(2) These standards should be applied to functional components and units during the developmental phase.

(3) It is important that the standards be applicable worldwide, at any time, for any type of conflict.

(4) The tasking of the Construction Board for Contingency Operations to develop proposed construction standards and planning factors for adaptation to various contingency situations is an important initial step toward progress in this area.

## 7. FUTURE BASE DEVELOPMENT PLANNING

a. Following joint consideration of the recommendations of the Special Military Construction Study Group, the Joint Chiefs of Staff initiated a number of steps to improve contingency plans with regard to base development planning in order to provide for:

(1) Increased emphasis on base development at all joint command levels and in the Services.

[25] Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), 19 July 1968, pp. 70-71 (SECRET)

[26] Office of the Joint Chiefs of Staff, SM-352-69, Establishment of a Joint Staff/Service Construction Board for Contingency Operations, 4 June 1969.

(2) Increased participation in requirements validation by the joint commands.

(3) Improvement in joint command staffing for base development planning.

(4) Additional study toward development of an improved planning and execution system supported by automatic data processing methods.

(5) Improvement in the review process for base development plans.

(6) Establishment of a Joint Staff/Services board to exchange information concerning results of Service functional component and retrievable concept research and development programs and to develop construction standards and planning factors for adaptation to various contingency situations. In this regard, it is noted that more than 60 percent of the vertical facilities being constructed by the OICC/contractor in RVN at the end of 1968 were still being individually designed. Reducing this percentage by the establishment and enforcement of the use of common standards and designs would have resulted in significant savings in resources and earlier availability of facilities.

b. Specific actions taken include:

(1) Specifying that the base development plan be made an appendix to the logistics annex to operations plans.

(2) Directing that J-3 (Operations) and J-4 (Logistics) of the Joint Staff, in coordination with the Services. review contingency plans and base development plans of the unified commands.

(3) Establishing, on 4 June 1969, the Construction Board for Contingency Operations.

(a) The responsiblities of the Board include:

"Exchange of information concerning results of Service functional component and retrievable concept research and development programs.

"Examination in detail of the use of pre-engineered units which can be retrieved and relocated.

"Development of proposed construction standards and planning factors for adaptation to various contingency situations."[27]

(b) Regular reports regarding results of meetings, conclusions, and recommendations are to be made to the Joint Chiefs of Staff.

(4) Promulgating instructions, 1 October 1969, to the unified and specified commands for preparation of base development plans as part of the joint operations planning process.[28]

(a) A format, adaptable to automatic data processing use, is to be used without alteration.

(b) Unified commander responsibilities are specific. The commanders are charged to prepare base development plans and to provide enumerated items of guidance.

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[27] Ibid., p. 26.

[28] Office of the Joint Chiefs of Staff, SM-613-69, Instructions for Base Development Planning in Support of Joint Contingency Operations, 1 October 1969.

as appropriate, for subordinates. In addition, they must ensure that engineer intelligence requirements are included in the Consolidated Intelligence Program, and they are required to maintain current files on existing facilities, soils, terrain, climate, and other factors that influence construction capability within their area.

(c) With regard to the responsibilities of the Services, the instructions state: "Implementing directives will be published by the CINCs to specify the procedures for participation of their Service components in the base development planning required, since the detailed base development planning is the responsibility of the Services."

(d) Construction standards, planning factors, and use of ADP are specifically addressed.

(e) Experience has yet to be gained with this system. It is, therefore, too early to assess its value.

c. The Services are actively engaged in developing improved systems for base development planning, e.g., the Navy's STINGER system. It is expected that these new systems will substantially increase construction responsiveness. Although the effectiveness of these systems cannot yet be evaluated, it appears appropriate to comment on certain aspects of the base development planning process that should be considered in the development of joint and Service plans.

(1) Base development plans in the past have been characterized by an inherent inflexibility; they have been based on a given scheme of maneuver and on a given, fixed-force level. They have sometimes been accompanied by too much detail with planning going to the point of detailed master planning of installations. This approach is inappropriate for two primary reasons. First, deviations from approved operational plans must be expected. Second, there is an opportunity to adapt previously determined, as well as subsequently determined, gross construction requirements to actual field needs during the period immediately following D-Day. Construction during the first 3 to 6 months of an operation consists mainly of combat support and expedient work to meet immediate operational and logistic requirements. During this period, engineer planners can develop more detailed base development plans as the actual employment of the forces in the theater becomes more firm. An appropriate base development planning system should contain four key elements:

(a) An inventory of existing assets in the proposed area of operations and detailed climatological and topographical data.

(b) Identification of immediate construction requirements to permit implementation of the operational plan, e.g., port clearance, port construction, and expedient airfield construction.

(c) A system capable of determining gross facility requirements, material and equipment requirements, troop and contract effort requirements (see Chapter VI), and funding required under variable parameters of force levels, location and type of operations, and climatic conditions. Particularly for logistic increases, the system should be capable of developing requirements on a "construction slice" basis. For example, a change in port throughput requirements should generate gross requirements data for piers, staging areas, depot storage, and similar items.

(d) A plan for augmenting engineer staffs during the early stages of the buildup to adapt the gross requirements generated by the system to field conditions (see Chapter VIII).

(2) Other essential features of new base development planning systems are as follows:

(a) They must be adaptable to ADP.

(b) They must be compatible with Joint Chiefs of Staff instructions for base development planning and subsequent changes.

(c) The several Service systems should have no serious interface problems.

d. It is noted that substantial progress on the important and urgent tasks enumerated above has not been apparent to date. The Commanding General of the U.S. Army Materiel Command has stated in this regard: "Impact from these efforts on this command are not discernible."[29] A review of the minutes of the Construction Board for Contingency Operations meetings substantiates this lack of progress. The absence of a full-time engineer staff with advisory functions at the Joint Chiefs of Staff level is a repetition of the inadequate contingency construction staffing that existed generally just prior to the buildup in RVN. Although the tasks presently assigned to the Construction Board for Contingency Operations are important areas of consideration, there are other significant efforts that are not currently designated. These additional or expanded tasks include the following:

(1) More extensive coverage of the Services' activities to ensure that there is a complete exchange of knowledge concerning the construction aspects of base development planning to include planning systems and the progress of the Services' R&D programs for functional components and retrievable, preengineered structures.

(2) Assistance to the Services and the Commanders in Chief in identifying interface problems regarding base development planning related information.

(3) Monitoring of progress in regard to standardization and planning factors.

(4) Monitoring the status of actions taken to overcome major construction deficiencies identified in base development plans to include the availability of specific construction materials and equipment assets of such critical importance that the lack of them would limit significantly contingency plan implementation.

e. In summary:

(1) Steps recently initiated by the Joint Chiefs of Staff should provide better policy guidance, a better integration of base development planning within future contingency plans, increased attention to such planning by both the joint and Service commands in the formulation and review of contingency plans, improvements in future functional components and preengineered units, enhanced exchange of information among the Services, greater emphasis on functional components and preengineered and retrievable units, better use of ADP methods, and more adequate construction standards and planning factors. However, actual progress by the Construction Board for Contingency Operations has not been marked and, consequently, the responsibilities and functions should be expanded and strengthened as detailed above.

(2) Recognition is being given to the fact that base development planning for contingencies involves both operational and logistic considerations.

(3) Base development plans for contingencies should recognize the high probability that the actual situation will differ significantly in many respects from specifics of the operations plan and should be of such a nature as to be readily adaptable to wide variations

[29] Department of the Army, U.S. Army Materiel Command, Letter, AMCRP-G, subject: Modern Base Development Facility Components, 4 March 1970.

in the situation and implementation of the plan. Such an approach is consistent with the instructions for base development planning recently issued by the Joint Chiefs of Staff, but indications are that base development plans currently being prepared by the Services tend to be characterized by unwarranted detail and relative inflexibility.

(4) Planning should provide for the augmentation of engineer staffs during the early stages of the buildup with individuals expert in the field of base development planning.

(5) With the assistance of ADP, the Services are improving their capabilities to maintain up-to-date information on construction assets, in the form of materials and functional components, in the war reserves in readiness for contingencies. In addition to providing information to meet the command and management needs of the Services concerned, this will facilitate providing information to the Joint Chiefs of Staff and unified commanders appropriate to their responsibilities, e.g., overall readiness, deficiencies identified in the review of contingency plans, and major items of critical importance such as mobile or prefabricated deep-draft piers, airfield matting, and generators.

## 8. CONCLUSIONS AND RECOMMENDATIONS

### a. Conclusions

(1) The plan of the Commander in Chief, Pacific, was basically sound had Phase II been implemented. The specifics of the base development plans of the Services were to be almost nullified by the fact that the buildup was greatly different from that planned. For instance, although the Pacific Command Army component base development plan was adequate to meet planned requirements, it was developed within specific force level parameters and a fixed concept of operations--based on only one set of factors.

(a) As a result, when the scale of operations deviated substantially from the specified force level on which the plan was based, the usefulness of the existing base development plan was seriously degraded. There remained little more than a catalog of existing assets, climatic data, topographic information, and meaningless deficiencies in construction effort. The desirability of a base development plan that can be applied to a wide variety of situations and force compositions is clearly apparent.

(b) Action had been initiated to identify construction deficiencies in plans for logistic support, but, mainly because of the rapidity with which events subsequently moved, corrective action had not, in many cases, been initiated (paragraph 3a and Appendix H).

(2) Major changes in requirements in a rapidly changing war are inevitable. Planning must minimize time and effort in meeting these requirements. This indicates the importance of designs being able to meet the more common requirements and to avoid specially tailored designs wherever practicable. Special attention must be given in planning to the requirements for engineer intelligence, such as hydrographic surveys, and to the requirements for key construction items with long lead times with particular attention to dredges, pile drivers, and rock crushers (paragraph 3).

(3) Functional Components with firm designs and some nucleus of assets provide a valuable means of assisting planning and responding promptly to the need for facilities at the start of contingencies and during dynamic warfare.

(a) Actions now being taken recognize this importance.

(b) The tasks and environment of the operations of the Services introduce specialized needs.

(c) The fullest exchange of information among the Services in this area, starting with concepts and research and development, is of major importance.

(d) The Joint Chiefs of Staff, in tasking the Construction Board for Contingency Operations with exchanging information concerning results of Service functional components and retrievable concept research and development programs, have taken a healthy first step in this direction (paragraph 4).

(4) Preengineered structures have a significant potential for future contingencies. The Joint Chiefs of Staff have tasked the Construction Board for Contingency Operations to examine in detail the use of preengineered units that can be retrieved and relocated. The results of this examination should provide valuable guidance for future programs in this area.

(5) The development of appropriate standards for construction prior to the development of a contingency situation would be of considerable value in improving the effectiveness and responsiveness of the construction program.

(a) These standards should be applied to functional components and units during the developmental phase.

(b) It is important that the standards be applicable worldwide, at any time, for any type of conflict.

(c) The tasking by the Joint Chiefs of Staff of the Construction Board for Contingency Operations with developing proposed construction standards and planning factors for adaptation to various contingency situations is an important initial step toward progress in this area and, because of its importance and urgency, should be expedited (paragraph 6 and Chapter VIII, paragraph 2c).

(6) Steps recently initiated by the Joint Chiefs of Staff should provide better policy guidance; a better integration of base development planning within future contingency plans; increased attention to such planning by both the joint and Service commands in the formulation and review of contingency plans; improvements in future functional components and preengineered units; enhanced exchange of information among the Services; greater emphasis on functional components and preengineered and retrievable units; better use of automatic data processing methods; and more adequate construction standards and planning factors.

(a) Recognition is being given to the fact that base development planning for contingencies involves both operational and logistic considerations.

(b) Base development plans for contingencies should recognize the high probability that the actual situation will differ significantly in many respects from specifics of the operation plan and should be of such a nature as to be readily adaptable to wide variations in the situation and implementation of the plan. Such an approach is consistent with the instructions for base development planning recently issued by the Joint Chiefs of Staff, but indications are that base development plans currently being prepared by the Services tend to be characterized by unwarranted detail and relative inflexibility.

(c) Planning should provide for the augmentation of engineer staffs during the early stages of the buildup with individuals expert in the field of base development planning.

(d) With the assistance of automatic data processing, the Services are improving their capabilities to maintain up-to-date information on construction assets, in the form of materials and functional components, in the war reserves in readiness for contingencies. In addition to providing information to meet the command and management needs of the Services concerned, this will facilitate providing information to the Joint Chiefs of Staff and unified commanders appropriate to their responsibilities, e.g., overall readiness, deficiencies identified in the review of contingency plans, and major items of critical importance such as mobile or prefabricated deep-draft piers, airfield matting, and generators (paragraph 7 and Chapter VIII, paragraph 2c).

(7) In addition to the above, Vietnam experience indicated that it would be appropriate to expand the activities and tenure of the recently established Joint Staff/Services Construction Board for Contingency Operations. The activities of the Board need to be expanded to provide additional advice and assistance to the Joint Chiefs of Staff in coordination of the establishment of construction policies and capabilities responsive to contingency requirements. Initially, the Board needs a full-time technical staff to overcome the backlog of work and to develop procedures that will facilitate discharge of the Board's responsibilities. Thereafter, the Board should be assigned full-time assistance as necessary to accomplish specific tasks (paragraph 7) (see notes to Recommendation (CO-2).

b. Recommendations. The Board recommends that:

(CO-1) The Joint Chiefs of Staff ensure that the following are accomplished:

(a) Ensuring a continuing full exchange of information among the Services in major aspects of base development planning.

(b) Identifying any interface problems among the Services and unified chains of command in base development planning and related information.

(c) Monitoring progress in regard to standardization and planning factors.

(d) Monitoring overall readiness to meet contingency construction needs, the status of major deficiencies identified in the contingency planning process, and the availability of any specific assets of such critical importance that the lack of them would limit significantly contingency plan implementation (conclusions (1), (2), (5), and (6) ).

(CO-2) In order to assist the Joint Chiefs of Staff in the accomplishment of the preceding responsibilities, the Terms of Reference of the Construction Board for Contingency Operations be amended as indicated in Appendix F to this monograph (conclusions (3), (4), (5), and (7) ).

NOTE 1: While agreeing with Recommendation (CO-1), the Navy Member of the JLRB does not agree with those portions of Appendix F which would change substantially the purpose of the Construction Board for Contingency Operations. The Navy Member set forth the following reasons:

"Following a review of the report of the Special Military Construction Study Group by the Joint Staff and Military Services, actions on several of the Study Group items were combined into a recommendation promulgated by JCS Memoranda (SM-801-68, SM-802-68, SM-803-68) of 11 December 1968, namely:

'That a Joint Staff/Service board be established to exchange information concerning results of Service functional component and retrievable concept research and development programs. The use of pre-engineered units which can be retrieved and relocated will be examined in detail. The Board will develop construction standards and planning factors for adaptation to various contingency situations.'

"I concur with the Terms of Reference as promulgated by JCS memorandum SM-352-69 of 4 June 1969 to implement the recommendation. Every effort should be made to fulfill the responsibilities so assigned at the earliest practicable date including the assistance of personnel working full time to the extent necessary. In addition, I believe it would be appropriate to task the board also with monitoring progress in the application of the standards and planning factors developed and in ensuring a continuing full exchange of information on the technical aspects of base development planning for contingencies.

"In my opinion, other recommended changes to the Terms of Reference would extend the purpose and responsibilities of the Board into matters to do with policy, command relationships,

programming, requirements, planning, and acquisition of material highly inappropriate for a specialized board. It would, I believe, inject the Board into matters which should be the subject of coordinated efforts within the Joint Staff and at the higher levels of the Military Services; tend to compartmentalize matters related to the construction aspects of planning and readiness; increase the danger of by-passing the responsible chains of command; encourage redundancy and duplication; and result in inefficient use of personnel."

NOTE 2: The USMC Member comments as follows:

"While agreeing with the great importance of both planning and execution of those aspects of the Military Construction Programs that relate to Base Development in Support of Joint Contingency Operations, I have certain reservations regarding the course of action recommended by the majority of the JLRB which is proposed as a means of improving existing procedures

"The Joint Chiefs of Staff have been acutely aware of the shortfalls that manifest themselves in the support of operations in the Republic of Viet Nam after 1965 and have taken a number of positive actions since 1968 designed to identify causes, fill voids, promulgate uniform procedures and undertake review and monitoring of the processes.

"It is apparent that action has been initiated by the Joint Chiefs of Staff to remedy many of the shortcomings in the area of base development and construction which occurred in the Vietnam buildup The most prominent of these actions by the JCS are the issuance of SM-643-69 and establishment of the Construction Board for Contingency Operations. Other appropriate actions are known to be in work and continuing.

"In my view, it is too early for either the JLRB or the JCS to have reached definitive conclusions as to the overall pattern by which the JCS will achieve and retain the high degree of control that is essential to the success of base development in support of future contingency operations.

"I am in agreement that the detailed responsibilities set forth in the Construction Monograph and the need for the full time assistance for the Contingency Board are valid and need to be assigned to suitable subordinate functionaries of the JCS but the alignment and delegation of authority should be based on the evaluation which will only be possible when the ongoing preliminary steps have been completed. I, therefore, suggest this alternate be adopted."

(CO-3) Because of their importance, high priority be assigned to the completion of tasks assigned to the Construction Board for Contingency Operations and officers be assigned to work for the Board on a full-time basis as necessary to complete these tasks (conclusions (3), (4), (5), and (7) ).

(CO-4) Rather than concentrating on specific details, such as individual line item identification and siting, contingency base development planning place emphasis on the following:

(a) Determination of gross requirements derived from typical site layouts.

(b) Troop and contractor effort requirements.

(c) Funding required under variable parameters of force levels, locations, types of operations, and climatic conditions.

(d) Key construction items with long lead times with particular attention to dredges, pile drivers, prefabricated piers, and rock crushers (conclusion (2)).

(CO-5) Provisions be made for the prompt augmentation of engineer staffs during the early stages of the buildup to adapt gross construction requirements to actual field conditions (conclusion (6) ).

# CHAPTER IV
# PROGRAMMING AND FUNDING

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# PROGRAMMING AND FUNDING

1. INTRODUCTION. Unlike other wars, funding of the majority of the Vietnam construction effort was through military construction (MILCON) appropriations, and peacetime programming and budgetary procedures were essentially retained. Comments received by the Joint Logistics Review Board from responsible officers have highlighted the adverse effects of such procedures and stressed the need for a way to provide a better balance between flexibility for the commander using construction funds under combat conditions and the need for control of the overall effort at the Washington level. Previous studies and reports on construction in Vietnam have generally agreed on this point, highlighting a continuing division at various echelons between those desiring program and financial control of each line item at the Washington level and those desiring complete flexibility in the accomplishment of construction in the combat area. This chapter will review the major evolutions of the construction programs, the degree of program authority delegated to commanders in the theater of operations, and the factors affecting program flexibility.

2. PROGRAM EVOLUTION

a. The Decision To Use MILCON Funds. Prior to FY 65, more than $60 million had been made available for construction in the Republic of Vietnam (RVN) primarily through the Military Assistance Program (MAP) and for the Vietnamese military. Subsequent to the Tonkin Gulf incident, the Secretary of Defense, by memorandum of 2 September 1964, directed that construction costs related to the deployment of nonadvisory units be funded from appropriations available to the military departments rather than MAP. Further, obligations and expenditures incurred against MAP funds for certain specified projects previously approved under MAP but required for nonadvisory units were to be transferred to or reimbursed by "applicable Military Department appropriations."

(1) Although the Secretary of Defense memorandum did not specifically state that the construction requirements of U.S. forces would be financed by MILCON appropriations, the guidance provided by the implementing Joint Chiefs of Staff message 032200Z of September 1964 required that all projects contemplated be submitted on DD Forms 1390 and 1391. This requirement essentially placed programming on the MILCON route along with its many time-consuming procedural constraints. These constraints were recognized in a Secretary of Defense memorandum of 1 October 1964, which requested the military departments to make appropriate comments and recommendations concerning special procedures for funding and approving military construction projects for SE Asia.

(2) Programming and funding procedures were of particular concern to the Navy due to its responsibilities as construction agent in the SE Asia areas. By memorandum of 27 November 1964, the Secretary of the Navy emphasized that this problem had far-reaching implications regarding the support and readiness of our forces in SE Asia and throughout the world and identified the fluid situation in Vietnam as one requiring a flexible and rapid response for MILCON needs. He urged recognition of the fact that the situation in SE Asia was rapidly evolving into a combat operation that could not be supported with existing funding, that Congress should be requested to provide relief, and that there appeared to be reason for optimism that such a request would be favorably received by the Congress. He recommended that "approval procedures be streamlined to reduce time consuming administrative review to the barest minimum consistent with Congressional desires for information and control."

(3) Subsequent to his return from a visit to the Pacific Theater, the Director for Logistics on the Joint Staff generalized that a great many of the present difficulties were dictated by peacetime funding procedures and indicated that a broad plan was under consideration within the Staff of the Office of the Secretary of Defense (OSD) to correct procedural, funding, organizational, and other similar constraints that were compounding logistic problems in South Vietnam. His stated objective and concept for responsive financial support was to remove inhibiting peacetime procedures without sacrificing appropriate control and to establish a streamlined and responsive system appropriate to the combat situation.[1]

(4) Of further interest to the yet unresolved procedural constraints is a series of exchanges between Congress and the Department of Defense (DOD) concerning the propriety of using MAP vice MILCON funds to satisfy the construction requirements of U.S. forces. By letter of 5 February 1965, the Chairman of the House Armed Services Committee questioned the statutory propriety of utilizing MAP funds to initiate construction that, although previously authorized under MAP appropriations, was now considered by the Secretary of Defense to be chargeable to MILCON appropriations. The Secretary had further directed the military departments to reprogram these projects utilizing appropriate emergency authorization. The Chairman further stated:

> "Under the facts presently made available to me, it would appear that if these projects were properly military construction projects, action should immediately have been taken by your office to effect them through the reprogramming authority and procedures outlined in the military construction bill. My Committee has never, to my knowledge, failed to act expeditiously in respect to any urgently required 'emergency construction project'."

(5) Prior to the transmittal of a reply, the Secretary was in receipt of an 11 February letter from the Chairman of the Subcommittee on Military Construction Appropriations. This letter reflected the Committee's decision following the hearings on the aforementioned reprogramming actions. Armed with the Secretary's rationale concerning the use of MAP and MILCON appropriations, the Committee's decision was to authorize the projects specifically addressed and estimated at $9.77 million from MAP appropriations. By memorandum of 1 March 1965 the Secretary of Defense advised the Assistant Secretary of Defense (International Security Affairs) (ASD (ISA) ) that he had decided not to reclama the Committee's decision regarding the above sum. He also stated: ". . . in order to conform to the position of the Committee, it will become necessary that the costs of previously approved projects now underway for construction of the Army Security Agency locations and the planning of Danang and Chu Lai Air Fields will be financed with MAP funds." A listing of the projects included in the $9.77 million, as well as the additional projects addressed in the OSD memorandum of 1 March 1965, is shown in Table 5.

TABLE 5

LIST OF MAP FUNDED PROJECTS

| Project Description | Location | MAP Funding |
|---|---|---|
| Airfield Complex Including A&E | Nha Trang | $ 3,335,000 |
| Dry Storage w/Generators A&E | Saigor | 1,350,000 |
| Army Airfield Facilities | Various | 5,085,000 |
| Subtotal | | $ 9,770,000 |
| Army Security Agency | Various | $ 4,300,000 |
| Airfield Design | Da Nang | 258,000 |
| Airfield Design | Chu Lai | 390,000 |
| Total | | $ 14,718,000 |

[1] Lt. Gen. R. D. Meyer, USA, Trip Report, Logistic Improvement South Vietnam, 5 February 1965.

(6) Although overtaken by events, a Secretary of Defense reply was still pending concerning the statutory propriety of utilizing MAP funds to initially finance, subject to reimbursement, projects that, although previously authorized and funded under MAP, were now considered to be properly chargeable to MILCON appropriations. By letter of 2 March 1965, the Secretary of Defense replied:

> "As you are aware, the determination of whether a particular item should be considered as military assistance or military construction depends on an evaluation of many factors. In general, facilities which are intended exclusively or principally for support of military missions of U.S. forces are included in the Military Construction Program, while those intended for support of host country forces are treated as military assistance. However, with the character of the buildup necessitated by the critical situation in South Vietnam, there are a number of items which may be said to involve the support of foreign country forces as well as the support of the assigned missions of U.S. military forces. In such instances, it is the opinion of the Department of Defense that there is a basis for proceeding either under the authority of the Foreign Assistance Act of 1961, as amended (Sections 503a and 644(d)) with funds appropriated pursuant to that Act or under applicable provisions of Military Construction Authorization Acts, with military construction funds.
>
> "After consideration of the issues raised by your letter and in deference to the views of the Military Construction Subcommittee of the House Committee on Appropriations, I have directed that the costs of those projects initially financed with military assistance funds and which are now in advance stages of design and construction should be funded by the Military Assistance Program. Accordingly, we wish to withdraw such projects from the reprogramming proposals now before your Committee."

(7) Thus, it is concluded that facilities considered for joint use (U.S. and Free World Military Assistance Forces) could have been financed from either MILCON or MAP appropriations. The decision to sponsor facility requirements of U.S. forces via the MILCON route, however, was not only retained, but, as will be discussed later in this chapter, MAP requirements were to become integrated into the MILCON system.

b. Responsiveness. The first action to improve the responsiveness of the MILCON system is found in a Deputy Secretary of Defense letter of 6 March 1965 to the Chairman of the Subcommittee on Military Construction Appropriations. This letter proposed that OSD be granted the power to authorize urgently required construction as necessary, using the authorization of Sections 102, 203, and 303 of PL 88-390 and available MILCON funds, and that the subcommittee be advised concurrently or soon thereafter of the work involved, the reason therefor, and the estimates of the line items of construction. It was proposed that this revised procedure be employed for the balance of the fiscal year and be limited to South Vietnam requirements.

(1) Exactly how broad were these revised procedures in terms of flexibility and dollar value? As far as the Services were concerned the only relief granted was at the OSD level. The detailed flow of paper work, justification, and definition were not relaxed. A flow diagram for emergency construction authorization and funding is shown in Figure 8. In addition, the reprogramming authority addressed, which was within the FY-65 authorization not only was unfunded, but any use thereof required the forfeiture of an equal amount of authorization. This was an unusual stipulation of the FY 65 authorization, which fortunately was not contained in future authorizations. A summary of the emergency authorization contained in the FY 65 law along with the extent to which it was used in the Pacific theater is shown in Table 6.

(2) Continuing concern was reflected in a Secretary of the Navy memorandum of 31 March 1965 that stated: "The existing procedures and funds . . . are inadequate and we are not being responsive to the recommendations of our Fleet Commanders." By contrast, the Secretary of Defense had stated in a memorandum of 1 March 1965 that the availability of funds for the financing of aid to Vietnam was unlimited. Of further concern to the Secretary of the Navy were the numerous construction requirements then considered essential to adequately support the Vietnam crisis but for which no resources were available within the Navy and the flood of construction projects from all services foreseen for SE Asia and for which the Navy, as construction

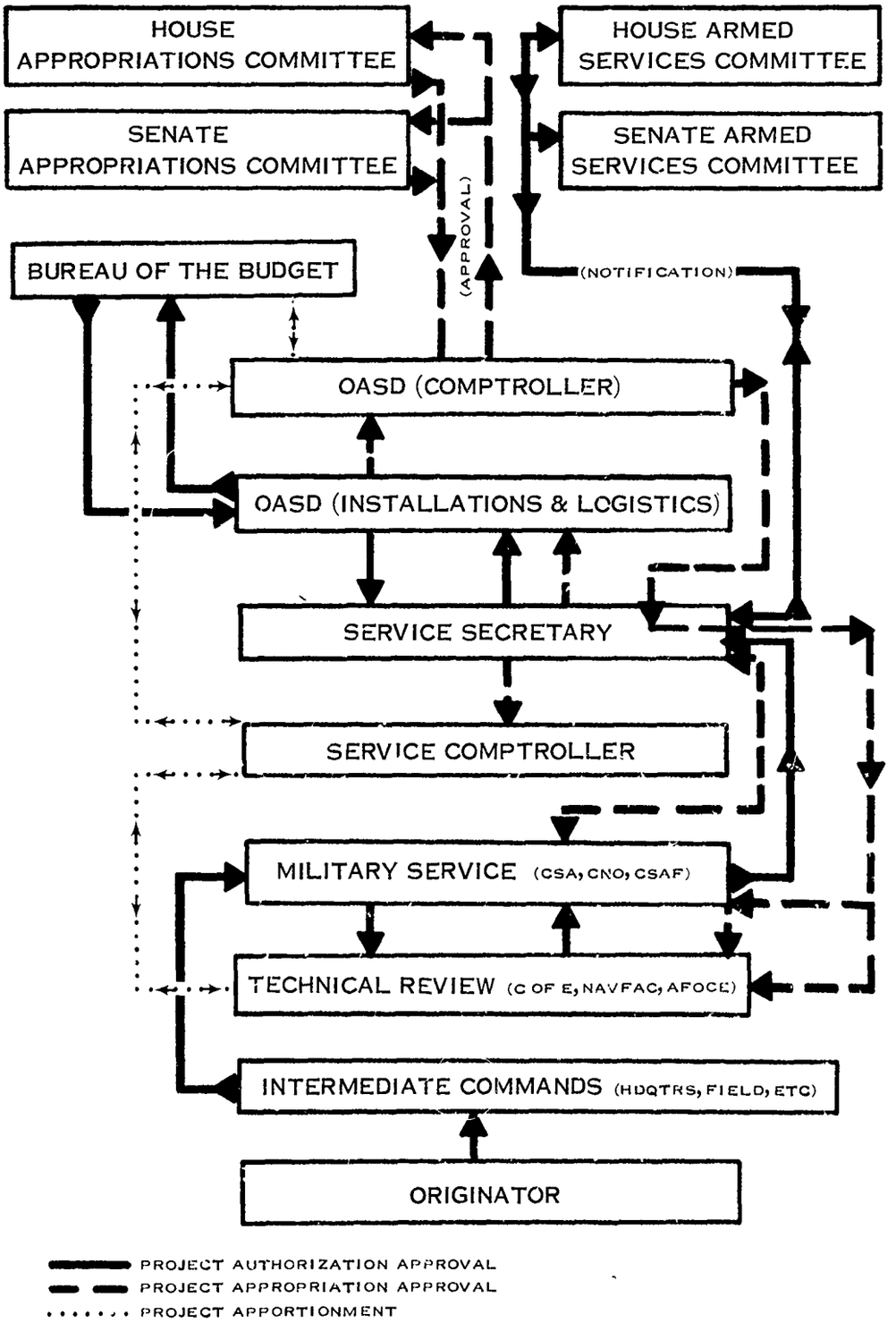



FIGURE 8. FLOW DIAGRAM FOR EMERGENCY CONSTRUCTION AUTHORIZATION AND FUNDING REQUIRING CONGRESSIONAL APPROVAL

TABLE 6

SUMMARY OF USE OF EMERGENCY REPROGRAMMING AUTHORITY IN PUBLIC LAW 88-390
(Millions of Dollars)

| Department | Section of Law | Authority | Appropriations | Amount Reprogrammed | |
|---|---|---|---|---|---|
| | | | | PACOM | RVN |
| Army | 102 | 17.5 | 0 | 13.6 | 13.4 |
| Navy | 203 | 17.5 | 0 | 13.4 | 9.4 |
| Air Force | 303 | 17.5 | 0 | 14.7 | 8.9 |
| DOD | - | 0 | 0 | 0 | 0 |
| Total | - | 52.5 | 0 | 41.7 | 31.7 |

agent, was not at present prepared to meet. It was emphasized that, although a great number of projects had been proposed, only a very minor portion had been planned to a sufficient degree to permit commencement of construction; in any event, if both funds and plans were available, a delay of from 4 to 6 months would still be experienced in order to procure and transport the necessary materials and equipment to the area. In order to provide for the essential Navy construction requirements as well as get a jump on planning, designing, and stockpiling of advanced materials and equipment, the Secretary of the Navy recommended that supplemental authorizations and funds in the amount of $49 million be made available to the Navy in a timely manner.

(3) Similar concerns had already been expressed by Commander in Chief, Pacific (CINCPAC) message 120017Z of March 1965. In commenting on ways and means of reducing construction lead time, CINCPAC recommended that design, real estate acquisition, and material requisitions be initiated immediately so that actual construction, once funded, would not be delayed by these prerequisites. Construction programming and funding procedures precluded such action. CINCPAC further stressed the securing of early congressional consideration of contingency construction requirement in FY 66 MILCON or preferably a supplemental FY 65 appropriation for contingency construction.

(4) The need for procedural changes to the normal MILCON system was apparent. The only question was the form and extent of these required changes. One of the actions taken was to include in the proposed bill for FY 66 a request for both authorization and funds in the amount of $50 million to be available to the Secretary of Defense to meet emergency construction requirements. Previous emergency authorizations had not been funded and, therefore, required reprogramming from the items already authorized. In the Congressional hearings of 13 April 1965, the Chairman of the Subcommittee on Military Construction Appropriations acknowledged that "normal reprogramming channels may not be sufficiently responsive to meet these emergency situations." Although both the reprogramming authority regarding the 1965 program and the $50 million contingency fund previously mentioned were granted to the Secretary, skepticism and caution were expressed by some members of the subcommittee who had serious reservations about extending this kind of authority to the point that the Congress was essentially giving DOD a blank check. As will be noted later in this chapter, a number of blanket appropriations representing appreciable amounts of money were to be made available in the ensuing months.

(5) Additional relief was provided by the OSD message 011835Z of April 1965 that informed CINCPAC and CNO that the $6 million requirement for construction equipment, which the Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV) (as well as CINCPAC and the Secretary of the Navy) had urgently requested, had been approved for inclusion in an add-on FY 65 MAP package for Vietnam. This was another precedent toward utilizing MAP appropriations to finance the construction requirements of U.S. forces.

c. Major Appropriations. The appropriation of large sums of MILCON dollars did not actually take place until the first supplemental appropriation, known as the 1965 Supplemental, was passed on 7 May 1965 as Public Law 39-18. This was followed by a number of additional supplemental and regular appropriations, the last of which was enacted on 26 September 1968. This section will review the development of these appropriations with emphasis on the earlier programs that impacted so noticeably on the responsiveness of the overall construction effort. Major provisions, actions, and force levels to be supported will also be considered in examining the evolution of these programs. Additional details, analytical charts, and supporting data concerning these major appropriations are provided in Appendix G.

(1) The FY 65S Appropriation. Subsequent to the landing of a Marine brigade at Da Nang and the planning concerning the deployment of additional U.S. forces to Vietnam, CINCPAC convened a conference on 8 April 1965 that, in part, identified the facilities required to support U.S. forces. These requirements, estimated at $305 million, were submitted to the Joint Chiefs of Staff, who in turn validated a program of $294 million. During the course of the CINCPAC conference, the Assistant Secretary of Defense (Installations and Logistics) (ASD (I&L)) requested the Secretaries of the military departments to submit their requirements grouped into three separate categories of priority and to take into account the findings of CINCPAC and the Joint Chiefs of Staff referenced above. The Service submissions amounted to $285 million. The force levels used as a basis for the development of these requirements were subject to appreciable vacillation during this time frame. It is not surprising, therefore, that upon being apprised of these requirements and their costs the Secretary of Defense convened a special second conference in Honolulu on 19 and 20 April 1965. Following this conference, new guidelines were issued to the military departments resulting in the reduction of the tri-category list of requirements from the previously submitted $285 million to a newly stipulated total of $200 million. By this time the President's request for a FY 65 supplemental appropriation had been forwarded to the Congress void of any line-item detail, and, in view of the urgent nature of the requirement, joint hearings were commenced on the morning of 5 May 1965. Two days later, a Joint Resolution was passed that made a supplemental appropriation of $700 million directly available to the Department of Defense for transfer to any appropriation deemed necessary in connection with military activities in SE Asia. During the hearings of 5 May, the Secretary of Defense stated that approximately $100 million was required to satisfy the construction category. Ultimately, the Secretary allocated nearly $108 million to the Pacific theater, of which $72 million was for construction within RVN. By way of comparison, the previously stated CINCPAC requirement of $305 million included $169 million for RVN proper. Authorization to proceed with specified projects were promulgated by Secretary of Defense memorandums of 27 May 1965. These memorandums modified the normal restrictions governing the execution of military construction programs by delegating, to the military departments, the authority to transfer projects from one location to another if the mission that originally generated the requirement had been reassigned to the new location.

(2) The FY 66 and 66A Appropriations

(a) The next major MILCON appropriations to be made available in support of the SE Asia requirements were enacted during the end of September 1965. Two appropriations, namely the FY 66 regular and the FY 66 amendment, were passed by the Congress on 25 and 29 September 1965, respectively. These appropriations provided approximately $250 million for construction of facilities in support of the SE Asia program, of which $180.9 million was expended on projects within RVN.

(b) Subsequent to the passage of the FY 65 supplemental appropriation on 7 May 1965, the serious deterioration of conditions in Vietnam became increasingly apparent, and the level of U.S. commitment was considered insufficient. In early July, COMUSMACV identified his construction requirements at $104 million in order to support the planned deployment of 75,000 U.S. troops. These requirements were in addition to the $26 million already included in the regular FY 66 program. By mid-July, strategic reviews at the highest national level resulted in the complete restructuring of requirements in order to support a total deployment of approximately 180,000 U.S. troops, a level that was to be achieved by the end of 1965. As a result of this restructuring, Pacific Command (PACOM) construction requirements

were reestimated at $560 million, of which $268 million was for RVN. The OSD supplemental budget then under preparation was in keeping with the early July plan to deploy a level of 75,000 troops and, unfortunately, became the basis for the FY 66 emergency appropriation request that was forwarded to the Congress on 4 August 1965. From the resulting appropriation, known as the FY 66 Amendment, approximately $160 million was apportioned for military construction in support of SE Asia. The majority of these funds, $133 million, was for PACOM requirements, of which $90 million was earmarked for RVN proper. This figure was appreciably below the CINCPAC estimate of $560 million, and the RVN portion even fell below the earlier COMUSMACV stated requirement to support a level of 75,000 U.S. troops. From the point of view of CINCPAC, construction requirements were being underfunded and underprogrammed by $427 million.

(c) In summary, the MILCON portion of this FY 66A budget was based on supporting a total deployment of 75,000 U.S. troops. At the time of its submission to the Congress, the approved force level to be achieved by September of that same year was 125,000. Approximately 3 weeks prior to the passage of the bill, the approved force level was further increased to 175,000, the achievement of which was planned for the end of that calendar year. In addition, a level of 210,000 was under serious consideration and was, in fact, approved in early October 1965. This level was nearly three times that which the submitted and approved program was designed to support. Since the bill was not line-item oriented and the funds addressed in the SE Asia section were not even oriented to any specific appropriation, an addendum for increased funding would have been feasible. The fact that a last minute change could have been introduced is evidenced by the actual experience of the FY 65S appropriation, namely, that the passage of the latter only took 4 days from the time it was sent to the Congress until it was passed into law.

(d) The constant dialogue on the subject of force levels planned and to be deployed, along with the attendant impact on construction requirements, prompted the Joint Chiefs of Staff to request a thorough CINCPAC review of the overall requirements to adequately support operations and approved deployments. This was especially significant in view of the reduced level of program approval vis-a-vis the CINCPAC stated requirements of 29 July 1965. CINCPAC responded by message of 24 September 1965, 5 days prior to the passage of the FY 66A appropriation. These new requirements by CINCPAC amounted to $671 million, excluding planning and CONUS support items. This represented an increase of over $100 million from the July submission. Some relief was provided through reprogramming actions and from contingency funds ($50 million) that had been included in the regular FY 66 appropriation for use by the Secretary of Defense.

(e) In retrospect, and considering subsequent allocations from existing appropriations not then foreseen by CINCPAC, the deficit in the funding of MILCON requirements amounted to nearly $500 million. A summary analysis of this deficit is shown in Table 7. This deficit resulted from supporting a force level of 175,000 U.S. troops, all of whom were to be in-country prior to the end of the calendar year, at which time the approved deployment level had been increased to 393,700 U.S. troops. Of further significance is the apparent imbalance in the Service requirements reflected by CINCPAC, particularly as applicable to Vietnam. Although the Army in-country force level was approximately 64 percent of the total throughout the FY 66 to FY 69 time frame, their requirements, as reflected in Table 7, represented only 25 percent of the total. An analysis of this condition is provided in the following section.

(3) The FY 66S Appropriation. The funding deficit, as it stood in late September, represented what was to become the basis for the FY 66 supplemental appropriation. In following months, however, the approved force level to be deployed increased from 175,000 to 393,700, the latter being the basis for the FY 66S program ultimately submitted to the Congress in January 1966. MILCON requirements were of course affected. Both the Navy and Air Force requirements approximately doubled in estimated dollar value, the Army requirements increased fourteen-fold from the initial deficit of $29 million to $407 million. Analysis of the Army program revealed that the major identification of requirements, at least dollar-wise, occurred incident to the Phase IIA increase. This increase was relatively minor, representing a force-level increase of less than 20 percent. Further, since requirements were developed on relatively short order, a comparatively soft program resulted. This condition, however, is not

TABLE 7

DEFICIT ANALYSIS OF MILCON REQUIREMENTS
(Millions of Dollars)

| Description | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| | | RVN | | |
| CINCPAC Rqmts. of Sep 65 | 92.9 | 148.0 | 113.4 | 354.3 |
| Funds Avail. from 66 & 66A | 63.6 | 52.8 | 52.7 | 169.1 |
| Deficit | 29.3 | 95.2 | 60.7 | 185.2 |
| | | Other | | |
| CINCPAC Rqmts. of Sep 65 | 137.3 | 63.5 | 116.2 | 317.0 |
| Funds Avail. from 66 & 66A | 28.7 | 10.3 | 18.7 | 57.7 |
| Deficit | 108.6 | 53.2 | 97.5 | 259.3 |
| | | PACOM Total | | |
| CINCPAC Rqmts of Sep 65 | 230.2 | 211.5 | 229.6 | 671.3 |
| Total Funds Available | 92.3 | 63.1 | 71.4 | 226.8 |
| Deficit | 137.9 | 148.4 | 158.2 | 444.5 |

peculiar to the FY 66S program, as evidenced by comparing the total programs approved through FY 66 with that finally allocated. For example, whereas nearly $80 million had been programmed for medical facilities, less than $12 million was finally allocated toward this end use; cantonment facilities were reduced to half; and port and depot facilities were more than doubled. The total funds requested for DOD in the FY 66 supplemental program amounted to $12.4 billion, of which $1.238 billion was for military construction. Of the total for construction, $1.1 billion was earmarked for the Pacific theater, and the balance was to finance planning, design, and continental United States (CONUS) requirements. The planned Vietnam construction program amounted to $737 million, of which $684.5 was ultimately allocated.

(a) Contingency - Flexibility Funds. The Secretary of Defense fully recognized the lack of adequate program definition in the stated MILCON requirements that were submitted to Congress in January 1966. In order to preclude being locked into a specific program by Service and by country, he tailored the program so that $200 million of the $1.238 billion would be appropriated to "Military Construction, Defense Agencies" for later transfer to the military departments as required. This resulted in a greater degree of flexibility in the utilization of the overall funds. This pocket of money has often been referred to as the Secretary's "contingency fund." Since overall requirements had been generally identified against the entire MILCON portion of this appropriation, including the $200 million, this reference was misleading. Of this $200 million, $175 million was specifically obtained by reducing the Vietnam program from $737 to $562 million. However, mobilization in Vietnam proceeded on the basis of the larger amount. This pocket of money was exactly what the Secretary had described it as -- a provision for flexibility to accommodate inevitable changes not only within but, more important, among the Services. Further emphasis and clarity was provided in support of the need for this flexibility due to the lack of firm program definition at the Congressional hearings of 3 February 1966 before the House Appropriations Subcommittee on Military Construction. During these hearings, emphasis was made of the fact that projects, as finally built, bore little resemblance in many cases to those originally intended. The apparent futility of reviewing the program by line item was also emphasized.

(b) Mobilization Of Construction Resources. Although the funding situation had been greatly improved, monetary relief essentially remained dependent on the time required

to enact the proposed supplemental program into law and to allocate the funds to the field. The bill was passed into law, in the amount requested, on 25 March 1966. Requirements were becoming more and more critical, however, and a way of getting a jump on this program was needed. Although the construction program was not precisely defined and construction assignments were uncertain, the Officer in Charge of Construction (OICC), RVN was directed to mobilize for a total program of approximately one billion dollars. In a statement before the Staff of the Senate Preparedness Investigating Subcommittee on 13 September 1966, the Deputy Assistant Secretary of Defense (Properties and Installations) indicated that "The size of the construction program planned for assignment to RMK-BRJ (Contractor) was estimated at about $960 million (all sources of funds) and procurement of plant and materials was initiated for this size program." To provide for this advance procurement, the Secretary of Defense approved a plan for the use of Navy Stock Funds (NSF) to finance the required long-lead-time construction supplies, materials, and equipment pending the availability of FY 66 supplemental appropriations for construction in Vietnam. These funds were provided for obligational authority only. All obligations incurred against them were to be transferred to appropriate MILCON appropriations within 30 days following the availability of the FY 66S funds, at which time NSF authority was to be withdrawn. This is a good illustration of the fact that, unless the ultimate funds are made available with minimum delay, as was the case with the FY 65S appropriation, some "stop-gap" funding would most probably be required to either maintain or increase the program momentum.

(c) Continuance of Monetary and Procedural Restraints. The January 1966 authorization to utilize the NSF for mobilization and the April allocation of the FY 66S monies to the field seemed to overcome the monetary restraints. Unfortunately, this was not the case, for during this period plans and discussions to further escalate the force level were underway. By April the approved level, known as Phase II A(P) or Program 3, had risen to 437,000 U.S. troops. At a Honolulu planning conference held in January 1966, CINCPAC and the component commanders determined that requirements to support the contemplated Phase II A(R) level (then identified at 459,000 U.S. troops) totaled $2.5 billion for the PACOM area, with $1.7 billion for RVN. By priority message 120301Z of February 1966, CINCPAC accordingly directed his subordinate unified and component commanders to reevaluate their requirements and to resubmit a priority listing by line item, with indication of funding cutoff, based on the contemplated FY 66S program. Critical projects that fell below the funding cutoff were to be separately identified and justified. A submission deadline of 28 February was stipulated. This was yet another, and not the last, in a long line of detailed program submissions, the value of which is suspect at the very least. This type of submission was again required a few months later when the need for a follow-on construction program became apparent and COMUSMACV directed the component commanders to prepare Service submissions in support of construction funding requirements beyond the FY 66S program. Submissions were to be given to MACV no later than 1 August 1966. By message 270434Z July 1966, CINCPAC advised his subordinate commands that, although the MACV requested follow-on program was

> "still a valid goal, it is now apparent that in addition, the presently funded program (66S and prior) must be revalidated ... to insure that each item will be required at the time construction is expected to be completed. The Forms 1390 and 1391 with back up to support funding must define the requirement for the facilities and defend the type construction proposed in engineering economic terms. The documents must specify what facilities have been funded to date and what they support as a basis for justifying future construction. The final program going to Washington should cover total requirements and show assets currently funded so that any unfunded deficiency is evident to all concerned."

(d) Complex Reviews. By the end of 1966, each of the four major support areas essential to the COMUSMACV logistics concept had been analyzed to determine the type and scope of total facilities required, the assets available to satisfy these requirements, and the deficiencies by Service. The analyses were promulgated in "Construction Program South Vietnam (Complex Review)" (U), (SECRET). Although not available for complete use in formulating the FY 67S program, these analyses did provide the Services, CINCPAC, the Joint Chiefs of Staff, and OSD with an overview of the total Vietnam construction program; and they

set the stage for project budgeting, funding, and reprogramming. A description of the "Complex Review" is attached as Appendix D.

(4) Future Appropriations. The FY 67S program was prepared by the Services and submitted by COMUSMACV in accordance with CINCPAC instructions. On submitting the program, COMUSMACV advised CINCPAC that the program had been jointly reviewed by the MACV and Services staffs to ensure that Service views had been properly considered. Although the program scope remained essentially unchanged, program funding was appreciably reduced by increasing the amount of the program proposed for assignment to the troops versus the contractor. Essentially, most of the heavy construction and specialized work was planned and programmed for contract accomplishment, and the remaining work for troop assignment. The contractor would be assigned approximately one-half of the total dollar value of the program, namely $300 million (actual assignment was $289.1 million), and he would essentially complete the work by mid-1968, at which time he was to be completely demobilized. The troop effort would require about 2 years to complete. The disparity between the construction programmed and that ultimately approved and put in place plagued this program as it had earlier programs. This problem is best reflected in the area of lines of communication (LOC). The total program requirement, as stated by COMUSMACV, amounted to $588.9 million, of which $117.1 million was for LOC between major installations, i.e., exclusive of LOC construction required at the installations themselves. By contrast, the total funds allocated for LOC projects, both between and within the major installations, amounted to $14 million. A summary of the Service programs, the MACV recommendations, the final allocation, and other relevant data are shown in Table 8.

TABLE 8

SUMMARY OF FY 67S MILCON PROGRAM FOR RVN
(Millions of Dollars)

| Description | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| Service Program | 563.5 | 588.0 | 163.7 | 1315.2 |
| MACV Recommendation | 334.2 | 179.4 | 75.3 | 588.9 |
| Funded | 217.6 | 76.1 | 100.2 | 393.9 |
| Contract Effort* | 140.3 | 56.0 | 92.8 | 289.1 |
| Troop Effort* | 77.3 | 20.1 | 7.4 | 104.8 |

*Per 915 Report of February 1969.

With the funding of the 67S program in April of 1967, nearly $1.5 billion had been made available for RVN construction since 1965. Future MILCON programs were relatively minor by comparison with a total of approximately $235 million being allocated in the FY 68, 68S, and 69 appropriations.

d. Overmobilization and Underfunding. One area that created appreciable concern during the latter part of 1966 was the apparent overmobilization of contract resources and cost overruns.

(1) A review of the information available on this subject, such as the General Accounting Office report on "United States Construction Activities in the Republic of Vietnam, 1965-1966" dated May 1967, the CINCPAC Study Group report of 20 March 1967 entitled "Construction Cost Overruns in South Vietnam," and the numerous correspondence that directly and indirectly bears on the subject, indicates that, in light of the projected requirements, the extent of mobilization of construction resources was within reasonable bounds and much of what was described as cost overruns should not have been so classified. The subject also received some

news coverage that distorted the situation out of proportion. This coverage was addressed by the Deputy Assistant Secretary of Defense (Properties and Installations) in his statement of 13 September 1966 and was clearly found to be misleading and without foundation.

(2) The process of determining the amount of contract construction resources to be acquired and deployed to Vietnam was difficult. Requirements had to be anticipated well in advance to provide for the long lead times involved. In an expanding situation complicated by the changing needs of warfare, detailed requirements could not be developed in advance in many cases, and there is a valid tendency to plan for too much too early rather than take the risk of serious shortfalls.

(3) Contractor mobilization, during the winter of 1965-1966, was based on a minimum contract construction estimate of $960 million. This figure was arrived at by considering two major factors, namely, the current working estimate (CWE) of the work already assigned (then estimated at $410 million), and the new work anticipated out of the FY 66S appropriation. The latter was determined to be $550 of the $737 million earmarked for Vietnam, with the balance being assigned to troop engineer units for accomplishment. These appropriations were based on supporting a force level of 394,000 U.S. troops. By the time these funds were made available in April, this force level was obsolete, and an appreciable funding deficit had been identified by CINCPAC. The total work-in-place (WIP), as of 1 January 1966, realized through the medium of the Cost-Plus-Award-Fee (CPAF) contract amounted to $101 million. This meant that facilities worth an estimated $859 million remained to be constructed.

(4) During the first 3 months of 1966, the contractor obligated approximately $165 million for materials, equipment, and spare parts. This increased his stock base then on hand and already under procurement to roughly $320 million. Since these items represent approximately 40 percent of the contract construction costs (WIP to go). their availability would permit the accomplishment of nearly $840 million of construction assuming, of course, that the items procured were fully utilized and amortized. The remaining costs represent labor, dredging, subcontracts, and overhead.

(5) By early September, the total funds in contract amounted to $823 million; however, because this figure included $87 million dollars made available for the procurement of material and equipment for others, the amount in contract for actual construction was really $736 million. If no further work was to be assigned, there is no question that overmobilization had in fact occurred. However, the Secretary of Defense still held the $200 million "flexibility" money, of which most, at least originally, was earmarked for Vietnam and had been so considered in determining the degree of mobilization and extent of capability to be fielded. The Vietnam program ultimately received $140 million of this flexibility money with $113 million going to the CPAF contract effort. This meant that the contractor, who had mobilized for a workload of $960 million, had now been assigned a program of $849 million. In addition, the FY 67S program had now been formalized and approximately $300 million of it was being considered for contract construction. From the long-term point of view, overmobilization had not occurred.

(6) Planning procedures such as those recommended in Chapter III of this monograph should provide for improved program definition and permit the development and maintenance of a construction capability on a scheduled basis. In mobilizing any capability, however, construction agents must recognize the inevitability of change and sufficient flexibility must be provided to accommodate a dynamic situation.

(7) The overrun problem was somewhat more complex. The previously mentioned CINCPAC study defined a cost overrun as "any increase in the cost of a project line item, as (originally) described and supported by the sponsor Service over the original program cost." It has already been established that the program that was ultimately constructed differed markedly from that originally approved and that the latter was by no means a photograph of the CINCPAC/COMUSMACV original statements of requirements. Most of these analyses, however, were based on dollar differences. The disparity between planned and constructed facilities

resulted mainly from extensive changes in the scope of the work. For example, and as previously discussed, the Air Force was provided with over $12 million in June 1965 (FY 65S Program) to initiate the construction of an airfield at Tuy Hoa (primarily horizontal work). This entire amount was reprogrammed for different work at different locations--primarily utilities at Tan Son Nhut and Bien Hoa. Extensive changes were reflected in the scope of the Navy FY 66S program as originally allocated by ASD(I&L) in his memorandum of 25 March 1966 and that shown in his memorandum of 5 July, which included adjustments "more compatible with revised requirements" expressed by COMUSMACV. Examples of these post mobilization scope changes are shown in Table 9.

TABLE 9

MAJOR SCOPE CHANGES IN NAVY 66S MILCON PROGRAM

| Facility Category | Scope Authorized 25 Mar 66 | Scope Authorized 5 Jul 66 | Final |
|---|---|---|---|
| Airfield Pavement (Sq Yds) | 176,000 | 251,000 | 899,000 |
| Port Facilities (Measurement Tons/ Day) | 6,260 | 6,260 | n.a. |
| POL (Barrels) | 282,000 | 150,000 | 272,000 |
| Airfield Sup & Maint Bldgs (Sq Ft) | 951,000 | 1,032,000 | 1,307,000 |
| Ammo Storage (Sq Ft) | 1,510,000 | 2,123,000 | 1,301,000 |
| Cold Storage (Cu Ft) | 332,000 | 516,000 | 497,000 |
| Warehouse Storage (Sq Ft) | 724,000 | 1,060,000 | 1,453,000 |
| Open Storage (Sq Yds) | 188,000 | 92,000 | 518,000 |
| LOC (Sq Yds) | 0 | *387,000 | 1,559,000 |
| Cantonment (Men) | 68,200 | 68,200 | 38,500 |

*Equals 27.5 miles at 24 foot width.

(8) Another example of extensive scope change was evident in the U.S. Army, Vietnam (USARV) headquarters complex at Long Binh. The initial design and construction directive, issued in May of 1966, provided for slightly more than 100,000 square feet of vertical construction, i.e., buildings. During the very same month, a scope change was issued increasing the quantity to nearly 400,000 square feet. Another minor change was requested in June and construction was commenced. In July the project scope was doubled to over 800,000 square feet; in August this project increased to nearly 2 million square feet. In a period of less than 4 months the project magnitude had increased twenty-fold. By November, the scope had risen to 2.8 million square feet, and construction was well underway with a work force of 2,000 men assigned to the project.

(9) Other factors affected project costs. For example, without the benefit of pre-programming engineering studies that are normally always performed, but not so in Vietnam, it was impossible to predetermine with accuracy such items as the amount of dredging required, the extent of sheet and bearing pile needed or the depth to which they would have to be driven, the soil condition of sites not yet chosen, the real estate delays, and the losses due to enemy action such as the sinking of the dredge JAMAICA BAY. The latter item alone cost the program $3 million in addition to the delays suffered by other projects due to its nonavailability.

(10) Other factors that either were not or could not be programmed but that had a definite bearing on project cost were weather and site relocations. During the November 1966 through January 1967 period, the Phu Cat site experienced 33 inches of rain in 42 days, whereas the recorded average was 9 inches in 28 days. The cost of the attendant reduction in productivity was estimated at $1.5 million. Under normal conditions this construction would never have been undertaken until the advent of the dry season. An example of a site relocation is seen in the MACV headquarters complex originally planned for Cholon, where mobilization, site preparation, and foundation work had already commenced; however, overriding considerations in May 1966 resulted in changing the site to Tan Son Nhut. The total wasted effort resulted in an unrecoverable total cost of $650,000. Another such example occurred during the early days of the buildup when the CPAF contractor was authorized to establish an offshore staging area for materials, equipment, and the fabrication of major assemblies. This depot, located at Poro Point in the Philippines, was conducive to better organization and management and was inherently more secure. More important, it reduced the competition for in-country, deep-draft off-loading facilities that were so sparsely available in those early days. In addition, materials, assemblies, etc. could be shipped via barges and landing ships, tank (LSTs) as required directly to or close to their ultimate destination. Unfortunately, adequate intercoastal shipping could not be dedicated or relied upon, and as a result, Poro Point was never fully exploited. By mid-1966, its use as an offshore surge tank could no longer be economically justified, and accordingly, phase-out was commenced.

(11) The CINCPAC study group identified some of the preceding items in Annex D of their report and priced these items, where possible, at over $25 million. The topic of cost overrun was further affected by the full funding concept, which in turn appreciably affected the flexibility available to the theater commander.

(12) Overruns did occur. However, from an overall program point of view, and, within the logical CINCPAC definition, it is concluded that true overruns were relatively small. With reference to the term "cost overrun," the Deputy Secretary of Defense, in a memorandum dated 26 November 1969 to the Service secretaries, stated that this term was "general and imprecise," created "confusion in the minds of many," and "casts improper reflection on the true status of events." He directed the use of the term "cost growth" in the future.

(13) Reduced to essentials, the construction program contemplated and planned for in January 1966 consisted of construction requirements derived from a constantly evolving military operational plan. The construction agents mobilized in January, February, and March to build this program. In some cases and over the long haul, some mobilization actions have been greater than proved to be necessary; in other cases, projects comtemplated in January were underestimated, usually due to latent conditions, or were necessarily expanded in scope with features that were understandably overlooked in the press of the emergent situation existing during the winter of 1965-1966.

(14) There were many changes in project scope and criteria, Construction had often been held up due to real estate problems, and changes continued to be injected into construction plans by the continuous evolution of military operations. In the GAO report it was noted that "repeated changes in design, criteria, and/or siting had delayed the timely completion of construction projects."

(15) With reference to the preceding statement that changes continue to be injected into the program, the OICC, RVN, by letter of 17 June 1969 to the Commander, Naval Facilities Engineering Command, observed:

> "Our program today is perhaps more unstable than in the past and I see no early diminution of this trend. The squeeze on dollars has forced the sponsors and MACV to re-evaluate their needs (to manage) which resulted in many changes. For example, over the past two months the Air Force has cancelled 15 projects valued at $5.8 million. In order to provide funds for the construction of VNN bases in the Delta, the Navy cancelled 20 projects valued at $10.8 million. The recent decision to reduce the 9th Infantry Division at Dong Tam by 9,000 troops caused the cancellation of a number of projects valued at $5.3 million. This in addition to cancellation of eight other Army projects valued at $6.8 million. In all cases, construction materials were ordered or on hand and in many cases the facilities were partially completed."

e. Summary. In the dynamic combat environment of the Vietnam conflict, construction requirements could not be forecasted with a high degree of accuracy far ahead of time. Thus, a flexible construction capability was the ultimate goal, and not an orderly, peacetime process whereby complete construction plans and specifications were to be available from which precise material takeoffs could be developed. Since a modified but essentially peacetime military construction programming procedure was employed, programming, reprogramming, reevaluation, rejustification, and resubmittals resulted, with all of the attendant administrative burdens and delay. The system had evolved over many years primarily to satisfy peacetime construction requirements. It was a system that provided maximum visibility and tight controls. In addition, it was laborious and time-consuming, and lacked the flexibility desired in a dynamic warfare situation. More specifically, the evolution of the major construction programs was characterized by the following:

(1) Programming and funding procedures employed to control the construction program in RVN were essentially peacetime procedures and were inappropriate for such a contingency. They did not provide the unified and Service commanders with the degree of flexibility required by and commensurate with their responsibilities.

(2) Procedural constraints, although properly recognized from the outset, were never adequately resolved.

(3) The formulation and enactment of the military construction portion of the FY 65S appropriation was most responsive timewise, requiring less than 1 month to complete. Congress required less than 4 days to consider and pass the entire appropriation.

(4) The request for construction funds, as submitted to Congress and applicable to the FY 65S and FY 66A appropriations, did not adequately reflect the theater commander's stated requirements.

(5) The decisions to subsequently reduce the force levels to be deployed from those utilized in the formulation of construction requirements, as was the case with the FY 65S and FY 66A programs, were clearly foreseeable as being short-lived and should not have affected the requests for construction funds. Any need to reduce construction funds should have been exercised through allocation control.

(6) The appreciable and numerous changes in force levels from June to September 1965 were not properly reflected in the FY 66A appropriation request. Both time and circumstances permitted the inclusion of needed adjustment prior to the congressional enactment of 29 September 1965.

(7) Funding constraints prior to 1966 resulted in the mobilization of a construction capability that was both minimal and piecemeal, and appreciably below the stated requirements.

(8) There was little resemblence between the facilities originally programmed and those ultimately constructed. The formulation and review of the Military Construction Program by line item rather than gross requirements, as well as the need to resubmit and reevaluate, was accordingly both time-consuming and to a large extent futile.

(9) The decision to transfer $200 million of the FY 66S MILCON requests from military departments to defense agencies compensated for the softness in the definition of the overall program.

(10) The recognition of the need for stop-gap funding in early 1966, although in the form of obligation authority only, permitted the mobilization of a capability in anticipation of the FY 66S appropriation.

3. PROGRAM FLEXIBILITY. The subject of program flexibility was very briefly discussed in the preceding section in order to provide a proper perspective in the discussion and analysis of program evolution. This section discusses the need for program flexibility, steps to increase such flexibility, and subsequent restraints. Some of the unusual factors affecting flexibility are also reviewed in order to determine their impact on overall responsiveness.

a. The Need For Flexibility

(1) The degree to which flexibility was provided prior to 1966 was extremely limited, untimely, and of little value in view of the relative paucity of funds. COMUSMACV, by memorandum of 19 July 1965, objected to the peacetime limitations and procedures that had been imposed and made two specific recommendations to the Secretary of Defense: that Vietnam be designated as one installation with reprogramming authority, within the total funds allocated, being provided to each Service; that mobilization, i.e., the advance procurement of materials and equipment, be authorized without reference to line items.

(2) By memorandum of 2 October to the Secretaries of the military departments, the Secretary of Defense, without reference to the COMUSMACV memo, but in consideration of evolving conditions in Vietnam, agreed that ". . . sufficient flexibility must be provided to permit realignment of the construction program to coincide with changes in the military situation." Accordingly, the variations authorized by memorandums of 27 May were further modified as quoted below and their application was authorized for all RVN construction accomplished under the FY 65S and FY 66A appropriations. These new modifications in flexibility were:

> "Locations of approved line items within South Vietnam may be changed as necessary to coincide with changes in operational requirements.
>
> "Estimates of approved line items may be varied as required.
>
> "Scope of approved line items may be modified where individual project adjustments do not involve an increase in estimated cost in excess of $1 million.
>
> "New line items may be added to the approved program when the estimated cost of individual projects does not exceed $1 million.
>
> "All changes in program were subject to the overall total dollar amounts approved for South Vietnam in each Service appropriation. Concurrent reductions will be made either through reductions in estimates of other line items or by complete deletion of projects of lesser priority.
>
> "All program adjustments will be most carefully controlled to assure that sufficient funds on a fully funded basis are allocated to each project, so as to provide a completely usable facility in all cases."

(3) These new modifications issued by the Secretary were in some respects revolutionary when compared to the previous constraints. Prior to this, the flexibility had been limited to that provided to OSD by Congress. This flexibility, although appreciable, was not delegated. Congress, starting with the FY 65S and then the FY 66A appropriations, essentially provided DOD with a stated amount of money against which projects were later authorized by OSD, and reports to the Congress concerning the projects authorized were after the fact. Although some authority was now being delegated to the military departments, the system continued to be inhibited:

(a) It continued to be line-item oriented.

(b) The requirement to reprogram completely tied up funds involved until reprogramming was approved and, as was often the case, the projects that required deferment were nearly as urgent as their replacement.

(c) Requirements had so outstripped the availability of funds that any amount of flexibility was rendered somewhat superfluous.

(4) In a COMUSMACV to CINCPAC message of 28 November 1965, with copies sent to OSD and the Joint Chiefs of Staff, COMUSMACV advised:

> "Limitations and restrictions on the availability and use of funds seriously hampers the timely execution of the construction program urgently needed to support our operations . . . we are conducting a major contract construction effort, 8000 miles from its logistic base, in a combat environment, and under circumstances of exigency where timeliness of response must override considerations of economy where the two conflict. This precept is basic and must be recognized and accepted at all levels. Furthermore, it is considered that the cost of this abnormal effort should be placed in proper perspective by recognizing the relatively minor element that construction represents in the total cost of the war effort . . . . With respect to present administrative restrictions, I urgently need and request the support of a construction program that provides:
>
> "a. Country-wide program funding in bulk, limited only by type of facilities, e.g., ports, airfields, depots, cantonments, ammo, POL, etc., and required standards of construction.
>
> "b. Obligation authority that allows (the) start of any needed project as quickly as identification of criteria and availability of resources allow."

In commenting on the above by memorandum of 5 January 1966 to ASD(I&L), the Assistant Secretary of the Army (I&L) cautioned against stratification and urged that authorization be provided "in one lump amount." This was actually what COMUSMACV had originally requested in July.

(5) The need for appreciable flexibility was recognized by Congress when it passed the FY 65S and FY 66A appropriation acts. Certain Congressmen did express some reservations and cautioned key DOD witnesses on the advisability of properly controlling and reporting the obligation and expenditure of these funds; this is, however, politically understandable in view of the fact that blanket appropriations were being authorized and therefore proper and even special management of these authorizations was commensurately expected.

(6) Specific recognition was accorded by Congressman Sikes in a speech entitled "Construction in Vietnam" and entered into the Congressional Record of 20 January 1966. Congressman Sikes observed:

> "One basic requirement in the logistics-construction field is for additional funds to be made available for the construction of adequate facilities and for the logistical support essential to our troops in Vietnam.
>
> "Consideration should be given to making a large portion of these funds available directly to the Military Assistance Command in Vietnam - MACV - rather than to the individual military services. Construction should be accomplished wherever possible without fiscal and programming restrictions and with complete flexibility. This has not been the case in the past but must be done now if our troops are to be properly supported.
>
> "It is very difficult for the logistics effort to respond to the changing operations' program under present limitations and regulations. The military command in Vietnam should be provided with greater flexibility in the use of funds . . . . There is still too much paper work on programming, on requisitions for construction material and on other needed supplies. Requisitions sometimes take weeks or even months for approval. . . .This is particularly attributable to peacetime procedures which necessitate too much paperwork."

(7) This subject was pursued during the Congressional Hearing of 13 January 1966 on the FY 66S program. The Chairman of the Subcommittee on Military Construction Appropriations asked what steps were being taken "to ease or eliminate the present line items approval requirements and funding restrictions." The Deputy ASD(I&L) replied that a paper was currently being developed that would essentially provide COMUSMACV with the degree of flexibility that was being sought, namely, 16 broad categories in each of the three Services. A list of these broad categories, which become known as functional facilities category groups (FFCG), is attached as Appendix E.

b. Granting Flexibility. The procedures referred to above were promulgated by a Secretary of Defense memorandum of 14 January 1966 and superseded by a memorandum of 12 February 1966. Major highlights of this latter directive were as follows:

(1) Procedures established were considered interim, and final procedures were to be developed prior to 1 July 1966.

(2) Facility requirements were to be reviewed and authorized by the Secretary of Defense on the basis of the newly designated FFCGs.

(3) The procedures were not only applicable to the forthcoming 66S program but also applicable (retroactively) to the FY 66A and FY 65S programs. Accordingly, these three programs were to be restructured at departmental level to the new FFCGs.

(4) The procedures were also to be applicable to subsequent programs, the requirements of which were subject to COMUSMACV approval prior to submission through Service channels to the Office of the Secretary of Defense.

(5) Funds derived from FY 65S, 66A, and 66S appropriation legislation were to be made available to each of the military departments in a single total amount. COMUSMACV was authorized to transfer authorization and funding as allocated from one functional category to another, provided that the functional category group was not increased by more than 10 percent and that he immediately notified OSD and the military service involved. Since each Service program was subject to the total funds provided therein, increases in any particular FFCG would necessarily require an equal and concurrent reduction in one or more of the other groups. That portion of the directive concerning the transfer of program between categories, although clearly stated, was restrictively interpreted by the MACV staff, at least as indicated in the "Raymond Observations." Page 51 of General Raymond's report states: "Under the functional facility category group system COMUSMACV had the authority to reprogram funds from one location to another within one of the FFCGs provided the amount reprogrammed was less than 10% of the total within the FFCG. To exceed that 10% or reprogram funds from one FFCG to another required prior approval of DOD." Interviews with personnel directly involved with the administration and management of this facet of the program revealed some uncertainty concerning the actual degree of flexibility authorized.

c. Factors Affecting Flexibility. A number of factors bear on the degree to which available flexibility can be evaluated. For example, flexibility under conditions of limited funding is of questionable value. Flexibility stated in terms of percentage of a base may be misleading where the base itself is subject to variation or deliberate adjustment. For instance, the authority to overdraw a $10 million account by 10 percent is appreciably different than the same percentage against an account of $250,000. The latter is essentially what occurred in early 1967 and will be discussed in more detail under "The Reduction in Flexibility." This section, however, will discuss three factors of a somewhat different nature -- the discontinuance of MAP appropriations, the merging of MAP and MILCON funds, and the full-funding concept.

(1) The Discontinuance of MAP Appropriations. One of the cogent provisions of the FY 66S authorization act stated:

> "Funds authorized for appropriation for the use of the Armed Forces of the United States under this or any other Act are authorized to be made available for

> their stated purposes in connection with support of Vietnamese and other Free World Forces in Vietnam, and related costs, during the fiscal years 1966 and 1967, on such terms and conditions as the Secretary of Defense may determine."

A decision reached in September 1964 allowed requirements of U.S. forces in Vietnam to be financed from other than MAP appropriations. This proviso authorized the use of Defense appropriations for what previously had been financed through MAP funds; in fact, the FY 66 MAP appropriation of some months earlier (July 1965) was the last such appropriation provided to finance the non-U.S. efforts in Vietnam and all such costs, construction and otherwise, have since been borne by regular DOD appropriations.

(2) The Merging of MAP and MILCON Funds. In passing the accompanying appropriation act, the committees caused an amplification of the above by the inclusion of the following general provision:

> "Appropriations available to the Department of Defense during the FY 1966 shall be available for their stated purposes to support Vietnamese and other Free World Forces in Vietnam and for related costs on such terms and conditions as the Secretary of Defense may determine: Provided, that unexpended balances, as determined by the Secretary of Defense, of funds heretofore allocated or transferred by the President to the Secretary of Defense for military assistance to support Vietnamese and other Free World Forces in Vietnam shall be transferred to any appropriation available to the Department of Defense for military functions (including construction) to be merged with and to be available for the same purposes and for the same time period as the appropriation to which transferred."

(a) The authority to merge unexpended MAP funds with regular DOD funds in essence permitted a reduction in the number of fund packages to be managed, i.e., pockets of money, or accounts, whose individual totals could not be exceeded. Funds amounting to over $100 million, applicable to all three Services, and covering MAP appropriations from FY 63 through FY 66, were identified and merged with MILCON appropriations. This was a step in the direction recommended by the theater commander. It did not reduce the number of accounts down to one per Service, but it did provide for the elimination of 12 such accounts. All three Services, however, elected to retain the "assistance" identity of these funds by allocating them to the field as separate accounts rather than actually adding them to the FY 66S in-theater account. Both the Army and the Navy elected to roll up these unexpended amounts and allocate them as one account. The Air Force, however, chose to retain the fiscal year identity resulting in four separate accounts. A review of this program, particularly regarding the status of its execution, revealed some interesting data. A summary of these data, along with the MAP funds transferred to the MILCON appropriation, and the program status as of 25 March 1969, is shown in Table 10.

(b) Two areas are of particular interest: the large input of FY 66 MAP funds into the Army program and the rate of execution of this program. Concerning the former, the Army had requested $40 million in the FY 66S MILCON program for construction of cantonment facilities for third-country forces. This request was specifically addressed in the "Subject/Issue" approved by the Deputy Secretary of Defense on 22 December 1965, and these facilities were deleted from the proposed FY 66S MILCON program with the comment that they would be "handled by separate subject/issue covering the transfer of MAP financial adjustments." As a result, $14.3 million in MAP funds was made available on 7 February 1966 for initial cantonment construction (project YU-52), and by amendment of 28 March 1966, the amount was increased to $37.2 million.

(c) Regarding the execution of this program, facilities valued at nearly $40 million had not been defined and/or started as of the beginning of 1967. By July, this figure had been reduced slightly to about $34 million, and by the spring of 1969, nearly 2 years later, over $14 million still remained within this category. The fact of the matter is that these funds were part of the overall construction resources available to COMUSMACV (available for

TABLE 10

SUMMARY OF MAP FUNDS TRANSFERRED TO MILCON AND
EXECUTION STATUS OF "ASSISTANCE" PROGRAM AS OF MARCH 1969
(Millions of Dollars)

| Source Description | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| FY 1963 | 0 | .7 | .4 | 1.1 |
| FY 1964 | 0 | .5 | 2.3 | 2.8 |
| FY 1965 | 21.2 | 2.7 | 15.2 | 39.1 |
| FY 1966 | 44.5 | 7.5 | 11.9 | 63.9 |
| Total $ Transferred | 65.7 | 11.4 | 29.8 | 106.9 |
| CWE* of Work Contemplated | 62.2 | 11.4 | 29.8 | 103.4 |
| Accrued Cost Through March 1969 | 47.0 | 11.4 | 29.1 | 87.5 |
| Work Comp-Underway by July 1966 | 21.1 | 10.5 | 23.0 | 54.6 |
| Work Comp-Underway by End 1966 | 26.6 | 11.1 | 25.8 | 63.5 |
| Work Comp-Underway by July 1967 | 31.9 | 11.4 | 26.3 | 69.6 |
| Work Comp-Underway to Date | 51.5 | 11.4 | 29.8 | 92.7 |
| Work not Started or Defined | 14.2 | 0 | 0 | 14.2 |

*Current Working Estimate

any requirement, i.e., U.S., RVN Army, or third-country forces) and that they were not "put to work" during that point in time when "available" funds were not only limited but when the lack of such funds necessitated the curtailment of many projects -- projects for which mobilization had been essentially completed. Stated differently, this was a degree of flexibility that was available to the theater commander but not utilized. The fact that these funds, considered reserved for assistance requirements, were managed by a different segment of the MACV staff was possibly the cause of not considering them a part of the overall assets and capability. The following are specific examples of projects for which mobilization costs had been incurred but whose scopes were reduced due to the nonavailability of funds.

1. Army: 173d Airborne Infantry Brigade Cantonment. This project provided for the construction of a cantonment facility to support a force of approximately 6000 men. Vertical construction requirements exceeded 650,000 sq. ft. and the construction estimate in July 1966 was $15.9 million. Although a notice to proceed (NTP) had been issued to the contractor on 1 September 1965 and mobilization had proceeded accordingly, the lack of funds in July and August 1966 dictated a corresponding reduction in scope and redesign to a level of $7.1 million.

2. Navy: Qui Nhon MARKET TIME Facility. This project provided for the construction of operational, maintenance, and cantonment facilities in support of MARKET TIME requirements. In October 1966, with construction approximately 75 percent complete, a CWE of $3.9 million, and a shortage of funds, the project was adjusted resulting in a CWE reduction to $3.2 million.

3. Air Force: Phan Rang Airbase. At its peak in January 1966, this project included 91 line items amounting to over 800,000 sq. ft. of vertical construction, and

400,000 sq. yds. of airfield pavement, all of which was the basis for mobilization. In April, the number of line items was reduced to 77, with deletions being primarily vertical construction. In June, with mobilization essentially complete, programwide underfunding necessitated the deferral of a number of additional line items in order to stay within the full funding limitation (described below). Accordingly, the program was reduced to 42 line items with a vertical scope of approximately 400,000 sq. ft. Additional reductions that were subsequently required resulted in the dismissal of local personnel, the relocation of U.S. and third-country vertical construction workers, and the absorption of lost mobilization costs by the remaining line items.

(3) The Full-Funding Concept. The full-funding limitation, imposed by DOD, requires that the total funds necessary for the construction of all projects (line items) be available and reserved prior to the start of construction. In other words, the total estimated cost of projects authorized by Construction Directives (CDs) issued by COMUSMACV could not exceed the total funds actually made available to COMUSMACV. This concept, apparently very sound on the surface, proved to be restrictive. Moreover, it was inconsistent with the magnitude of the mobilization effort of early 1966 and ignored the unallocated portion of funds appropriated by the Congress but withheld by the Secretary of Defense. The constant adherence to this concept appreciably affected the flexibility available to COMUSMACV and precluded his full utilization of the extensive capability that had been developed since he was required to plan for the prorated distribution of all mobilization costs against the "in-country" funded program at any point in time. During the September time frame, this represented an appreciably reduced base from that originally contemplated and had the effect of further reducing the overall ability to put work in place.

(a) The adverse effects of the full-funding concept, with its disregard for both the level of capability mobilized as well as the unallocated but appropriated funds, can be seen in an almost endless number of projects, for example, the parallel runway project at Bien Hoa. This project called for approximately 207,000 sq. yds. of airfield pavement, including parallel runway, taxiway, warm-up pads, and apron space. Both design and mobilization were authorized in January 1966, at which time the user (Air Force) estimate was established at $6.5 million. By July, with design and mobilization completed and a funded program that was approximately $300 million below the mobilized capability, a cost estimate of $14.2 million was announced by the OICC, RVN. This high estimate resulted in the project being placed in a deferred status until May 1967, at which time it was reactivated with identical scope. By this time, however, not only had the remaining FY 66S funds been allocated by the Secretary of Defense, but also the FY 67S appropriation law had by now been enacted and approximately $300 million thereof had been allocated for contract construction. No longer faced with the problem of distributing the cost of mobilization against an appreciably reduced base, the Bien Hoa project was completed at a cost of $5.8 million -- 40 percent of the July 66 estimate and below the initial user estimate. Figure 9 has been developed to reflect the programwide effects of underfunding and the requirement that mobilization cost be absorbed within the reduced base. This figure has been drawn to scale and the quantities and distributions represent the actual conditions experienced.

(b) Of particular interest in Figure 9 is the relationship between the final cost and the actual unadulterated cost of the work accomplished. By increasing the $572 million total cost of column 1 by 49 percent (to $853 million of column 2), the actual work accomplished is increased from $403 million to $853 million, or 112 percent. Further, by equating the $403 million total as representing 100 units of work accomplished and assuming equal productivity in the situation of column 2, then the latter would result in the accomplishment of 212 units of work. This is illustrated in Figure 10. The most significant disclosure of this analysis is that, although the first 100 units of work resulted in a per unit cost of 5.72 units of money, the final 112 work units were obtained at a per unit cost of only 2.51. This not only represents a theoretical cost reduction to less than half (44 percent) of the original cost, but a gross finding commensurate with the actual reduction of the Bien Hoa project previously discussed and reduced to 40 percent of its original estimate.

(c) The Secretary of the Navy essentially recognized the limitation of the full-funding concept, although he did not state it as such. A memorandum dated 9 August 1966 to

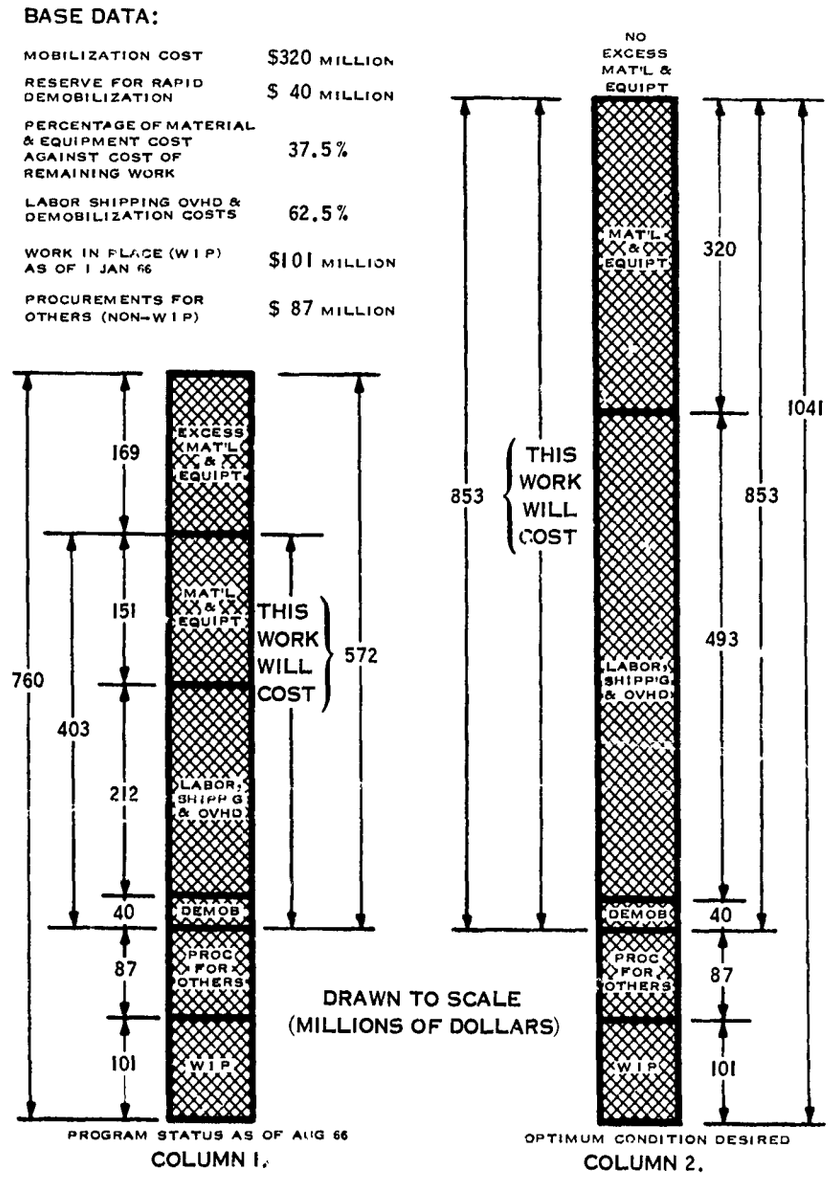
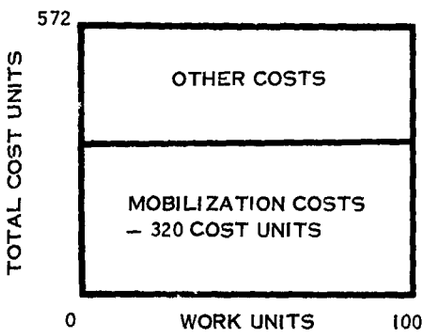



FIGURE 9. FULL-FUNDING CONCEPT LIMITATIONS

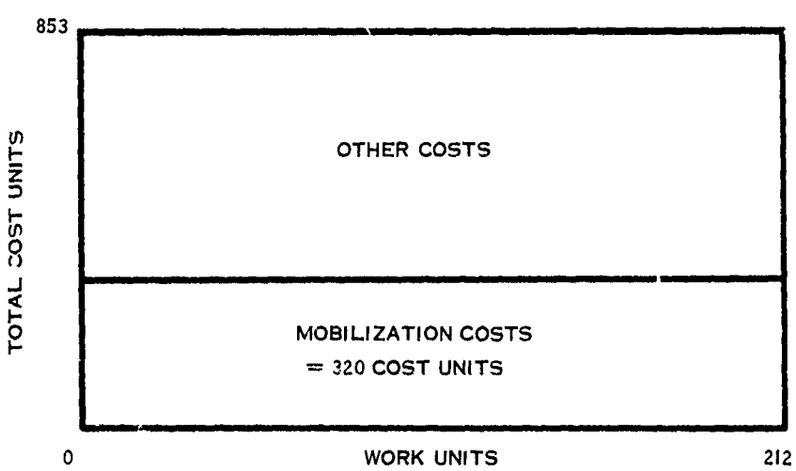
(The purpose of this chart is to portray graphically the adverse effects that occur when a construction program such as envisioned for Vietnam is underfunded subsequent to mobilization and when the cost of the latter must be absorbed by the reduced program.)




COST PER WORK UNIT EQUALS
572 ÷ 100 = 5.72

NOTE: DATA FROM COL 1 OF FIGURE 9.

COST PER WORK UNIT EQUALS
835 ÷ 212 = 4.02




NOTE: DATA FROM COL 2 OF FIGURE 9.

THE ADDITIONAL 112 WORK UNITS RESULTED IN A COST INCREASE OF 281 OR A PER UNIT COST OF ONLY 2.51.

FIGURE 10. WORK UNIT ANALYSIS

the Secretary of Defense requested an increase of $200 million to maintain the contract capabilities. The specific phraseology was: "The contractor now has a fully mobilized and broad capability that is reaching peak efficiency and with the input of the $200 million, plant amortization (cost of mobilization) will be covered and every dollar of follow-on program input to the contract will result in a two dollar return of facility value." This is in keeping with the conclusion of this analysis: a theoretical reduction of 44 percent was probable, i.e., $1.00 of input would have resulted in a $2.29 return of facility value. In reply to this request, the Secretary of Defense, by memorandum of 7 September 1966, simply stated: "Based on subsequent analysis, it has been determined that $60 million will be required for this purpose." This shortcoming was corrected with the passage of the FY 67S appropriation in April 1967, at which time $126.2 million was allocated by the Secretary of Defense to cover mobilization costs.

(d) As previously acknowledged, the application of the full-funding concept is, in principle, a sound one. However, in a combat situation where there is more than one construction agent, and, in fact, even different types of construction agents, this application must be tempered with good judgment. One must guard against ending up with half a runway or a building without a roof, but one must also consider the extent to which the project can be taken over and completed by troop units. Projects having usable increments should be given different consideration; for example, although half a runway is of little value, one-half of an accessible parking ramp may be of great value. It should be remembered that capability costs money whether productively engaged or not and that the application of full funding should be in terms of total available resources in-country rather than those solely identified to one particular construction agent. The latter point was specifically recognized by an ASD(I&L) memorandum of 27 February 1967.

(e) The adverse effects of the full-funding concept should be avoided in any future contingency operation requiring an extensive construction effort. Accordingly, mobilization and demobilization costs should be funded as a separate line item rather than attempting to distribute such costs against some unknown quantity of future line items whose scopes and costs are subject to appreciable variation. In addition, the theater commander concerned should have authority to make exceptions to full funding when circumstances so dictate.

d. The Reduction of Flexibility. As previously acknowledged, the broad flexibility authorized and provided to the theater commander in January was interim in nature, and final procedures were to be developed prior to 1 July 1966. By message 141837Z of May 1966 ASD(I&L) requested that Brigadier General Dunn, the MACV Director of Construction be placed on temporary duty to the office of ASD(I&L) during the period of 30 May to 4 June to assist in formalizing these procedures. In response to this request, COMUSMACV, by message 200810Z May, "urgently recommended that no changes be made to these (the established) procedures" as any changes would "(probably) result in an increased requirement for additional programming detail or a reduction of present in-country flexibility." COMUSMACV reasoned that the system had been in effect for only a limited period, and that although some refinement was still required, a great deal of effort had gone into its establishment and all concerned had adapted to its use; he further reasoned that "any change in this system, just as we have made a good start on putting it into effect, could not help but introduce undesirable confusion of considerable proportions and result in much lost effort and time."

(1) Although no procedural changes were made for the time being, a degree of restlessness on the part of the Washington managers was beginning to emerge. This was largely due to the fact that (1) although a visible program was inbeing, the interpretation of the data was subject to the individual and his environment; (2) the limitations of the full funding concept and the lack of due regard for its impact; and (3) the defensive attitude that developed due to the unfortunate press coverage of early September 1966. CINCPAC reflected this attitude when he imposed a complete revalidation of the funded program by line item. When the urgent need for additional construction funds, amounting to $200 million, was emphasized by the Secretary of the Navy in a memorandum of 9 August 1966, the Secretary of Defense, by memorandum of 7 September to the Chairman, Joint Chiefs of Staff, requested that "CINCPAC

submit, not later than 1 October 1966, a restatement of the complete current program by construction agency, by Service, by location, and by functional facility category groups or line items, as appropriate, setting forth the current programmed amounts and the current working estimates."

(2) The Secretary of Defense was determined to require proper validation of the SE Asia construction projects prior to the approval of any follow-on construction program. In fact, the Secretary's instruction during the fall of 1966 required that beginning with the FY 67 supplemental program, then being formulated, both the program and the fiscal controls were to be on a line-item rather than category basis.[2] Further, by memorandum of 31 January 1967, the Secretary of Defense rescinded the broad flexibility that had been provided by his memorandum of 12 February 1966, and provided the following rationale for this action: "Experience demonstrates that present procedures on processing military construction reprogramming actions beyond COMUSMACV's approval authority do not provide the rapid response he needs. I have therefore established the procedures set forth in the attachment." This rationale is misleading since existing procedures on reprogramming actions beyond COMUSMACV's approval authority were responsive; in fact, approval could be assumed on any reprogramming action if a reply was not received within 30 days.[3]

(3) The procedures issued by memorandum of 31 January were expanded on by ASD (I&L) memorandum of 3 April 1967. These directives did away with the concept that the entire country was to be considered as one installation for programming purposes and in lieu thereof, principal locations or major sites were to be employed. A listing of the 19 major sites that evolved, along with their designated minor or satellite sites, is shown in Table 11. In addition, the nonstandard FFCGs were replaced by standard DOD category groups as shown in Table 12. Although these doubled the number of superseded FFCGs, they provided far better definition than the previous groups, which were extremely broad in content and did not convey a true picture of what was being built. For example, the FFCG identified as "Cantonment" was measured in numbers of men and included nearly all of the standard category groups. The combination of these two changes--major sites and category groups--resulted in an increase in the number of entities to be managed from 15 to over 500 per Service program. Each of these entities was to be considered a "work project" for the FY 65S, 66A, and 66S programs, and these entire programs had to be restructured accordingly. However, for subsequent programs, the definition of work project was to be whatever the approved DD form 1391 encompassed. As the situation evolved, the latter became exactly what one would expect under normal peacetime procedures.

(4) In executing this program, COMUSMACV was to provide to ASD(I&L) within 72 hours three copies of each CD he was to subsequently issue, accompanied by DD forms fully justifying the projects in the related directive. Justification was not necessary if the proposed change concerned a previously justified project and was less than 10 percent of the cost of the project or $50,000, whichever was larger. If, however, the project was in a program subsequent to the FY 66S and involved an increase in excess of $1.0 million, regardless of whether the proposed change was below 10 percent of that previously approved, full justification in the form of a completed 1391 was required. Copies of each CD and 1391 issued were to be made available to CINCPAC, appropriate PACOM component commanders, and the appropriate military department. Any nonconcurrence was to be transmitted by the recipient within 7 days. Further, the date of issuance of each CD was to be transmitted electrically to ASD (I&L) concurrently with the air mailing. Similarly, the date of receipt was to be transmitted electrically by ASD (I&L) to COMUSMACV. The date of receipt was to serve as the point of departure from which approval could be assumed if a reply was not received within 21 days. Construction could proceed immediately upon the issuance of the CD, but in a manner consonant with possible cancellation. Disapproval required complete cessation of all execution activities regardless of any intention to reclama. Finally, these directives advised that agreements had been made with the Chairman of the House Armed Services Committee requiring that the Secretary of Defense keep

[2]Naval Facilities Engineering Command Point Paper, subject: Control and Management of Vietnam Construction Requirements, 15 November 1966.

[3]Brig. Gen. D. A. Raymond, USA, Observations on the Construction Program, RVN, 1 October 1965 - 1 June 1967 (U), p. 52 (CONFIDENTIAL).

TABLE 11

MAJOR SITES OR COMPLEXES AND THEIR SATELLITE SITES

| Code | Major Site | Satellite Sites |
|---|---|---|
| 01 | An Khe | None |
| 06 | Bien Hoa | None |
| 08 | Cam Ranh Bay | Dong Ba Thin |
| 09 | Can Tho | Bac Lieu, Binh Thuy, Long Xuyen, My Tho Rach Gai, Sa Dec, Soc Trang, Vinh Long, An Thoi, Chau Doc, Tan An, Dong Tam |
| 14 | Chu Lai | Quang Ngai |
| 16 | Da Nang | Da Nang East |
| 25 | Long Binh | Zuan Loc, Long Thanh |
| 29 | Nha Trang | Ban Me Thuout, Doc My, Ninh Hoa |
| 30 | Phang Rang | Phan Thiet, Da Lot, Boa Loc |
| 32 | Phu Bai | Hue, Quang Tri, Dong Ha, Tan My |
| 35 | Pleiku | Kontum, Chu Boa |
| 39 | Qui Nhon | Charange, Phu Tai |
| 43 | Saigon | Cat Lai, Nha Be, Phu Lam, Bon Luc |
| 45 | Tan Son Nhut | None |
| 49 | Vung Tau | Ba Tia, Cat Lo, Bien Ba |
| 54 | Tuy Hoa | Vung Ro |
| 67 | Cu Chi | Quang Trung, Tay Ninh, Phu Loi, Di An, Dau Tieng, Phuoc Vinh, Lai Ke, Song Be, Hou Quan |
| 70 | Phu Cat | None |
| 9Z | Various Locations | -- |

the committee informed of reprogramming actions under the FY 67S program involving changes in specific project costs in excess of $1.0 million due to either change in scope or cost of each project. Such information was to be provided no less than 7 days prior to final decision.

e. Summary

(1) In summary, the initial flexibility of any consequence was promulgated to COMUSMACV in January 1966 and revolved around the 15 pockets of money or accounts that had been provided to each of the military departments. Each account constituted program authorization for a specified scope to be constructed any place in-country. COMUSMACV was provided with the authority to increase the amount in any account by up to 10 percent, as long as the sum total of the overall program was not exceeded. Although prior OSD approval was required to exceed the 10 percent limitation, such approval could be assumed if a reply was not received within a 30-day period.

(2) By contrast, the new procedures of early 1967 increased the number of accounts to approximately 30 per military department. In general, each account was somewhat smaller since the sum total remained the same. As in the former case, each account constituted authorization for a specified scope; however, in this case, major location was also specified.

TABLE 12

LIST OF MAJOR DOD FACILITY CATEGORY GROUPS

| | |
|---|---|
| 110 Airfield Pvmt | 540 Dental Clincs |
| 120 Liq Fuel/Disp Fac | 550 Dispensaries |
| 130 Comm Fac | 610 Admin Fac |
| 140 Land Oprs Bldgs | 720 Troop Hsg |
| 150 Water Front Opns | 730 Pers Sup/Svc |
| 160 Harbor Fac | 740 Comm/Inter |
| 170 Training Fac | 750 Comm/Exter |
| 210 Maintenance Fac | 800 Misc Utilities |
| 410 Liq Fuel Stor | 810 Electricity |
| 420 Ammo Stor | 830 Sewage |
| 430 Cold Stor | 840 Water |
| 440 Covered Stor | 850 Roads |
| 450 Open Stor | 860 Railroads |
| 510 Hospital Bldgs | 870 Ground Impvmt |
| | 930 Improvements |

Note: This list contains the major standard DOD facility category groups that were implemented on 1 April 1967 for programming and reporting purposes. This list superseded the nonstandard functional facility category groups that had been established in late 1965.

With a total of 19 such locations, the original 15 entities to be managed became subdivided into over 500 accounts per Service. Although the 10-percent flexibility feature was retained, its application was now limited to previously approved projects only. Further, since the flexibility base susceptible to the application of this 10-percent factor had now been subdivided into over 500 accounts, the true flexibility, in effect, became correspondingly more than 30 times smaller.

(3) Emergency requirements were recognized by granting COMUSMACV the authority to start the construction of any project he felt to be urgently required; however, if it exceeded the authority he now possessed, it was subject to OSD veto. The new procedures, however, imposed an appreciable administrative workload. To paraphrase Brigadier General Raymond, flexibility had essentially been maintained; however, since there were so many separate projects, the new system imposed a monumental paper workload and copies of all amendments were required by OSD. One reprogramming action could involve as many as 5 to 10 amendments to construction directives. The procedures applicable to the Vietnam program were too complex, involved too many people, and generated far too much paper. Procedures such as these should not be revolutionized during a contingency operation, let alone more than once; nor should different procedures be made to apply to different appropriations within the overall program. The key point is the need to assign authority commensurate with responsibility to the commander of a unified command and his subordinates, subject to overall controls of the construction programs of the Services and of the total program. It is questionable that a meaningful review and analysis of the details of changing requirements in a dynamic construction program can be accomplished in a responsive manner, except in-country. A simpler system is required for use in future contingencies. Such a system should preclude the recurrence of the

programming weaknesses experienced in Vietnam, especially in the area of flexibility that was characterized by the following significant constraints:

(a) The need for flexibility was duly recognized by the commander of the unified command; however, prior to 1966, it was negligible.

(b) There were no statutory limitations affecting the granting of flexibility, and although the Congress essentially provided the Secretary of Defense with full authority in this regard, it was not further delegated except as noted in 1966.

(c) The flexibility provided by the merging of unexpended MAP funds with MILCON funds was not exploited by COMUSMACV.

(d) In reducing the degree of flexibility previously authorized, the authority for reprogramming largely reverted to OSD, and the procedures established resulted in an unprecedented amount of unproductive paperwork.

(e) The decision to return program and fiscal control from a category to a line-item basis resulted in a return to peacetime procedures inconsistent with the dynamic conditions and environment of the situation.

(f) The unmodified application of the full-funding concept precluded full utilization of the construction capability that had been mobilized in Vietnam.

4. PROGRAM MANAGEMENT. The purpose of this section is to review the two major elements of control that were developed and implemented specifically for the RVN construction program -- Construction Directives and Level of Effort Construction Management System.

a. Construction Directives. COMUSMACV authorized the construction of the various projects included within the MILCON program through the issuance of construction directives (CDs). Under the guidelines established by the Secretary of Defense in his memorandums of 14 January and 12 February 1966, CDs served as the instrument authorizing the release of specified funds to a particular construction agent for the construction of specified work at a certain location and during a particular time frame. Only one CD per construction agent was issued for each location or major complex. Additional requirements or changes of any type were provided for by modification to the initial directive. During the 1966 time frame, requirements were stated by FFCG, and the funds assigned under each FFCG constituted an administrative subdivision of funds. Accordingly, it was the responsibility of the recipient to ensure that obligations and expenditures did not exceed these administrative limitations. Initial directives were issued in March and April 1966 not only to provide for the execution of the FY 66S program, which had just been enacted by the Congress, but also to cover three prior programs (FY 65S, 66, and 66A) that were in various stages of completion. The abandonment of the nonstandard FFCGs in early 1967 resulted in the complete restructuring of the construction directive system. This was not limited to the on-going program but, for the sake of compatibility, also included all of the previously authorized work, regardless of whether such work was completed or underway. One of the policies applied in adminstering the construction directive system was that of issuing CDs on every project included in an approved program immediately upon receipt of such approval and with complete disregard for current requirements. Stated differently, upon receipt of an approved program, such as the FY 67S or 68R programs, CDs were issued covering every project included therein. The formulation of these programs had occurred months before approval (in the case of the FY 69 program, formulation had occurred approximately 2 years earlier) and many of these projects were no longer required. In some cases new requirements could be identified; in other cases new requirements had not yet been determined. Regardless of the situation, CDs were issued covering every line item in the originally approved program. Projects that were no longer required or that were in doubt were issued on a "restricted" CD. Throughout the 1967 and 1968 period, the data bank and management reports were literally glutted with restricted CDs. The extent to which this created an aura of control cannot be ignored -- CDs had been issued on the entire program and hundreds of these entries were worthless. There can be no question that management would have been

enhanced had these items been combined into one entry by Service per appropriation and representing funds against which requirements remained to be identified. This procedure is currently used by COMUSMACV, with the single entry identified as "undistributed assignment." Procedures must focus on visibility and good management. A flow diagram depicting the program funding and execution, and the relationship of construction directives thereto, is shown in Figure 4 of Chapter II.

b. Level of Effort. Prior to the spring of 1967, one of the major control factors of program management had been the CWE of each individual project within the overall program. However, for the myriad of reasons previously discussed, CWEs were subject to continuing instability, and control by this medium was unwieldy and extremely difficult. The use of this procedure essentially resulted in a total cost picture so inaccurate that it precluded sound management. This approach failed to recognize that what was bought in Vietnam was not construction in the normal sense, but a capability consisting of men, materials, equipment, plant, management, and a logistic system to support and sustain it. Accordingly, the Level of Effort Construction Management System (LOE) was developed during 1967 for the purpose of more adequately controlling the large cost-plus contract effort. LOE was designed to provide management with a tool that would indicate the overall financial condition of the contract together with long-range plans for work accomplishment and required labor levels. Through the integration of three basic elements -- funds, work, and labor -- it became possible to evaluate the effects of change in one or more of these elements and the corresponding impact on maintaining any given level of contractor capability for various periods of time. Although the LOE system was developed for and tailored to the specific circumstance of the Vietnam CPAF contract, its basic principles are valid for the management and control of any cost-reimbursable construction effort and may be of value if similar undertakings are entered into in the future. For this reason, the system has been thoroughly documented by the Naval Facilities Engineering Command.

c. Summary

(1) One of the outstanding by-products associated with the extensive use of a civilian contractor in Vietnam was the successful development and implementation of LOE. This system resulted in revolutionary procedures applicable to the management of large cost-plus contracts that encompassed numerous diversified activities and were specifically tailored, but not limited to, a combat environment. The system, which focuses on cash flow and cost of capability, should prove to be an invaluable asset in situations of continuing instability such as experienced in Vietnam.

(2) Management resources were essentially stagnated in the nonproductive juggling of construction directives that confounded rather than contributed to good management.

(3) CDs should have been issued on valid projects only and not on line items that were no longer required or in doubt. Funds assigned for projects no longer required should have been accumulated into one account for visibility and continued management by the in-country commanders of unified and component commands.

## 5. APPROPRIATION ALTERNATIVES

a. The decision to finance requirements from Defense appropriations (as opposed to MAP) is, in some respects, a landmark because it resulted in a complete reversal of the pre-FY 65 policy. Initially, all requirements -- construction and otherwise -- were funded from MAP appropriations. During FY 65, the Secretary of Defense directed that the requirements of U.S. forces be funded from Defense appropriations, regardless of the fact that these requirements were "assistance" oriented. The Supplemental Defense Appropriations for FY 66 lumped the MAP monies into the MILCON program, and new or additional MAP appropriations were no longer made available for Vietnam. This raises the question of which appropriation should be tapped to finance a major construction effort. A number of opinions and recommendations have been expressed on this matter with varying degrees of validity. For example, the Department of the Army wanted legislation that would authorize the use of available operational maintenance (O&M) funds for the construction of facilities in foreign countries designated by the

Secretary of Defense as areas in which U.S. forces may be subjected to hostile fire. The proposed legislation was worded to limit the funding of vertical construction (buildings) to projects not over $300,000 in cost. Other facilities, such as airfield pavement, LOC, dredging, and utilities (horizontal construction) were free of any cost limitations.[4] The supporting rationale was that existing authority and procedures were inadequate as "the time period involved in obtaining line-item authorization for construction is about two years from determination of the requirement to commencement of the work--a period far greater than is available to commanders charged with meeting the immediate needs of troop units." CINCPACFLT, when requested to comment on the source of funding of construction requirements, recommended to CINCPAC by message 190301Z of September 1964 that "all projects be MAP funded." The CINCPACFLT rationale was that facilities will be available for RVN and U.S. use and will ultimately revert to sole use by RVN. Since there are a number of precedents for funding facilities in this category using MAP funds, it is considered that MAP funding would be both the appropriate and responsive source.

b. In April 1965, COMUSMACV, by message 291213Z to CINCPAC, expressed a similar position and reasoned: "Recommendation based on experience shows that MAP funding is obtained more rapidly and requires less administrative time and effort to manage . . . recommendation also based on advantage of processing all construction funding through a single source which will insure better monitoring of the entire effort at this headquarters." COMUSMACV also reasoned that "eventually these facilities will pass to control of GVN."

c. The military construction programming system is a relatively sophisticated system that has evolved over many years essentially to satisfy peacetime requirements and to be consistent with congressional interest. To continue the use of this system in a conflict environment, however modified, with its current name unfortunately runs the risk of sliding back to standard, unmodified, and cumbersome peacetime procedures. This is essentially what happened in the Vietnam arena as early as 1966, starting with the formulation of the FY 67S program. Other appropriations, such as MAP and O&M, are also encumbered with certain constraints both statutory and regulatory. For example, the basic responsibility for developing and submitting programs to meet MAP requirements is vested in the appropriate Military Assistance Advisory Group (MAAG) and not the military department. This holds true whether the requirement is for construction or for other types of programs financed with MAP funds. If a military department has a requirement to be considered, it is responsible to ensure that such a requirement is reflected through the department's section of the MAAG. Requirements are submitted to the commander of a unified command for appropriate coordination and review, and he in turn submits his program directly to the Director of Military Assistance, Office of the Assistant Secretary of Defense (International Security Affairs). These procedures are a direct result of recommendations made by a committee appointed in November 1958 by the President of the United States to study the U.S. Military Assistance Program. This committee, under the chairmanship of William H. Draper, Jr., completed its study and submitted it final report on 17 August 1959. Detailed procedures concerning construction programming and execution are contained in Chapter Z of the Military Assistance Manual, Part II.

d. Regarding the use of O&M funds, the first major constraint stems from Title 10 USC 2674 - Public Law 84-968 (as amended), which limits expenditures to $25,000 for any construction project. In fact, if a project originally estimated at under $25,000 experiences a cost growth to above $25,000, the revised total funded cost must be financed from MILCON appropriations, which in turn shall reimburse the O&M appropriation in whatever amount charged. In addition, programming and reporting procedures are also quite cumbersome and any attempt to waive the law could possibly result in resorting to existing MILCON procedures.

e. Although both COMUSMACV and CINCPACFLT urged the use of MAP funds and noted the availability of numerous precedents, the cost of major construction requirements in

[4]Office of the Secretary of the Army, Memorandum, subject: P65-75-Proposed Legislation "To Authorize Construction in Certain Foreign Countries," 7 April 1965.

Vietnam was funded from military construction appropriations. By way of contrast, construction costs incurred during the Korean conflict were financed with O&M funds, which was in keeping with the Army position stated previously. Further, similar costs experienced during World War II were financed from a single war support appropriation incrementally increased as the need for more funds occurred. In other words, the costs of construction associated with these wars were all funded in a somewhat different manner and precedents exist to satisfy almost any position on this subject, including the precedent of doing it differently the next time.

## 6. SUMMARY

a. There can be no question that programming and funding of construction requirements in support of the Vietnam contingency were characterized by a continuing dichotomy at all levels between those desiring Washington-level program and financial control at the detailed line-item level, and those desiring complete flexibility in the combat area. The compromises effected caused considerable confusion and lost motion at all levels, particularly in-country where administrative capabilities were at a premium. In a dynamic combat environment such as Vietnam, construction requirements cannot be forecast with any degree of accuracy far ahead of time. Further, a flexible construction capability was and should have been the ultimate goal, and not a peacetime process whereby construction plans and specifications were to be available from which precise material takeoffs could be developed.

b. The initial flexibility of any consequence that was provided to the theater commander was promulgated in January 1966 and provided COMUSMACV with 15 pockets of money per Service. Each pocket constituted program authorization for a specific scope to be constructed any place in-country and included the authority to increase the amount in any pocket by up to 10 percent, as long as the sum total of all pockets was not exceeded. By contrast, the new procedures of early 1967 resulted in an increase in the number of pockets or entities to be managed from 15 to over 500 per Service program. Each and every subsequent program (FY 67S, 68, 68S, and 69) resulted in a possible increase of approximately 1,500 entities to be managed. The new procedures imposed a monumental paper workload since there were so many separate projects, and copies of all construction directives subsequently issued were required by DOD. One programming action could involve as many as 5 to 10 amendments to construction directives. These procedures were altogether much too complex, involved too many people, and generated far too much paper. Appropriate authority must be delegated to the theater commander commensurate with his responsibility and the exigency of the situation.

c. Since a modified but essentially peacetime military construction programming procedure was employed, programming, reprogramming, reevaluation, rejustification, and resubmittals, with all of the attendant administrative burdens, unfortunately, became a way of life. In essence, the system employed is one that had evolved over many years primarily to satisfy peacetime construction requirements. It was an in being system that provided maximum visibility and minimum flexibility.

d. What is required is a new procedure developed specifically to satisfy construction requirements in a contingency operation. The major considerations of such a system should be responsiveness, flexibility, visibility, and discipline. Since, as was the case in Vietnam, construction requirements are not apt to be adequately defined with reasonable accuracy and with a sound basis for the cost estimate (the latter normally requires engineering studies, core borings, soundings, etc.), then programming should be on a gross requirements basis only. The point of departure for the development of gross requirements should be the contingency plans, updated as required to satisfy current requirements. Requirements should be defined by standard DOD facility category groups (Table 12) on a theaterwide basis. Appropriate completion schedules should then be developed along with the capability or level of effort required. The labor mix, i.e. troop versus contract, must also be defined from the outset since this will affect the cost of construction chargeable to the construction appropriations. Armed with the knowledge of what is to be built by whom and in what time frame, the funding required to mobilize and maintain any given capability can be readily determined. The procedures must recognize the inevitability of change during the entire execution phase

and sufficient flexibility must be provided to accommodate a dynamic situation. Wide reprogramming authority should be delegated to the commander of a unified command so that he can accommodate changes as they develop. Controls imposed on the exercise of this flexibility should be held to a minimum and be primarily directed at ensuring compliance with statutory limitations. Specific changes or disapprovals desired by the Washington managers should take the form of modified guidelines and after-the-fact veto. Such decisions could be based on "Complex Reviews," which would list requirements and deficiencies, and the established reporting system. A reporting system such as the current Military Construction Status Report, South Vietnam, Base and Country Summary RCS: DD I&L (M) 915, modified to include a section reflecting all new entries or projects authorized for accomplishment during the preceding month and not previously listed should suffice.

e. The value of extensive and detailed multiple staff reviews under broad programming is suspect at the very least. Maximum attention should be in the area of in-theater reprogramming. Procedures should provide for separate funding of mobilization requirements as well as demobilization costs, and actual programming and fund allocation should be in keeping with the level of capability to be realized. Finally, restricted construction directives should not be issued or at least be held to a minimum rather than glut the management system and data bank with useless documents and entries. Available funds, for which program definition is not available, should be accumulated into one visible undistributed account.

## 7. CONCLUSIONS AND RECOMMENDATIONS

### a. Conclusions

(1) The programming and funding procedures employed to control the construction program in Vietnam were essentially peacetime procedures and were inappropriate for such a contingency. They did not provide the unified and Service commanders with the degree of flexibility required by and commensurate with their responsibilities. Although appropriate flexibility was provided throughout 1966, the modifications promulgated in early 1967 essentially reverted to peacetime procedures and imposed an undue and monumental paper workload (paragraphs 2, 3, and 5).

(2) Funds were not provided in a timely manner and the amounts provided, especially prior to the FY 66S program, fell appreciably below the required and requested level (paragraphs 2 and 3).

(3) Although many of the construction requirements were recognized during the early days of the buildup, appropriate mobilization could not be initiated until the various programs were passed into law. Mobilization and demobilization costs should have been funded separately and earlier in order to enhance responsiveness, facilitate program management, and provide more meaningful construction cost data (paragraphs 2, 3, and 5).

(4) The limitations imposed by the "full-funding" concept created significant management problems and precluded the theater commander from utilizing, to the best advantage, the construction capability that had been mobilized (paragraph 3).

(5) The early preparation of program definition by line item, months before the initiation of construction, resulted in the constant necessity to reprogram. Considerable effort was required to formulate the initial programs in great detail; much of this detail was of questionable value. Gross requirements programming would have been more responsive and effective (paragraph 2, 3, and 5).

(6) The use of the nonstandard functional facility category groups specified for Vietnam did not provide adequate or meaningful program definition (paragraphs 2, 3, and 4).

(7) Clear and simple procedures must be identified to preclude the constant recurrence of such actions as program restructuring and revalidation. Such procedures should

provide for a disciplined system specifically tailored to achieve an optimum balance of flexibility, responsiveness, visibility, and good management (paragraphs 2, 3, 4, and 5).

(8) The provision in the current instructions by the Joint Chiefs of Staff for base development planning, whereby streamlined procedural guidance for implementing the funding program for military construction in support of contingency operations will not be established until the time of operation plan implementation, is deficient. It defers resolution and does not provide for timely planning in a manner ensuring responsiveness. Procedures should be developed in advance between the Department of Defense and the appropriate congressional committees, and legislative proposals should be drafted to implement the procedures agreed upon. These proposed procedures should be provided to the Services and commanders of unified commands for guidance (paragraphs 2 and 5).

(9) Continued submission of program requests concurrently through the unified and Service channels is necessary in view of the overlapping logistical responsibilities. Modification of construction programming procedures would eliminate the more serious problems experienced with dual-channel submission (paragraphs 2 and 5).

b. Recommendations. The Board recommends that:

(CO-6) Subject to overall controls, the flexibility provided to the commander of a unified command in the execution of the construction program in a combat area be broad and commensurate with the responsibilities assigned and the exigency of the situation. To achieve this, the Office of the Secretary of Defense should develop and sponsor a completely new appropriation with established formats, programming procedures, and limitations specifically tailored to achieve an optimum balance of flexibility, responsiveness, visibility, and good management. This appropriation would be temporary in nature and applicable only during the contingency situation. It is suggested that such an appropriation be called "Contingency Construction Appropriation" and that the development of such an appropriation, and the management thereof, be based on the following:

(a) Definition of programs on the basis of gross requirements identified by a limited number of standard Department of Defense facility category groups.

(b) Appropriation of funds commensurate with the level of effort to be mobilized and maintained, in keeping with the gross requirements, the completion schedules, and the troop-contractor mix.

(c) Mobilization and demobilization costs funded separately from other construction costs.

(d) Introduction of line-item identification at the construction-directive stage of program execution.

(e) Authorization to make exceptions to "full funding."

(f) Allocation of construction funds in a single account for each Service without fiscal year identification of follow-on funds. Such follow-on funds should be additive to the accounts applicable to facility category groups in the total program.

(g) Control of construction above the unified command level not based on detailed line-item approval but exercised through broad guidance and veto power, with base "Complex Reviews" and established reporting systems providing the necessary data for decision-making (conclusions (8) and (9)).

(CO-7) Construction programming procedures to be employed in future contingencies be developed in advance between the Department of Defense and the appropriate congressional committees and that legislative proposals be drafted to implement the procedures agreed upon (conclusions (1), (2), (3), (4), (5), (6), (7), and (9)).

# CHAPTER V

# COORDINATION AND CONTROL

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# COORDINATION AND CONTROL

1. INTRODUCTION. The extensive requirements for the construction of facilities in support of the Vietnam conflict, the use of a contractor for a significant portion of that construction, the graduated military action strategy accompanied by difficulties in forecasting requirements, and the limitations placed on resources were accompanied by extraordinary measures of coordination and control. This chapter sets forth basic responsibilities and discusses coordination and control within the Pacific Command (PACOM) and Vietnam at the start of the buildup and major changes since then, including those originated at the Washington level.

2. BASIC RESPONSIBILITIES. The basic responsibilities, insofar as they related to construction, followed the principle of authority commensurate with overall responsibilities. As a commander of a unified command and accompanying his responsibilities for the operational control of assigned forces, the Commander in Chief, Pacific (CINCPAC) had commensurate authority for the direction, control, and coordination of construction; however, some of this authority was delegated to the Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV). This establishment of authorities and responsibilities paralleled the responsibilities of the secretaries of the military departments and the Service chains of command under them for the logistic support of their forces. Adequate facilities were among the elements necessary to carry out the missions and specific tasks of the Services and to fulfill responsibilities for readiness and performance of their forces (see Volume II, Chapter III).

a. The responsibilities of the secretaries of the military departments included: "Develop, . . . equip, and maintain bases and other installations, including lines of communications. . . ."[1]

b. The responsibility of the commander of a unified command for coordination in the field of logistics was accompanied by directive authority "intended to ensure " (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. " It was specifically directed that the authorization of directive authority was not intended to discontinue Service responsibility for logistic support.[2]

c In the case of facilities, the authority of the commander of a unified command extended to "the coordination, as necessary, of: . . . Acquisition or construction, maintenance, operation and disposition of facilities. " Coordination of "construction of facilities within his command" and the establishment of "priorities for construction projects" were specifically covered.[3]

3. PACOM. CINCPAC reviewed the construction programs for the entire Pacific area as submitted by the Service component commanders and, in the case of Vietnam, COMUSMACV, in order to coordinate priorities, ensure effective utilization of all assets, provide a balanced program, and verify that Service programs were in consonance with his. The latter's program was based to a great extent on the submissions of his Service component commanders (which he

[1]Joint Chiefs of Staff, Publication 2, Unified Action Armed Forces (UNAAF), Section 20101, November 1959, as amended.
[2]Ibid., Section 30203.
[3]Ibid., Sections 30603, 30608.

reviewed and approved). Thus, there was a high degree of coincidence of Service and unified submissions, even in the original stage. Chapter II reviews this procedure.

4. VIETNAM.

a. Authority for priorities of construction within the Republic of Vietnam (RVN) was delegated by CINCPAC to COMUSMACV per applicable PACOM plans. As a result, the MACV supporting plan specified the following construction priorities:

(1) Improve airfields and related facilities at specified locations as necessary.

(2) Improve main supply routes as necessary.

(3) Improve railroads as required.

(4) Rehabilitate and expand port facilities at specified locations as necessary and appropriate.

(5) Improve logistic base and support facilities to include POL storage and dispensing facilities, as necessary.

(6) In the event that any of the tasks listed in previous subparagraphs could not be accomplished because of enemy action or for any other reason, the succeeding task would assume the higher priority, for example, port improvement over railroads.

b. With growing demands by all the Services scattered throughout Vietnam, overall priorities by categories of facilities were not enough. A limiting factor was contractor and troop capabilities for specified types of construction, e.g. horizontal, vertical, dredging, pile driving and well drilling. As discussed in Chapter VI, the DOD contract construction agent in the area was the Navy's Bureau of Yards and Docks (later Naval Facilities Engineering Command). Responsibilities were exercised through the Officer in Charge of Construction (OICC) SE Asia (later RVN) and his principal construction organization was the consortium of the firms of Raymond International, Morrison-Knudsen, Brown & Root, and J.A. Jones (RMK-BRJ). The OICC, RVN, executed the contract program for the Services and MACV as it expanded from $1 million work-in-place (WIP) per month in mid-1964 to a peak of $63 million WIP per month early in 1967. He directed the activities of the construction contractor and maintained the accounts for all the military construction program (MILCON) funds, including troop construction monies. This central banking system, which facilitated control and reporting of finances, had been established in March 1966.

c. Under COMUSMACV, coordination of base development planning was a function of the engineer staff in the office of the Assistant Chief of Staff, Logistics, which up until the buildup had been concerned primarily with the Military Assistance Program (MAP). The responsibilities pertaining to MAP were expanded to include military construction, but the actual accomplishment of the responsibility was inhibited by the inability of the limited engineer staff to handle a program of the magnitude to which the one in RVN grew. As a result, priorities for projects or complexes for the use of limited construction resources were often not resolved at the COMUSMACV level.

d. Facility requirement submittals were generally developed at the base and installation level and were processed in-country through the Service chain of command, where the requirements were reviewed for validity and integrated into a composite priority listing according to individual Service need. They were subject at times to local area coordination. For instance, starting in 1965 the Commanding General (CG), III Marine Amphibious Force (MAF), submitted consolidated priority lists for the I Corps Tactical Zone under his operational control.

e. Priorities for projects or complexes had to be translated into the allocation of construction resources. Thus, prior to the establishment of a single construction manager under

COMUSMACV, these priorities had not been balanced in consideration of importance, urgency, and available resources. The allocation of resources by the OICC often had the effect of making priority decisions, although there was consultation between the OICC and COMUSMACV and his staff.

f. The establishment of relative priorities covering the total construction effort was hampered by changing requirements brought about by changing patterns of combat operations and deployments necessitating changes in the facilities that were utilized to conduct or support these operations. Thus, the OICC was faced with far less than a stable program, and there was fierce competition among the Services and areas for the construction effort that was available.

5. DIRECTOR OF CONSTRUCTION. During a visit to RVN in July 1965, the Deputy Assistant Secretary of Defense (Properties and Installations) (DASD(P&I)) discussed the lack of a joint coordinated construction program with the Assistant Chief of Staff, Logistics, MACV, and COMUSMACV. He ". . . strongly urged that there be one focal point in MACV direction of construction matters, a central office with which DOD, CIN(C)PAC, and other Service Agencies can coordinate; and he recommended a 'construction czar' other than the MACV J4. General Westmoreland concurred with this recommendation."[4] Following a visit to RVN in November 1965, the Secretary of Defense directed the establishment of a MACV Engineer.[5]

a. In response to a Joint Chiefs of Staff request for a position statement on the proposal, COMUSMACV stated in a message (43865) of 8 December 1965:

> ". . . that unless and until control of construction funds is vested in COMUSMACV, desired goals of responsiveness, increased management flexibility and improved coordination cannot be achieved. Thus arrangements advocated . . . offer no reasonable prospect of achieving better results than attainable under the present MACV organizational structure.
>
> ". . . the construction effort in RVN is confronted with four problems of overriding significance. These are:
>
> Shortfall in engineer construction units and repair parts.
>
> Delayed availability of critical construction materials.
>
> Funding restrictions which preclude rapid responsiveness to new requirements.
>
> "Deficiencies in coastal shipping and lighterage which complicate and delay timely distribution of construction materials. It is noteworthy that none of these problems can be alleviated significantly, much less resolved, by reorganization . . .
>
> ". . . a final product of the MACV analysis is the conviction that separation of construction from the overall logistics functions runs the risks of introducing more problems than it would solve. Aside from proliferation of staff elements, the close coordination between construction, movement control, and transportation would be impaired. Moreover, the already difficult task of allocating engineer resources between base development and support of tactical operations would be compounded by according separate organizational status to construction . . . ."[6]

b. In commenting on this, CINCPAC stated that COMUSMACV had exercised control constantly and successfully in execution of the construction program, and that he had an organization that was functioning well. He stated that logistic difficulties and construction problems in RVN would not be solved by changes in organization. CINCPAC identified the problems to be those concerned with lack of funding and difficulties in getting people and equipment to construction sites because of labor shortages and long supply pipelines.

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[4] Office of the Secretary of Defense (Installations and Logistics), Memorandum for Record, Conference of Deputy Assistant Secretary of Defense (P&I) with General Dunn, 27 January 1966.

[5] Ibid.

[6] Commander, U.S. Military Assistance Command, Vietnam, Message 0813052, 8 December 1965, subject: MACV Construction Staff Augmentation (U), (CONFIDENTIAL).

c. The Deputy Secretary of Defense, by memorandum dated 6 January 1966, requested the Joint Chiefs of Staff to proceed with establishing an engineer boss under COMUSMACV. Appendix A contains the text of this directive.

d. The intended relationships were stated in testimony by the Assistant Secretary of Defense (Installations and Logistics) on 3 February 1966 during hearings by the Subcommittees (Defense, Construction, and Foreign Operations) of the House Appropriations Committee on the Supplemental Defense Appropriations, as follows:

> 'In a memorandum dated January 6, 1966, subject, Construction Management in Vietnam, Secretary Vance says: 'It should be clearly understood that the 'engineer construction boss' has full authority to discharge the responsibilities placed upon him, and that such authority rests in him and not in the MACV-J4. If he needs additional authority I will expect him to let Secretary McNamara or me know so the terms of reference can be modified promptly.'
>
> "The description of General Dunn's position, Mr. Chairman, indicates that he will be responsive to the Commander, U.S. Military Assistance Command, Vietnam, that he will advise the Commander and his staff on military engineering, and base development matters, but it goes on to say that he will also exercise direct supervision, and directive authority, over all DOD construction commands and agencies, both military and civilian, in the Republic of Vietnam, except for those construction engineer units organic to or assigned to major combat units.
>
> 'In short, he will be General Westmoreland's advisor, but in addition will have authority to coordinate the resources available in the country to get the construction job done."

In further clarification - - 'Mr. Chairman I think Mr. Vance's memo speaks for itself in that regard. He states that he believes the construction boss should have the requisite authority, and if he does not have it he asks the Chairman of the Joint Chiefs of Staff to advise him and Secretary McNamara. It is the intent that he have the necessary authority."

e. The Construction Directorate was established on 11 February 1966 with a staff of 135 personnel, 50 percent from the Army, and 25 percent each from the Navy and the Air Force.

f. To ensure responsiveness and to clarify relationships, COMUSMACV issued a directive on 15 February 1966 defining the "Missions and Functions of the MACV Director of Construction" (see Appendix A). The mission was stated as 'Direct, manage, and supervise the combined and coordinated construction program to meet MACV requirements and coordinate all Department of Defense (DOD) construction effort and resources assigned to MACV or in the Republic of Vietnam (RVN)." Excluded were his supervision and directive authority over construction/engineer units organic to or assigned to major combat units. The directive stated that the MACV Director of Construction was a "Special staff officer on the staff of COMUSMACV" and it was in this role that he functioned.

g. The current PACOM position is expressed as follows:[7]

> "During a visit to PACOM in September 1969, the Chairman of the Joint Logistics Review Board (JLRB) requested the current CINCPAC position on centralized construction program management by a subordinate unified commander during a contingency situation.
>
> "Publication of reference A [JCS-SM-643-69 of 1 October 1969], with guidance for execution of construction programs in any future contingency, has resulted in a re-evaluation of the CINCPAC position. It has changed several factors on which objections had been based.

[7] Commander in Chief, Pacific, Message 270511Z December 1969, Management of Construction in Support of Contingency Operations.

"The use of service funds (O&M [Operation and Maintenance], OPN [Other Procurement, Navy], PEMA [Procurement of Equipment and Missiles, Army], etc.) for construction support of short duration contingencies and MILCON funds for sustained contingencies supplants CINCPAC recommendation to fund all facilities requirements in any contingency with O&M funds.

"Establishment of streamlined procedures for funding military construction in support of contingency operations could eliminate excessive reprogramming actions. Implementation of such procedures would reduce the size of the staff required for centralized military construction program management. The large size of the in-country staffs required under current procedures has been a major drawback.

"The requirement to integrate facilities deficiencies into a coordinated plan and to recommend funding of MILCON on the basis of construction capability, or level of effort, necessitates active direction of the construction by the subordinate unified commander.

"Accordingly, CINCPAC concurs in the concept of centralized construction program management by a subordinate unified commander when authority is delegated through the chain of command and when a wartime or contingency situation requires large scale multi-service construction program. Specific recommendations will be made, for any future contingency, when the specific circumstances are determined."

6. SOUTHEAST ASIA CONSTRUCTION GROUP, OFFICE OF THE SECRETARY OF DEFENSE. Meanwhile, a Southeast Asia Construction Group was established in the Office of the Secretary of Defense under DASD(P&I) in September 1965 for the following reason and purpose:

"With the increasing tempo of construction operations in support of U.S. forces in Southeast Asia, it is essential that there be complete coordination of all phases of the program and that overall surveillance be established to ensure the completion of essential facilities to meet critical readiness dates.

"I have requested the Assistant Secretary of Defense (Installations and Logistics) to monitor the construction programs of the Military Departments to assure that they are proceeding on schedule and that any obstacles are identified and overcome."

This group was subsequently formalized as a division under the directorship of a general officer in March 1966.[8] On 1 February 1969 this organization was reorganized as the Directorate for Construction Operations with worldwide responsibilities for ". . . all aspects of the military public works concerned with construction execution, and . . . all aspects of construction in support of contingency military operations, when such construction is identified and established as a separate program."[9]

7. SUBSEQUENT ACTIONS. Shortly after the establishment of the MACV Construction Directorate (MACV-DC) with its enlarged staff, a more thorough review of individual Service priorities began to take place. This resulted in a more optimum balance of construction resources.

a. A Construction Coordination Committee was established in mid-1966. The committee was chaired by a MACV-DC representative with representation from the Services, OICC, and the contractor. The committee, which met weekly, served as a focal point for coordination of efforts in solving the problems related to the construction effort. During the same time period, a system of "complex reviews" (see Appendixes C and D) was initiated. These reviews provided a planning and programming guide using broad countrywide planning factors in the determination of requirements. They resulted in the establishment of comprehensive facilities deficiency listings by location.

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[8] Deputy Secretary of Defense, Memorandum, subject: Southeast Asia Construction, 3 September 1965.

[9] Deputy Assistant Secretary of Defense (Properties and Installations), Memorandum, subject: Reorganization of the Office of the Deputy Assistant Secretary of Defense (Properties and Installations), 31 January 1969.

b. In a further attempt to improve the coordination of effort, area and installation coordinators were appointed. Although there is little recorded evidence to indicate the degree of effectiveness achieved by the area and installation coordinators, the provision of such a focal point could only benefit coordination at the local level. In some instances where programs were developed and fielded by continental United States (CONUS) agencies, local coordination was overlooked with the inevitable breakdown of effective resources allocation.

c. During early 1967 the OICC initiated formal monthly meetings between his own staff, the contractor, the Services, and MACV. These meetings came to be known as Level of Effort (LOE) Work Load meetings and proved to be very beneficial as the status of every active project assigned to the OICC was reviewed. Constraints, if any, were identified and beneficial occupancy dates were analyzed and adjusted. All participants were provided an opportunity to present their views.

8. CONSTRUCTION REPORTING. In the initial stages (1962 to early 1965), the OICC prosecuted a small and reasonably stable program at a WIP rate of about $1 million per month, which could be effectively managed with the manually prepared Military Construction Status Report - - 2319. The report was transmitted by mail; summaries and analyses were accomplished by hand. Such a system, supplemented by close knowledge of the program by the Naval Facilities Engineering Command (NAVFACENGCOM) managers, adequately served the needs of OSD and Service management.[10]

a. On 27 May 1965 the Secretary of Defense authorized the Services to proceed with the FY 65 Supplemental Program, and on 15 June 1965 DASD(P&I) provided the military departments with the requirements for reporting on this program. This report, "Military Construction in Support of Southeast Asia," RCS DD-I&L (Twl) 6526, became the vehicle by which the Services advised OSD of program changes ex post facto. This report was modified and redesignated RCS DD-I&L(Ni) 6545 on 15 October 1965 and successively changed to the 6610, 6727, and the 915 reports (see Appendix C).

b. The reporting procedures continued to fluctuate for the next 2 years, and eight significant changes of the reports to OSD were made. A recounting of this extensive growth and change of the reporting system appears in Appendix C. Appendix C also addresses those related reports that did not provide progress of construction and funds status, but furnished such necessary management information as summaries of requirements and assets, cost trends, and inflationary impacts.

c. A complex reporting system that utilized computer support evolved (mostly at the behest of OSD) in order to subject the RVN program to the same critical scrutiny given the CONUS construction program. The evolution of this system was characterized by many difficulties; format changes, adjustments of basic files, revised input data, and the loss of a common basis for comparing latter to former reports. The Joint Chiefs of Staff have under development a contingency construction reporting system that is proposed to be compatible with current automatic data processing (ADP) reports.

d. The amount and diversity of data, both financial and project status, required in any contingent situation will vary with the scope and complexity of the construction program concerned. In addition, the Congress will have varying reporting requirements that will be dependent on the personalities and political environment extant at the time. Consequently, although it is necessary to develop a standard system prior to the next contingency in order to preclude the difficulties experienced in Vietnam, such a system should be flexible. Progression from manual to card-sort to computer processing should be possible without revision of the basic files. The status of construction progress and funds should be of a mimimum of detail consistent with the requirements of the customer, the constructor, and the program managers at all levels. This requirement could dictate the production of several versions of the report, depending on the

[10] Naval Facilities Engineering Command, Construction Problems and Achievements, 13 April 1967, Volume IV, Item 8.

degree of detail desired. In case of an escalating situation, such as Vietnam, the system should be capable of evolving from a simple report with a minimum of detail to a full-blown report incorporating the features of the 915 and Complex Review reports, if required.

## 9. CONCLUSIONS AND RECOMMENDATIONS

### a. Conclusions

(1) Initial deficiencies existed in the capabilities for construction vis-a-vis the rapidly growing requirements. Major problems cited at the end of 1965 included shortfall in engineer construction units, repair parts, and critical construction materials; funding restrictions; deficiencies in coastal shipping and lighterage for distribution of materials; and labor shortages (paragraph 5a).

(2) The translation of priorities for projects or complexes into allocation of construction resources was greatly complicated by rapidly changing requirements as new forces were deployed and the combat situations altered (paragraph 4).

(3) The Commander in Chief, Pacific, delegation of responsibility to Commander, U.S. Military Assistance Command, Vietnam, for coordination and priorities recognized the need for authority commensurate with responsibility (paragraphs 2 and 3).

(4) The engineer staff of the Military Assistance Command, Vietnam, was initially inadequate to carry out fully the coordination and priorities responsibilities that had been delegated to the Commander, U.S. Military Assistance Command, Vietnam (paragraph 4).

(5) The establishment of a Director of Construction with joint manning provided the required capabilities at a level commensurate with the importance of the construction program.

(a) Vietnam experince has shown that such a director should be directly under the command or part of the staff of the joint commander in the combat area to ensure effective and responsive coordination of the construction program with operations and logistic support. The manner in which the charter of the Director of Construction was established, i.e., missions and functions prescribed by the Office of the Secretary of Defense rather than by the responsible commander, presented the possibility of ambiguities regarding responsibilities. However, these ambiguities were avoided by the action of the Commander, U.S. Military Assistance Command, Vietnam, to delegate responsibilities and authority to the Construction Director as a special staff officer under his aegis.

(b) The establishment of a construction coordinating committee, improvements in local area coordination, and level-of-effort workload meetings contributed to the improved use of construction capabilities and responsiveness to Service and area needs (paragraphs 5 and 7).

(6) Specifics concerning the coordination of construction in a combat area and the organizational requirements will vary from one contingency to another depending on the nature and scope of the operations and participating forces (paragraph 5).

(7) The everchanging demands for detailed management information and differing formats for reporting dynamically changing programs imposed a heavy workload on the construction managers and responsible commands in Vietnam (paragraph 8).

### b. Recommendations. The Board recommends that:

(CO-8) The Joint Chiefs of Staff instructions regarding base development planning for joint operations (SM-643-69) require specific provision for the coordination and control of construction in the combat area, as suitable to the contingency operation planned. The planning

should set forth the composition and role of a construction directorate on the staff of the joint field commander, if warranted by the scope and complexity of the contingency (conclusions (3), (4), (5), and (6)).

(CO-9) The contingency reporting system under development by the Joint Chiefs of Staff stress simplicity, reduction of information requirements to key elements pertinent to a combat situation, capability for expansion without major changes in automatic data processing programs and format, and compatibility with the program and funding management requirements of the Services (conclusion (7)).

CHAPTER VI

# EXECUTION AND IMPLEMENTATION

## CHAPTER VI

# EXECUTION AND IMPLEMENTATION

1. AREA OF INVESTIGATION. This chapter begins with a review of the construction capability existing in the Republic of Vietnam (RVN) at the start of the major buildup in 1965. The manner in which the total construction force was mobilized to meet the requirements for construction is then examined. Major attention is given to the mobilization of the engineer troop construction units and of the principal civilian construction contractor in Vietnam (the joint venture of Raymond, Morrison-Knudsen, Brown and Root, and J.A. Jones), but an analysis is made of the size and composition of the total construction force to include the numerous other construction resources available. The chapter ends with a study of the employment of these construction resources with particular attention to the manner in which the efforts of the troop and contractor forces were coordinated to accomplish the construction mission.

2. CAPABILITY AND UTILIZATION OF TROOP-CONTRACTOR FORCES

a. Initial Capability

(1) Background. In October 1963, it was anticipated that the major part of the U.S. task would be completed by the end of 1965. As a result, there was a cutback in building up a logistic base in RVN. By mid-1964, however, the tactical situation had deteriorated, and, at a conference held at the Headquarters, U.S. Pacific Command (PACOM), the Commander, U.S. Military Advisory Command, Vietnam (COMUSMACV), proposed extension of the U.S. advisory effort. [1] The Commander in Chief, Pacific (CINCPAC), concurred and recommended approval of the proposal on 4 July 1964. Presidential approval was given on 21 July 1964 to begin an increase in military strength. This was the first in a series of decisions that was to reverse the downward trend in construction capability and to bring about the massive construction program that later evolved in RVN.

(2) Construction Troops. There were no engineer construction troops employed in RVN in 1964. In November 1964, COMUSMACV requested deployment of an Army engineer construction group to complement the civilian contractor effort already available. [2] This request was pending on 1 January 1965, and, although both Army and Navy planners were considering the inclusion of engineer construction units in their troop lists, the year started with no firm plans for deployment of such troops.

(3) Civilian Contractor Forces

(a) As DOD contract construction agent in South Vietnam [3] the Navy's Bureau of Yards and Docks—later redesignated the Navel Facilities Engineering Command (NAVFACENGCOM) – had, in 1962, mobilized the construction combine of Raymond, Morrison-Knudsen (RMK). As a result of the downward trend in construction activity evident in 1963, the RMK combine had been phased down in the spring of 1964 in anticipation of terminating the

[1] General W. C. Westmoreland and Admiral U. S. G. Sharp, Report on the War in Vietnam, Washington, D. C. U. S. Government Printing Office, 1968, p. 99.

[2] Joint Chiefs of staff, J-3, Report, Major Combat and Principal Support Unit Deployments to South Vietnam (U), 24 March 1966, p. 25 (SECRET).

[3] Assistant Secretary of Defense (ISA), Memorandum, subject: Approval of FY 1956 Direct Forces Support Programs (U), 27 February 1956 (SECRET).

contract and demobilizing the contractor organization. [4] By 1 July 1964, the contractor capability had been reduced to a monthly work-in-place (WIP) rate of about $0.9 million from a previous peak of about $2.0 million. Material stockpiles were being depleted, and no construction equipment was on order.

(b) As discussed in Appendix C, contingency planning had been based on the assumption that engineer troop units would accomplish virtually all of the construction needed to support operations in RVN and that civilian contractor forces would not be used to any significant degree. It soon became evident, however, that a contractor force would have to be kept in operation even though plans had not been made to do so. The Director, Bureau of Yards and Docks, Pacific Division (DIRPACDOCKS), described the first of many difficult decisions regarding this problem as follows:

> "When it appeared certain in July 1964 that a major construction program would develop in RVN, we terminated prior actions aimed at demobilizing our CPFF [cost-plus-fixed-fee] contract operations. Although no project funding was yet at hand, we retained our existent capability in U.S. supervisors, staffs, and logistics support operations as a gamble that the planned program would materialize."[5]

(c) When projected Military Assistance Program (MAP) funds were received in September, additional construction equipment was ordered, and both the Officer in Charge of Construction (OICC) and RMK staffs were expanded so that, by 1 January 1965, the contractor's monthly WIP rate had increased to over $2.0 million.[6] Of major importance from the long-range point of view was the fact that two increments of $1.0 million each of equipment had been ordered, a Saigon stockpile of materials had been authorized, and the contractor supply system from San Bruno, California, to Saigon was inbeing.

(4) Prebuildup Posture. The actions taken with regard to expanding the contractor's capability were aimed at raising the monthly WIP rate of $4 to $5 million by the spring of 1965. Even at this work rate, it was estimated that only the critical portion of the $60 million in MAP, Service, and Agency for International Development (AID) funded projects assigned the contractor during the last half of 1964 could be completed by January 1966.[7] The less critical portion of the program would have to be deferred, completed by the use of Vietnamese contractors, or completed by Army Engineer battalions to be deployed from the continental United States (CONUS) or Navy Mobile Construction Battalions (NMCBs) then located at other PACOM bases. In addition, the command learned late in 1964 of the possibility of plans for funding an even larger construction program later in FY 65, and construction programs for future fiscal years were not yet defined even in gross terms.[8] The absence of any firm plans for the deployment of construction troop units has already been noted. Some use had been made of local Vietnamese contractors by the Headquarters, Support Activity, Saigon (HSAS), to accomplish essential billeting, warehouse, and port development projects in the Saigon area, but this had little impact on the overall program. On 1 January 1965, it was becoming apparent that further force buildup would require deployment of construction troops, in addition to further increases in contractor capability, if facilities were to be constructed in a timely, responsive manner.

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[4] Naval Facilities Engineering Command, File, Subject: Management Actions, 1967, Item D.1.

[5] Director, Pacific Division, Bureau of Yards and Docks, Memorandum, subject: RVN Construction Program (U), 22 December 1964 (SECRET).

[6] Naval Facilities Engineering Command, Sequence of Significant Events, Southeast Asia Construction, Item 80, "Chronology of Actions to Enhance Capability, "20 July 1965.

[7] Director, Pacific Division, Bureau of Yards and Docks, Memorandum, subject: RVN Construction Program (U), 22 December 1964 (SECRET).

[8] Naval Facilities Engineering Command, File, subject: Management Actions, 1967, Item D.1.

b. Development and Deployment of Additional Capability

(1) Recognition of Requirements

(a) In a combat environment, construction requirements can be translated into such factors as battalion-month or man-day equivalents for accomplishment. Because combat construction has historically been funded from operations funds, the construction planner has not been constrained by funding procedures except when funds represent a depletable resource. Two aspects of construction in RVN changed this. The first of these was the use, for the first time during combat operations, of a civilian contractor to accomplish a major portion of the construction. The second was the decision by the Secretary of Defense, late in 1964, that approval of requirements was to be centralized in his office and that military construction (MILCON) programming and funding procedures would be used. [9] Therefore, in RVN facilities requirements were first programmed in dollars, which were then converted into the materials, equipment, work force, and the management required to produce the facilities. For this reason, a discussion of the recognition of requirements, especially in the early stages of the buildup, must be addressed from the funding point of view. (Chapter IV discusses programming and funding in detail.)

(b) At the beginning of 1965, each of the Services were engaged in a worldwide reprogramming action to make funds available for emergency projects in SE Asia. The authority for this reprogramming was contained in the applicable sections of the FY 65 MILCON authorization act—Public Law 88-390. [10] By March, the slowness of the reprogramming process led the Secretary of the Navy to advise the Secretary of Defense that the MILCON programming procedures should be altered. In addition, the Secretary of the Navy pointed out that funds were required by the Navy for advance procurement of long-lead-time materials and equipment and to permit accomplishment of planning and design of facilities. [11]

(c) The Secretary of Defense did not, however, change his basic position that MILCON procedures were to be used. In his initial comments following COMUSMACV's briefing in Saigon on 28 November 1965, he stressed that Congress should not be expected to give a "blank check"; that, in view of the tremendous size of the construction program, careful advanced planning was required; and that, in order to get congressional authorization, a program in the form of "reasonably defined projects" would be required. [12]

(d) As a result, normal budget requests and supplemental requests, on an "as required" basis, were submitted to Congress. This in turn resulted in incremental funding of the RVN construction program as shown in Figure 11. Incremental funding, per se, would not necessarily have been unresponsive to requirements in view of the fact that the force buildup, as dictated by the policy of "graduated response, " was itself inherently incremental. It was recognized, for example, that MILCON programs approved in May 1965 (FY 65 Supplemental) and September 1965 (FY 66 Regular) were nothing more than stop-gap actions that pertained to only some of the major, obviously required facilities. [13] The probelm was that the deliberate procedures resulted in considerable delays between CINCPAC's statements of requirements and the funding of these requirements. Figure 12 shows the relationships between the statement of CINCPAC requirements and the provision of funds to PACOM and to MACV. Since actual construction takes some time to accomplish after

[9] Secretary of Defense, Memorandum, subject: Funding of Construction Cost of U.S. Build Up in Vietnam (U), 12 September 1964 (SECRET)

[10] Naval Facilities Engineering Command, History of SEA Construction Program, 7 September 1965.

[11] Secretary of the Navy, Memorandum, subject: Readiness Actions for Southeast Asia (U), 31 March 1965 (SECRET).

[12] Commander in Chief, Pacific, Command History (U), 1965, Annex A, p. 126 (SECRET).

[13] Naval Facilities Engineering Command, Southeast Asia Coordinating Group Note 11010, 13 April 1967, Volume 11, p.1.

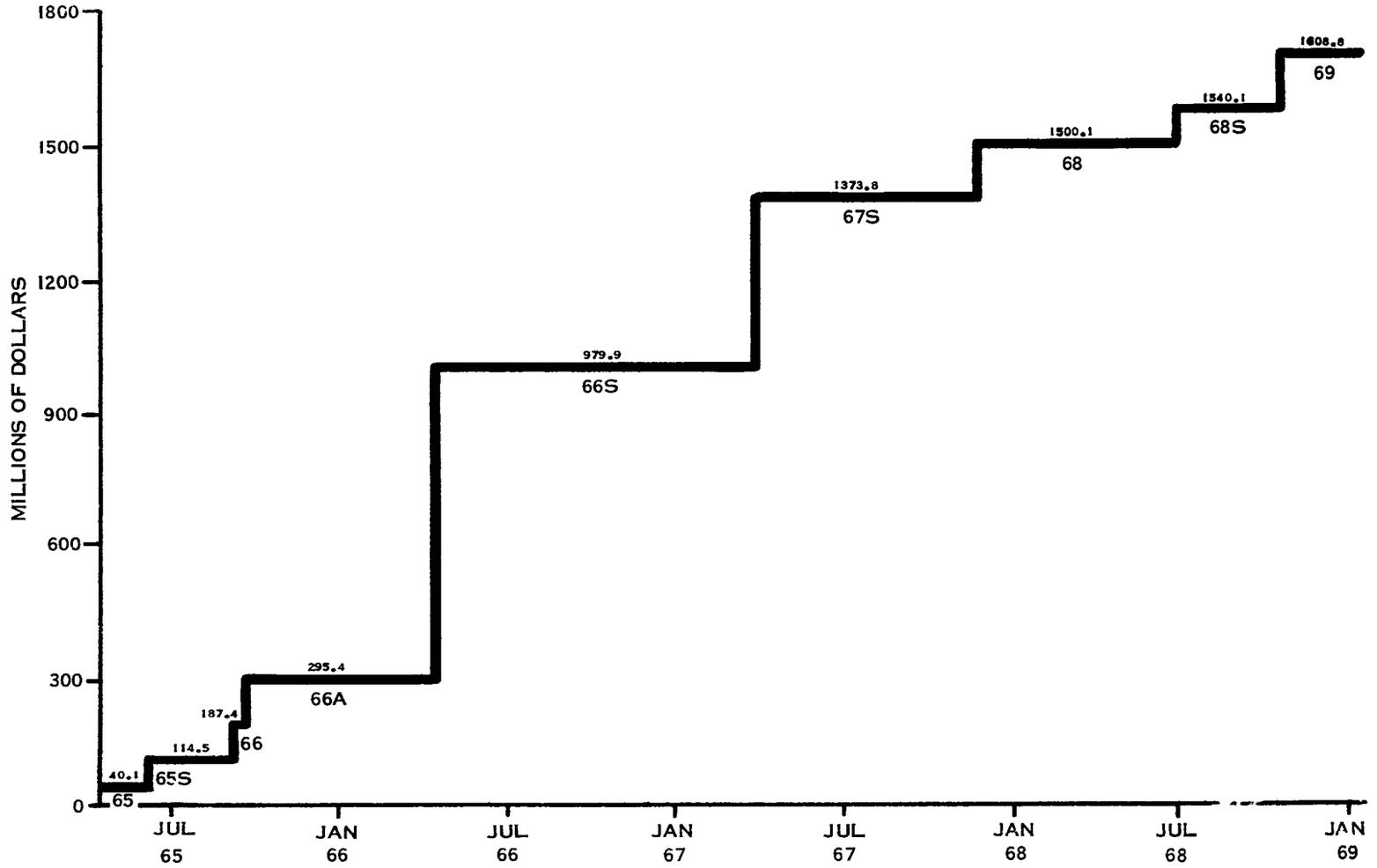


FIGURE 11. CUMULATIVE MILCON APPROPRIATIONS VIETNAM (MAP NOT INCLUDED)

Source: Naval Facilities Engineering Command, Military Construction Status Report, South Vietnam, Base and Country Summary, 28 February 1969.

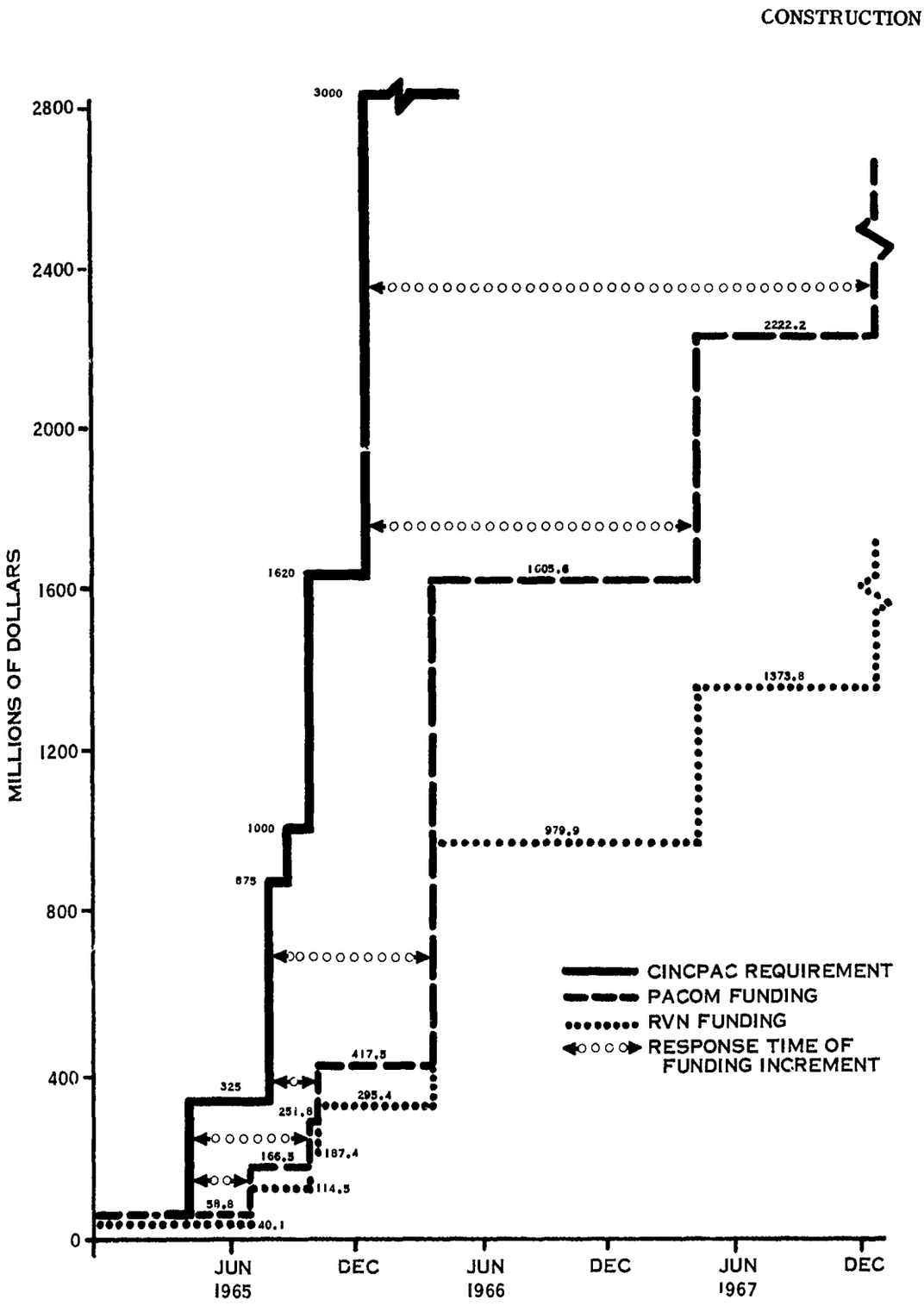


FIGURE 12. MILITARY CONSTRUCTION FUNDING VS. REQUIREMENTS
Source: Naval Facilities Engineering Command, Vietnam Construction Report, September 1968.

funds are made available, the funding procedures contributed to the lag between the expression of a need and the construction of facilities. Figure 13 shows the relationships of the buildup of the force level, funding, and actual WIP.

(2) Buildup of Contract Construction Capability

(a) In January 1965, with the new program firming up, NAVFACENGCOM (then designated the Bureau of Yards and Docks) was queried as to its capability to handle the anticipated program within the time frame then foreseen. NAVFACENGCOM responded that there was no major constraint to expanding contractor operations as required, provided that specific construction requirements were given upon which to base plans and that funds were provided in advance for procurement of equipment and materials.[14]

(b) Early in 1965, NAVFACENGCOM initiated a rapid expansion of design capability by employing additional architect-engineer (A-E) firms. By March, plans were formulated to establish a more responsive organization by separating the construction office in Saigon from the orgainzation in Bangkok, Thailand, and establishing it as an independent office under the OICC, RVN. This action was completed on 1 July. Establishing the OICC staff was followed by a substantial buildup of the staff, the addition of Brown and Root and J.A. Jones to the RMK joint venture to form a larger organization known as RMK-BRJ; the introduction of new management systems and procedures; seeking funds to reduce long lead times; and the revision of the CPFF contract to a cost-plus-award-fee (CPAF) contract.

(c) Major portions of the 1965 program were assigned to the OICC, RVN for contract construction. Each new increment of the total funded program required contractor mobilization of materials, equipment, and work force to achieve a new level of construction capability that would ensure project completion within the established time frame.

(d) The OICC worked closely with the contractor to develop a construction plan. The airfield and logistic support projects were translated into rockcrushing, earthmoving, and paving equipment as well as into gross quantities of materials such as cement, asphalt, and lumber.[15] Because equipment and most materials had to be shipped from CONUS and additional workers had to be recruited in CONUS or from third countries, mobilization decisions had to be made 4 to 6 months before on-site construction could be started on each newly funded program.

(e) Although the true measure of progress in a construction program is the actual facilities built, dollars are the common denominator for translating construction funding programs into physical construction. Accordingly, the OICC and the contractor used WIP as a rough indicator of progress.[16] As a result of the construction planning for the FY 65 Supplemental and FY 66 Regular Programs, the OICC established target dates for the contractor to attain a new level of capability (WIP rate). For these programs, NAVFACENGCOM, through OICC, RVN, unilaterally established the target rates for WIP seen in Figure 14 based on professional judgment as to the level of mobilization required.[17] Concurrent with the activation of the MACV Construction Directorate in February 1966, NAVFAC-ENGCOM ceased establishing unilateral targets for WIP, since this was properly the responsibility of MACV.[18] For the FY 66 Supplemental and all subsequent programs, however, the construction plan, as before, was prepared by OICC and RMK-BRJ to develop a WIP rate. The target rate for WIP then became a commitment that was the basis for analyses and planning by MACV and the Office of the Secretary of Defense (OSD) of capabilities versus requirements.[19]

[14] Ibid., p. 1.
[15] Ibid., pp. 2,3.
[16] Ibid., p. 4.
[17] Naval Facilities Engineering Command, Analysis of Construction Capability Required in Vietnam (U), 15 March 1966 (CONFIDENTIAL).
[18] Ibid., pp. 2,3.
[19] Naval Facilities Engineering Command, Southeast Asia Coordinating Group Note 11010, 13 April 1967, p. 4.

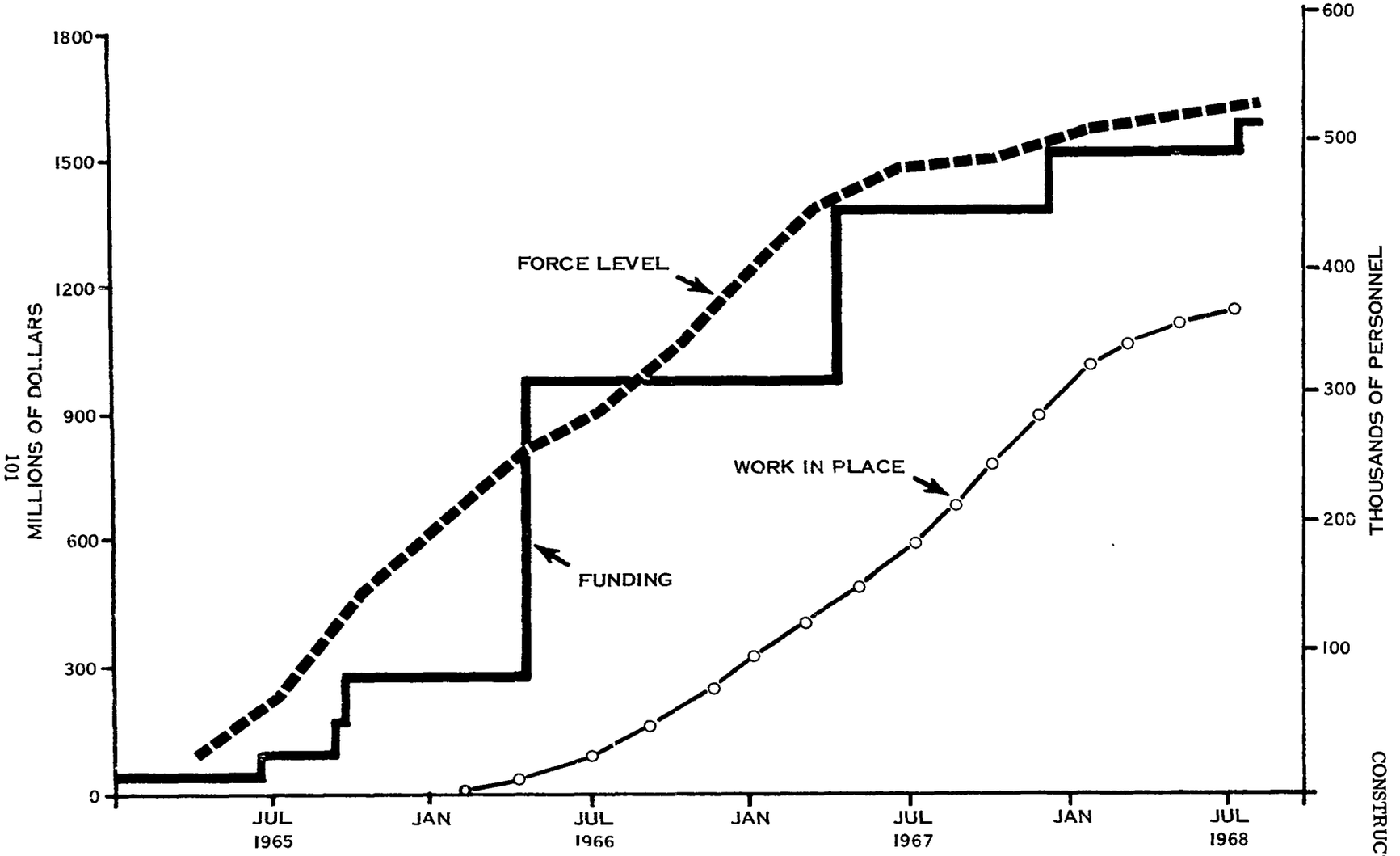


FIGURE 13. VIETNAM FORCE BUILDUP VS. MILCON FUNDING AND WORK IN PLACE

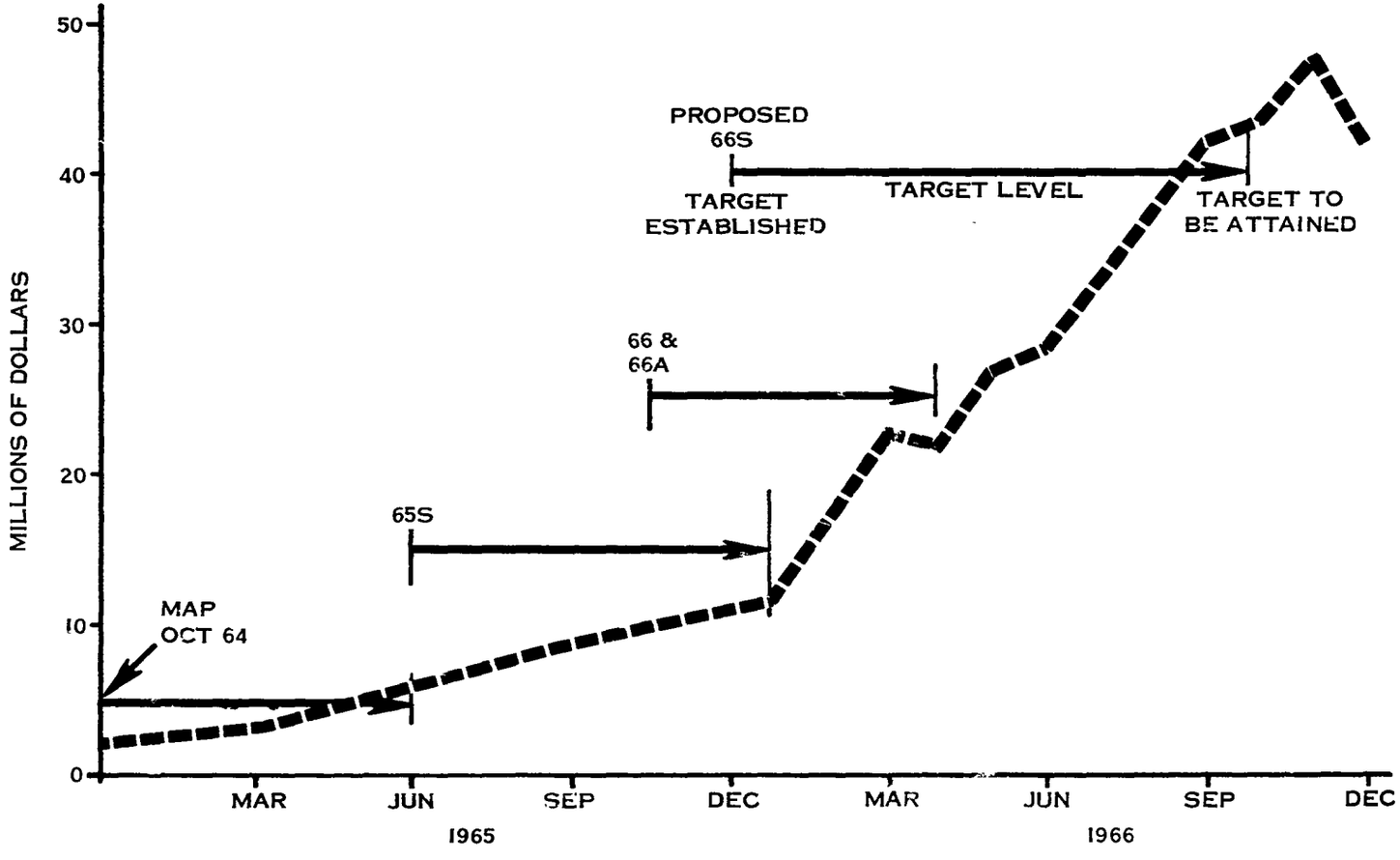


FIGURE 14. VIETNAM CONTRACT TARGET VS. ACTUAL WORK IN PLACE PER MONTH

Source: Naval Facilities Engineering Command, Point Papers, 1967

(f) An analysis of Figure 14 shows that the contractor was, in fact, responsive in meeting the target WIP rates. This accomplishment, however, was a real test of both OICC and RMK-BRJ management. Further analysis of this management will focus on three principal areas—design and advance procurement funding, mobilization of equipment and materials, and mobilization of the work force.

1. Design and Advance Procurement Funding

a. On 31 March 1965, the Secretary of the Navy advised the Secretary of Defense that the Navy, as DOD contract construction agent in SE Asia, could forecast: "an approaching flood of construction projects we are not at present prepared to meet. Although a great number of projects have been prepared only a very minor portion have been planned to a sufficient degree to permit commencement of construction. Additionally, if construction funds were available immediately it would take 4 to 6 months to get the necessary materials and equipment into the area." The Secretary of the Navy recommended a total of $13 million in funding, of which $2 million was for planning and design, $5 million for a material stockpile, and $6 million for construction equipment.[20]

b. OSD responded quickly on the funding for design. A decision on 15 April 1965 established this as a Service responsibility.[21] The Services, not having programmed the requirement, could only respond by the laborious reprogramming process until the FY 65 Supplemental Program was authorized and funded. Thereafter, the requirement was recognized, but the amount of funds provided by the Services was not always adequate. In these instances MILCON project funds had to be transferred.

c. The advance procurement funding problem was not, however, addressed as quickly. By the time the FY 65 supplemental funds became available in June, OSD had not reacted to the requirement for funds for this purpose. Therefore, NAVFACENGCOM unilaterally used a portion of the FY 65 supplemental funds to establish a material stockpile in Saigon. Materials worth $20 million were ordered prior to the receipt of criteria and project descriptions despite the deficiency in funds.[22]

d. In July 1965, NAVFACENGCOM advised the Deputy Assistant Secretary of Defense (Properties and Installations) (DASD(P&L)) that projects in the FY 66 Amendment Program (OSD Table A) would be delayed 5 months because of the failure to procure materials in advance but that a similar delay could be avoided in the follow-on FY 66 Supplemental Program (OSD Table B) if advance procurement was approved.[23] In August, the Acting Commander, NAVFACENGCOM, advised the Assistant Secretary of Defense (Installations and Logistics (ASD(I&L)) that, since they had discussed the necessity for advance procurement previously, a request for advance apportionment of $34.5 million was being processed and support in securing the advance was solicited.[24] In early September 1965, COMUSMACV advised CINCPAC, the Joint Chiefs of Staff, and OSD that he had requested advance procurement funds in the amount of $15.9 million for equipment and $25.9 million for materials but that no FY 66 funds had been received. As a result, a $7.0 million construction equipment order was being held up

[20] Secretary of the Navy, Memorandum, subject: Readiness Actions for Southeast Asia (U), 31 March 1965 (SECRET).

[21] Assistant Secretary of Defense (Installations and Logistics), Memorandum, subject: Construction Planning Funds in Support of Vietnam Operations (U), 15 April 1965 (SECRET).

[22] Naval Facilities Engineering Command, Point Papers, Requirements for the Projected FY 1966 Military Construction, Republic of Vietnam (U), 16 June 1965 (SECRET); Contract Construction Capability, Vietnam, 23 July 1965.

[23] Naval Facilities Engineering Command, Point Paper, Advance Funding for Construction Equipment and Material in Vietnam (U), 24 July 1965 (SECRET)

[24] Naval Facilities Engineering Command, Memorandum, subject; Funds for SEA Construction: Request for Advance Apportionment of, 9 August 1965.

and, if the requested funds were not received by 1 November, the contractor would have to phase down and the delay in facility construction would necessitate major reevaluation of deployment schedules.[25] CINCPAC agreed with the MACV assessment and requested Joint Chiefs of Staff assistance in resolving the problem.[26]

e. On 22 September 1965, a few days less than 6 months after the initial request by the Secretary of the Navy, OSD authorized use of 40 percent of the FY 66 Amendment Program funds to support advance procurement of equipment and materials for the contemplated FY 66 Supplemental Program. The Secretary of Defense regarded this action as an unusual use of MILCON funds and indicated that this was an emergency matter and was not to be considered as a continuing or stock-fund arrangement.[27] This represented adoption of the NAVFACENGCOM August proposal, but this action was to prove inadequate because, on 14 October 1965, NAVFACENGCOM found it necessary to inform ASD(I&L) that the funds available to support the contract effort would be obligated by 1 January 1966 and that a funding deficit of $40 million would exist before the receipt of FY 66 supplemental funds, which were anticipated in March 1966. This situation necessitated a decision to either defer preparatory actions on the FY 66 supplemental projects or to provide for interim funding.[28] The Secretary of Defense responded on 11 November 1965 by approving an additional list of specific projects and providing funds by exercising the DOD reprogramming authority cited in Public Law 89-188. The $40 million made available was authorized for continuing the contractor buildup and for financing the advance procurement for Table B projects.[29]

f. Following the visit by the Secretary of Defense to Saigon in November 1965, the contemplated FY 66 Supplemental Program escalated from about $350 million to about $700 million.[30] The contract portion of this program was established by MACV as about $600 million. This new program and all prior buildup projects were to be completed by July 1967, a period of 15 months after expected congressional action on the appropriation request.[31]

g. On his own initiative, the Secretary of Defense provided advance procurement authority for the FY 66 Supplemental Program in January 1966, almost 3 months before appropriations were made available. He authorized $200 million in Navy Stock Fund (NSF) obligational authority to be used until 30 days after FY 66 supplemental funds were available to the Services. The Services were, however, required to reimburse NSF.[32] This action did not eliminate the problem entirely, but it did reduce it to manageable proportions. Nevertheless, the lack of advance procurement funds was a real constraint. Figure 15 shows how closely contractor obligations paralleled the funding for contract work. The contractor had to expend unusual effort to ensure that his work force buildup stayed within the limit of unobligated funds. Despite this, as Figure 15 shows, the contractor may have on at least one occasion assumed obligations in excess of the value of the contract. The important point is that the contractor did respond promptly to the demands of the program as it was funded.

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[25] Commander, U.S. Military Assistance Command, Vietnam, Message 100440Z, September 1965 (SECRET).

[26] Commander in Chief, Pacific, Message 140324, September 1965 (SECRET).

[27] Secretary of Defense, Memorandum, subject: Advance Procurement of Construction Materials and Construction Equipment for U.S. Military Construction in South Vietnam (U), 22 September 1965 (SECRET).

[28] Naval Facilities Engineering Command, Memorandum, subject: Funding Deficiency to Support Advance Procurement for Table B, Vietnam, 14 October 1965 (SECRET).

[29] Secretary of Defense, Memorandum, subject: Emergency Authorization and Funding of Construction Vietnam, 11 November 1965 (SECRET).

[30] Naval Facilities Engineering Command, Memorandum, subject: Analysis of Construction Capability Required in Vietnam (U), 15 March 1966 (CONFIDENTIAL).

[31] Naval Facilities Engineering Command, Southeast Asia Coordinating Group, Note 11010, 13 April 1967, p. 3.

[32] Secretary of Defense, Memorandum, subject: Financing of Long Leadtime Construction Supplies and Materials in Vietnam (U), 8 January 1966 (CONFIDENTIAL).

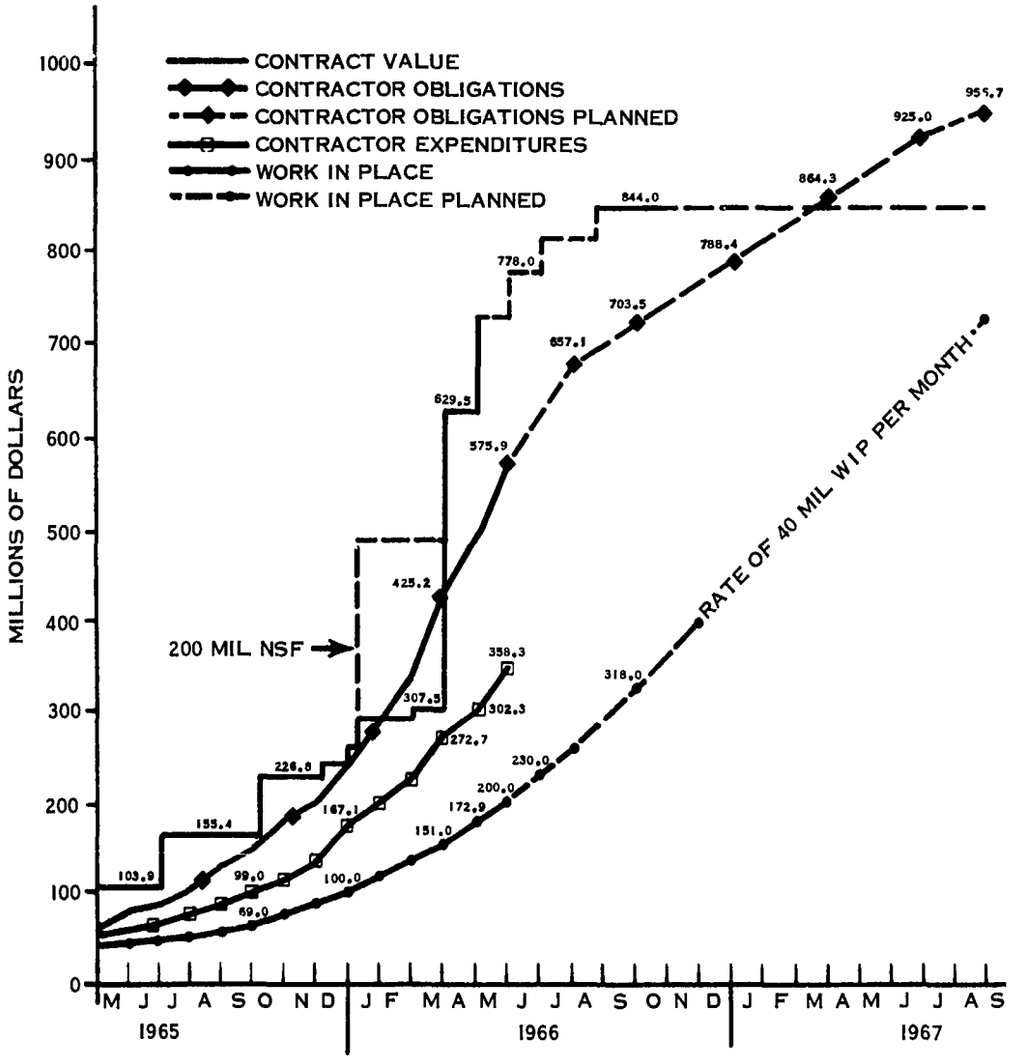


FIGURE 15. VIETNAM CONTRACT CONSTRUCTION – DOLLARS OF INPUT, OBLIGATION, EXPENDITURES AND WIP

Source: Naval Facilities Engineering Command, Sequence of Significant Events, Southeast Asia Construction (U), Volume XII-B, Item No. 51 (SECRET).

2. Mobilization of Equipment and Materials

a. Prior to the visit by the Secretary of Defense to RVN in November 1965, the FY 66 Supplemental Program had been considered to be firm at about the $350 million level. The OICC and the contractor had reviewed the construction planned under this program and had determined that a WIP rate that had previously been established at $25 million per month would be adequate to complete the new program by June 1967. The twofold increase in the program, which occurred after the Secretary's visit, caught them without a plan, since the vastly increased program was to be completed by the same date, July 1967. This situation required immediate action to organize and staff OICC and RMK-BRJ elements that could operate at dispersed geographical locations. Furthermore, the buildup in each area had to be done so that there would be no loss of impetus in the work underway.

b. As a result of this large increase, the program was not completely defined. For example, the program included airfields at locations identified as only Bases X, Y, and Z; major port facilities of only approximately defined scope at Da Nang, Qui Nhon, Cam Ranh Bay, Vung Tau, and Saigon; and cantonments defined only as gross requirements without meaningful division into individual projects as specific locations.[33] Construction Mobilization decisions had to be made in the absence of definite plans in order to start advance procurement actions. The magnitude of the effort is reflected in the following statistics:

(1) Contractor obligations, an indicator of mobilization activity, exceeded $200 million between 1 December 1965 and 1 April 1966. This amount was greater than the total of the obligations between January 1962 and the end of November 1965.[34]

(2) The value of equipment procurements in the 30-day period following the visit by the Secretary of Defense totaled $49 million. This was only $2 million less than all the equipment procurements made by the contractor prior to December 1965.[35]

(3) Materials valued at $85 million were ordered between 1 December 1965 and 20 January 1966. This amounted to more than 46 percent of the total materials procured in support of the construction program by the end of February 1966.[36]

c. In May 1965, the contractor recognized that logistics would be the key to construction effectiveness and that deep-draft pier capability would be a bottleneck. Accordingly, after OICC approval, a transshipment point was established in the Philippine Islands. This was followed by creation of a series of in-country subdepots from which materials and equipment could be dispersed directly to individual project sites.[37] The logistic system established by the contractor proved to be so responsive that it was used on occasion to support troop construction until such action was effectively precluded by an OSD directive.[38]

3. Mobilization of the Work Force

a. Mobilization of the work force was the most sensitive task. The first estimates for the FY 66 Supplemental Program indicated a total requirement—later

[33] Naval Facilities Engineering Command, Memorandum, subject: Analysis of Construction Capability Required in Vietnam (U), 15 March 1966, p. 2. (CONFIDENTIAL).
[34] Naval Facilities Engineering Command, Vietnam Construction Report, September 1968.
[35] Naval Facilities Engineering Command, Sikes Committee Hearing Book, January 1966.
[36] Naval Facilities Engineering Command, Point Paper, Navy and Contractor Mobilization, 20 January 1967.
[37] Naval Facilities Engineering Command, Memorandum, subject: Analysis of Construction Capability Required in Vietnam (U), 15 March 1966, (CONFIDENTIAL).
[38] Office of the Secretary of Defense (Installations & Logistics), Memorandum, subject: Joint DOD & Navy Review of Stateside Procurement Under Contract NBY 44105 with RMK-BRJ, February 1967, p. II-3.

somewhat reduced—for a work force of 62,000, plus the management for the regional offices. The contractor was thus faced with a monumental recruiting task. The effectiveness and responsiveness of his recruiting system is reflected in the fact that the work force increased from slightly over 2,500 in July 1964 to a peak strength of over 51,000 in July 1966.

b. One of the most serious problems was the shortage of skilled, indigenous workers, which required the importation of third-country nationals (TCNs). This action had highly sensitive diplomatic and economic overtones in Vietnam. The OICC had worked with COMUSMACV and the American Embassy since the summer of 1965 to establish the administrative procedures needed to minimize this potentially serious constraint.[39] The results of this action and of the contractor's efforts in recruiting skilled TCNs are shown in Figure 16. In addition, a formal, on-the-job training program established for about 10 percent of the Vietnamese employed by the contractor was vigorously pursued. In addition to assisting in the efforts by the contractor to mobilize skilled workers, this training program made a lasting contribution to the economy of South Vietnam.

(3) Buildup of Troop Construction Capability

(a) The decision not to issue a general callup of Reserve and National Guard units imposed a major constraint on the deployment of engineer construction troops to RVN. Military planning had relied on the augmentation of the active duty forces by these Reserve units, and the start of the buildup in RVN found the Army and the Navy without adequate construction forces on active duty to support the combat forces planned for deployment to RVN.[40]

(b) It is also important to note that there were fundamental differences of opinion regarding a requirement for such troops in early 1965. The applicable CINCPAC, MACV, and Service plans did not recognize the extent to which the construction contractors (primarily the Navy's contractor, RMK) already in operation in RVN could be used to accomplish construction in a contingency operation. Insofar as requirements were anticipated, it was planned to use troops to accomplish the work. In late 1964, COMUSMACV and CINCPAC had recommended deployment of an Army engineer group as part of the planned Army logistical command. This request was forwarded to the DOD by the Joint Chiefs of Staff on 15 January 1965 with the justification that a military capability was needed to supplement that of the construction contractor and to respond to a critical need for military engineers to accomplish work unsuitable for the contractor. The need was particularly great in the combat environment of remote areas and where the requirement for minor construction projects was time sensitive to rapidly changing military operational requirements. Following a visit to RVN and Thailand in February 1965, an OSD task force concluded that this was unnecessary and recommended against the deployment of the engineer group at that time. The task force stated that the contractor had virtually unlimited capacity for expansion and was capable of working in combat areas.[41] The Navy's Bureau of Yards and Docks also expressed some reservation regarding the deployment of large numbers of Army engineer troops considering the scope of the construction program as it was then known. The Navy stated that the contractor's" . . . mobilization and rate of construction accomplishment can and will be promptly expanded as required by further program expansion."[42] In addition, some considerations had been given to having the proposed engineer group take over as coordinator of all engineering work in RVN.[43] The Navy cautioned against this action because of the disruptive effect that would probably result from such a shift of responsibilities.[44]

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[39] Naval Facilities Engineering Command, Military Construction Status Report, South Vietnam, Base and Country Summary, 28 February 1969.

[40] Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), 19 July 1968, p. 41 (SECRET).

[41] Joint Chiefs of Staff (Director of Logistics), Memorandum, subject: Logistic Improvement in South Vietnam (U), 5 February 1965 (SECRET).

[42] Director, Pacific Division, Bureau of Yards and Docks, Message, 092059Z January 1965 (SECRET).

[43] Office of the Secretary of Defense, Message, 282057Z January 1965 (SECRET).

[44] Naval Facilities Engineering Command, Point Paper, Vietnam Construction (U), 3 February 1965 (SECRET).

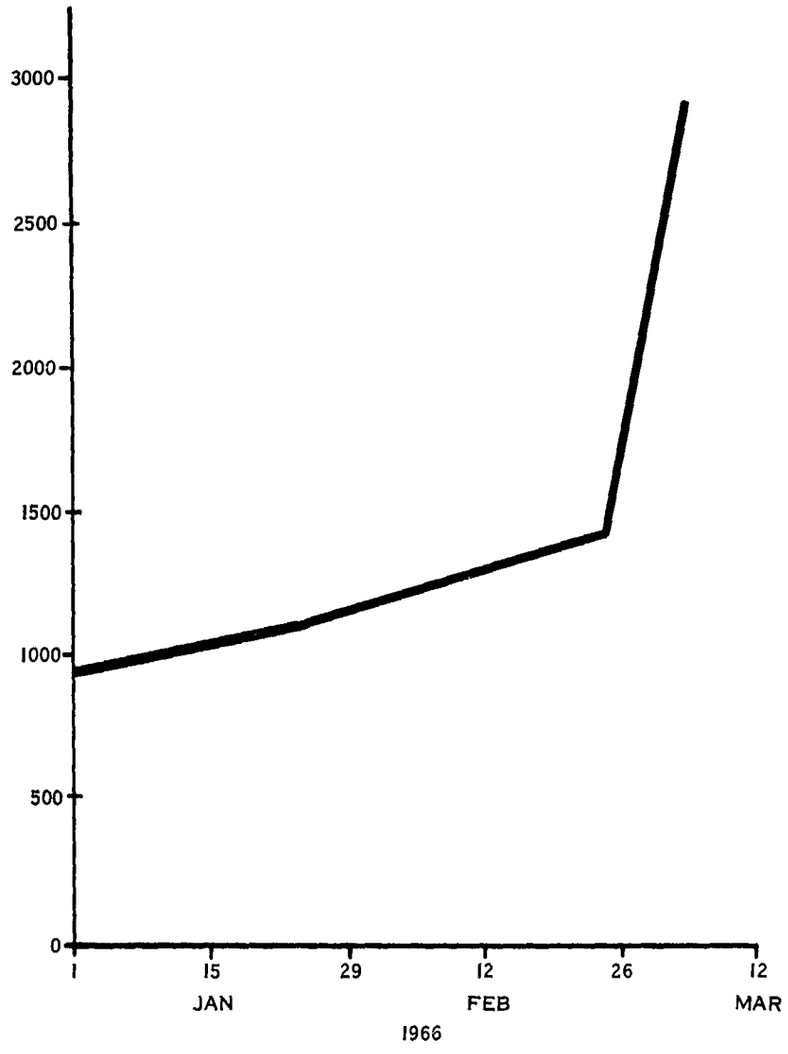


FIGURE 16. VIETNAM CONTRACT FREE-WORLD JOURNEYMEN EMPLOYED (THIRD-COUNTRY NATIONALS)

Source: Department of the Navy, Bureau of Yards and Docks, Analysis of Construction Capability Required in Vietnam (U), 15 March 1966 (CONFIDENTIAL).

(c) The form that the overall direction of the construction program would take remained undecided for several months. In addition to the concept of giving the task to the Army engineer group, consideration was given to augmenting the staff of the Deputy Officer in Charge of Construction (DOICC) in Saigon and assigning him the additional duty of base development planning as a member of the MACV staff.[45] As the DOD agent for contract construction in RVN,[46] the Navy, in the absence of troop construction effort, had de facto responsibility for managing the overall construction program. Giving the DOICC staff responsibility for the program would recognize this. The Navy opposed this action, since it would interfere with the already full-time job of the DOICC and would place him in the very difficult position of attempting to resolve such problems as conflicts of priorities while managing the contractor's efforts. The plan was not implemented. Control of the program remained the responsibility of the small engineering staff reporting to the MACV Assistant Chief of Staff, Logistics. Primarily because of inadequate staffing, this control was exercised passively until the staff was substantially expanded concurrent with the establishment of the Directorate of Construction in February 1966.[48]

(d) Despite these circumstances, the Army and the Navy, in reprogramming FY 65 funds for urgent facilities needed to support the initial buildup, did plan work for engineer troops. In addition, the Joint Chiefs of Staff forwarded on 20 April 1965 a proposed FY 65 and FY 66 base development construction plan based on the 9-10 April CINCPAC planning conference for review by the Services. The plan stated that Army construction forces could be used on projects requiring 113 battalion-months of effort and that Navy construction forces could be used on projects requiring 21 battalion-months of effort.[49]

(e) Formal approval by the Secretary of Defense for deployment of the first Army and Navy engineer troop units was obtained in April-May 1965. In May the first NMCB arrived in I Corps Tactical Zone (CTZ) to begin work on an expeditionary airfield at Chu Lai. By June, two more NMCBs had arrived in I Corps. The first Army engineer group headquarters and two engineer construction battalions arrived at Cam Ranh Bay in June 1965 to begin work on a deep water port, logistic complex, and airfield. These battalions were the beginning of the engineer troop construction forces that were ultimately to grow to a total of 27 Army, 12 Navy, and 5 Air Force nondivisional battalions and squadrons with an aggregate strength of about 40,000 augmented by a sizable labor force of local nationals.

(f) In reviewing the planning for engineer troop deployment that took place late in 1965 and in 1966, it is important to note that (1) the overall requirements for troops were indefinite at best in view of the uncertainties inherent in a policy of "graduated response," (2) the decision had been made not to call up the Reserves, and (3) there was uncertainty as to the requirement for engineer construction troops as opposed to further expansion of the contractor effort.

1. As of December 1965, OSD troop planning reflected a requirement for 22-1/3 construction battalions as of the end of 1965 and for 46-1/3 battalions as of the end of 1966. This proved to be an unrealistic plan, however, insofar as the capabilities of the Services to deploy units were concerned. For example, as of November 1965, CINCPAC had stated requirements for 25 Army construction and combat engineer battalions, and the Joint Chiefs of Staff had validated the requirements. In the same month, however, the Secretary of Defense limited deployment planning to 13 battalions, because the closure dates desired by CINCPAC could not be met. NMCB approvals were cut for the same reason. A summary of troop deployment approvals and actual deployments is shown in Table 13. The deployment approvals shown include the first two of five Air Force Heavy Repair (RED HORSE) Squadrons

[45] Joint Chiefs of Staff, Message, 130032Z February 1965 (SECRET).
[46] Assistant Secretary of Defense (Installations and Logistics), Memorandum, subject: Design and Construction in the Far East, 8 March 1963.
[47] Commander in Chief, Pacific, Message, 260233Z February 1965 (SECRET).
[48] Brig. Gen. D. A. Raymond, USA, Observations on the Construction Program, RVN, 1 October 1965 - 1 June 1967 (U), Ch. V, p. 17 (CONFIDENTIAL).
[49] Joint Chiefs of Staff, Southeast Asia Construction Plan (U), 25 April 1965 (SECRET).

that were activated for RVN duty. The reasons for the activation of these units are discussed in Chapter VIII. Although they were primarily activated to provide the Air Force with an organic capability for heavy airfield repair, the RED HORSE squadrons constituted an additional resource for MACV to use to accomplish military construction.

2. By February 1966, OSD planning had been revised to incorporate the inability of the Services to deploy engineer troop units in accordance with the December 1965 plan. The new plan provided for an increase in contractor capability to compensate for the deficiency in available troop effort. The new plan appeared to be realistic, but COMUSMACV was soon to state that the plan, even with the increase in contractor work placement, would result in a substantial shortfall, since the plan was based on assumed troop capabilities that were unrealistic.[50] Table 14 compares the planned and actual buildup of engineer troop units through June 1967. If the Air Force squadrons are not included, the actual deployments closely paralleled the February 1966 plan. The sharp increase in June 1967 reflects the fact that the Army, faced with an inadequate active duty base of engineer units and the nonavailability of Reserve forces, found it necessary to organize, equip, and train entirely new units for deployment. This effort required about 1 year. Although it was satisfactory in terms of trained personnel, a shortage of equipment was experienced and some of the units were deployed with equipment shortages.

(4) Summary of Construction Resources

(a) Although the nondivisional engineer troop units and the Navy's contractor, RMK-BRJ, accomplished most of the construction in RVN, it is important to note that they were by no means the only construction resources available to COMUSMACV and other commanders. The contributions made by these other resources should not be underestimated either from the point of view of the amount of construction accomplished or of their impact on user satisfaction. Other resources accomplished construction amounting to about 20 percent of the MILCON program and provided a means whereby some commanders were able to obtain immediate response to some of their requirements.

(b) A summary of the major construction resources is shown in Table 15. The following comments supplement the summaries in the table.

1. Facilities Maintenance Forces. Although primarily intended for maintenance and repair of completed facilities, facilities maintenance forces were also used for alterations and minor new construction funded from operations and maintenance (O&M) funds. This new work is limited by law and DOD directive[51] to $25,000 in total funded cost for each project. In addition, each Service imposes administrative restrictions that sharply restrict the aggregate amount of funds that may be spent each fiscal year on alterations and minor new construction in relation to the amounts spent on maintenance and repair. This latter restriction has not been imposed in RVN, however, and the facilities maintenance effort in the early years of the conflict was employed predominantly for new work. This is a reflection of the tremendous need for construction of new facilities during this period and the relatively lesser requirement for maintenance and repair work. By FY 68, however, the emphasis had shifted, and all Services were expending a majority of their facilities maintenance efforts on maintenance and repair. An estimate of the magnitude of the O&M funded construction accomplished can be taken from the fact that the Army's facilities maintenance contractor, Pacific Architects and Engineers (PA&E), spent about 25 percent of its effort on new construction in FY 68, over half in FY 67, and nearly all of its effort in previous years. The total O&M funded construction for all Services has probably exceeded $200 million.[52]

[50] Commander, U.S. Military Assistance Command, Vietnam, Message, 270950Z February 1966 (CONFIDENTAL).

[51] Department of Defense, Directive 4270.24, Operations and Maintenance Facilities Program--Minor Construction Programming, Review and Reporting Procedures, 30 June 1961.

[52] Office of the Secretary of Defense, Memorandum for Record, subject: Real Property Maintenance Council Meeting, 31 January 1968, Enclosure 1; C.J. Merdinger, Report on Public Works, Da Nang, 10 July 1968, p. 3; Office of the Secretary of Defense, Memorandum for Record, subject; Real Property Maintenance Council Meeting, 28 June 1966, Enclosure 3.

TABLE 13

TROOP DEPLOYMENT

| MILITARY SERVICE | 1965 J | F | M | A | M | J | J | A | S | O | N | D | 1966 J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Army** | | | | | | | | | | | | | | | | | | | | | | | | |
| Construction Battalions | | | | | | | | | | | | | | | | | | | | | | | | |
| CINCPAC Approved (Total) | | | 2 | 4 | | | 5 | | | 16 | | | | | | | | | | | | | | |
| JCS Approved | | | | 2 | | | 5 | | | | 16 | | | | | | | | | | | | | |
| OSD Approved | | | | | 2 | | 5 | | | | 6[a] | | | | | | | | | | | | | |
| Deployed | | | | | | 2 | 4 | 5 | | | | | | | 6 | | | | 7 | | | 8 | | |
| Combat Battalions | | | | | | | | | | | | | | | | | | | | | | | | |
| CINCPAC Request (Total) | | | | 2 | | | 3 | 7 | 9 | | | | | | | | | | | | | | | |
| JCS Approved | | | | | | 2 | 3 | 7 | | | 9 | | | | | | | | | | | | | |
| OSD Approved | | | | | | | 3 | 4 | 5 | 7[b] | | | | | | | | | | | | | | |
| Deployed | | | | | | | | 1 | 2 | 3 | 5 | | 7 | | | | | | | | | | 9 | |
| **Navy** | | | | | | | | | | | | | | | | | | | | | | | | |
| Mobile Construction Battalions | | | | | | | | | | | | | | | | | | | | | | | | |
| CINCPAC Request (Total) | | | | 7 | | | | | | | | | | | | | | | | | | | | |
| JCS Approved | | | | 7 | | | | | | | | | | | | | | | | | | | | |
| OSD Approved | | | | 4[c] | | | | | | | | | | | | | | | | | | | | |
| Deployed | | | | | 2 | 3 | | | 4 | | | | | | 5 | 7 | | | | 8[d] | | 9 | 7 | 8 |
| **Air Force** | | | | | | | | | | | | | | | | | | | | | | | | |
| Heavy Repair Squadrons[e] | | | | | | | | | | | | | | | | | | | | | | | | |
| CINCPAC Request (Total) | | | | | | | | | | 2 | | | | | | | | | | | | | | |
| JCS Approved | | | | | | | | | | 1 | 2 | | | | | | | | | | | | | |
| OSD Approved | | | | | | | | | | | 2 | | | | | | | | | | | | | |
| Deployed | | | | | | | | | | | | 1 | 2 | | | | | | | | | | | |

[a] 10 additional units approved but not ordered deployed due to nonavailability to meet CINCPAC closure dates Nov. 65 - Jul. 66.
[b] 2 additional units approved but not ordered deployed due to nonavailability to meet CINCPAC closure dates Jan. 66 - Feb. 66.
[c] 3 additional units approved but not ordered deployed due to nonavailability to meet CINCPAC closure dates Apr. 65 - Jul. 65.
[d] Increase authorized by using spaces allotted for Army Battalions.
[e] Activated in October 1965

Source: Joint Chiefs of Staff, Director J-3, Major Combat and Principal Support Unit Deployments to South Vietnam, 24 March 1966 (SECRET)
Capt. C. J. Merdinger, CEC, USN, Civil Engineers, Seabees and Bases in Vietnam, Naval War College, 1 May 1969.

TABLE 14

BUILDUP OF NONDIVISIONAL ENGINEER TROOP UNITS IN VIETNAM*

| Quarter Ending | Army Const | Army Cmbt | NMCB | AFCE Sqdn | Total | OSD Plans Dec 65 | OSD Plans Feb 66 |
|---|---|---|---|---|---|---|---|
| 31 Mar 1965 | 0 | 0 | 0 | 0 | 0 | - | - |
| 30 Jun 1965 | 2 | 0 | 3 | 0 | 5 | - | - |
| 30 Sep 1965 | 5 | 2 | 4 | 0 | 11 | - | - |
| 31 Dec 1965 | 5 | 5 | 4 | 0 | 14 | 22 1/3 | 16 |
| 31 Mar 1966 | 5 | 7 | 5 | 2 | 19 | - | 16 |
| 30 Jun 1966 | 5 | 7 | 7 | 2 | 21 | 24 | 19 |
| 30 Sep 1966 | 7 | 7 | 8 | 4 | 26 | - | 25 |
| 31 Dec 1966 | 8 | 11 | 8 | 5 | 32 | 46 1/3 | 27 |
| 31 Mar 1967 | 8 | 11 | 8 | 5 | 32 | - | 27 |
| 30 Jun 1967 | 15 | 11 | 10 | 5 | 41 | 46 1/3 | 29 |

* Excludes Marine Corps Fleet Marine Battalions assigned to III MAF.

Source: Brig. Gen. D. A. Raymond, USA, Observations on the Construction Program, RVN, 1 October 1965 - 1 October 1967 (U), (CONFIDENTIAL).

TABLE 15

SUMMARY OF CONSTRUCTION RESOURCES

| | Army | Navy | Air Force | Other |
|---|---|---|---|---|
| TROOPS | a. Two engineer brigades consisting of 13 combat battalions and 15 construction battalions. (Peak strength about 30,100)<br><br>b. Various engineer utility detachments with the primary mission of facilities maintenance. (Peak strength about 1,450) | a. A Seabee brigade consisting of 12 NMCBs. (Peak strength about 10,000)<br><br>b. Public Works forces assigned to the Naval Support Activities at Da Nang and Saigon. (Peak strength about 2,500) | a. Five heavy repair. (RED HORSE) squadrons. (Peak strength about 2,000)<br><br>b. Base Civil Engineering forces at each of the Air Force bases to accomplish facilities maintenance. (Peak strength about 4,500)<br><br>c. Prime BEEF teams -- small teams of Air Force officers and men deployed to RVN on a temporary duty basis to accomplish specific construction projects. (O&M funded) | a. Self-help -- widely used by all services.<br><br>b. Divisional Army and Marine Corps engineer battalions and Marine Corps Fleet Marine Force battalions assigned to III MAF. (Not included in troop strengths of the three other Services. |
| CONTRACTORS | a. Pacific Architects and Engineers (PA&E) -- the Army's facilities maintenance contractor. (Peak strength about 24,000)<br><br>b. Vinnel Corporation -- contractor for installation, operation, and maintenance of electrical systems -- primarily T-2 tankers.<br><br>c. DeLong Corporation -- installation and rehabilitation of DeLong Piers. | a. RMK-BRJ -- the main construction contractor in RVN operating under the supervision of the Navy Officer in Charge of Construction (OICC). (Peak strength about 51,000)<br><br>b. Philco-Ford -- contractor providing a skilled third-country national (TCN) labor force to the Public Works activities. This force together with the Seabees organic to the Public Works activities and a force of local nationals made up the Navy's facilities maintenance work force. (Peak strength about 6,000) | a. Walter Kidde -- turnkey contractor for Tuy Hoa Air Base. | a. Various turnkey contractors for communications facilities -- included Page, RCA, and Philco.<br><br>b. Local contracting authority -- primarily funded with AIK funds -- used extensively by the Army and the Navy to construct advisor facilities. |

Source: Brig. Gen. D.A. Raymond, USA, *Observations on the Construction Program, RVN, 1 October 1965 - 1 June 1967* (U), (CONFIDENTIAL)

2. Self-Help. Self-help was widely used for such construction as troop cantonments. These projects were normally MILCON funded and covered by a construction directive. There was, however, a considerable amount of self-help work done on an unauthorized basis. In the earlier period of the buildup, much of this work was done to provide facilities that were essential and had to be constructed by the most expeditious means whether the work was authorized or not. The practice was carried over into the more stable period of the conflict, and it was to result in a considerable diversion of effort and materials from authorized work. The problem was of sufficient concern to the Deputy Commanding General, U.S. Army, Vietnam (USARV), that he sent, in the autumn of 1967, a personal letter to each of his subordinate commanders directing that positive actions be taken to reduce the amount of unauthorized construction.

3. Local Contracting Authority. As indicated in Table 15, contracts awarded under this authority were funded primarily with Assistance-in-Kind (AIK) funds and were mainly for construction in support of the MACV advisor detachments. The contracts were generally small, ranging in size up to $100,000. In addition, RMK-BRJ expended AIK funds for all Services from FY 63 to FY 68 in the total amount of about $20 million. Another source of funds to finance a limited amount of construction was nonappropriated funds.

(c) In reviewing the relationships of these construction resources, it is apparent that the overall joint and Service controls, relationships, and responsibilities with regard to these organizations was complex and not well defined in some cases.

1. The intent to centralize control of construction is clearly stated in the charter of the MACV Director of Construction (MACV-DC), who was charged 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"[53] (see Chapter V). Although the overall control exercised by MACV-DC was extensive and effective, it was by no means as absolute as the charter might indicate. The engineer troop units, for example, necessarily had overriding missions for operational support that often preempted their availability for military construction. The degree to which they were available for MILCON work was controlled by the Service component commanders, not by MACV-DC. On the other hand, the engineer units could not undertake MILCON work unless so directed by MACV-DC, and the rapidity with which the Service construction requirements were met depended to a large extent on the engineer troop effort they made available to do the work. As another example, the various turnkey contractors, e.g., Vinnel, DeLong, Walter Kidde, and the communications facilities contractors, were, once authority had been given for such a contract, under virtually complete control of the Service or Defense agency concerned. The Services' facilities maintenance forces used for construction were also under the control of the component commanders.

2. As discussed in Chapter III, the Joint Chiefs of Staff, on 1 October 1969, promulgated instructions to the unified and specified commands for preparation of base development plans as part of the joint planning process.[54] These instructions include a requirement that command relationships be clarified in future base development plans to include specification of channels for programming, approving, and directing construction.

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[53] Joint Chiefs of Staff, Memorandum SM 39-66, subject: Construction Management in Vietnam, 14 January 1966.

[54] Joint Chiefs of Staff, Memorandum SM-643-69, subject: Instructions for Base Development Planning in Support of Joint Contingency Operations, 1 October 1969.

c. Utilization of Troop and Contractor Forces

(1) The Troop-Contractor Mix. The manner in which the troop and contractor construction forces were mobilized was not the result of a carefully planned development of an optimum troop-contractor mix calculated to best meet construction requirements. It was, instead, a series of actions and reactions to develop and to make the best use of the construction effort that could be made available. The extensive use of the civilian contractor, RMK-BRJ, throughout the conflict and the particularly heavy reliance upon the contractor during the early period of the buildup were not the result of a decision that this was or was not the best approach. They were the results of the facts that the contractor was an exisiting and effective concern (and had been since 1962), that the initial troop construction capability in-country was nonexistent, and that deployment of engineer troop units to RVN would be impeded by the decision not to call up Reserve and National Guard forces.[55]

(a) Preferred Use of Troop and Contract Construction Forces

1. Although the capability and, under some circumstances, the necessity to use a construction contractor in a combat environment was clearly demonstrated in RVN, the general preference for the use of troops to the exclusion of contract effort was evident early in the conflict and has persisted to date. The absence of any plan to use contract construction in the operations plans for RVN has already been noted. The Army's basic position early in the conflict is contained in testimony presented to the Congress in January 1966:

> "The major advantage (of using engineer units for construction) stems from the control exercised by the commander over his troops. This gives him greater flexibility of movement and employment, and the ability to react quicker to changing conditions caused by hostile enemy action. The ability to provide their own security and to continue working under fire gives the commander control that cannot be duplicated with civilian contractor personnel.
>
> "Engineer units have their own equipment in hand ready to work. A supply line for repair parts and construction material exists and some stocks are on hand. Purchasing procedures and facilities are available.
>
> "There is no recruitment problem and replacements are furnished rather than having to hire personnel, get entry permission, set up hospitalization facilities, housing, and recreation facilities for his people.
>
> "The troops are trained in expedient construction, often times using only locally available materials. These can be unfunded troop projects, combat support tasks, or construction support. The engineer groups with assigned battalions can accomplish site selection, layout, design, and construction of the theater of operations type of facilities. This gives a built-in capability to respond more quickly to change orders and modifications to the facilities design.
>
> ". . . . The flexibility of employment of the engineer units extends to using them as a reserve of combat forces for use as infantry should the need arise."[56]

2. This same attitude was reflected in COMUSMACV's statement to CINCPAC in February 1966 in evaluating his construction requirements: ". . . (Engineer troop) units offer greater flexibility in employment, quicker reaction to changing requirements, are more mobile, and more suitable for employment on the many types of projects than is the contractor."[57]

3. In his "Observations," Brigadier General Raymond confirmed the preference for troops but gave due recognition to the fact that there were significant advantages

[55] Brig. Gen. D.A. Raymond, op. cit., p. 25

[56] U.S. Congress, House of Representatives, Subcommittee of the Committee on Appropriations, Supplemental Defense Appropriations for 1966, Testimony of Maj. Gen. W.R. Shuler, Director of Installations, Deputy Chief of Staff for Logistics, U.S. Army, p. 189.

[57] Commander, U.S. Military Assistance Command, Vietnam, Message 270950Z February 1966 (CONFIDENTIAL).

to the use of a contractor under certain circumstances. He concluded:

> "Use of construction contractors in an active theater is an acceptable substitute for troop units, provided contractor efforts are confined to heavy construction, in a limited number of reasonably secure locations where the heavy volume of work justifies the cost of mobilization."[58]

General Raymond further commented on the relative desirability of troops as opposed to contractor forces as follows:

> "Troop units have a universal capability which is designed to give them considerable flexibility as to where they can go and what they can do. They can move quickly and go to work with little lost motion. In many respects they are self-sustaining. Contractor forces on the other hand are made up on the basis of specific capabilities tailor-made to a given job or jobs within an area. They require extensive base facilities to which they are essentially tied. They require considerable time to mobilize on a job. On the other hand contractor forces, because of their tailored makeup, are more efficient than are troop units since the latter must adapt a universal capability to specific tasks."[59]

It is of interest to note, however, that in a presentation to the Joint Chiefs of Staff in late September 1969 given by the Deputy Director of Construction, MACV, the overall flexibility and adaptability of engineer troops in Vietnam was rated, at that time, as inferior to that of the contractor. This had resulted from the fact that the engineer troops had become closely associated with the units to which they furnished operational support, and the latter resisted efforts to relocate units as dictated by military construction projects.

4. In commenting on the subject, the Air Force has stated:

> "The relative shortage of in-being troop construction support has reduced the flexibility commanders require under war conditions. . . . Basically, SEA is an environment in which troop construction is more feasible than contractor operations. Troop labor should be used to a much greater extent and the contractor reduced to enclave construction where requirements and programs are more stable."[60]

5. The Special Military Construction Study Group convened by the Joint Chiefs of Staff also concluded that "construction required in contingencies should be accomplished by troop construction units to the maximum extent possible." But "civilian contractors should be considered for augmentation of troop construction capabilities commensurate with tactical conditions."[61]

6. The Navy also takes the position that "construction required in direct support of expeditionary forces and tactical operations should be accomplished by troops to the maximum extent possible," but "that planning for contingencies (should) give consideration to the use of a construction contractor to augment troop construction capability."[62]

7. In summary, the Service consensus demonstrates a preference for the use of troop units for construction in contingent operations. The need to consider contractor participation is, however, recognized. When a troop-contractor mix is used, the contractor should be assigned the heavier or more sophisticated construction in relatively secure enclaves with the troops being assigned the lighter or simpler work in the less secure areas.

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[58] Brig. Gen. D.A. Raymond, op cit., p. 145.

[59] Ibid., p. 31.

[60] Deputy Assistant Secretary of the Air Force, Memorandum, subject: Southeast Asia Construction Management, 12 December 1966.

[61] Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), 19 July 1968, pp. 42, 43 (SECRET).

[62] Department of the Navy, Analysis of RVN Construction, September 1967, pp. 14, 16.

(b) Analysis of Actual Use of Troop and Contractor Forces

1. The pattern of the foregoing philosophy is clearly reflected in the history of the mobilization of the troops and contractor and the eventual types and locations of work performed by each. Figure 17 reflects the buildup of troop and contractor forces and the general trend toward troop dominance. It is evident that the buildup of troops increased steadily as force levels were approved and units were made available for construction. The more extreme shifts in the size of the contractor's forces were the result of several significant decisions and events. Although COMUSMACV had stated a preference for troop units,[63] the slowness inherent in organizing and deploying troops without the callup of Reserve or National Guard units meant that the contractor had to be tasked to undertake a major buildup of forces if the construction program was to proceed at an acceptable rate. This is the basis for the contractor's rapid mobilization, which reached a peak in excess of 51,000 in the autumn of 1966. During the summer and autumn of 1966, a series of articles appeared in the New York Times, the Washington Post, the Engineering News Record, and other U. S. publications that were generally critical of the contractor's management and predicted a major shift of construction effort to troops. Considerable congressional interest was also evident in such a shift. Apparent overmobilization of the contractor in relation to program funding, together with these pressures, led to considerations to reduce significantly the contractor's work force by January 1967.

2. In September 1966, OSD advised the Senate Armed Services Committee, however, that "there is no prospect whatever of a complete takeover by troops early next year. RMK-BRJ has many months of work yet to accomplish in Vietnam...."[64] This statement reflected CINCPAC's position that there was a continuing need for a contractor capability.[65] At this same time, the Navy acknowledged that it was"... look(ing) forward to the time, however, when troop construction units deployed to Vietnam can carry on the essential military construction task without major support from the RMK-BRJ joint venture . . . ."[66] CINCPAC then recommended a target date of "... mid- CY 1968 for phase out of the RMK-BRJ Joint Venture's operations, provided the troop construction capability is increased sufficiently to maintain the required level of accomplishment . . . ."[67]

3. In February 1967, Secretary of Defense McNamara advised the Congress of plans to "... begin to phase-down the contractor effort during Calendar Year 1968, and to complete the phase-down during Calendar Year 1969."[68] Subsequent events, particularly the Tet Offensive in early 1968, caused deferment of this plan. As of the end of 1968, the relative size of the troop and contractor forces were as shown in Figure 17. Although the troops outnumbered the contractor forces almost two to one, their capability for placement of programmed construction work was about the same. This reflects the fact that about 50 percent of the available effort of engineer combat battalions and 20 percent of the available effort of engineer construction battalions was devoted to combat or combat support and was not available for construction.[69] This also reflects the different types and locations of work assigned.

4. The types and locations of work performed by the troops and the contractor have been analyzed on the basis of the actual work-in-place as of the end of January

[63] Commander, U.S. Military Assistance Command, Vietnam, Message, 270950Z 27 February 1966 (CONFIDENTIAL).

[64] U. S. Congress, Senate, Preparedness Investigating Subcommittee, Statement of Mr. E. J. Sheridan, Deputy Assistant Secretary of Defense (Properties and Installations), 13 September 1966.

[65] Commander in Chief, Pacific, Message 181811Z August 1966 (SECRET).

[66] Department of the Navy, Letter, Secretary of the Navy to the Assistant Administrator, Far East, AID, 20 September 1966.

[67] Secretary of Defense, Memorandum, subject: Inadequacy of Contract Construction Funds, 7 September 1966.

[68] Naval Facilities Engineering Command, Memorandum, subject: Supplemental Data for Congressional Hearings, February 1967.

[69] Major G. E. Galloway, Jr., USA, A Historical Study of United States Army Engineer Operations in the Republic of Vietnam, January 1965-- November 1967, (unpublished U.S. Army Command and General Staff College paper) p. 271.

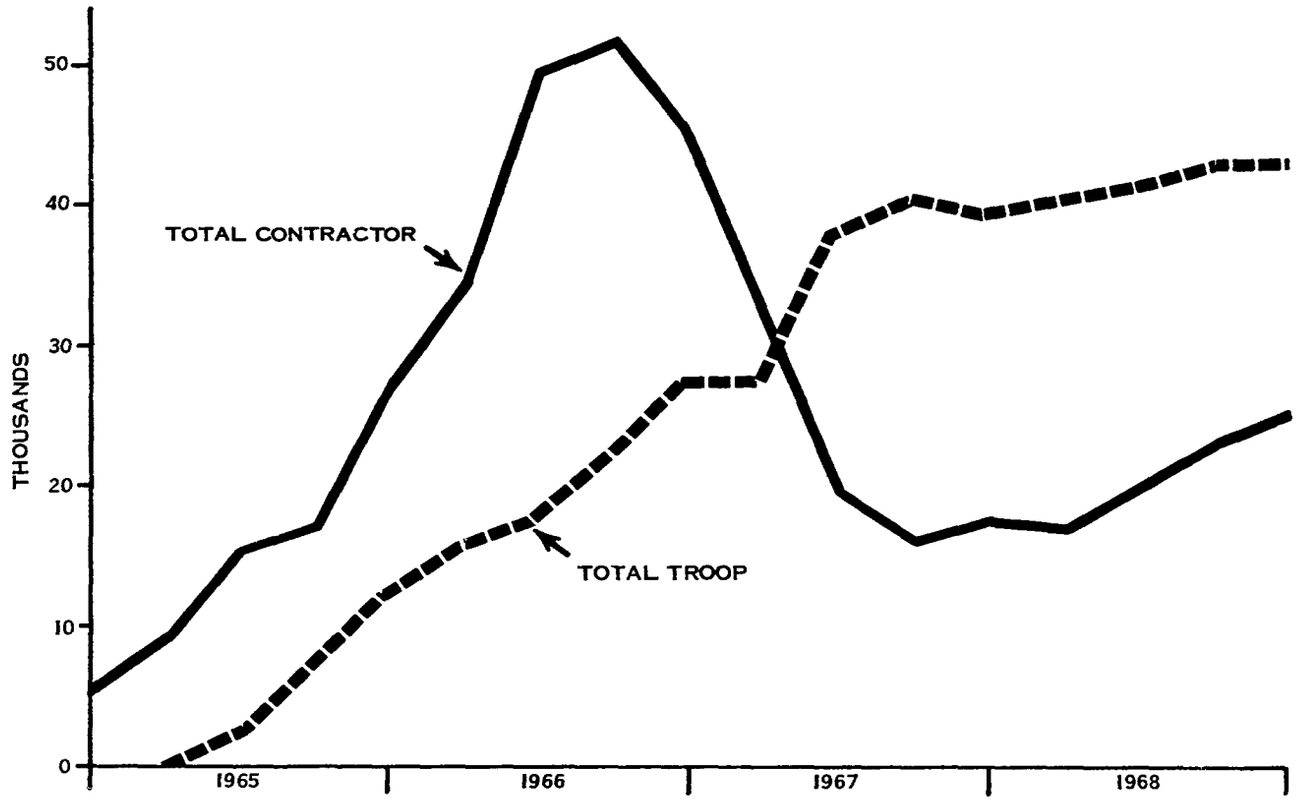


**FIGURE 17. CONTRACTOR–TROOP WORK FORCE**

Source: Naval Facilities Engineering Command, Vietnam Construction Report, September 1968; RMK-BRJ, Activities Report, February 1969.

1969.[70] As the dominant initial force, the contractor, in the spring of 1966, was mobilized in 47 locations throughout Vietnam as shown in Figure 18. At the peak of the contractor's mobilization in the autumn of 1966, the contractor had major construction projects underway at 31 locations, shown in Figure 19. This dispersion of the contractor's work force not only violated the general concept of contractor employment that was previously discussed; it also made the contractor's forces difficult to administer and control. By the start of 1968, when a more desirable troop-contractor mix had been obtained, the number of the contractor's major work sites had been reduced to 12--a more manageable number--located in more secure areas. These sites are indicated by asterisks in Figure 19. As the contractor's work sites were reduced, the number of locations of troop work sites increased. These 12 contractor work sites and representative locations of Army, Navy, and Air Force construction units are plotted in Figure 20. This figure shows countrywide coverage by the construction forces; the location of the contractor forces in the generally more secure areas; and the collocation of troop units at almost every site where there were contractor forces. This last factor stems from the fact that troops were needed at these locations for two primary reasons:

a. To handle a portion of the workload beyond the contractor's capability.

b. More importantly, to accomplish work that could not be assigned to the contractor for security reasons, e.g., communications facilities and ammunition storage areas to which non-U.S. employees of the contractor could not be admitted.

5. The shift of the contractor forces to fewer, more secure areas was gradual as the shifts in the troop-contractor strengths took place. A summary of the relative amounts of WIP accomplished through January 1969 at 18 principal locations is shown in Table 16. These locations are plotted in Figure 21. The dominance of the contractor's effort in the more secure areas such as Saigon and Tan Son Nhut and the dominance of troop effort at the more remote locations such as Cu Chi, An Khe, and Phu Bai are readily apparent. Similarly, an analysis of the total WIP as of January 1969 by type of work shows that the contractor did, in fact, accomplish more of the heavier work, whereas the troop units did more of the lighter work. The results of this analysis are shown in Figure 22.[71]

6. In summary, the contractor-troop mix ultimately achieved and the manner in which these forces were utilized closely adhered to the after-the-fact principles stated in the Service comments, Brigadier General Raymond's "Observations," and the report of the Joint Chiefs of Staff Special Military Construction Study Group, with the exception that the role of the contractor, even at the end of 1968, was greater than had been projected. The contractor had placed 60 percent of the work-in-place as of January 1969; the contractor's work force, as of the same date, still represented better than 50 percent of the effort available for MILCON funded work.

(2) Troop-to-Contractor and Contractor-to-Troop Switches. One of the major problems from the construction management point of view was the shift of work from the contractor to construction troops and vice versa.

(a) The primary cause of shifts of work to the troops was the series of decisions already noted to reduce the size of the contractor's forces and the number of sites at which the contractor was mobilized in view of the increasing number of troop units. In addition, shifts were made on a project-by-project basis in an effort to adjust changing priorities of construction to changing construction assets. An example of this was the construction of the Long Binh Depot during 1968. The assignment of this work vacillated from predominantly contractor to predominantly troop to a 50-50 basis as the effects of the Tet Offensive. The emphasis on the upgrading of lines of communication—with an accompanying great demand for horizontal paving capabilities—and other factors affected both troop and contractor capabilities.

[70] Headquarters, Military Assistance Command, Vietnam, Military Construction Status Report for South Vietnam, 28 February 1969.

[71] Ibid.

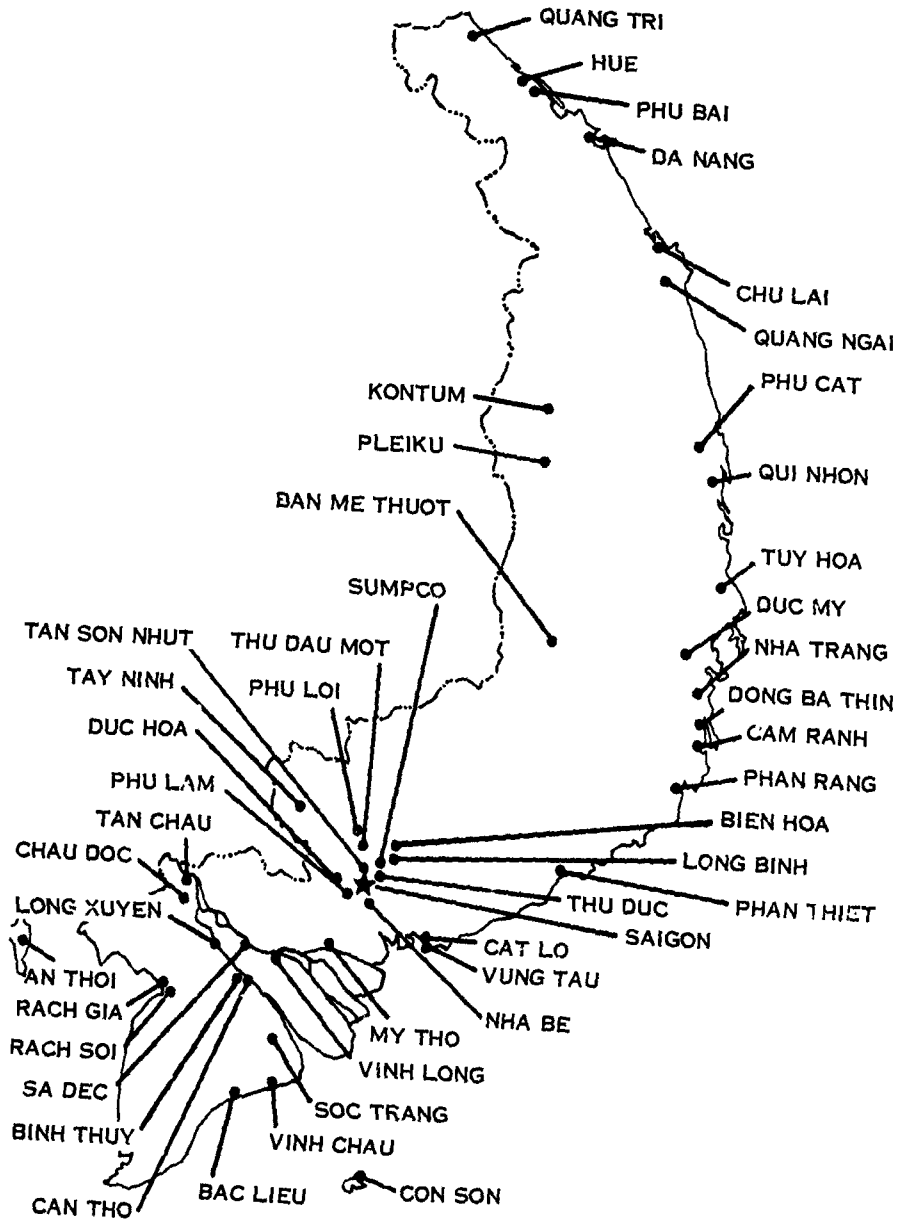


FIGURE 18. CONTRACTOR PROJECT LOCATIONS - JUNE 1966

Source: Brig. Gen. D. A. Raymond, USA, Briefing Notes for OSD (U), 11 August 1966 (CONFIDENTIAL).

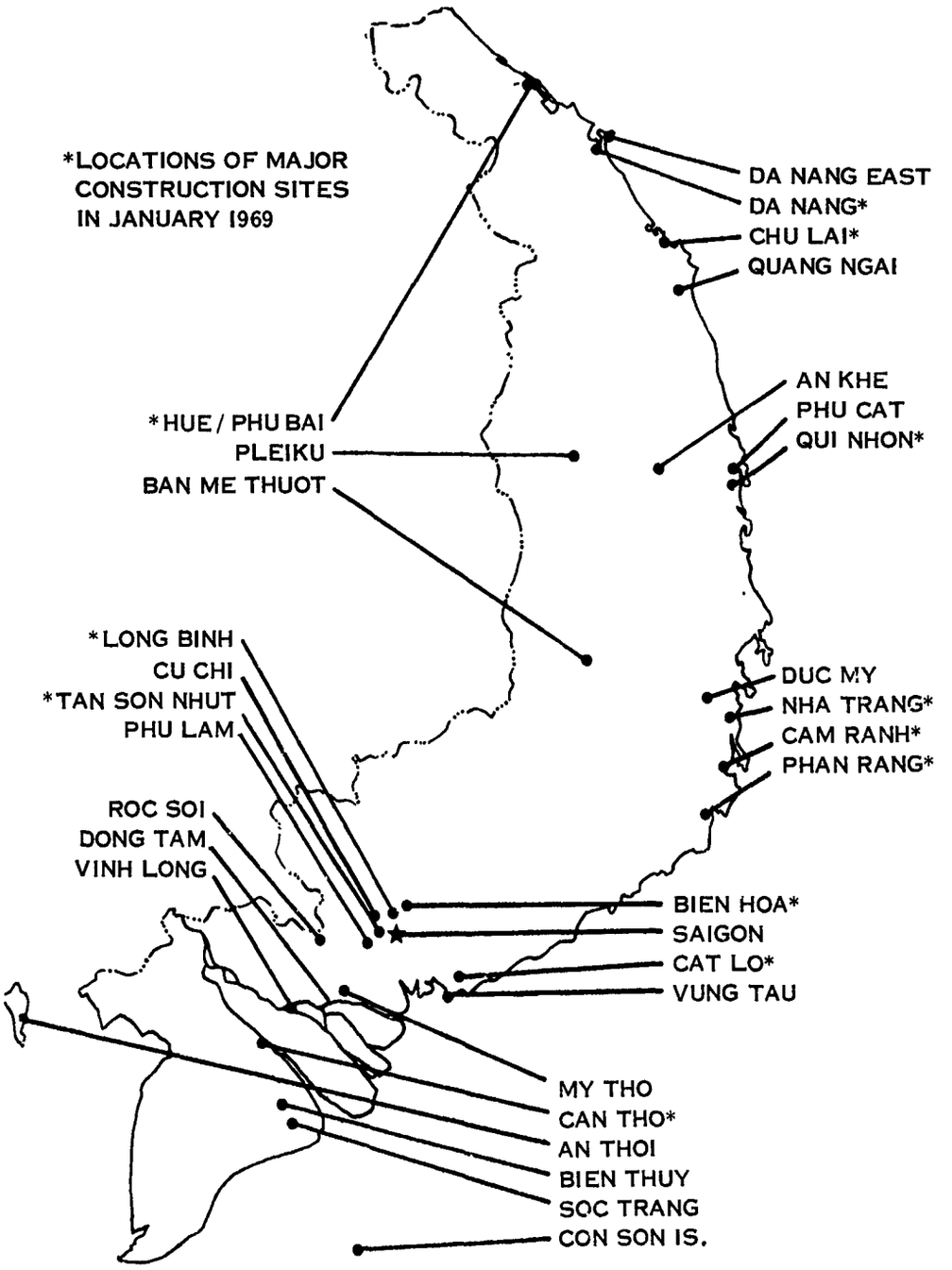


FIGURE 19. RMK-BRJ CONTRACT MAJOR CONSTRUCTION SITES, FALL 1966

Source: Naval Facilities Engineering Command, Sikes Hearing, 4 August 1966; RMK-BRJ, Activities Report, February 1969.

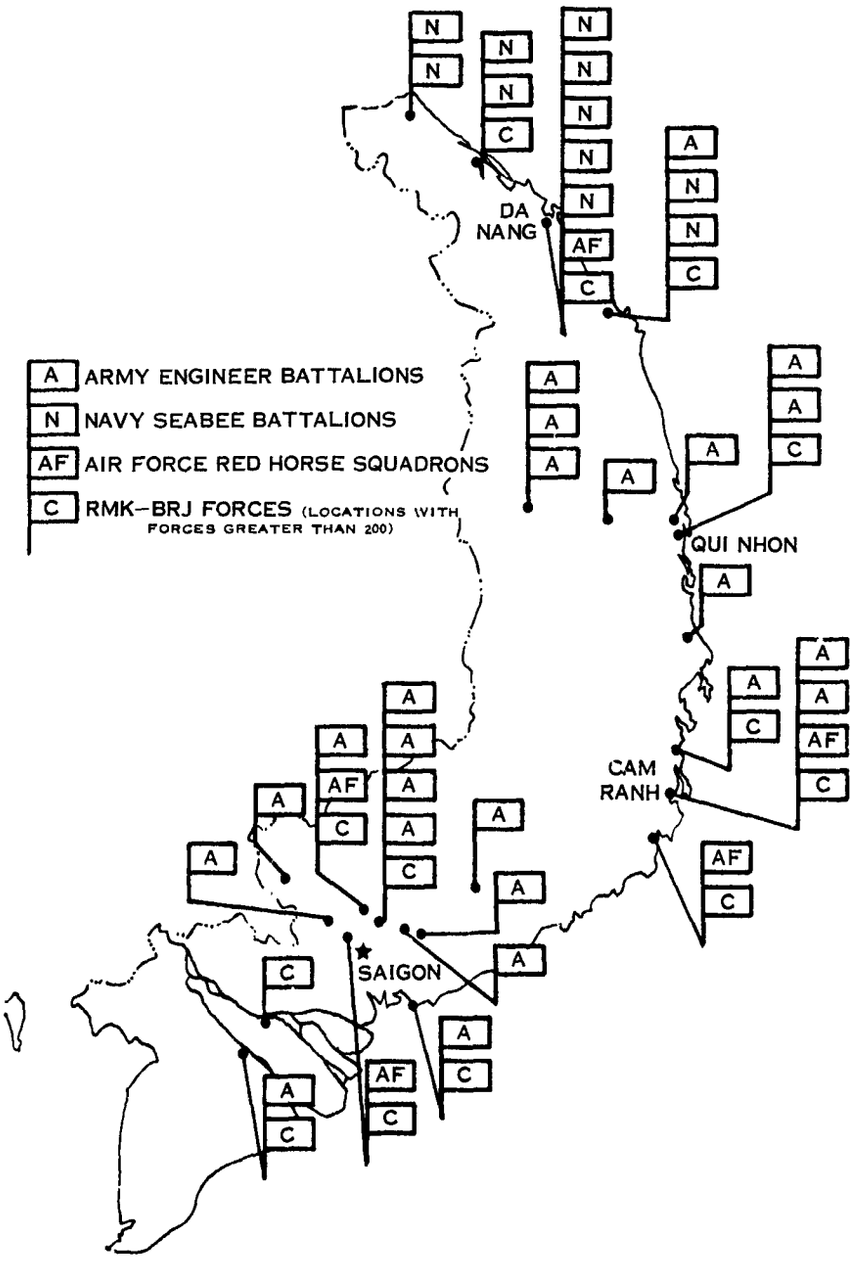


FIGURE 20. REPRESENTATIVE LOCATIONS OF CONSTRUCTION FORCES

Sources: United States Military Assistance Command, Vietnam, Brig. Gen. D. A. Raymond, Observations on the Construction Program, 1 October 1965 through 1 June 1967 (U), (CONFIDENTIAL); Maj. G. E. Galloway, Jr., A Historical Study of United States Army Engineer Operations in the Republic of Vietnam, January 1965 - November 1967, Unpublished U S. Army Command General Staff College Abstract, 1968; RMK-BRJ, Activities Report, February 1969.

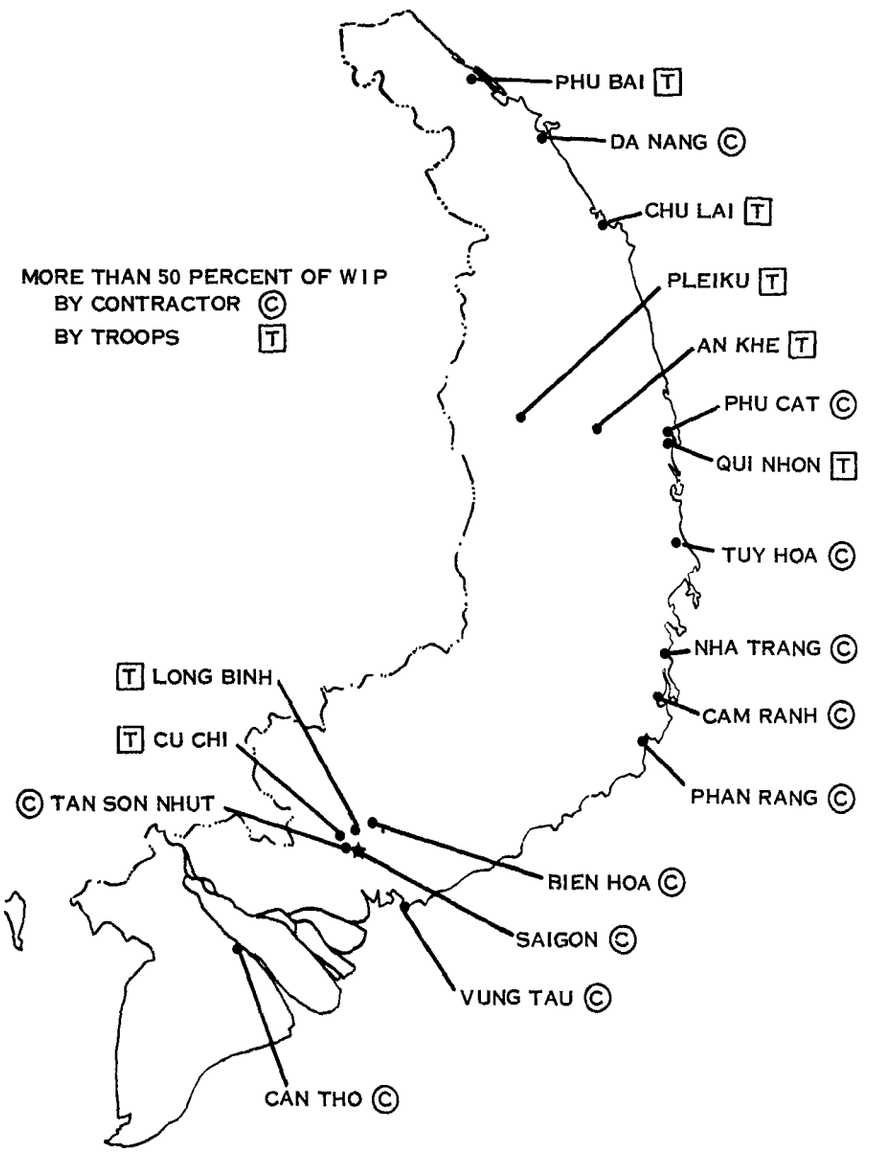


FIGURE 21. RELATIVE WORK ACCOMPLISHMENT

Source: Military Assistance Command, Vietnam, Military Construction Status Report, South Vietnam, 28 February 1969.

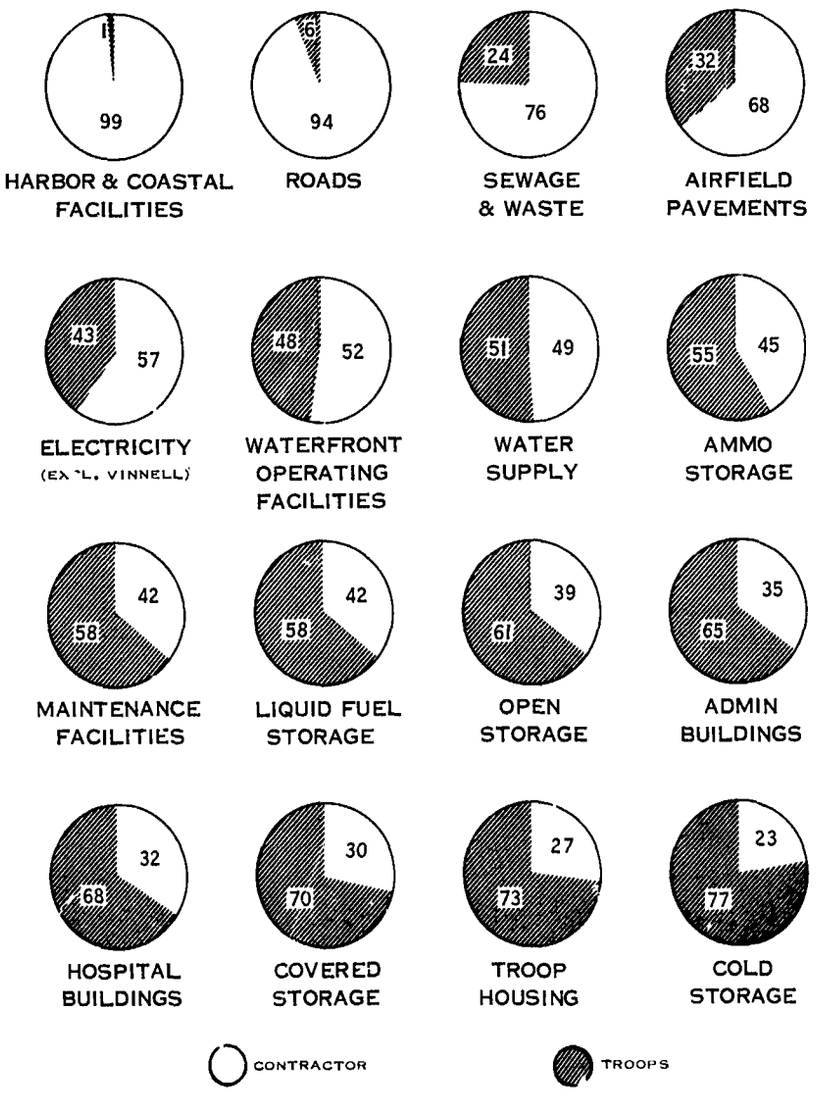


FIGURE 22. MILCON FUNDED WORK IN PLACE – JANUARY 1969 (PERCENT OF WORK, CONTRACTOR AND TROOPS)

Source: Military Assistance Command, Vietnam, Construction Status Report, South Vietnam, 28 February 1969.

TABLE 16

PERCENT OF WORK-IN-PLACE AT SELECTED LOCATIONS AS OF JANUARY 1969

| Location | Percent by Troops | Contractor |
|---|---|---|
| Saigon | 2 | 98 |
| Ton Son Nhut | 6 | 94 |
| Bien Hoa | 21 | 79 |
| Tuy Hoa | 22 | 78 |
| Can Tho | 22 | 78 |
| Cam Ranh Bay | 29 | 71 |
| Phan Rang | 33 | 67 |
| Nha Trang | 37 | 63 |
| Phu Cat | 40 | 60 |
| Vung Tau | 46 | 54 |
| Da Nang | 48 | 52 |
| Chu Lai | 57 | 43 |
| Long Binh | 59 | 41 |
| Qui Nhon | 67 | 33 |
| Pleiku | 71 | 29 |
| Phu Bai | 73 | 27 |
| An Khe | 75 | 25 |
| Cu Chi | 92 | 8 |
| Total | 40 | 60 |

Source: Military Assistance Command, Vietnam, Military Construction Status Report, South Vietnam, 28 February 1969.

(b) The difficulties in managing the shift of work from troop to contractor and vice versa resulted largely from two factors. First, such shifts usually resulted in a domino effect—one shift precipitated a number of similar shifts. Second, funding played a major role in the shifts—the shifts were both the cause and effect of funding problems. The latter factor largely results from the fact that the costs —from military construction appropriations—of troop-constructed projects in RVN were only about one-fourth of the costs of projects constructed by the contractor. Actually, from all sources of funds, the total real cost of a project accomplished by troops was at least equal to the cost of a like project accomplished by construction forces.[72] However, for troop projects, only the cost of construction materials consumed is charged to the project. Remaining costs are paid from other than construction-related appropriations such as for the pay of military personnel. Thus, under circumstances of tight funds and the full-funding concept—under which a project must be totally funded before work on it can commence— there is a natural tendency to prefer assignment of projects to troops rather than to the contractor. This can lead to an imbalance of workloads and further management problems. For example, the trend toward contractor demobilization and increased use of troops during the late summer of 1966 when the contractor's forces were at a peak was discussed above. At the same time, there was a sharp cut in the funds available for the construction program. These fund cuts included diversion of $47 million by the Army for advanced procurement of generators and a turnkey contract for electrical power generation and the withholding of $52 million of Air Force funds for construction of Tuy Hoa Air Force Base. In addition, the FY 66 Supplemental Program, as approved, was $60 million less than anticipated. These actions and events led to diversion of a substantial portion of the construction program from the contractor to troops with the result that the contractor became overmobilized while the troop backlog increased to about 36 months. Subsequent actions to balance the contractor and troop backlogs were hampered by the fact that transfer of a project from troops to the contractor required an approximate fourfold increase in funds. This, in turn, required major reprogramming actions and the deferral of previously approved and funded projects.[73]

(c) Another factor that occasionally caused projects to be switched from the contractor to troops was the prevalent attitude that an urgent, incompletely defined project is better suited for assignment to troops. Actually, under a cost-reimbursable contract, the contractor can proceed with an ill-defined project as well as can the troops. But the inherent waste in accomplishing such construction, the four-to-one ratio of contractor to troop construction costs, and the fact that the contractor's actions are more susceptible to audit and scrutiny lead to the preference to assign this type of work to troops. It is worthy of note, however, that the dissipation of the overall construction resource is the same regardless of who does the work.

(3) Construction Contracts. Given the use of a contractor in a combat environment, the contractual arrangement with the contractor must be determined. The two most significant aspects of this arrangement are the form that the contract will take, i.e., lump-sum versus cost-reimbursement and the number of contractors that should be employed.

(a) Contract Form

1. In peacetime, the Armed Services Procurement Regulations generally require the use of lump-sum contracting for construction. Under conditions that permit thorough advance planning and a clear definition of the scope of the work, this form of contract has distinct advantages for the Government and for the contractor. The parameters of contract administration and management are clearly defined, and competition, with its accompanying incentive for efficiency, is a dominant factor. As projects are less well-defined, the advantages of lump-sum contracting decline, and major disadvantages are introduced. Each change to a lump-sum contract must be negotiated essentially as if it were a small contract of its own, and, when the changes become numerous—in rare cases, dominant—the lump-sum

[72]Brig. Gen. D. A. Raymond, op. cit., pp. 31, 32.

[73]Col. L. A. Kirstein, USMC, Interview held in Washington, D.C., 8 September 1969.

contract essentially evolves into a negotiated contract that is generally very difficult to administer. When such a situation is foreseen, it is more advantageous to enter into a negotiated contract on a cost-reimbursable basis.

2. The Navy's contract with RMK-BRJ had been originally negotiated in 1961 on a cost-reimbursable basis as a CPFF contract because of the uncertainties of the construction program. Late in 1964, when the requirement to increase greatly the contractor's capability was foreseen, the Navy elected to continue it as a CPFF contract in view of the fact that the "major escalation of U. S. involvement in Vietnam generated corresponding increases in construction requirements, to be prosecuted under even more demanding conditions of urgency, combat environment, and imprecise definition of the facilities to be built."[74] In addition to the general problem of the unresponsiveness of lump-sum, competitive contracting, which "requires preparation of comprehensive plans and specifications, followed by advertisement and eventual award. . .", the Navy has indicated four key reasons why the contract with RMK-BRJ had to continue on a negotiated, cost-reimbursable basis.[75]

a. Urgency. It was estimated that normal competitive contracting procedures would have required from 3 months to a year from the start of preparation of plans and specifications through advertisement and award with as much as an additional 6 months required for contractor mobilization. The requirements of the program, under the combat conditions prevailing, would simply not permit such delays.

b. Persistent Changes in Scope and Criteria. The uncertainties of any combat situation were intensified by the policy of graduated response that made requirements forecasting very difficult. The constantly changing needs of the tactical situation frequently dictated that construction proceed concurrently with design, and changes in the scope, criteria, and location of projects were the rule rather than the exception.

c. The Combat Environment. The accomplishment of construction in a combat environment inherently involves uncertainties not ordinarily encountered. In RVN, these included the possibility of enemy attacks and harrassment, interferences from friendly activities, uncertainties of decisions and policies of the Government of RVN, uncertain labor policies, unreliable communications systems, and undependable lines of supply. A contractor attempting to submit a fixed-price bid under such conditions would necessarily have to include a substantial amount for risk insurance as a hedge against contingencies with a resultant overall increase in contract costs.

d. Duplication of Costs and Inflationary Impact. The use of lump-sum bidding would greatly increase the number of contractors operating in the theater. This would result in a multiplication of mobilization costs and the costs of maintaining facilities in CONUS and overseas. In-country competition for available labor, facilities, and supplies would have an inflationary impact on the Vietnamese economy.

3. Although it was appropriate, and in fact necessary, to continue to employ a cost-reimbursable form of contract with RMK-BRJ, the disadvantage of the absence of the competitive factor in the sole-source arrangement was noted early by the Navy. In a move to increase the contractor's incentive for economy and efficiency in the execution of the contract, it was converted in March 1966 to a CPAF contract. Under the terms of this contract, the contractor earned a basic fee of 1.7 percent of the estimated costs of the contract, and he could earn up to an additional 0.76 percent if his performance warranted. A semiannual evaluation was made of such factors as the contractor's effectiveness in management, economy, quality of construction, and responsiveness to determine the total fee that would be awarded to the contractor.

[74]Naval Facilities Engineering Command, Point Paper, Why CPFF/CPAF Contracts, 20 January 1967, p. 1.
[75]Ibid., pp. 2, 3.

4. There is an inherent danger of cost escalation in a sole-source, cost-reimbursable contract such as was negotiated with RMK-BRJ.[76] To counteract this, the Navy, in addition to the actions taken to introduce the award-fee concept into the contract, made maximum use of lump-sum contracts when possible. They were generally small contracts in the range of $25,000 to $200,000 and were largely awarded to local contractors. Some of the contracts were awarded directly by the OICC; others were awarded through RMK-BRJ.[77]

5. As the conflict in a contingency continues, it is logical to assume that the activities of a contractor operating under a cost-reimbursable contract should be supplanted by work accomplished by increasing numbers of lump-sum contractors, if, and as, the situation becomes more stable.[78] From the standpoint of construction requirements and construction management, however, the situation in RVN, through the end of 1968 remained essentially unchanged except for the gradually increased use of troops for construction. The circumstances that dictated the use of a cost-reimbursable contract in 1965 were still present at the end of 1968.

(b) Number of Contractors

1. One of the questions that has received considerable attention as a result of experience in Vietnam has been whether it is better to employ a single contractor to handle the contract construction on a countrywide basis or to employ multiple contractors with responsibilities assigned on a geographical basis, e.g., I Corps or Cam Ranh Bay, or a functional basis, e.g., air conditioning or paving.[79] As has been noted above, a number of contractors in RVN, in addition to RMK-BRJ, contributed to the construction effort. However, these were primarily contractors employed for specific projects or contractors employed principally for other purposes, such as facilities maintenance. In carrying out its responsibilities as contract construction agent, NAVFACENGCOM essentially followed the single-contractor approach utilizing the construction combine RMK-BRJ.

2. In his "Observations," Brigadier General Raymond showed a clear preference for this arrangement. He stated:

> "From time to time the question has been raised as to whether more than one contractor should have been used. Generally the contention is made that multiple contractors would (1) provide competition and (2) provide more responsive (i.e., reduced) spans of control, and (3) provide increased capabilities. The matter of competition is, I believe an academic one when cost plus fixed fee contracts are involved. In my opinion fragmenting the contract program among several contractors would complicate rather than simplify controls for then there would be multiples in everything -- cost factors, sets of assets, bookkeeping systems, management groups, logistic and service systems, contracts to administer, etc. There is no doubt in my mind that the problems we have had would only be compounded with several contractors. Additionally multiple contractors would of necessity generate costly duplication as well as competition for assets and support of all types. It is my opinion that the joint venture system used in Vietnam was the most desirable method of assembling and utilizing a contractor capability. There is no question that the system provided sufficient capability and was responsive. . . ."[80]

[76]Commander, United States Army Engineer Command, Memorandum, subject: Review of Construction Activities, RVN, Enclosure 1, p. 4.

[77]Naval Facilities Engineering Command, Point Paper, Why CPFF/CPAF Contracts, 20 January 1967, pp. 3 and 4.

[78]Commander, United States Army Engineer Command, Memorandum, subject: Review of Construction Activities, RVN, Enclosure 1, p. 4.

[79]Joint Chiefs of Staff, Report of the Special Military Construction Study Group (U), 19 July 1968, p. 114 (SECRET).

[80]Brig. Gen. D. A. Raymond, op. cit., p. 29.

In his conclusions, General Raymond stated: "Use of numerous contractors results in costly duplication and reduces flexibility in the allocation of resources."[81]

3. In commenting on General Raymond's "Observations," the Air Force dissented:

> "Undoubtedly, a single contractor prompts the simplest control problem (relatively speaking) for the "Construction Boss." However, simpler internal contractor management through reduced span of control; smaller contractor management hierarchies; a basis for continuing cost/production comparisons; etc., in our opinion, promise sufficient advantage to warrant serious consideration of multiple contractors. The Air Force feels this is especially true for construction programs reaching the scope and physical dispersion of that in Vietnam. Competition need not be in price alone (which would be controlled to a degree under a CPFF contract) but could well have been on timely delivery of the facilities themselves."[82]

4. The Army's comments generally supported the Air Force position:

> ". . . By employing several contractors, mobilized within specific clearly defined construction areas, and under the management of the DOD-designated construction agencies, the construction control would have been improved and lines of communication shortened."[83]

5. The Navy's position on this subject is probably best derived from the facts—they elected early to stay with the single contractor concept and found no reason to deviate from this decision.[84]

6. The Special Military Construction Study Group observed that the course of action taken in Vietnam was largely dictated by the fluidity of the situation and the fact that construction requirements were, particularly in the early stages, definable only in gross terms. The capability to mobilize a large construction force initially and then to move it about as projects were defined could best be provided by a single, large contractor. In addition, the organization for construction ultimately attained by RMK-BRJ achieved many of the benefits of multiple contracting. The contractor employed a number of subcontractors in functional areas, specifically the electrical, mechanical, dredging, air conditioning, and well-drilling areas.[85] Thus, the OICC benefited from being able to manage a huge construction program through a single contractor, and the construction program as a whole was enhanced from at least a partial employment of a multiplicity of contractors on a functional area basis.

7. There were two other aspects of the RVN situation that were peculiar to that theater and that had a major influence on the decision to employ a single, large contractor. The first of these was the almost totally undeveloped nature of the country and the absence of any construction capability except on the most limited scale. This situation meant that, in addition to contracting for the construction of facilities, the United States was contracting for the establishment of a construction industry in the Republic of Vietnam. A large contractor organization was needed to mobilize and deploy the men, equipment, materials, and—perhaps

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[81] Ibid., p. 145.

[82] Deputy Assistant Secretary of the Air Force (Installations), Memorandum, subject: Analysis of South Vietnam Construction Program (U), 18 October 1967, Enclosure 1, p. 2 (CONFIDENTIAL)

[83] Assistant Secretary of the Army (Installations and Logistics), Memorandum, subject: Analysis of South Vietnam Construction Program (U), 5 October 1967, Appendix 4, paragraph 1.c. (CONFIDENTIAL).

[84] Secretary of the Navy, Memorandum, subject: Construction Capability in Vietnam, 7 March 1966 (SECRET)

[85] Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), 19 June 1968, pp. 114-116 (SECRET).

most important of all—the expert management needed to run the construction force. The contractor played a dominant role in accomplishing the overall construction program. In a situation where the troops are the dominant force, the employment of a number of contractors to supplement the troop effort by accomplishing projects of a specialized nature may well be the best solution. In RVN, however, the size of the program that had to be accomplished by contract placed a premium on effective control of the contract forces. Employing a large contractor made it possible to buy some of the managerial control needed.

8. In recognizing the soundness of the decision as it was made in RVN, the Joint Chiefs of Staff Special Military Construction Study Group noted that future contingent situations would have to be evaluated on a case-by-case basis. The following were offered as areas of consideration.

"a. the time frame in which construction must be accomplished,
"b. the magnitude of the total construction program,
"c. the location(s) of the work,
"d. the 'tightness' of funds versus 'money is no object,
"e. magnitude of special type of construction (communications for instance)
"f. the 'mix' of vertical (buildings) and horizontal (airfields) construction, and
"g. availability of in-country construction resources (labor, communications, transportation, material, etc.)."[86]

(4) Self-Sufficiency of Contractor Forces. Construction contractors are generally capable of mobilizing and deploying to even undeveloped areas of the World on a self-sufficient basis. Supported from bases in the United States, they can take a needed "logistical tail" with them. The introduction of a large contract construction force into RVN raised the question of the extent to which the contractor should be integrated into the administrative and logistic systems established for the support of the military forces. Self-sufficiency on the part of the contractor raises the question of the unnecessary duplication of some resources, with accompanying waste and cost. On the other hand, the contractor's dependence on the military systems may make him an unwelcome competitor for scarce resources; and, if the military systems are not fully responsive to his needs, the overall execution of the construction program may be impaired. The experiences of the OICC and the contractor in the areas of procurement, communications, shipping, security, and air transportation are discussed in the following paragraphs.

(a) Procurement

1. In order for the contractor to accomplish the construction on a timely basis, it was necessary for him to maintain an orderly flow of material to his various construction sites. The terms of his contract made him generally responsible for obtaining his own supplies. As a result, the contractor established his own procurement and supply activity that could respond to the needs of his work force.

2. The quantities of construction materials procured by the contractor were very large. In this regard, the General Accounting Office (GAO), in a report made in May 1967, raised the question as to whether large, unphased procurements by the contractor did not create de facto competition with the Government, since the Defense Supply Agency (DSA) was also purchasing construction materials for SE Asia. The GAO concluded that "the Navy and the contractor made only limited use of the Federal supply system." The contractor responded to the GAO criticism by stating that a team from DSA had spent approximately 1 week reviewing the items purchased by the contractor to see if DSA could be of assistance in furnishing materials from the Defense Supply System. The DSA team advised that the contractor's purchasing was of

[86] Ibid., p. 118.

such magnitude that they would be unable to be of much assistance because DSA would be able to furnish only a very small percentage of each item desired and it would be too time-consuming and virtually impossible to convert the description given in the contractor's purchase request to federal stock numbers on which DSA procurement is based. The GAO, in rebuttal, stated that 50 to 75 percent of the line items could be identified by federal stock numbers and that 50 percent of the items were managed by the DSA's Defense Construction Supply Center.[87]

3. The responsiveness of the contractor's procurement activities is best measured by the fact that the military construction forces at times used the contractor as a procurement source in the early days of the Vietnam buildup. The influx of military units into Vietnam during the early phase of the buildup created major demands for materials and equipment needed for these troops to get on with the construction. Since RMK-BRJ had inbeing a quick-response procurement system, it was exploited as an interim support measure for the engineer troop units.

4. The responsiveness of the RMK-BRJ procurement[88] is shown by the fact that prefabricated buildings were delivered by the contractor within 4 months, as compared to 9 months through normal military supply channels. Also, mobile, 100-kw generators were delivered within 4 months, as compared to 12 months through military channels.

5. Despite these accomplishments, ASD(I&L) stated in October 1966: "this office looks unfavorably upon the indiscriminate use of these contracts as an expedient means for this type of procurement."[89] He directed that all future requests for such procurement actions would be sent to his office for review and approval.

(b) Communications

1. Because the RMK-BRJ organization generally operated in reasonably close proximity to military units, the contractor could have used military communications systems. But the use of these systems would have made the contractor's message traffic subject to pre-emption by higher priority military traffic.

2. In order to avoid communications delays, the contractor in conjunction with the OICC set up a separate, relatively inexpensive communications system in South Vietnam. This system consisted of a single-sideband network and provided dedicated communications between the contractor's Saigon office and the various construction sites throughout Vietnam.

3. The contractor also used a Telex system for communications between Saigon and the depot warehouses at Thu Duc Island (Saigon), Cam Ranh Bay, and Da Nang. The contractor also maintained communications between San Bruno, California (his supporting CONUS base) and Saigon by use of a leased Telex system.

(c) Shipping

1. MACV tasked the Army and Navy with the responsibility for all stevedoring and lighterage of military and contractor cargoes in Vietnam. Coastal cargo was planned for movement on Military Sea Transportation Service (MSTS), leased and fleet barges, landing ships, tank (LSTs), and freighters. Because of limited resources, however, this support was not fully available until the contractor's mobilization was almost completed.

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[87]Government Accounting Office, U.S. Construction Activities in RVN 1965-66, May 1967.

[88]Naval Facilities Engineering Command, RVN Construction Problems and Achievements, Contractor Procurement for Others, 13 April 1967.

[89]Deputy Assistant Secretary of Defense, Memorandum, subject: Procurement of Equipment and Material for Others Under CPAF Contracts--Southeast Asia, 28 October 1966.

2. Because he was unable to get the shipping service that he required to keep his organization producing at its highest capability, the contractor chartered two LSTs. These vessels were used to move construction materials and supplies from transhipment stocks at Poro Point, the Philippines, to in-country locations. The costs of chartering these LSTs became part of the contractor's operating overhead.

3. In August 1966, the MSTS, because of an overall shortage of LSTs in the theater, took over the LST assets of RMK-BRJ.

(d) Security

1. The problem of security for the contractor's living areas, construction sites, and material storage yards was particularly acute in RVN because pilferage rates were high and because no area was immune to enemy action. The tactical military commanders were understandably reluctant to provide their troops for security of the contractor's activities. Therefore, the contractor had little choice but to provide his own security forces or see his losses of material rise to massive proportions and slow or stop his construction efforts.

2. The contractor's attempts to provide adequate security were hampered by the considerable difficulty he encountered in recruiting qualified guards, particularly those who would be permitted by the Government of RVN to carry arms. The cost of hiring Vietnamese civilian guards did increase the contractor's overhead, but, since their salaries were low, the savings in lost material more than made up the cost.

(e) Air Transportation. On an overall basis, the intratheater airlift support of the contractor was adequate. However, tactical operations as well as logistic support requirements had a higher movement priority than the contractor's personnel and material. The contractor, early in the buildup, recognized the need for an organic capability that he could control for the purpose of moving high-priority cargo and personnel to various construction sites throughout the country in order to keep his construction projects going at maximum efficiency. To meet this requirement, aircraft were chartered from Air Vietnam and Continental Air Service. The extent of the air transport requirements of RMK-BRJ is illustrated by the fact that, in a representative month, the contractor moved 518, 914 pounds of cargo and 2301 passengers by this means.[90]

## 3. CONCLUSIONS AND RECOMMENDATIONS

### a. Conclusions

(1) The engineer troop units on active duty at the start of the RVN buildup were inadequate to support any significant contingency operation (paragraph 2b(3)).

(2) The decision not to have a general mobilization of Reserve and National Guard forces imposed a serious constraint on the deployment to RVN of vitally needed troop construction forces (paragraph 2b(3)).

(3) Although the consensus of the Services is still that troop construction forces are preferred as the primary construction resource in a combat zone, the need to consider supplementing the troop effort with contract capabilities is recognized (paragraph 2c(1)).

(4) Contingency plans did not adequately address the possibility of the employment of a civilian contract construction force or the extent to which such a force could be employed in a combat zone (paragraph 2a(3) and Appendix H).

(5) RVN experience demonstrated the feasibility and, under similar conditions, the desirability of employing a civilian contractor in a combat zone for major projects in relatively secure areas (paragraphs 2b and 2c).

[90] RMK-BRJ, Monthly Activities Report, Number 033, February 1969.

(6) The principal civilian contractor, RMK-BRJ, was responsive to demands placed on it to mobilize the large force needed to support the buildup of forces in RVN and the consequent extensive demands for construction (paragraphs 2b and 2c).

(7) Under the conditions prevailing in RVN, the use of a single, joint-venture contractor rather than a number of contractors was preferable. However, this should not establish an inflexible precedent; each contingent situation must be independently evaluated (paragraph 2c(3)).

(8) The type of contract negotiated with the contractor (cost-reimbursable) supplemented by lump-sum contracting was appropriate and desirable (paragraph 2c(3)).

(9) The degree to which the contractor was administratively and logistically independent evolved on a case-by-case basis (paragraph 2c(4)).

(10) The troop and contractor forces mobilized in RVN were effectively utilized, and the troop-contractor mix ultimately achieved was optimum for the situation and conditions in RVN. Initially, however, it was necessary to assign a disproportionate amount of work to the contractor (paragraph 2c).

(11) In addition to the primary construction resources (the engineer troop construction units and the contractor), there was a substantial number of other construction resources in the theater, and these resources made a significant contribution to the total construction effort (paragraph 2b(4)).

(12) The overall joint and Service controls, relationships, and responsibilities with regard to the total construction resources in the theater were not adequately defined in some cases. The recently issued Joint Chiefs of Staff instructions for base development planning require that command relationships be clarified in future base development plans to include specification of channels for reprogramming, approving, and directing construction (paragraph 2b(3)).

b. Recommendations. The Board recommends that:

(CO-10) Planning for major contingency operations be based on the employment of a hard core of engineer construction troops augmented to the extent practicable by contractor forces (conclusions (3), (4), and (5)).

(CO-11) In the case of plans for major contractor effort, the requirements contained in the instructions for base development planning in support of joint operations, recently issued by the Joint Chiefs of Staff (SM-643-69), be expanded to require, as appropriate, such specifics as:

(a) The time-phased plan for the mobilization of the contractor level of effort.

(b) The number and types of contractors to be employed.

(c) The degree to which the contractors are to be administratively and logistically independent (e.g., in such areas as procurement of construction materials and transportation) (conclusions (3), (4), (5), (7), (9), and (10)).

# CHAPTER VII

# REAL ESTATE

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# REAL ESTATE

1. BACKGROUND. The acquisition of real estate for facilities in support of U. S. military operations in the Republic of Vietnam (RVN) has been a difficult and time-consuming process. Although the need for real estate was particularly critical during the buildup period, some land transactions during this time took up to 9 months to complete.[1]

a. Prior to the buildup of forces in 1965, the problem of real estate acquisition had not had a serious impact. Construction efforts during this period were intended to support advisors and to provide necessary facilities for expanding U. S. Air Force base requirements in support of the RVN Air Force (VNAF) and contingency missions. All facilities required were either leased from private owners or provided by the Government of RVN (GVN). Requests for the use of RVN-owned land were submitted to the Republic of Vietnam Armed Forces (RVNAF) Deputy Chief of Staff, Logistics of the Joint General Staff (DCSLOG, JGS), who formally granted authority by letter. The United States paid the cost of indemnification and relocation when squatters were on the land. Privately owned land was purchased by the GVN, with reimbursement made by the United States. Title to such land was retained by the GVN. The United States did not own land in RVN. The system was adequate because small parcels of real estate were involved, and time was not a critical factor as it was to be later.

b. The U. S. policy does not preclude overtures to possible host nations regarding real estate requirements for military contingency purposes, but security and political consideration often make such requests imprudent and impolitic.[2] Base rights agreements did not exist between the United States and the RVN when Vietnam contingency plans were drafted. These matters were addressed in the applicable 1964 U. S. Military Assistance Command, Vietnam (USMACV), plans, which provided that the base rights and overfly rights in SE Asia for support of the plan would be in accordance with Government agreements as they were negotiated. The plan further anticipated that GVN would make available land and other facilities within its capabilities. Similarly, the pertinent U. S. Pacific Command plans were neither explicit nor detailed in this regard.

c. In 1965 arrangements were made to provide real estate, including improvements, rent free to the United States and Free World Military Assistance Forces (FWMAF) based on Article IV of the 1950 Agreement for Mutual Defense Assistance in Indo-China (the "pentalateral agreement") to which the United States and the Republic of Vietnam were parties.

d. The system of land acquisition underwent its first major test in the spring of 1965. With only 2 weeks remaining before the landing of a Marine regimental landing team at Chu Lai on 7 May, arrangements to obtain the necessary land area for construction of an airfield had not been completed. The problem was subsequently solved on an expedient basis by sending two U. S. Army officers from Headquarters, USMACV, to inspect the required land with Vietnamese provincial officials. The officers, an engineer and a finance officer, traversed an area

[1] U. S. Military Assitance Command, Vietnam, Command History 1965, (U), p. 124 (TOP SECRET).
[2] DOD Instruction No. 5100.61, International Agreements Concerning Facilities, Operating Rights, and Status of Forces Matters, 22 January 1969.

of 24 square kilometers and negotiated with the owners on the spot, paying indemnification for everything:

> "... each fruit tree, each banana tree, rice paddy, thatched hut and grave. This involved payment of some $620,000 to 1,800 different property owners. These indemnification negotiations took place in a nominally Viet Cong controlled area 10 days before the Marines landed. Assistance in kind (AIK) piasters were used for the indemnification payment."[3]

e. The real estate acquisition procedure followed in the case of Chu Lai was unsatisfactory for future acquisitions because the United States appeared to be buying land, which was not the case because (1) the GVN retained title; (2) sufficient AIK piasters were not available to finance future projects; (3) it was unwieldy for large-scale acquisitions; and (4) it revealed friendly intentions. Discussion concerning this procedure took place at the ambassador level, and Prime Minister Ky agreed in July 1965 that the GVN should be responsible for all land acquisition, funding for payments, and relocation without cost to the U.S. Government. The cost would be covered by continued U.S. support of the deficit in the GVN budget. The GVN established a real estate board to deal with the MACV real estate officers, and detailed procedures were settled by 1 September 1965. All tabulations of owners, decisions on the amounts of indemnification, and actual payments were to be made by the GVN without overt U.S. participation. Procedures for emergency procurement of land prior to the initiation of the indemnification plan were established.[4]

2. RESPONSIBILITIES AND PROCEDURES. The responsibilities and procedures that eventually evolved for acquisition of real estate were promulgated in MACV Directive 405-1, 3 November 1966, paraphased as follows:

a. The Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV), was responsible for the acquisition of real estate for U.S. forces and FWMAF in RVN. The Director of Construction was responsible to COMUSMACV for performance of these functions. In-country component commanders were directed by COMUSMACV to coordinate real estate functions and activities of all U.S. forces and FWMAF within their areas of responsibility. Their duties were discharged through their field real estate officers who negotiated with Vietnamese officials for the acquisition of required real estate and maintained a central record of all real estate utilized by U.S. forces and FWMAF within their areas.

b. Real estate requirements were submitted to the appropriate field real estate office, where it was determined whether the requirements could be met. If a requirement could not be met, the request was prepared for consideration by the Vietnamese Government.

c. The initial point of contact for U.S. real estate requests was the appropriate GVN official--district chief, province chief, or mayor. A land use concurrence document was submitted to the appropriate official for his approval. This document described the requested property and, when signed, granted to the allied forces the exclusive use of the real estate for as long as the requirement existed. If approval could not be obtained, the reasons were noted on the disapproval. The request and the land use concurrence document were then forwarded through support channels to the component commander and then to COMUSMACV. The complete package was submitted to the Interministerial Real Estate Committee (IMREC), a subelement of the JGS, RVNAF. When IMREC granted approval of the request, the component commander assigned the real estate to the original requestor.

d. If the requested real estate included privately owned property (e.g., houses, crops, and graves), indemnification was necessary. The local district chief, mayor, or province chief made a tabulation by name, item, and amount for each person to be indemnified. The

[3] U.S. Military Assistance Command, Vietnam, op. cit., p. 124.
[4] Ibid., pp. 125, 539.

amount was based on prices established at meetings between the local province and district officials and the Working Subcommittee of the IMREC. Tabulations were forwarded to JGS, RVNAF, for verification by the IMREC. Upon approval, IMREC forwarded the funds to the site. Actual payment was accomplished by the local district chief, mayor, or province chief.

3. ACQUISITION EXPERIENCES. The problem of moving graves has been a particularly serious cause of major delays in acquiring real estate. During the 2,000-year history of Vietnam, the countryside had become virtually covered with individual graves in marked contrast to the well-defined graveyards of the Western World. Cultural, religious, and legal precepts have required the permission (and frequently the indemnification) of the descendants of those interred prior to the relocation of graves.

a. The procedure for acquiring land in which graves were located has been as follows: (1) determination of ownership; (2) through the landowner, determination of the names and locations of the descendants of the respective remains; (3) when the relative has been contacted, removal of the remains or the accomplishment of a waiver authorizing the contractor to proceed without prior removal of the remains. Because many gravesites were ancient, it has been frequently difficult, if not impossible, to determine the proper persons from whom to seek such permission. Because the religion of many Vietnamese contains elements of ancestor worship, tampering with gravesites could have caused serious complications. For example, when the contractor uncovered graves during the preliminary construction of the contractor's camp at Phu Cat, the village chief initiated a protest via the district and province chiefs that resulted in a letter of protest from General Vien, Chairman of the Vietnamese JGS, to General Westmoreland, COMUSMACV. Delays ranging from 1 day to 1 month resulted from the need to relocate the graves. The runway construction at Phu Cat was stopped for approximately 1 month because of graves at the construction site. The local Vietnamese officials were consulted, and the province chief agreed to have the graves moved and granted approval for the contractor to proceed after approximately 4 weeks, even if the graves had not been relocated. Four weeks later, the contractor commenced construction in this area with a loss of 1 month. [5]

b. The real estate problem was further complicated by the fact that within a 3-year period there had been nine changes in the Government in Vietnam. Not only had each change caused a shift in the central government, but the relative independence of province officials, who had a strong voice in land acquisition, had compounded the difficulty. Continuity at both central and province levels was virtually nonexistent. [6] Although real estate acquisition procedures were established in the latter part of 1965, delays in actual procurement continued to be a common and persistent problem. The inability of the GVN to provide land in a timely manner had definitely hampered the development of facilities.

c. The prime civilian contractor for construction in RVN listed the acquisition of real estate as a major and continuing problem throughout the life of the contract. Inability to obtain real estate in a timely fashion adversely affected the performance of the contractor in obtaining land for project work and for physical plant, especially quarry sites. [7]

4. TRENDS AND HIGHLIGHTS

a. The major cause of problems in timely real estate acquisition has been the delays caused by the procedures established by the GVN.

b. The absence of a "country-to-country" agreement--or draft agreement--in support of the RVN contingency plans has impaired expeditious real estate procurement. The failure of most base development plans to address adequately real estate requirements further complicated this issue.

[5] Naval Facilities Engineering Command, Construction Restraints, Volume V, p. 10.
[6] Ibid., p. 5.
[7] Brig. Gen. D. A. Raymond, Observations on the Construction Program, RVN, 1 October 1965 - 1 June 1967 (U), pp. 137, 138 (CONFIDENTIAL).

c. Because of the rapid and unpredictable nature of the buildup of forces in RVN, it was not possible to predict accurately real estate requirements and locations. This condition further complicated the problem of adequately staffing sections to handle the real estate processing.

d. It is noted that the Joint Chiefs of Staff have taken action to:

(1) Require the development of procedural plans as an initial step in preparing real property negotiating folios to be used when appropriate.[8]

(2) Provide for the inclusion of real estate requirements in base development plans.[9] (Note: This is an expansion of the data currently contained in the U.S. Base Requirements Overseas Report and is intended to provide more detail.)

## 5. CONCLUSIONS AND RECOMMENDATIONS

### a. Conclusions

(1) Prior to any troop deployments, country-to-country real estate agreements should be reached if possible (paragraphs 1, 3, and 4).

(2) Subsequent to these high level governmental accords, procedures must be established for acquiring the necessary real estate for United States and allied forces. Such procedures would necessarily be established in conjunction with the individual governments concerned and, therefore, would vary from plan to plan. The agreed upon procedures would then become a part of the contingency plan concerning that country (paragraphs 1, 3, and 4.)

(3) Procedural agreements before the introduction of forces would reduce the red tape to permit rapid acquisition of real estate (paragraphs 3 and 4).

(4) Base development plans should address the theaterwide real estate requirements to include acreage, location, and procedures for expedited acquisition. The problems encountered in acquiring real estate emphasize the importance of identifying acreages and locations of facilities at the earliest possible stage in base development (paragraphs 1, 3 and 4).

(5) The recent moves by the Joint Chiefs of Staff to expand real estate considerations in contingency planning are in keeping with the lessons learned in Vietnam (paragraph 4).

### b. Recommendations.

The Board recommends that:

(CO-12) Real estate be accorded special treatment in contingency planning along the lines taken by the Joint Chiefs of Staff with a goal of attaining in base development planning a comprehensive definition of real property requirements (conclusions (4) and (5)).

(CO-13) The Office of the Secretary of Defense, in coordination with the Department of State, establish a file of draft real estate proposals suitable for the most likely host nations (conclusions (1), (2), and (3)).

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[8] Joint Chiefs of Staff, Publication 3, Joint Logistics and Personnel Policy and Guidance (U), Section 1, Chapter 6, Change 1 - July 1969 (CONFIDENTIAL)

[9] Joint Chiefs of Staff, Memorandum SM-643-69, Subject: Instructions for Base Development Planning in Support of Joint Contingency Operations, 1 October 1969.

# CHAPTER VIII

# RESPONSIVENESS

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# RESPONSIVENESS

1. AREA OF INVESTIGATION. This chapter examines the responsiveness of the construction effort to meet the needs generated by the military operations in Vietnam. Although the construction program was responsive from an overall point of view, there were instances in which operations were impaired by a lack of adequate facilities. Several examples of such instances are reviewed briefly. The chapter then identifies the major factors that affected the construction program's responsiveness to user requirements in order to identify areas in need of improvement.

2. ANALYSIS

a. General

(1) The degree to which the construction program in Vietnam satisfied or was responsive to user requirements is very difficult to measure. Any analysis of apparent construction shortcomings must consider the size of the program, the complexities of its management, and the fact that the construction program has been, in the words of Secretary Ignatius, "a fabulous success story."[1] In his "Report on the War in Vietnam," General Westmoreland stated: "Despite (numerous) obstacles, the construction mission was successfully and efficiently performed and the face of Vietnam was changed."[2] General Westmoreland generally set the standard for measuring the success of the construction effort when he stated to the Commander in Chief, Pacific: "At the end of this year (1966) much will remain to be done to provide a fully adequate facility base; however, no absence of facilities will prevent accomplishment of essential tactical missions and logistical support."[3] Brigadier General Raymond stated that this basic purpose of the construction program had been achieved and that, among the criticisms of the construction program, "conspicuously absent is any criticism that the program failed to provide required facilities in a timely manner."[4] A subcommittee of the House Armed Services Committee reported in May 1967: "The subcommittee is satisfied that the program is being effectively managed and that construction is proceeding at a desirable rate. In fact, the accomplishments to date obtained the highest praise from the members."[5]

(2) From an overall point of view, therefore, the construction program was never a limiting factor in the prosecution of the war. On the other hand, there were many instances when facilities were not built when they were needed. A former Army Chief of Engineers stated in 1967:

> "There has been a tremendous amount of construction accomplished and it is of generally good quality. With few exceptions, the Component Commanders stated that much of the hard core operational requirements except roads have been met. They pointed out, however, that there were many other requirements

[1] Joint Logistics Review Board, Memorandum for Record, Discussion with Secretary Ignatius of Logistics Lessons of the Vietnam Era, 17 March 1969.
[2] General W. C. Westmoreland and Admiral U. S. G. Sharp, Report on the War in Vietnam, 30 June 1968.
[3] Commander, United States Military Assistance Command, Vietnam, Message 270750, February 1966.
[4] Brig. Gen. D. A. Raymond, USA, Observations on the Construction Program, PVN, 1 October 1965 - 1 June 1967 (U), 1 June 1967 (CONFIDENTIAL).
[5] U. S. Congress, House of Representatives, Committee on Armed Services, Report on Special Subcommittee Following Visit to Southeast Asia, 6 May 1967, p. 1881.

programmed or not yet programmed which are essential to their effectiveness and efficiency which will not be completed (when required). They further pointed out that new requirements will develop with changes in the tactical situation."[6]

b. Operational Impact of Construction. Unlike most ground combat forces, there are many other elements of each of the Services (particularly combat support and logistic elements) that are dependent to a great degree on the adequacy of the facilities from which they operate to achieve maximum effectiveness and efficiency. In the absence of adequate facilities, these forces could and did accomplish their missions under the most adverse of field conditions. Where port facilities were inadequate, supplies were hauled across the beach and moved inland by whatever means could be devised. Convoys often forced their way over nearly impassable roads, and aircraft moved supplies where ground vehicles could not. In the absence of hardstands and roads, dozers were used to shove heavily loaded ammunition trailers through the mud to improvised storage pads. These Herculean efforts were truly among the remarkable feats of the war. However, in some cases the lack of adequate facilities had a clear impact on operational performance. The following paragraphs discuss examples of these cases. In almost every case examined, there were reasons why the work was not done when needed. The constant shifting of priorities, shortages of critical materials, nonavailability of equipment, funding problems, and vacillations and lack of clarity in requirements definition on the part of the user were but a few of the difficulties faced. In addition, circumstances often looked substantially different from the viewpoints of the user and the construction manager. Rather than attempt to evaluate each case in an effort to find the specific causes of lessened responsiveness, the examples serve as a basis for the balance of this chapter, which studies the factors that had the greatest bearing on the responsiveness of the construction program.

(1) The Channel at Chu Lai

(a) The problem of getting supplies ashore at Chu Lai, where the Marines were landed on 7 May 1965, was extremely critical. Occasionally a task force would be supplied by truck convoy, but the innumerable rivers to be crossed and enemy actions made this extremely difficult and hazardous. Primary dependence had to be on deliveries by sea, mainly from Da Nang. For about 4 months, the resupply was across a soft sand beach exposed to seas across the full sweep of the South China Sea. Storms often wiped out the pontoon causeway used for off-loading tank landing ships, tank (LSTs). In addition to the delays and the criticality of the supply situation ashore, the operation was costly in view of the extensive damage to the causeway sections.

(b) Considering the difficulties of resupply of Chu Lai, even in the summer months, it became clear that the situation could be untenable after the start of the monsoon season, which was expected in October. In late July 1965, the force of personnel being supported totaled about 7200, including the 4th Marines, Marine Air Group (MAG) 12, logistic support units, and Naval Mobile Construction Battalion (NMCB - Seabee) 10. The number was to double in August with the addition of the 7th Marines, MAG 36, one Marine attack squadron, and additional logistic support units.

(c) In recognizing the criticality of the situation, the Navy designated that the port of Chu Lai be assigned to function as a subdepot of the Da Nang base depot, receive shipments originating from sources outside Vietnam using over-the-shore techniques to avoid dependence on Da Nang's limited port capabilities, and develop an all-weather over-the-shore offloading capability.

[6] Lt. Gen. W.K. Wilson, Jr., USA (Ret.), Review of Southeast Asia Construction Program (U), 17 April 1967 (CONFIDENTIAL)

part of the emergency plan of 30 July 1965 encompassed dredging the shallow bar across the entrance and erecting navigation aids.[7]

(d) Steps to have this accomplished were taken by the Commander, Pacific Division of the Bureau of Yards and Docks, through the Officer in Charge of Construction (OICC), Vietnam. A small dredge was scheduled for the first week in August, and indications were that a larger one could be obtained if needed.[8] It was not, however, until after the northeast monsoon season ended in the spring of 1966 that the dredging was actually completed.

(e) The availability of port construction equipment, particularly dredges and heavy, floating, pile-driving equipment, was to serve as a limiting factor on construction of essential port facilities throughout RVN during the entire war. Dredging was a limiting factor, not only at Chu Lai, but at Da Nang and other locations throughout RVN as well. Inadequacies in port facilities came close to limiting operations in northernmost I Corps Tactical Zone (CTZ) and would have done so had it not been for the ingenuity and extraordinary performance of the individuals concerned.

(f) Because of the criticality of dredging, the following summary of the events concerning the dredging at Chu Lai is recorded as indicative of problems experienced.

1. The dredge that was to arrive in early August 1965 failed to do so. On 5 September 1965, the naval component commander--the Commanding General, III Marine Amphibious Force--dispatched a message summarizing his urgent needs for dredging the Chu Lai entrance channel and for work at other I CTZ ports. By the following week information was received that no Vietnamese dredges could be made available for Chu Lai or Da Nang and that the OICC was pursuing the acquisition of large dredges through civilian construction firms.

2. During the last week in September 1965, the OICC advised that he planned to provide a 16-inch suction dredge from Saigon; it was due to arrive on 15 October. In addition, a 4-cubic yard clamshell dredge, which had developed mechanical trouble, was under tow to Chu Lai and should arrive by the same date. During the week following the scheduled arrival, however, it was determined that the clamshell dredge had only gone as far as Cam Ranh Bay and was not anticipated to arrive at Chu Lai until 29 October.

3. Transportation for the 16-inch suction dredge was not arranged for until MACV requested, on 25 October 1965, a fleet landing ship, dock (LSD) to lift the dredge from Nha Be to Chu Lai. The USS FORT MARION delivered the dredge to Chu Lai on 5 November, but it arrived without a crew. The OICC was immediately requested to provide a crew. A crew large enough for one-shift operations arrived 6 days later, but the OICC representative would only permit dredging of the inner basin because of surf at the bar.

4. By the middle of December, the clamshell dredge had arrived and was working on the channel bar. Its work was intermittent, however, because of high seas. The working radius of the 16-inch dredge was limited by its 300 feet of available piping. Word was received that an Army Corps of Engineers hopper dredge was expected to arrive from Oregon, but the arrival date was unknown.

5. By the end of February 1966, the two dredges, working together in good weather, had dredged the southern half of the channel to a depth of 12 feet. By the middle of March 1966, dredging had been completed to a depth of 14 feet and a width of 500 feet.

6. During the week of 11 April 1966, the Corps of Engineers' hopper dredge DAVIDSON arrived and started deepening the channel. The project was completed in May.[9]

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[7]Commander, Service Force, Pacific, Briefing to Commander in Chief, Pacific, 30 July 1965.
[8]Pacific Division, Bureau of Yards and Docks, Presentation to Commander in Chief, Pacific, 30 July 1965.
[9]Extract from Service Force, Pacific, Situation Reports and Weekly Summaries.

(g) During much of this lengthy period, operational success was largely dependent on the fact that small, lightly loaded LSTs were able to bounce their way over the bar on swells of the sea at high tide. Otherwise, nothing larger than landing crafts, utility (LCUs), could have delivered cargoes.

(2) The Long Binh POL Jetty

(a) As part of the massive logistic complex constructed at Long Binh, a large POL tank farm was built to serve as a primary source of these vitally needed supplies throughout much of southern III CTZ. The tank farm was partially completed in the latter half of 1967 and put into limited use; final completion took place in January 1968.

(b) An essential ancillary structure to the tank farm was a POL unloading jetty on the Dong Nai River, the nearest navigable waterway. The jetty was not completed by the constructing troop unit until after the tank farm itself, however. Beginning with the partial use of the farm in 1967, an alternate procedure was employed to move POL products from the river to the storage tanks. POL barges were unloaded at a site on the west bank of the river, with the products being pumped directly into tank trailers for movement to the tank farm. This procedure was unsatisfactory for two reasons. First, it tied up a substantial portion of the available tank trailerage; second, it involved convoying the trailers across a highway bridge to the east side of the Dong Nai with the accompanying danger that destruction of the bridge would cut off the supplies of POL products to Long Binh.

(c) The selection of a site for the construction of the jetty had been a matter of considerable controversy between the user and the design and construction forces. The east bank of the Dong Nai is made up of extremely soft material, virtually bottomless at places from a practical construction point of view. The site for the jetty was finally selected based primarily on engineering factors, over the strong objections of the Commander, Saigon Support Command, and the battalion commander responsible for POL operations at Long Binh, that the jetty was not satisfactory for their operations. As built, the jetty was only accessible from the nearest vehicular road by means of a narrow footwalk, which was floated for nearly a kilometer over rice paddies. This footwalk also served as a support for the three pipelines to the tank farm. Leaks in the lines caused a constant fire hazard, and the remoteness of the jetty made security a problem.

(d) The jetty was put into operation in the early spring of 1968. Within a few weeks, it was evident that the jetty had serious structural problems. In addition, it was being subjected to a considerable amount of battering during mooring operations. There was no tug available to maneuver the POL barges into position for unloading. The landing craft used as a substitute was not sufficiently powerful or maneuverable to prevent the frequent heavy impacting of the fully loaded barges against the jetty, particularly during periods of heavy tidal currents. By mid-May, it was evident that failure of the jetty was probable and imminent. Several of the mooring dolphins had floated loose, and subsequent mooring of barges directly to the understructure of the jetty had loosened the supporting piles. This led the 1st Logistical Command Engineer to recommend that unloading operations at the jetty be suspended immediately. This was operationally unacceptable, however, since the trucks and trailers previously used to transport the POL products to the tank farm had been fully committed to convoying in support of tactical operations. Further, experiences during the Tet Offensive indicated that it would be undesirable to revert to a delivery system dependent upon a bridge being intact.

(e) Troops from the Army's 20th Engineer Brigade assisted in setting up a temporary expedient to keep the jetty in operation. An empty POL barge was moored to one half of the jetty with pneumatic bridge pontoons between the barge and the jetty as a cushion. This acted as a buffer between the barges being unloaded and the jetty. Operations were continued, but the off-loading capacity of the jetty was reduced by half. Efforts were made to have repairs made to the jetty as soon as possible. However, the heavy, floating, pile driving equipment needed to do the work was a scarce item throughout the war. The Army's two engineer brigades had only one port construction company between them, and this company was

fully committed to construction of the Phu Cuong Bridge, an urgently needed last link in the Saigon bypass route. Contractor equipment was also limited in number and committed to vitally needed work. By the first week of June, however, a contractor-owned pile-driving barge had been moored in position, and permanent repair and strengthening of the jetty had commenced. About 1 week later, sparks from a welder's torch started a fire that spread rapidly to the jetty and a barge being unloaded. The inaccessibility of the jetty made it almost impossible to fight the fire. By the time a temporary hoseline had been strung along the footwalk and the fire brought under control, the jetty had been virtually destroyed.

(f) Working around the clock, engineer troops from the 20th Brigade constructed a temporary unloading platform on the stubs of the burned piles, and 36 hours after the fire started, pumping operations had resumed. By this time the POL supplies at Long Binh, already at a low level as a result of the reduced pumping prior to the fire, were reduced to less than a 3-day supply for some vital fuels.

(g) The contractor recommenced the repair and strengthening of the jetty and mooring dolphins concurrently with the troop's expedient work, and the project was completed 2 months later. The experiences during the preceding months had emphasized the jetty's undesirability from an operational point of view. Accordingly, an urgent request had been submitted for construction of a larger, more permanent jetty at a better operational location. Early indications were that military construction funds would be reprogrammed to meet this requirement. Subsequent revisions in the plans for the FY 69 and FY 70 construction programs caused this project to be dropped. The end of 1968 found the inadequate jetty still in use and no permanent solution to the problem in sight.

(3) The Pleiku Supply Complex

(a) In order to support tactical operations in the highlands of II CTZ, the 1st Logistical Command established a supply and maintenance complex at Pleiku. Like many other logistic facilities, it was necessary for this one to go into operation before any appreciable construction could take place. The road net was very limited, and there was little hardstand. During the monsoon rains of the summer of 1967, the maintenance and supply areas were reduced to a sea of mud. Only by the most extreme measures were operations kept going. Vehicles were parked and convoys staged on the few surfaced roads that also served as a work area for limited vehicular maintenance. Vehicles that had to go into a maintenance shop for work often had to be winched or shoved through hub-deep mud. Materials handling equipment designed for surfaced areas was virtually useless, and even rough-terrain equipment bogged down. Supplies were lifted into place manually or by crane.

(b) In August 1967, the Commander, 1st Logistical Command, following a visit to the Pleiku Subarea Command, determined that adequate logistic support of the campaigns planned for the II CTZ highlands could not be accomplished unless minimum facilities were constructed, with emphasis on roads and hardstands, by the next monsoon season. He requested assistance from the Deputy Commanding General, United States Army, Vietnam (USARV), who advised the USARV Engineer that he wanted the Pleiku installation "out of the mud" prior to the next monsoon season. When the work had been approved and programmed, the USARV Engineer issued a directive for the necessary construction. In addition to other work, 102,000 square yards of hardstands and roads were to be built. Work was to begin in October 1967 and to be completed the following spring.

(c) Staff visits and other follow-up action during the months following October revealed that little was being accomplished. By the end of the first quarter of 1968, it became evident that, even with maximum effort by the engineer group assigned the task, the work could not be accomplished before the monsoon season. Although committed to this work, the horizontal effort of the engineer group had been largely diverted to other projects of high-command interest. Principal among these were the paving of 25,000 square yards at Dragon Mountain for the 4th Infantry Division and the upgrading of a long section of road wanted by the Commander of the I Field Forces, Vietnam. It was determined that the maximum amount of paving that could be accomplished prior to June, by which time the monsoon season was expected to be well

underway, was only 30,000 of the directed 102,000 square yards. Extra effort on the part of the engineer group and the fortuitous delay in the start of the heavy monsoon rains permitted somewhat more than this to be actually completed, but the logistic complex entered its second season of heavy rains with less than half of its essential roads and hardstands.[10]

(4) Small Bases

(a) Obtaining construction support at small bases was a particularly difficult problem. Although engaged in important, essential operations, these bases, because of their remoteness and size, were often unable to compete successfully with larger units and installations for the available construction effort. Typical of these small bases were the Navy's MARKET TIME and GAME WARDEN bases in II, III, and IV CTZs.

(b) Captain H. T. King, a former commander of the Naval Support Activity, Saigon, highlighted the Navy's construction problems at these bases in stating:

> "Navy bases were in general far down the priority list among total construction requirements in Vietnam . . ."
>
> ". . . with the exception of one tent compound at Dong Tam, those bases not authorized military construction funds were constructed on a self-help basis, usually with several Seabee ratings supervising other general ratings. Had additional Seabee personnel been originally planned, construction would have proceeded at a much faster pace. These were not included in the initial roles, however, since other forces were scheduled to handle the construction requirements."[11]

(c) Obtaining construction for these Navy bases by means of small operations and maintenance (O&M) funded projects was almost impossible because of inadequate facilities maintenance resources. The Army was responsible for providing facilities maintenance support of the Navy's installations in II, III, and IV CTZs; but, in the Army's allocation of its limited facilities maintenance resources, little was available for these small, remote Navy installations. The Navy occasionally sent small Seabee detachments south from I CTZ to assist, but the problem persisted until a Navy Construction Maintenance Unit (CBMU-302) was mobilized and deployed to the Navy bases.[12]

(d) Other small bases that experienced similar difficulties included many of the MACV advisor sites in II, III, and IV CTZs. Support of all but the largest of these sites by either construction or facilities maintenance forces was essentially nonexistent. In early 1968, a series of small, O&M funded minor construction projects was undertaken by the Army's facilities maintenance contractor in order to provide minimal facilities at some of the sites. Even so, the advisors were primarily reliant upon the Vietnamese Army unit being advised for the adequacy of their facilities.

(5) Air Base Construction

(a) Because of its better base development planning capability in-being prior to the buildup, the Air Force gained about 1 year on the other Services in the planning and execution of its program.[13] In addition to the advantage in planning, the Air Force bases were assigned a high priority during the early buildup, and the Air Force had been able to get at least part of its program accomplished as Military Assistance Program projects.

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[10] Colonel W. B. Wootton, Jr., USA (Ret.), Telephone Interview, 23 December 1969.

[11] Captain H. T. King, USN, Memorandum for Record, subject: Comments Relating to Logistic Support in Vietnam, Late 1965 - Spring 1967, NAVSUPPACT, Saigon.

[12] United States Naval Activity, Saigon, Command Brief, 24 September 1968, p. 21.

[13] Brig. Gen. D. A. Raymond, USA, op. cit., p. 9.

(b) By late 1965 and early 1966, however, the Air Force began to be concerned with the progress of work on its expeditionary airfields, and the prospects for early commencement of work on a badly needed additional air base at Tuy Hoa were not encouraging. In a memorandum to the Assistant Secretary of Defense (Installations and Logistics) (ASD (I&L)), dated 10 December 1965, the Assistant Secretary of the Air Force (I&L), made the following points:

1. In order to complete the expeditionary facilities at Cam Ranh Bay, it had been necessary for the contractor to withdraw equipment and materials from other jobs at other locations and to reinforce his efforts with Army troop units.

2. The beneficial occupancy date for the Phan Rang expeditionary airfield had slipped 1 month and additional slippage was foreseen.

3. The overall average of construction progress in the funded Air Force program was about 9 percent as opposed to the 20 percent that the Air Force felt should have been completed.[14]

(c) At about this same time, aircraft congestion at the existing in-country airfields began to become a serious problem. Concurrently, construction priorities were shifting from airfields to port facilities. Although the Navy's construction contractor was capable and prepared to undertake construction of the Tuy Hoa Air Base, there was considerable doubt on the part of the Air Force as to whether the contractor would be released from other high-priority work in time to meet the Air Force requirements.[15] Continuing Air Force concern with the progress of construction led to the proposal -- approved by the Secretary of Defense in May 1966 -- for a separate Air Force-managed TURN KEY contract for construction of the Tuy Hoa Air Base.[16] Construction of the air base was completed in May 1967, 11 months after mobilization of the contractor.

c. Factors Affecting Responsiveness. A review of the construction program as a whole reveals that there are four major aspects of the program and the organization for its execution that have a significant impact on the degree to which commanders at all echelons regard it as responsive to their needs. These are the construction effort available, procedural constraints, construction standards, and organic capability for construction.

(1) Construction Effort Available

(a) The mobilization of the troop and contract construction effort to meet the RVN construction program requirements has been discussed in detail in Chapter VI. Whatever the magnitude of the construction requirements, there are limits to the funds that are made available, the number of construction troops that can be mobilized, the size and dispersion of the civilian construction force that can be mobilized and managed, and the construction materials that can be supplied. These limits inevitably result in a backlog of construction. Within reasonable limits, a backlog facilitates coordination of the available work effort with the types, sizes, and locations of the projects awaiting accomplishment and encourages more efficient management of the program. On the other hand, the larger the backlog, the greater user dissatisfaction will be. A larger backlog means a longer wait for the average project to be completed once it has been approved and funded. It also increases the probability that some projects will never be completed at all. Small, low priority tasks tend to be pushed farther back in the backlog as projects with greater high-command interest are added. An equitable balance between these two considerations is difficult to define and a matter of managerial judgment. Throughout the Vietnam conflict, the total backlog for both troop and contractor construction was 18 to 24 months.

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[14] Assistant Secretary of the Air Force (Installations and Logistics) Memorandum, subject: Construction in Support of Air Force Operations in Southeast Asia (U), 10 December 1965 (SECRET).

[15] United States Air Force, Review of a Contract for Construction of Airfield Facilities in the Republic of Vietnam, March 1969.

[16] Office of Joint Chiefs of Staff, Report by the Special Military Construction Study Group (U), 19 July 1968 (SECRET).

(b) The available output of the construction forces is directly related to the manner in which they are managed. The user not only receives increased support as a result of better management, he is also apt to be more satisfied with whatever support he is getting if he believes that the construction forces are efficiently managed. A key factor in this evaluation in RVN was the construction reporting system. The evolution of this system was discussed in Chapter V. It is sufficient to note here that, unfortunately, the delays inherent in assembling, collating, and publishing the data; the vacillations in priorities; the frequent diversions of construction effort; and the undue concern at higher levels of construction management with fiscal matters made it difficult for the system to provide commanders with such vital information as reliable estimated completion dates. As a result, it was often difficult for commanders to evaluate the support they were getting without extensive monitoring by their own engineer staffs.

(2) Procedural Constraints

(a) Probably the greatest source of user dissatisfaction with the construction program resulted from the procedures to request construction and to get it approved, funded, and built. For the first time in history, peacetime funding procedures were imposed on the management of military construction in a combat zone. A detailed discussion of these procedures is contained in Chapter IV, which also discusses the impact that these procedures had on the ability of the construction agencies to respond to user requirements. From the standpoint of responsiveness, the primary problem was that the procedures were designed to satisfy the Department of Defense and not the user. A second problem was that, in the absence of adequate base development planning, the fiscal programming procedures were used as a planning tool.[17] The built-in delays in these procedures were substantial for those managing the construction program. As summarized in a Navy position paper:

> "The stringent funding and management techniques required to maintain the cost control demanded by the system involve a large number of people in the OICC, MACV, and the contractor, and in addition contribute heavily to the requirement for in-country automated data processing equipment.
>
> "But the most severe aspect of the financial control constraint is that, under this system, sponsor's operational requirements must often take a back seat to the cold hard realities of lack of funds. Basic to the funding control system is the 'fully funded' concept, which requires that the total funds required for the construction of all projects be available and reserved prior to construction start. Since both program definitions and stability of estimated costs of construction by project cannot be realistically achieved in the Vietnam environment, the entire financial control system takes on an unrealistic aura, and continued adherence to it promises to complicate further an already complicated pattern."[18]

(b) As onerous as these procedures were at the management level, their effect at the user level was at least as burdensome.

1. Under the procedures, a detailed line-item justification was required for every military construction (MILCON) funded project. The justification had to be submitted on the complex DD Form 1391, the preparation of which is governed by a rigid set of regulations. The problem was complicated by the fact that the fluid situation in Vietnam made advance base planning very difficult. The Commander of the Army's 1st Logistical Command described the situation at the end of 1965 as follows:

> "One item that is not going to get recorded in the written portions of the history or documented to date is the troubles we had in base development planning. First base development planning must be based on the tactical dispositions of the troops.

[17] Colonel L. A. Kirstein, USMC, Interview held in Washington, D. C., 8 September 1969.

[18] Naval Facilities Engineering Command, Construction Restraints, 20 January 1967, Table II, p. 36.

> Very few people realize the great amount of changes that have taken place in troop disposition. . . . I would say for every location that was finally decided upon for a tactical unit that a minimum of ten other locations have been massaged for each one accepted. And this, of course, takes much staff time, reconnaissance and so forth to accomplish."[19]

A visitor to I CTZ at about the same time underscored the difficulties being experienced there in coordinating base development planning.[20]

2. As the conflict in Vietnam intensified, the base development picture became more stable, but these chaotic base development problems were never totally eliminated. This meant that, at all levels of command, the complex DD Forms 1391 had to be made and remade many times over before final approval and funding were obtained. Supporting base development plans also required continual detailed updating.[21]

3. Further complicating the problem for the user was the fact that MILCON-funded construction was only one of the ways in which vitally needed engineer support was obtained. In late 1968, Major R. J. Polo, Directorate of Engineering, Headquarters, 1st Logistical Command, made a study of the various procedures that were required to be followed to obtain engineer support. He plotted the various procedures on a chart entitled Engineer Support Flow (Figure 23). A detailed explanation of this maze would be beyond the scope of this chapter, but it is noteworthy that there are seven distinct procedures involving three different forms of documentation. (In addition, omitted from the chart are procedures for projects funded from assistance-in-kind and nonappropriated fund sources.) Decisions at any level that a different procedural route should be pursued normally resulted not in a lateral shift to the proper route but in a return to the beginning and a requirement to start all over again under a different set of rules. The problem was particularly acute in the Army.

4. The procedural problems discussed in the preceding paragraphs resulted in a requirement for substantial engineering staffs at all levels of command in order to obtain engineering support. The amount of staff effort devoted to these procedural matters is a matter of speculation. But, in the aggregate, it represented a substantial dissipation of engineer talent.

(3) Construction Standards

(a) The need to establish construction standards was discussed in Chapter III. The establishment of standards of construction influences the question of user satisfaction insofar as the standards meet the user's own concept of his requirements or are at least as good as the standards afforded to other users.

(b) In his "Observations," Brigadier General Raymond noted a wide difference in Service standards early in the buildup. He observed that when construction was started:

> ". . . Wide variations became apparent; and considerable dissatisfaction arose, particularly where units were collocated. Initial attempts at reconciliation of standards within RVN sought to establish a common denominator which would have had the effect of lowering standards of the Air Force and Navy and raising those of the Army and Marine Corps."[22]

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[19] United States Army, Vietnam, USARV, Historical Interview, Colonel Robert Duke, USA, Commanding Officer, 1st Logistical Command, 3 January 1966.

[20] Captain F. M. Lalor, USN, Trip Notes, 16 November 1965.

[21] Maj. Gen. Eifler, USA, Debriefing Report, August 1967.

[22] Brig. Gen. D. A. Raymond, op. cit., p. 13.

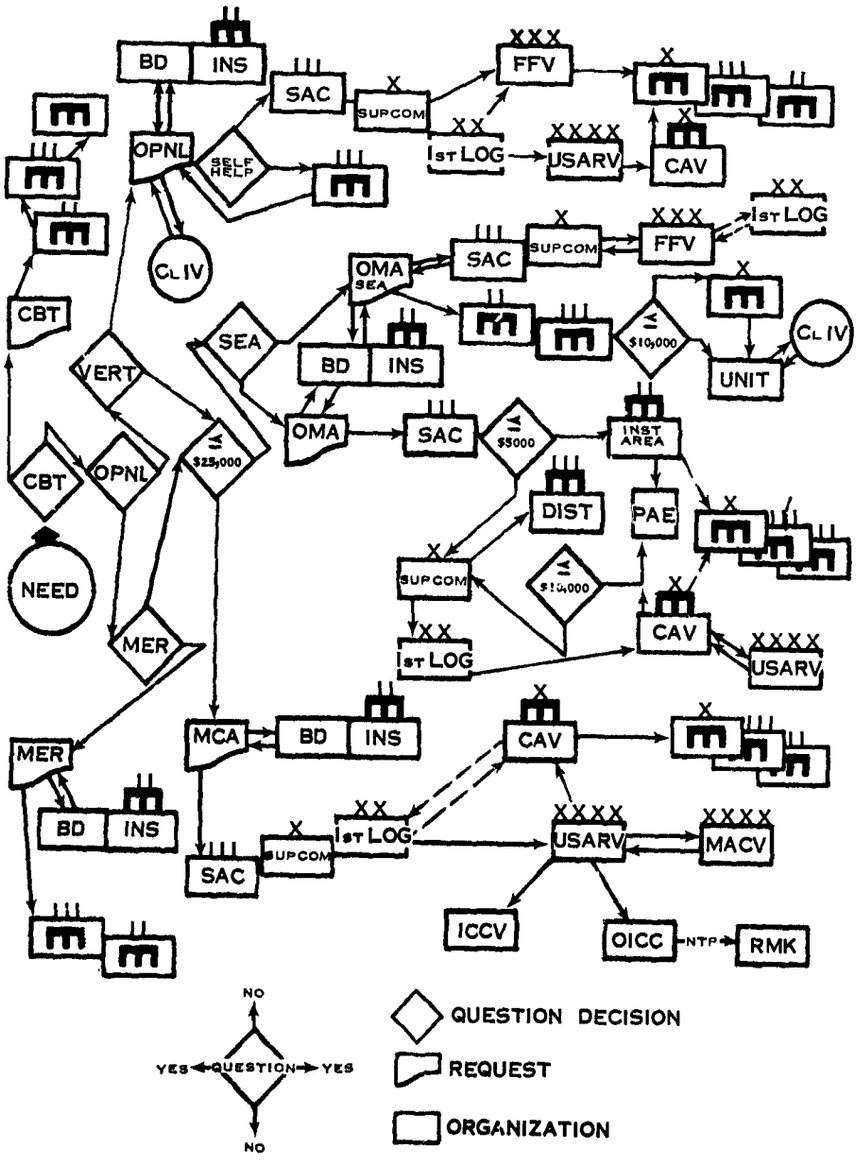


FIGURE 23. ENGINEER SUPPORT FLOW

FIGURE 23 (Continued)

Legend

| | |
|---|---|
|  | Question/Decision |
|  | Request |
|  | Organization |
| CBT | Combat Support |
| OPNL | Operational Support |
| MER | Minimum Essential Requirements |
| BD | Installation Review Board |
| INS | Installation |
| MCA | Military Construction, Army (Funded) |
| OMA | Operations and Maintenance, Army (Funded) |
| SEA | Southeast Asia Huts |
| SAC | Sub-Area Command |
| SUPCOM | Support Command |
| FFV | Field Force, Vietnam |
| 1st LOG | Hq, 1st Logistical Command |
| CAV | U. S. Army Construction Agency, Vietnam (USAECAV) |
| DIST | USAECAV Engineer District |
| AREA | USAECAV Area Engineer |
| VERT | Vertical Construction |
| PAE | Pacific Architects and Engineers -- The Army's Facilities Maintenance Contractor |
| OICC | Officer in Charge of Construction (Naval Facilities Engineering Command) |
| RMK | Raymond, Morrison-Knudsen, Brown and Root, and J. A. Jones -- The Navy's Construction Contractor |
| NTP | Notice-to-Proceed |
| Cl IV | Class IV (Construction) Materials Yard |

(c) The disparity of standards at installations such as Cam Ranh Bay became a matter of congressional interest, and a subcommittee of the House Armed Services Committee touring Vietnam in early 1967 reported: " . . . . That cantonment construction in the Army program had not progressed at the same rate as some of the other facilities, and were at a considerable lower standard than the cantonments of the other services . . . . The subcommittee believes that, especially where cantonments are in close proximity, the greatest care should be exercised to maintain a common standard . . . . "[23]

(d) In recognition of this problem, the Joint Chiefs of Staff assigned to the newly established Construction Board for Contingency Operations the responsibility, among others, of "development of proposed construction standards and planning factors for adaption to various contingency situations."[24]

(4) Organic Capability for Construction

(a) The degree to which a commander considers the overall construction program to be responsive may depend to a considerable extent upon his ability to satisfy some of his requirements, particularly the smaller, more urgent projects, with his own resources. Most units in Vietnam had some organic capability. The Army and Marine divisions had engineer battalions as part of their basic organization. In I CTZ, the Fleet Marine Force engineer battalions and the Seabee units provided additional support to meet the operational requirements of III MAF, and, in the Army's II, III, and IV CTZs, USARV's 18th and 20th Engineer Brigades provided this support. The Air Force had its RED HORSE units.

(b) Not all units at all echelons had organic engineer capabilities, however. The following examples are given to show problems encountered in the absence of such a capability.

1. The difficulties experienced in obtaining construction for the Navy's MARKET TIME and GAME WARDEN bases in II, III, and IV CTZs were discussed in paragraph b(4). Although self-help projects made some improvement, these difficulties were not alleviated until the arrival of CBMU-302, and the quotation attributed to the former commander of the Naval Support Activity, Saigon, includes the conclusion that it would have been highly desirable to have had additional Seabees in the original staffing for these bases.

2. The Air Force, at the outset of the Vietnam conflict, had only its existing base civil engineering forces in-country. These forces had been augmented in 1964 by additional officers and airmen deployed on a temporary duty basis, and authority had been granted to hire local nationals.[25] The base civil engineer squadrons, however, were not adequate to meet the Air Force needs for an organic minor construction capability. The initial solution to the problem was the use of Prime BEEF teams. These teams were small task forces made up from base maintenance units in the continental United States (CONUS) that were sent to RVN for periods of 120 days to accomplish specific projects.[26] The Army is responsible for "providing military troop construction support to the Air Force overseas"[27] and for providing "the number of troop units, by type, in the Active Army and reserve components of the

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[23] U. S. Congress, House of Representatives, op. cit., p. 1880.

[24] Office of the Joint Chiefs of Staff, SM-643-69, Establishment of a Joint Staff/Services Construction Board for Contingency Operations, 4 June 1969.

[25] United States Air Force, CORONA HARVEST RED HORSE, Interim Report (U), May 1969, Chapter II (SECRET).

[26] Office of the Secretary of Defense, Memorandum for Record, subject: Real Property Maintenance Council Meeting, 28 June 1966, Enclosure 3, p. 3.

[27] Department of Defense Directive 1315.6, Responsibilities for Military Troop Construction Support of the Department of the Air Force Overseas, 5 February 1967, paragraph IIIa.

Army . . . to satisfy mutually agreed upon (Air Force) requirements."[28] On this basis, the Air Force, in an effort to seek a more permanent solution to its problem, asked for the assignment of specific Army engineer units to the Air Force.[29] The request was not honored, however, on the grounds that Army engineer units deployed to RVN came under the control of the joint command and that the Air Force requirements would be met by MACV from its overall construction resources.[30] This did not satisfy the Air Force. 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."[31] Because it did not consider its base civil engineering squadrons capable of performing this mission and because it could not obtain the assignment or dedication of Army engineer units, the Air Force requested and was given approval in late 1965 to organize six Heavy Repair Civil Engineering (RED HORSE) squadrons for use in Vietnam and Thailand. The stated purpose of these squadrons was "to repair airfield damage caused by enemy action or natural disasters." Their actual effect was to provide the Air Force with an organic troop capability."[32] It should be noted that they also provided MACV with an additional construction resource for the accomplishment of MILCON-funded construction.

3. The Army's 1st Logistical Command was, until 1 July 1968, responsible for the Army's facilities maintenance program. Its primary resources were a contract force, Pacific Architects and Engineers (PA&E), and several small engineer troop detachments. Through the use of the authority to approve minor new construction projects, costing not more than $25,000 in O&M funds, the command had a ready resource to meet many of its small, urgent needs for construction. (It provided this support to others also as part of the facilities maintenance mission, but approval authority was retained in 1st Logistical Command channels.) On 1 July 1968, the facilities maintenance mission was transferred, together with the troop and contractor resources, to the newly created United States Army Engineer Construction Agency, Vietnam (USAECAV). Following this, the 1st Logistical Command became one of the few major USARV commands with no organic engineer capability whatever. The problems to be associated with this were to some extent anticipated, and, in an effort to alleviate them, the Commander, 1st Logistical Command, asked to retain project approval authority for projects essential to his mission even through he would have to call upon the resources of USAECAV to perform the actual work. The approval authority granted him, however, was administrative; the real authority was passed to the Commanding General, USAECAV. Although USAECAV's support of the 1st Logistical Command was as good as that furnished any other unit, the absence of organic forces was felt almost immediately.

4. The Army's facilities maintenance contractor, PA&E, had an organic resource that could not be used effectively to construct vitally needed facilities. The contracts negotiated with PA&E specified that the contractor's forces could be used only on work funded with O&M funds. The use of the forces on MILCON-funded work was expressly prohibited. This restriction was intended to preclude the diversion of the facilities maintenance forces into another MILCON resource -- to some extent in competition with the Navy's contractor -- to the detriment of the primary facilities maintenance mission. In order to function at optimum effectiveness, PA&E needed adequate facilities, including shops, warehouses, offices, and

[28]Army Regulation 415-30/Air Force Regulation 88-12, Troop Construction for the Air Force, 28 July 1965, paragraphs e, d.

[29]Secretary of the Air Force, Memorandum, subject: Engineering Troop Construction Support for Southeast Asia, 9 July 1965.

[30]Secretary of the Army, Memorandum, subject: Engineering Troop Construction Support for Southeast Asia (U), 20 July 1965 (CONFIDENTIAL).

[31]Department of Defense, op. cit., paragraph IIIb.

[32]United States Air Force, CORONA HARVEST RED HORSE, Interim Report (U), Chapter II (SECRET).

billets to support its mission. These were duly requested. These facilities were, however, all of relatively low priority in the overall countrywide construction requirements, and PA&E, throughout the conflict, was to be plagued with the problem of inadequate facilities. As has been noted in the facilities maintenance monograph, the PA&E forces until FY 68 were used predominantly for O&M-funded minor new construction, not for maintenance and repair as such. Some of the contractor's own facilities requirements were, in fact, constructed by this means, but, with projects limited to those having a total funded cost of $25,000, not much could really be accomplished. A better course of action would have been to have provided for the construction of the contractor's own facilities using his forces and MILCON funds. Accordingly, the contract for FY 70 was changed to provide for this. By this time, however, little could be accomplished. Had this action been taken earlier, it might well have significantly increased the contractor's capability to carry out the maintenance mission.[33]

(c) The PA&E case just discussed highlights a corollary to the adequacy of organic resources: the need for authority to use these resources. As previously noted, the procedure for obtaining approval of construction projects was usually long and complex. No exception was made for self-help projects. In providing for adequate organic capabilities, consideration must be given to delegating appropriate approval authority to the commanders concerned. In the absence of such authority, construction assets may be underutilized or unauthorized construction may become a widespread practice.

(d) Organic engineer capability must be provided at the staff level also. The need for adequate engineer staffs to handle the administrative workload involved in getting work programmed and approved and to monitor the progress of work once directed has been discussed previously. In addition, Chapter III emphasized the need for engineer staff work during the particularly hectic period immediately following the commencement of a contingent operation. The temporary augmentation of component engineer staffs with individuals expert in the field of base development planning should be considered.

## 3. CONCLUSIONS AND RECOMMENDATIONS

### a. Conclusions

(1) Overall, the construction accomplished in RVN was responsive to operational requirements (paragraph 2a).

(2) The relationship of the size of the total construction force to construction requirements resulted in a substantial backlog of work. This backlog meant that much important but lower priority work was deferred or not accomplished (paragraph 2c(1)).

(3) The elaborate procedures that were employed to request construction and get it approved, funded, and built contributed significantly to the lag between recognition of a requirement and construction of a facility (paragraph 2, Chapter IV, and paragraph 2c(2), Chapter VIII). (See paragraph 7.b., Chapter IV, Programming and Funding, for changes recommended in construction programming procedures.)

(4) Disparities in construction standards contributed to user dissatisfaction (paragraph 6, Chapter III, and paragraph 2c(3), Chapter VIII).

(5) RVN experience demonstrated the need for organic construction capability and appropriate approval authority in order for commanders to accomplish minor, urgent construction projects (paragraph 2c(4)).

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[33] Lt. Col. H. F. Gustafson, USA, Telephone Interview, 10 November 1969.

(6) Joint and supporting contingency plans did not specifically provide for the discharge of the Army's responsibility to provide engineer troop construction support for the Air Force (paragraph 2c(4)(b)2).

b. Recommendations. The Board recommends that:

(CO-14) The Services establish simplified procedures for requesting and approving construction in the combat zone (conclusion (3)).

(CO-15) Following the development of construction standards and planning factors by the Construction Board for Contingency Operations, operation plans and implementing orders specify the standards to be used and provide necessary guidance to adapt the standards and factors to the circumstances of the plan (conclusion (4)).

(CO-16) Contingency planning provide for adequate organic construction capabilities and appropriate delegation of approval authority to permit commanders to accomplish minor, urgent construction projects in a timely manner (conclusion (5)).

(CO-17) Contingency plans and base development plans address the way in which Army troop construction support will be provided to meet Air Force requirements (conclusion (6)).

# CHAPTER IX
# CONSTRUCTION MATERIALS

# CHAPTER IX
# CONSTRUCTION MATERIALS AND EQUIPMENT

## 1. INTRODUCTION

a. The timely provisioning of materials and equipment to the construction program was vital to the success of the operations it supported. This chapter reviews the critical aspects of the supply and maintenance picture, e.g., status of war reserves, prebuildup posture, and responsiveness. The materiel considered includes materials consumed during construction, fixed plant installed in the structures, and the equipment used to produce, move, and install these consumables and fixed plant.

b. The construction materials and equipment concerned are both expendable and nonexpendable. They fall within 35 Federal Supply Classification groupings (excluding field fortifications), the principal ones being:

(1) Tractors

(2) Wood and Metalworking Machinery

(3) Construction, Mining, Excavating, and Highway Maintenance Equipment

(4) Refrigeration and Air Conditioning Equipment

(5) Plumbing, Heating, and Sanitation Equipment

(6) Piping, Valves, and Hardware

(7) Prefabricated Structures

(8) Lumber, Asphalt, Portland Cement, and Gravel

(9) Power Generation and Distribution Equipment

c. The vast bulk of materials were manufactured in the continental United States (CONUS) with the principal offshore procurement being Portland cement from Taiwan. Table 17 recapitulates the dollar estimates of material consumed by construction forces for new work including major damage repair. Reconciliation with the amount appropriated is not feasible, as it would require accounting for diversions, residual CONUS stocks, excess disposals, unobligations, and losses due to pilferage, weather, enemy action, and supply system errors. Table 17 figures are approximate, having been estimated on the following basis:

(1) Materials = 25 percent contract construction costs (assumed based on Officer in Charge of Construction (OICC)/contractor experience).

(2) Materials = 80 percent troop construction costs (assumed based on U.S. Army, Vietnam (USARV), experience).

(3) Funds such as assistance-in-kind (AIK) and Procurement of Equipment and Missiles, Army (PEMA), are excluded, but Operations and Maintenance (O&M) and Other Procurement, Navy (OPN), monies are included.

TABLE 17

MATERIALS CONSUMED FOR
NEW CONSTRUCTION IN RVN
FY 65 - FY 68 (Incl)

| Service | Cost (millions) |
|---|---|
| Army | $480 |
| Navy | $255 |
| Air Force | $165 |
| Total | $900 |

(4) Military Construction (MILCON) funds include Military Assistance Program (MAP) funds transferred under the FY 66 Supplemental Appropriations Act.

(5) Figures include the Tuy Hoa Air Base contract materials but exclude those contracts administered outside the jurisdiction of the Pacific Command (PACOM) contracting agencies such as the Page Communications IWCS/439L system and the Vinnel Power Float procurement.

d. These materials totaled 4.7 million short tons shipped by surface from CONUS to Vietnam during CY 66 through CY 69. An additional 15,000 short tons was airlifted during this period. The total of all classes of supplies shipped from CONUS during this time was 16.6 million short tons, including airlift.

## 2. SITUATION PRIOR TO BUILDUP

a. Construction Contractor. By April 1965, the contractor (RMK) had been furnished $4.6 million in construction equipment from the Pre-Positioned War Reserve Stocks (PWRS) managed by the Bureau of Yards and Docks. An additional $2.6 million was awaiting sealift at this time. These transactions were on a reimbursable basis and intended to meet the immediate demands. Subsequently, the contractor relied on new procurement to expand and maintain his fleet.[1] Chapter VI of this monograph provides additional data relating to the contractor's posture at the onset of the buildup.

b. Army

(1) The position of the Army to support the buildup with engineer equipment was expressed in a U.S. Army Materiel Command (AMC) report as summarized below:[2]

(a) In early 1965, engineer troop units worldwide were equipped with relatively new construction equipment and no major modernization was scheduled.

(b) The increasing commitment in SE Asia constituted an increase in construction requirements that exceeded the quantities under procurement for routine replacement and the upgrading of Reserve units.

(c) As those items under procurement were produced, they were diverted to Vietnam requirements including equipping new engineer units activated late in 1965.

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[1]Naval Facilities Engineering Command, Weekly Report of Special Interest Items for the Chief, Support of SE Asia Construction Program, 13 April 1965.

[2]U.S. Army Materiel Command, Impact of Vietnam on Readiness of Forces (U), 11 August 1969 (SECRET).

(d) Eventually, any equipment available, including Korean War vintage items, was shipped. This introduced an old and diverse equipment population into the combat zone.

(e) Budgetary restraints had precluded the development of significant war reserve stocks.

(f) A significant shortage was experienced in the heavy equipment category of those items with few peacetime requirements, such as heavy paving plant equipage for processing asphaltic and Portland cement concretes. These items receive little attention during peacetime and require appreciable time to manufacture.

(2) Also, the stock position on long-lead-time construction materiel, other than erection equipment, was generally short of the demand that occurred. Some examples are:

(a) DeLong Piers. The ultimate requirement for these movable piers was 25 sets (excluding two sets at Sattahip) equaling 5550 feet; the Army had on hand only one set totaling 300 feet.

(b) Nontactical Power Generation. The reserve stocks in 1965 were practically zero. An immediate requirement of 200,000 kw was identified in December 1965, and 240,000 kw capacity was subsequently purchased for approximately $28 million. As discussed in Chapter VI, Advanced Base Facilities Maintenance Monograph, an additional 78,000 kw was eventually installed in power barges and fixed plant throughout Vietnam.

(c) Airfield Landing Mat. An Army Chief of Engineer's report, regarding the supply of landing mat and the membrane used in conjunction with it, indicated that these items were in short supply initially, thus requiring hasty procurement to fulfill operational demands. The report highlights the critical need for prefabricated airfield surfaces in large quantities on short notice. Such material is of the type suitable for the PWRS.[3]

(3) The CINCPAC Command History for 1965 (p. 276, Vol. II) reflects the low level of construction stocks in-theater by indicating that:

(a) Army forces deploying into PACOM were required to have initial and follow-on support from outside the theater.

(b) In March 1965, CINCPAC proposed the initiation of a $10 million construction material stockpile (30-day level in RVN and 60-day level in Okinawa for six construction battalions) in addition to reaffirming the need for $6 million in FY 65 MAP construction funds for contractor equipment. Both proposals were approved and funded.

c. Navy

(1) The Navy's stock position just prior to the buildup in RVN was relatively favorable. Of the established pre-positioned war reserve requirements, 51 percent was available for issue.[4] This 51 percent was carried in the PWRS and was partly expressed in terms of Advanced Base Functional Components (ABFCs). Chapter III of this monograph discusses the ABFC system. The various Navy bureaus managed the commodities peculiar to their functions. The Bureau of Yards and Docks, now Naval Facilities Engineering Command (NAVFACENGCOM), was in. ntory manager for long-lead-time items such as prefabricated buildings, fuel tanks, nontactical generators, and pontoons. The requirement for this portion totaled $166 million, of

[3]Department of the Army, Office, Chief of Engineers, Impact of Vietnam Conflict on Readiness of Forces, 4 August 1969.

[4]Chief of Naval Operations, Memorandum, subject: Impact on Readiness Posture of Logistic Support to SE Asia, 17 October 1969.

which $74 million was on hand and $10 million under procurement as of 1 January 1965. Eight percent of the on-hand stocks were not in condition for issue. Many of the stocks in condition for issue were 10 years old or more because of a lack of rotation since World War II and the Korean War. Funds had not been provided for updating the makes and models of complex equipment.[5]

(2) The principal supply facility in support of the naval construction force (NCF) in RVN was the Construction Battalion Center (CBC), Port Hueneme. In January 1965, essentially 30 days of supply for PWRS were in stock at Port Hueneme and other naval depots. Requirements beyond 30 days were lacking primarily because of insufficient funding.[6]

(3) The Navy did manage to rotate some PWRS stock during the interval between the end of the Korean War and 1965. The rotation of PWRS stock averaged between $7 and $12 million per year during that time. The Navy rotated its stock by selling the items of stock to other Government agencies on an as-required basis. Advantages resulted for both parties, since the Navy was able to rotate some items of stock and the agency that purchased the stock received relatively new stocks at depreciated prices. A major drawback to rotating PWRS during peacetime was that for some stock items there was little or no demand.[7]

(4) NAVFACENGCOM has expressed the readiness condition of the NCF as follows:

> "In January 1965 the equipment readiness posture for ten (10) authorized NMCBs was short of authorized equipment allowances. The automotive equipment requirement was 55% short of allowance requirements and construction equipment was 29% short. The major portion of the shortfall was met by Prepositioned War Reserve Stocks (PWRS) but much of it was substitute commercial items which did not stand up well in the tactical environment of SEA. Some of the equipment in the CBLANT [Construction Battalions, Atlantic Fleet] inventory had to be shipped west to support the buildup in SEA. However, this buildup did not affect the equipment inventories of the two Amphibious Construction Battalions or the Special Units that are supported by NAVFAC. No draw down on this equipment was necessary. As operations in RVN progressed the equipment posture of these units actually improved due to fund availability."[8]

d. Air Force. Contingency provisioning for construction for the Air Force was the responsibility of the Army for troop construction and, in the case of Vietnam, the Navy for contract construction. As discussed in Appendix H of this monograph, the contingency plans relating to Vietnam did not provide for additional airfields. The materials for troop construction were not generally available (see paragraph 2b) for any emergency major air facility expansion. The FY 65 and FY 66 MAP programs provided $41.8 million for contract construction in support of the Air Force mission in Vietnam.

e. Summary

(1) Prior to 1965, construction stocks in-theater and in CONUS were inadequate to support the buildup. The main causes were insufficient forecasting and limited funding for procurement of war reserves.

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[5]Naval Facilities Engineering Command, Letter, Ser. 00184, Enclosure (2), Logistics Posture Construction, 14 May 1969, p. 25.

[6]Ibid., p. 26.

[7]Mr. M. Perkins, Material Management Division, Military Readiness, Headquarters, Naval Facilities Engineering Command, Interview on 31 March 1970.

[8]Naval Facilities Engineering Command, Fact Sheet, Code 06324, Naval Construction Force Automotive/Construction Equipment Readiness, 29 July 1969.

(2) Long-lead-time prefabricated equipage required for early phases of logistical buildup was not generally available nor pre-positioned as exemplified by the shortage of landing mat, generators, and preengineered shelters.

(3) The retention of World War II and Korean War residual stocks in the PWRS made a meaningful contribution to the pre-buildup supply posture even though obsolescence degraded the effectiveness of some items.

3. SUPPLY SITUATION – 1965 THROUGH 1968. The rapidity and scope of the buildup, coupled with the generally low level of construction material stocks on hand, resulted in large scale and crash programs by the Services and Defense Supply Agency (DSA).

a. Construction Contractor

(1) In addition to the equipment furnished to the contractor from PWRS, as mentioned above, the contractor inventory contained $4.3 million worth of commercially procured items in early 1965. By the spring of 1966, there were 3,450 units of equipment in-country valued at $78 million. The inventory increased to approximately $100 million for heavy equipment by the summer of 1966, at which time it reached a general level of capability approximating that required to prosecute the anticipated program.

(2) The contractor purchased materials through a CONUS office that was collocated with the NAVFACENGCOM procurement office at San Bruno, California. Requirements were screened against in-country assets and with DSA in CONUS prior to initiating new procurement.

(3) Chapter VI of this monograph reviews the actions taken by the OICC/contractor to develop stock objectives prior to the establishment of a firm individual line item program. Much of the supplies were, of necessity, ordered forward before there were definitive requirements.

(4) A representative stock position of consumables, as of November 1967, follows:

| | |
|---|---|
| Accumulative procurement | $350 million |
| Current value of inventory | $100 million |
| Previous 7-month drawdown | 50 million[9] |

This inventory, which represented over a 1-year consumption in dollars, was not excess to the program, which at this time was firm through mid-1969.

(5) As the program fluctuated, adjustment of stocks among the contractor, Naval Forces, Vietnam, USARV, Seventh Air Force, OICC, Thailand, and the Agency for International Development (AID) was coordinated by the Military Assistance Command Director of Construction (MACV-DC).

b. Army

(1) The underdeveloped economy of RVN necessitated the importation of virtually all construction materials, the major exceptions being sand, gravel, and rock. However, even rock was considered for offshore procurement during the early portion of the buildup when quarries were not in secure zones and crushing and screening equipment was scarce. As discussed

[9]Officer in Charge of Construction, Vietnam, Fact Sheet, OICC RVN Material Inventory, 28 November 1967

previously, stocks in-country were virtually nil at the outset. U.S. Army, Pacific (USARPAC), reports the following as critical materials for the early period:

(a) Lumber

(b) Airfield matting

(c) Airfield membrane

(d) DeLong piers

(e) Generators

(f) Prefabricated buildings

It is noted that all of these items, except lumber, are long-lead-time commodities.

(2) USARV and USARPAC developed requirements to start the flow and to build up adequate, balanced stocks in-country. Prevailing troop strength projections were used and engineering estimates made in the absence of an applicable base development plan. Chapter III of this monograph covers the planning aspects concerned. A summary of the expediting actions taken by USARPAC, USARV, and the 1st Logistical Command in concert with AMC and DSA follows:

(a) Developed requirements using the Engineer Functional Component System (EFCS) for criteria and bills of materials (BOMs).

(b) Placed the requirements, through the USARPAC supply management system, on the National Inventory Control Points (NICPs) concerned for O&M- funded materials.

(c) Forwarded material requirements letters to Headquarters, AMC, for MILCON-funded materials.

(d) Provided priority criteria to the Logistics Control Office, Pacific (LCOP).

(3) The Project Manager for Construction Materials in Headquarters, AMC, provided assistance by furnishing coordinated material forecasts to DSA, by translating MILCON requirements letters into MILSTRIP requisitions on the NICPs, and by coordinating the assembly of the EFCS sets at the Granite City Army Depot in Illinois. (Note: The functional component sets are not stocked as sets as shown in the applicable manuals, but are carried as component line items in the various commodity depots.,

(4) The procedures followed had the following drawbacks:

(a) The EFCS listed items had not been updated to meet the current practices of the construction industry. Examples are the inclusion of electrical wiring hardware of World War II vintage known as "knob and tube wiring" and incandescent light fixtures rather than fluorescent.

(b) The EFCS components were based on standards of a lower level than those adopted in RVN.

(c) Of necessity, incomplete facilities were shipped from Granite City rather than waiting for delayed components. The follow-up shipment frequently failed to catch up with the original package.

(d) Adjustment of design criteria in the field often created shortages and excesses, such as the overage of urinals resulting from the decision to reduce the stipulated allowance by one-half.

(e) Most of the long-lead-time items in the EFCS had not been procured and positioned as a portion of the PWRS. This resulted in delays that could not be completely avoided by expedient supply actions.[10]

(5) As indicated above, the stop-gap procedures followed created some temporary excesses. However, it is noted that Project STOP/SEE, a USARV supply status review system initiated to preclude the generation of excess stocks, did not include construction materials as suspect stocks until December 1968. The Pacific Utilization and Redistribution Agency's (PURA) Master Excess File, maintained by the 2nd Logistical Command in Okinawa, reflects $15 million in surplus construction stock as of 30 August 1969.[11] This represents approximately 3 months of consumption, dollarwise, by the contractor at the 1968-1969 level of effort.

(6) The assembly of the EFCS kits was discontinued in July 1966 and 1 year later the use of line item identification was substituted for EFCS set nomenclature.

(7) It is noted from Table 18 that materials in Vietnam as of November 1966 were slightly in excess of the current stockage objectives and that more was in the pipeline. Presumably the increase in objectives shown for December were related to projected requirements but, as the result of a change in reporting format, the Board was unable to determine the specifics.

(8) The historical report of the 1st Logistical Command, covering the period up to mid-1967, discusses the same problem areas and highlights the development of an imbalance in electrical stocks as follows:

> "This system (EFCS) saved the field units the work of compiling long complicated bills of materials and preparing thousands of requisitions . . . . [However, one ]disadvantage of the EFCS is that its bills of material are developed from designs many years old, and intended for austere, temporary Theater of Operations Construction, while the design(s) for construction in Vietnam, in most cases, are much less austere and call for many items not in the EFCS bills of material. This has created a double problem; large excesses of EFCS items that have been designed out-of-buildings and a shortage of items designed into buildings. The command has experienced acute shortage of electrical installations in buildings for which the EFCS planned only rudimentary electrification . . . . Electrical wire, as well as most electrical hardware and lighting fixtures remain problems requiring permanent solutions rather than spot emergency actions . . . ."

This same report listed the following as serious shortages:

(a) Sand bags

(b) 2" x 4" lumber

(c) Dust palliatives

(d) Electrical wire

(e) Corrugated roofing[12]

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[10]Headquarters, U.S. Army, Pacific, Office of the Engineer, Fact Sheet, Construction Material (U), 6 October 1969 (CONFIDENTIAL).

[11]Headquarters, 2nd Logistical Command, RIBCCG, Letter, 26 September 1969.

[12]Headquarters, 1st Logistical Command, Debriefing Report, 11 August 1967, pp. 385-387 (CONFIDENTIAL).

TABLE 18

HEADQUARTERS 1ST LOGISTICAL COMMAND
DEPOT MATERIAL OPERATIONS (ENGINEER CLASS IV MATERIAL)* (TONS)

| Areas | Saigon | Cam Ranh Bay | Qui Nhon | Nha Trang | Vung Tau |
|---|---|---|---|---|---|
| October 1966 | | | | | |
| Stockage Objective | 99,188 | 71,721 | 85,313 | 13,820 | 13,820 |
| O/H Beginning | 89,513 | 62,430 | 57,844 | 13,006 | 7,824 |
| Receipts | 29,213 | 17,323 | 19,800 | 3,621 | 376 |
| Issues | 25,895 | 12,329 | 11,066 | 3,737 | 694 |
| O/H Ending | 92,831 | 67,424 | 66,578 | 12,890 | 7,506 |
| Percent | 93.6 | 94.0 | 78.0 | 93.3 | 53.3 |
| November 1966 | | | | | |
| Stockage Objective | 99,188 | 71,721 | 85,313 | 13,820 | 13,820 |
| O/H Beginning | 92,891 | 66,324 | 66,578 | 12,890 | 17,315 |
| Receipts | 37,365 | 22,262 | 20,765 | 9,162 | 2,905 |
| Issues | 26,077 | 11,903 | 10,582 | 2,855 | 1,995 |
| O/H Ending | 104,179 | 76,683 | 76,761 | 19,197 | 18,225 |
| Percent | 105.3 | 106.9 | 90.0 | 138.0 | 131.9 |
| December 1966 | | | | | |
| Stockage Objective | 180,000 | 130,000 | 150,000 | 25,000 | 30,000 |
| O/H Beginning | 104,179 | 67,414 | 69,487 | 14,880 | 17,395 |
| Receipts | 36,549 | 18,655 | 24,800 | 4,148 | 8,821 |
| Issues | 21,881 | 11,492 | 12,050 | 1,820 | 2,854 |
| O/H Ending | 118,847 | 74,577 | 82,237 | 17,208 | 23,362 |
| Percent | 66 | 57 | 54 | 69 | 78 |

*Based on 60-day stockage objective.

Source: Headquarters, 1st Logistical Command Report, Commanders Goals 2nd Quarter FY 67.

(9) A U.S. Army Audit Agency's Report of Audit, 21 April 1969, states that the U.S. Army Inventory Control Center, Vietnam, records on 57 line items (118 Federal Stock Numbers (FSNs)) of major end items showed about $28 million in excesses as of 31 January 1969.[13] However, the auditors had deleted $82.9 million in adjustments to the inventory records (1 month old) in attaining this figure. The indication of only 25 percent accuracy in depot records portrays the difficulty in determining the scope of surplus construction stocks.

(10) One significant item that eventually developed into a long supply position was airfield landing mat, M8A1. A critical item in mid-1966, its stock position increased to over a 2-year supply (180,000 short tons) in USARV depots.[14]

(11) By way of contrast, in the spring of 1970 USARPAC placed the quantity of all construction materials on hand and excess to the current program at 141,000 short tons. Future military and AID programs will reduce this to some extent.

(12) Eventually, the USARV requisitioning procedures for Army troop construction evolved into the following seven methods for requesting materials:

(a) Construction material requirements letters were furnished to the 1st Logistical Command and LCOP. Standard FSNs were requisitioned by 1st Logistical Command from CONUS supply sources. Nonstandard items were ordered by LCOP on procurement request to the San Francisco Procurement District.

(b) Urgent construction material requirements were ordered through LCOP to the San Francisco Procurement District. Delivery was made directly to the requiring engineer construction battalion.

(c) Some urgent requirements were obtained in-country or offshore by use of "Buy U.S. Here" (BUSH) contracts.

(d) Procurement requests for some urgent requirements were submitted to U.S. Army Procurement Activity, Vietnam (USAPAV). Delivery was direct to the contracting officer's representatives in Vietnam (this also applies to the methods in subparagraphs (e), (f), and (g) ).

(e) Procurement requests were transmitted direct to the San Francisco Procurement District when high-priority requirements existed and material could not be supplied on time from any other source.

(f) Military Interdepartmental Purchase Requests (MIPR) were hand-carried to the U.S. Navy OICC when emergency requirements were urgently required.

(g) Operations and Maintenance, Army-funded construction material in 1st Logistical Command depots was issued when Military Construction, Army (MCA), emergency requirements could not be satisfied from any other source in time.[15]

c. Navy

(1) The naval construction force peaked at 12 NMCBs and two Construction battalion maintenance units (CBMUs). Initially, they were hindered in accomplishing construction because of the shortage of materials. Efforts to alleviate this situation are described in the

[13]U.S. Army Audit Agency, Construction, Engineer and Industrial Equipment, 1st Logistical Command, U.S. Army, Vietnam, 21 April 1969.

[14]Maj. Gen. J.M. Heiser, Jr., Letter to General F.S. Besson, Jr., 20 March 1969.

[15]Department of the Army, Deputy Chief of Staff for Logistics, Information Paper, USARV Supply System(U), 1969 (SECRET).

following excerpt from a memorandum from Chief of Naval Operations (CNO) to the Chairman of the Joint Logistics Review Board:

> "In early 1967 authorization was obtained to create a stockpile of common construction material in the form of pre-engineered assemblies. An initial apportionment of $20 million was provided to NAVFAC to implement . . . the Tactical Support Functional Component Program. Procurement of material was started in April 1967 . . . . As of 1 January 1968, the Tactical Support Functional Component Program (had) provided a greater capability to respond, even to additional contingencies, than existed prior to RVN. . . ."A large amount of the equipment for SEA was purchased to satisfy emergency requirements and sufficient time to update and maintain procurement specifications was not always available. A residual effect of the buys made under these conditions was the proliferation of types of similar but not identical equipment in Navy stock which increased spare parts inventories universally. PWRS drawdown for RVN has occurred on many items such as reefers, laundry units, air conditioners and 40' x 100' prefabricated metal buildings."[16]

(2) The Tactical Support Functional Component (TSFC) program was budgeted by NAVFACENGCOM and provided for the materials to be pre-positioned in Da Nang and Port Hueneme as a special category of the PWRS. The Commander, 3rd Naval Construction Brigade, was authorized to release these stocks as required, provided the following 10 criteria were met:

(a) For direct support of tactical operations.

(b) Required to establish or reestablish operational capability.

(c) Unforeseen requirement.

(d) Need generated from changed tactical or operating conditions or enemy actions.

(e) Urgency precludes MILCON programming or reprogramming actions.

(f) Construction time frame necessitates use of preengineered components.

(g) No formal design action required.

(h) Urgency requires on-hand stocks, precluding the ordering of materials out-of-country.

(i) Habitability criteria remain within established MACV "Field" cantonments standards.

(j) Installations by NCF or Marine engineer units or other troop construction units under the supervision of NCF or Marine engineer units.

Some of the sets procured were kits for 60-foot bridge (steel), 120-foot bridge (timber), various-sized bunkers, 250-man cantonments, and medium-lift airfields. Issues from these stocks for FY 67 through FY 69 reached $41 million.[17] NCF units could obtain support from the Navy

[16]Chief of Naval Operations, Memorandum, subject: Impact on Readiness Posture of Logistic Support to SE Asia, 17 October 1969.

[17]Naval Facilities Engineering Command, Fact Sheet, SEABEE Tactical Support Functional Components, 6 October 1969.

supply system by requisition. The requisition control for the Pacific area was exercised by NSC, Oakland, California. The NCF also utilized local procurement where practicable. When a supply requirement could not be filled by purchase or requisition on the Navy supply system, the requiring unit placed its request on CBC, Port Hueneme, which then assumed the responsibility for obtaining and providing the needed items.[18]

(3) The Naval Support Activity (NSA), Da Nang, was the other major Navy customer of construction materials in RVN. Unlike the NCF units, the NSA, Da Nang, Public Works Department did not have recourse to the TSFC sets at Port Hueneme since they, by definition and type of procurement (OPN), were for tactical operations support and not facilities maintenance. NSA, Da Nang, provided common supply support. The consumption of materials for maintenance is more susceptible to forecasting than is combat support construction, but wide fluctuations occurred because of requirements for damage repair due to enemy action and acts of nature as well as unprogrammed minor new construction. These fluctuations in program inhibited the development of valid stock objectives and resulted in sporadic requisitioning against CONUS agencies of unpredicted demands. This surge procedure drew down CONUS stocks and required the supply agencies to resort to expedited procurement as a normal method. This resulted in inordinately long delays in deliveries. Subsequent to the troop buildup in I Corps and the 1968 Tet Offensive, NSA, Da Nang, experienced an order and ship time (O&ST) averaging 60 days more than the SE Asia objective of 90-120 days. The more troublesome items were:

(a) Lumber

(b) Sand bags

(c) Sheet metal

(d) Asphalt

(e) Wire.

An analysis of the delays, by the Navy and Defense supply agencies concerned, revealed that the major causes were:

(a) Vacillating requirements (sand bags)

(b) Demands equaled maximum production capability (asphalt)

(c) Demands exceeded current production capacity (concertina wire)

(d) Deficient contract performance (lumber)

(e) Delays in requisitioning and shipping (sheet metal).

As the demand leveled off, the overall O&ST reduced from an average of 183 days to an average of 138 days.[19]

(4) Although 138-day O&ST is acceptable for items consumed at a regular rate and can be managed in an optimum flow through the pipeline, it is excessive for a responsive construction program. Long O&STs not only delay projects but tie up funds committed when requisitions are submitted.

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[18] Naval Facilities Engineering Command, Letter, Ser. 00184, Enclosure (2), Logistic Posture Construction, 14 May 1969, pp. 17, 26.

[19] Naval Supply Systems Command, Letter SUP 0462 to Chief of Naval Operations, Excessive Order and Shipping Times, 6 March 1969.

d. Marine Corps

(1) As a member of the Navy-Marine Corps Team, the 3rd Naval Construction Brigade performed the bulk of the construction effort for Marine Corps units in I Corps Tactical Zone (CTZ). In addition to the construction effort, the 3rd Naval Construction Brigade provided construction materials to the Marine Corps engineer units.

(2) Prior to the summer of 1967, construction materials for use by Marine Corps units were procured through two Services. Materials for O&M-funded projects were procured through the Marine Corps supply system. In addition, certain materials were provided by the 3rd Naval Construction Brigade. For example, upon initiation of the TSFC program in mid-1967, construction materials were released by the Commander, 3rd Naval Construction Brigade, to Marine Corps engineer units after approval of the Commanding General, III Marine Amphibious Force, based on the criteria established for use of the TSFC (see paragraph 3c).

(3) Facilities maintenance materials were provided for Marine Corps cantonments by NSA, Da Nang.

e. Air Force

(1) The introduction of RED HORSE squadrons into Vietnam created a need for construction materials for new work over and above those materials consumed by the base civil engineering squadrons for maintenance and minor new construction, the contractor, and Army engineer troops in support. Supply packages of lumber, cement, pipe, and hardware totaling over 800 line items were provided from CONUS by the Air Force Logistics Command (AFLC) for the first two squadrons. Similar but adjusted packages accompanied the follow-on squadrons. In addition, each of these new squadrons received a follow-on package designated BITTERWINE 131-C, valued at $1 million and containing 875 items of construction materials.

(2) Resupply for the RED HORSE units was to be processed through normal base supply channels. However, the squadrons consumed material at a rate faster than anticipated, and the various base supply offices were not geared to handle the load. Work slowdowns and stoppages resulted. Twenty of 23 projects completed by the Cantonment Flight, 555th Civil Engineer Squadron (Heavy Repair), encountered work stoppages in 1966. Requisitions through the AFLC system were not being satisfactorily filled.

(3) Pending the development of stabilized, long-range RED HORSE supply procedures, additional packages of materials were shipped. These were known as LOGGY STEED and were slightly smaller than the BITTERWINE packages. Over $10 million in package support had been shipped by June 1967, 18 months after the first RED HORSE squadron disembarked.[20]

(4) Project PACER OAR was established as the long-term procedure. It was a pull system with the requisitions forwarded through engineer channels on a quarterly basis. Six increments of PACER OAR, totaling $17.4 million, were shipped before the program was terminated in September 1969. An overall excess of $1.4 million was generated and returned to CONUS.[21]

[20]Department of the Air Force, CORONA HARVEST RED HORSE, Interim Report, RED HORSE in Southeast Asia, 1965-1967, Chapter V, May 1969.

[21]Headquarters, U.S. Air Force, Civil Engineering Center, Memorandum for the Record, subject: PACER OAR, 28 July 1970.

f. Military Assistance Command, Vietnam. The flow of materials through multiservice channels created the possibility that requirements could be duplicated. The creation of a MACV provided a management focal point oriented to the control of all construction assets (see Chapter V). As the program fluctuated, shortages and overages were adjusted among the construction agencies as they were identified.

g. Summary

(1) Subsequent to 1965, the rate of construction was inhibited by shortages in stocks created by changes in programs and compounded by the long O&ST involved.

(2) Although some excess stocks developed primarily due to changes in criteria (such as electrical fixtures), the injudicious use of functional component systems, and fluctuations in the program, the basic stock control problem was one of timing, i.e., matching stocks with the program at any one time. The shifting of assets between the contract organization and the troop constructors was accomplished as changes in their respective levels-of-effort and assigned workload occurred.

(3) Critical materials and excess stocks were monitored by COMUSMACV, thus providing requisite control and appropriate redistribution of imbalanced stocks.

(4) All Services set up special systems to expedite and control the flow of construction materials. Frequently, supplies were pushed initially with a transition to a pull system when in-country stocks were developed and some degree of accuracy had been attained in forecasting.

4. SUPPLY OPERATIONS AND PROBLEMS

a. Role of the Contractors. The extensive use of construction contractors in RVN presented the unusual situations of materials procurement channels paralleling the DOD system in the combat zone. The principal contractor was the joint venture RMK-BRJ. In addition several TURN KEY contractors were employed to construct, independently of RMK-BRJ, selected specific facilities such as communications centers and DeLong piers. One of the major TURN KEY contracts was for the construction of Tuy Hoa Air Base. Each of these contractors was basically responsible to procure the materials and equipment to accomplish its work. The following paragraphs briefly discuss supply aspects of the RMK-BRJ and Tuy Hoa contracts and their relationships to the DOD system. In addition, a brief reference is made to the Army's facilities maintenance contract with PA&E to present the contrasting picture of a large contract that called for the Army to provide the contractor with almost all of his materials and equipment.

(1) RMK-BRJ

(a) As mentioned in paragraph 3a, RMK-BRJ maintained a procurement office in San Bruno, California, under the administrative cognizance of the Resident OICC, Pacific (ROICCPAC), a subordinate activity of the Pacific Division, NAVFACENGCOM. In addition to purchasing, this office provided engineering, accounting, shipping, and personnel processing services in support of the RMK-BRJ main office in Saigon. The contractor was authorized by the Contracting Officer, in accordance with the Armed Services Procurement Regulations, to use commercial specifications, to use procurement procedures that were less restrictive than generally applied by governmental agencies, and to maintain records and accounts in accordance with acceptable commercial practice; this lack of encumberances provided a rapid and responsive supply source. Two examples of the use of this quick reaction by the contractor for the Services are:

1. In 1966, 2,399 prefabricated buildings were procured for the Army. A savings of $4.52 million was realized by resorting to a performance specification after

prohibitively high bids had been rejected as a result of invitations solicited through regular DOD procurement channels. Delivery was made in the short period of 4 months.[22]

2. Within 4 months after requests, $25 million of construction equipment was purchased and delivered to the Navy (12 to 18 months would have been required through normal military channels).[23]

(b) One of the contractor's major procurement actions was for lumber. In January 1966, COMUSMACV directed that the construction of troop housing consist of tents on wood frames or the equivalent in temporary wood-frame buildings. This action was the result of an effort to reduce construction program scope and to utilize other materials for higher priority projects. On 1 February 1966 the OICC directed RMK-BRJ to procure the lumber required.

(c) A total of 100 million board foot measure (BFM) was estimated based on the requirements for:

1. 2,500 troop shelters (hootches) @ 33,000 BFM each = 75,000,000 BFM
2. Contractor plant – 15 million BFM
3. Miscellaneous = 10 million BFM.

Construction grade lumber (better than standard) of west coast origin was selected because of:

1. Minimal loss due to knots, shakes, and warps
2. Workability
3. Durability
4. Proximity to west coast ports.

The specifications required treatment to resist termites and rot.

Proposals were solicited for 78.4 million BFM on 28 February 1966. The low bid of $12,837,600 received the award on 13 March 1966. Delivery was slated at 16 million BFM per month commencing 1 July 1966. This schedule was moved up to a starting date of 18 April with a dockside delivery total of 25 million BFM by 17 June 1966. Some minor reductions in the standards were allowed to assist meeting the expedited dates with a net reduction in contract cost of $316,000. The contract provided for the best spread of deliveries, within the demands of the program, in an effort to minimize the impact on the market. The entire order had been delivered dockside on schedule by October 1966. At this time 42 million BFM had already been lifted for RVN, leaving about 36 million BFM in port backlog.

In January and February 1966, an agreement had been reached between ROICCPAC and the Defense Construction Supply Center (DCSC) that DCSC would provide for in-stock, off-the-shelf items and for those field fortification items for which DCSC had tied up production. It was also agreed that it was impracticable for the contractor to procure from DSA any items other than the DCSC items cited above. As a consequence of this agreement, DSA was not requested to act as agent for the contractor in this matter.[24] This procurement action contributed to an increase in the price of lumber in the spring of 1966. Other factors were the lack of transportation,

[22] Naval Facilities Engineering Command, Memorandum, Code 05, subject: Procurement for Others, 8 February 1967; and Resident Officer in Charge of Construction, Pacific, Value Engineering Reports Nos. 66-6, 7&8, May 1966.

[23] Office of the Joint Chiefs of Staff, Special Military Construction Study Group (U), pp. 50-51 (SECRET).

[24] Naval Facilities Engineering Command, Fact Sheet, Lumber Buy, 19 December 1966.

seasonal demands, labor shortages, and other Vietnam-generated requirements such as lumber for packing and crating. The Office of the Secretary of Defense (OSD) issued instructions requiring closer control of requirements, encouraging the use of substitute items, and permitting the use of offshore sources.[25]

(d) Chapter VI of this monograph discusses the details relating to the possible adverse effects of contractor procurement. ROICCPAC provided the focal point within CONUS that exercised adequate controls necessary to preclude purchasing competition that could arise between a contractor and DSA or other Government procurement agencies. Also, such a system introduces some supplies into the theater of operations without identification by FSN and thus complicates stock control procedures. This pitfall arose each time the OICC/Contractor advertised excesses for redistribution.

(2) Tuy Hoa Air Base

(a) Early in 1966, during the deliberations regarding the construction of a jet-capable airfield at Tuy Hoa, it became apparent that an independent construction effort would not compete for supplies and equipment from RVN sources, nor further tax the already crowded west coast and RVN ports, and would minimize the impact on the overextended U.S.-flag merchant marine resources. These, plus many other factors, lead to establishment of Project TURN KEY, under which a construction contractor, independent of the Navy's SE Asia contracting organization, undertook the construction. This contractor, under Air Force direction and assistance, moved the required people, equipment, and materials mainly from gulf and east coast ports directly to Tuy Hoa for off-loading. This procedure reduced the impact on other programs as follows:

1. 154,000 measurement tons shipped.

2. 19 percent discharged over-the-beach.

3. 81 percent discharged in the basin at Tuy Hoa.

4. 80 percent shipped in foreign bottoms.

5. Outloading was accomplished at the ports of Philadelphia, Jacksonville, Mobile, and New Orleans.[26]

(b) It is noted that this is the second instance of successful use of a contractor as the material supplier, the first being the RMK-BRJ case. The Army's maintenance contractor, on the other hand, was to be provided Government-furnished property and, as discussed in the Facilities Maintenance Monograph, experienced continual difficulties due to this (see paragraph 4a(3)).

(3) Pacific Architects and Engineers. The Army's contract with its facilities maintenance contractor, PA&E, provided for Government-furnished materials. The Army supply system was to provide the items necessary for repairing the facilities and executing minor construction to include the erection equipment required. The provisioning fell short of the contractual requirements as discussed in the Facilities Maintenance Monograph. On special occasions the contractor resorted to procurement through civilian channels, but only after supply through other sources had been screened.

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[25]Office of the Assistant Secretary of Defense (Installations and Logistics), Memorandum, subject: Procurement of Lumber, 15 April 1966.

[26]Department of the Air Force, Directorate of Civil Engineering, Fact Sheet, Tuy Hoa Shipping and Pay Data Sheet, 4 March 1970.

(4) Relationships to DOD Systems. The supply systems of the Services are designed to provide construction materials in an integrated supply management structure. Within CONUS the Defense Supply Agency (DSA) is the provider of construction items to the Services either direct to the consumer or to a depot or a port. When the contractor in an overseas theater is authorized to procure direct from CONUS sources, as was the case with RMK-BRJ, he becomes an additional Service supply system in essence and functions within the OSD procurement structure as would any military supply agency unfettered, however, by stringent specification restrictions. Stock management controls are established as in the military systems and procurement conducted in concert with DSA as discussed under lumber procurements above.

b. Common Supply In The Combat Area

(1) The common use of construction materials by all Services made them logical items for integrated materiel management. The DOD Coordinated Procurement Program assigns procurement responsibility to DSA.[27] DCSC is the DSA agency concerned.

(2) As discussed in the Common Supply Monograph, other factors influence the adaptability to integrated management besides common use. Some of these are predictable demands, large bulk and tonnage, large demands, and large volume of dollar sales. These criteria hold true for construction materials with the exception of predictable demands that tend to fluctuate for facility programs. Common supply, if judiciously followed, can reduce the number of stocking activities in the pipeline and minimize the stockage to be maintained overseas. The overseas forward depot, if established, could serve as both the holding area for pre-positioned equipment and as the surge tank for the Service designated as the supply agent.

(3) Some instances of common supply of construction materials occurred in Vietnam. Significant support was provided by NSA, Da Nang, in I Corps Tactical Zone from December 1966 on. However, this support was not to the exclusion of other sources for the major customers, i.e., 1st Logistical Command depots and RMK-BRJ for the Army construction troops and CBC, Port Hueneme, for the 3rd Naval Construction Brigade. Because of these alternative sources, an assessment of demand satisfaction is impractical.

(4) A coordinator of construction material supplies for all of RVN existed subsequent to the establishment of the MACV Construction Directorate. The management of scarce and critical items, which would normally be exercised by the common supplier, was a function of this office.

(5) The common supply of a selected stockage of generally used material would be practical just subsequent to the initial phase of the lodgement provided that the following arrangements had been previously established:

(a) A joint list of common items with acceptable substitutes as tailored by the unified commander concerned.

(b) Funding procedures.

(c) Forecasting procedures.

(d) Procedures for transitioning from multiservice to uniservice responsibility.

(e) Common construction standards.

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[27] Department of Defense Instruction No. 4115.1, DOD Coordinated Procurement Program--Purchase Assignments, 14 October 1968, as amended.

Such items as lumber, cement, field fortification materials, common hardware, lighting and plumbing fixtures, and paint would be appropriate for this supply system.

c. Packaging. Construction materials suffered, in some instances, from inadequate packaging. During the early stages, material that had not been given Level A packing was received in unserviceable and unidentifiable condition. Even after Level A packing became standard, lower quality packaging was accepted when necessary to reduce lead time. Major problems were experienced with asphalt, Portland cement, and lumber.

(1) Asphalt. The light-gauge drums initially used on a large scale for the transport of asphaltic products did not withstand the rigors of shipping and handling. Bungs fell out in the holds of the vessels causing leakage in transit, and the drums would burst while being handled with barrel chimes. In addition to the loss of product, extra costs were incurred by reduced efficiency of operating in the "gumbo" residue in the cargo handling areas and vessels. The holds of the ships and lighterage had to be steam-cleaned. The bulk of procurement of this product (General Services Administration-managed items) was accomplished from offshore sources. The POL Monograph covers the procurement experiences regarding asphalt in detail. Shipping and handling losses can be appreciably reduced by moving as much of the asphaltic products through the bulk POL system as their viscosity and the distribution coverage of the system allow. The highly viscous and solid products could be handled by large containers of heavy-gauge metal suitable for forklift movement. Sometimes it is impracticable to move the asphalt forward to the construction site in large containers or other bulk means. Consequently, provisions should be made to provide drummed asphalt of all types in containers of adequate strength and sealant.

(2) Portland Cement. High loss rates of bagged cement occurred throughout RVN. Losses were highest when shipments were made in individual heavy paper, common export bags. Such packaging was prone to breakage because of the necessity for repeated handling and because of crushing in cargo nets. These bags were also susceptible to pilferage. Estimates of the losses sustained due to this packaging have ranged as high as 50 percent for some shipments. Most of the cement was purchased offshore, primarily in Taiwan. Consequently, commercial standards tended to prevail initially. Within CONUS, cement in common export packing costs approximately $1.00 per bag as opposed to $1.75 per bag in premium bags. However, even premium bags are susceptible to high loss when handled individually. Methods developed to reduce losses included:

(a) Palletizing

(b) Wrapping in plastic cover and then palletizing

(c) Wrapping in plastic cover, boxing (20-25 per box), and then palletizing

(d) Bulk loading into large rubberized containers capable of being handled by a forklift (4000-5000 lbs) [28]

Method (b) became the most common; method (c) was used extensively by the Navy; and method (d) was tried by the naval construction forces in areas where bulk batching was conducted and where materials handling equipment could be effectively used. More extensive use of methods similar to method (d), where feasible, would increase batching efficiency and reduce handling, pilferage, and weather losses. However, provisions should be continued to provide cement so that it can be manhandled at ultimate destinations, such as methods (b) and (c), or by packaging the bags in containers.

[28] Naval Facilities Engineering Command, Memorandum, subject: Cement for RVN, 12 May 1967.

(3) Lumber. Early in the buildup, significant quantities of lumber were shipped with banding of the gauge and spacing in keeping with commercial practice, which was inadequate. This caused considerable delay in discharging and forwarding the broken bundles. However, the lower level of packaging was necessitated by the urgency of getting the flow started. Subsequent shipments, packaged in accordance with military specifications, caused little trouble.

d. Control Of Flow Of Materials. The regulation of the flow of construction materials into the theater is a function of the construction manager concerned. When a common supply system is in effect, the engineer requisitioners indicate the desired sequence of flow by stating required delivery dates (RDDs). Conflicts regarding movement priorities are resolved by the common supplier by providing the various movement regulating agencies with advice based on overall priorities established by the operational commander concerned. In RVN, where common supply was of a low order of magnitude and some use of the unilateral Service channels was made, but where the bulk of engineer supplies was moved through special engineer channels, both push and pull, control of flow was accomplished within established component movement priority procedures, based on staff engineer advice. When critical conflicts between Service cargo offerings arose, the MACV-DC provided guidance to the joint regulating agencies within operational criteria.

e. Offshore Surge Tank Depot

(1) As described in earlier paragraphs, the extraordinary efforts to develop a responsive in-country stock of construction material resulted in periodic excesses and imbalances and in the shipment of bulky material when available rather than when they could best be handled by the ports of discharge, as exemplified earlier in the case of urinals and landing mat. Yet O&ST continued to be less than satisfactory and the management of the stocks upon arrival created many problems. The dangers inherent in large in-country stocks were expressed by a former commander of the U.S. Army 1st Logistical Command as follows:

> ". . . . However, today's system is overcostly—a commander/manager finds it most difficult, almost impracticable, to maximize effectiveness and efficiency due to having far too much too far forward—we put too much of all classes of supply too far forward, then we have to put too many skills and facilities to house and care for them too far forward. Our logistic philosophy, doctrines and techniques must be changed so that we reduce the materiel resources to be managed in the field army zone to the minimum commensurate with the safety level and capability of 'INVENTORY IN MOTION.'"[29]

(2) The extensive use of cargo airlift and more effective cargo handling techniques, such as containerization, will reduce the need for large forward stockage in general. Whereas construction materials are not suitable for air movement normally, they lend themselves to containerization in many instances, two of which were discussed in paragraph 4c. The engineer materials shipped from CONUS to RVN during CY 66 through CY 69 represented approximately one-third of all the cargo. As previously noted, of 16 million short tons of dry cargo sealifted during this period, 4.7 million were construction materials; however, only approximately 7 percent of the airlift was for this type of commodity.

(3) As discussed earlier, there is also a requirement for positioning in forward areas those long-lead-time items required for essential terminal facilities during the expeditionary phase of an operation.

(4) Early in the buildup, steps were taken to establish forward depots, outside RVN, as efforts to reduce in-country stockage and to increase responsiveness.

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[29] Maj. Gen. J. M. Heiser, op. cit.

(a) Navy. The Navy's experience with a forward depot is quoted from a NAVFACENGCOM Background Report on the Poro Point facility in the Philippines as follows:

> "In the spring of 1965, NAVFAC recognized that with impending escalation of construction, there was a need for an intermediate staging and shipping point. Deep draft port facilities in RVN were inadequate to discharge cargo on an expeditious basis.
>
> "In April 1965, NAVFAC approved the concept for (the contractor-RMK) establishing an out-of-theater transshipment point to be located at Poro Point in the Philippines, determined to be the best location available from the standpoint of shipping distances and response required. The use of shallow draft vessels with over-the-beach operations at coastal construction sites was contemplated.
>
> "A subcontract with Shipside, Incorporated, was executed on 20 July 1965 to provide warehouse facilities, open storage, and stevedoring and other cargo movement services. Under the provisions of the contract, Shipside would construct warehouse facilities and provide open storage areas which would be rented on the basis of square meters, at a decreasing annual rate.
>
> "LST's did not become available for use as required. Until April 1966, only seven LST's out of a total of 40 vessels used this transshipment point. With most of the materials and equipment already in RVN or on their way by mid-Calendar Year 1966, and with deep draft berths being constructed and becoming available in RVN, the requirement for the use of Poro Point was no longer valid. The transshipment and material stocking operations commenced phase-out in August 1966.
>
> ". . . . Provisions in the subcontract provided for a term of occupancy up to five years. RMK-BRJ rented 210,311 square meters of open storage and 13,500 square meters of covered storage. Rental rates for the storage were based upon amortizing costs of construction over a period of five years, with rates decreasing annually after the first two years. For covered storage, the rate was 83¢ per square meter per month for the first two years. In the third year, the rate was 62¢; it was 50¢ for the fourth year and 39¢ for the fifth year. Open storage rates were established at 1/3 the cost for covered storage.
>
> "As of 31 January 1967, RMK-BRJ had payed $1,731,620 to Shipside for services and rental of the Poro Point facilities. . .
>
> "On 26 April (1966), RMK-BRJ executed a subcontract with Atlantic Gulf & Pacific Co. of Manila for fabrication of Reeves pier sections. The Poro Point facility has been, and is currently being used for fabrication of the piers. It is expected that such use will be discontinued in the very near future."[30]

In addition to the $1.7 million indicated above, the following costs (nearest $1,000) has been incurred by 31 January 1967:

| | |
|---|---|
| Operations | $5,089,000 |
| Construction (LST ramps) | 151,000 |
| Other | 225,000 |
| Total | $5,465,000 |

Transshipment operations had been essentially phased out by October 1966.[31]

(b) Army. By February 1966, the Department of the Army had u erway two studies on the development of a forward depot in PACOM. One was a long-range effort under the cognizance of the Chief of Engineers, the other a quick-response program sponsored by AMC.

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[30]Naval Facilities Engineering Command, Poro Point Operations, February 1967.

[31]Resident Officer in Charge of Construction, Pacific, Message, Poro Point Operations, 13 February 1967.

The AMC study resulted in a proposal to set up a construction materials depot facility in the Philippines (the long-range study was still underway). By May 1966, agreement on this proposal was reached by AMC with the Army logistic agencies in PACOM, except that Japan was selected as the site by USARPAC vice the Philippines. However, Department of the Army approval was not forthcoming until 24 February 1967, at which time Okinawa was designated as the site. By 27 April 1967, final agreement on stockage and procedures was reached between AMC and USARPAC. Shipping directives were issued early in June 1967 for approximately $5 million of materials for movement to the 2nd Logistical Command's Okinawa depot.[32] The bulk of these materials were moved prior to late December 1967 when shipments to Okinawa were discontinued because little or no use had been made of surge tank stockage since inception.[33] This inactivity is attributed to the chronic shortage of shipping (LSTs) and the increased capability of the RVN logistical facilities to accept shipments directly from CONUS.

(c) Analysis

1. The preceding experiences indicate certain drawbacks to the forward depot concept when used as a surge tank after operations are underway. The main disadvantages were:

a. Double handling of cargo.

b. Increased demand on the lighterage fleet, which was already overtaxed.

c. Duplication of facilities and overhead.

2. The advantages that could occur from the use of a surge tank depot are:

a. Reduced "O&ST."

b. Supply management enhanced by a safe-haven atmosphere.

c. Tactical security.

d. Larger and more diverse stocks.

e. Permit the tailoring of project packages for over-the-beach delivery.

f. Reduced personnel requirements in-country.

g. Reduced construction of logistical facilities in-country.

3. MACV-DC expressed the need for the forward depot as follows: "The Construction Materials Depot ("Surge Tank Depot") to be located on Okinawa, should be opened as soon as possible. This depot could provide a readily accessible source of selected construction materials, thereby eliminating many of the long-lead time problems."[34] The above advantages are in addition to the obvious benefits of having a forward depot with pre-positioned stocks oriented to expeditionary phase operations.

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[32]Headquarters, U.S. Army Materiel Command, Memorandum, subject: Construction Material Depot - Far East, 27 April 1967.

[33]Department of the Army, Headquarters, U.S. Army Pacific, Message GPLO - MM45434, Construction Materials Surge Tank, 20 December 1967.

[34]Brig. Gen. D.A. Raymond, Observations on the Construction Program, 1 October 1965 through 1 June 1967 (U), p. 103 (CONFIDENTIAL).

4. In the case of Vietnam, the development of the deep-water ports and large storage complexes, coupled with the shortage of lighterage, influenced the decisions regarding the advanced depots. However, the lack of a regulating depot offshore of the area of operations created large and unwieldly stocks to be secured and managed under difficult conditions. This contributed to the nonresponsiveness of the supply system to construction demands.

f. Summary

(1) The Services' use of contractor procurement channels, as a supplement to regular supply systems, was workable and beneficial. However, this method should be resorted to only when established procedures cannot respond in time and then with the cognizance of all the procurement agencies concerned.

(2) The TURN KEY contractor's logistics procedures at Tuy Hoa minimized the impact of this project on critical construction assets.

(3) Construction materials are under integrated management in CONUS by DSA and are allocated as controlled items by COMUSMACV on an "as required" basis. Common supply procedures for selected regularly consumed materials can be established in a contingency as soon as the sponsoring Service is able to provide the facilities and organization necessary for this function. Supply arrangements by the Services are necessary for providing items until such time that program definition is sufficiently firm to permit accurate forecasting to the common supplier.

(4) Packaging improvements developed for RVN construction materials were practical and should be continued where economical. Asphalt and cement are amenable to bulk handling procedures but must continue to have a portion packaged for manhandling in forward areas.

(5) A properly stocked forward depot (PWRS) would have provided the long-lead-time material and prefabricated equipage essential to ocean and air terminal construction required in the initial stages.

(6) An advanced base depot in the Western Pacific, outside RVN, could have furnished valuable assistance in controlling the discharge of low-priority and bulky engineer cargo at RVN ports, thus providing more efficient use of both deep-draft vessels and harbor facilities until a full receiving capability was developed. The lack of shallow-draft vessels made the efforts in this matter abortive.

## 5. HEAVY EQUIPMENT SUPPLY AND MAINTENANCE

a. Army. As discussed earlier, mobilization reserve stocks were inadequate, and expedited actions were taken to provide equipment and spares for the construction of facilities and for the provision of utilities. This resulted in a multiplicity of makes and models as well as introducing some overage equipment into the construction fleet. The 1st Logistical Command has indicated that some of the ultimate impacts of these actions were:[35]

(1) Tractors

(a) Extensive reliance on expediting systems such as the Red Ball Express.

(b) Standardization within units and geographical areas.

[35]Department of the Army, Headquarters, 1st Logistical Command, Debriefing Report (U), p. 304, 11 August 1967 (CONFIDENTIAL).

(c) Intensive management of the stockage of high mortality repair parts.

(d) Heavy reliance on the use of manufacturers' and technical representatives.

(2) Cranes

". . . . Despite intensive repair parts management, nonavailability of repair parts and the slippage of equipment standardization have contributed to keeping the deadline rate from falling below 15% for the 21 different makes and models of cranes employed in the Republic of Vietnam.

". . . . Through failure analysis and subsequent stockage monitoring, the repair parts required to replace high mortality type components are being phased into the Vietnam supply system. Concurrently, mission support plans and standardization management procedures are being formulated to properly redistribute the serviceable assets produced by the issuance of standardized cranes of the 20 ton and 12.5 ton classes . . . ."[36]

(3) Generators

". . . . The most critical deadline rate has been experienced in generators above the 15 KW range. The average monthly deadline since January 1966 has been 27%, with a high of 36% during October 1966. The present rate stands at 23%.

". . . . Primary causes for this high deadline rate have been the around-the-clock utilization, age of the equipment, lack of repairs, lack of an adequate maintenance float, and the numerous makes and models requiring support. The prolonged use of this equipment has caused frequent breakdowns. There are about 145 makes and models of generators in use in the Republic of Vietnam in the 1.5 KW to 100 KW range. Repair parts support for such a multitude of makes and models has been a serious problem. Constant reliance has been made of the Red Ball supply procedures, push packages, and the use of procurement requests. . . ."[37]

The DOD Project Manager, Mobile Electric Power, established in July 1967 to provide a long-range coordinated interservice effort to resolve the generator problem, has made marked progress in reducing the multiplicity of makes and models. The current DOD population of 2000 makes and models has been adjusted to a set of requirements for a standard family of 43 sets, all of which are either in being, under development, or defined.

(4) Commercial Equipment

(a) USARPAC made the following comment on commercial equipment:

"The LOC program brought out the fact that construction units require equipment that is capable of production far greater than available under current military specification construction equipment. Military specification equipment is fine for combat battalions as their projects require equipment capable of taking the additional abuses inherent with their mission, however, the construction units should be equipped with the most recent commercial item available. Projects accomplished by the construction units can be associated with similar projects done by civilian construction units. As such, their experience in construction methods, to include the use of construction equipment, should be utilized and our construction units tailored and equipped accordingly."[38]

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[36] Ibid., p. 305.

[37] Ibid., p. 306.

[38] Headquarters, U.S. Army, Pacific, Office of the Engineer, Fact Sheet, Equipment (U), 6 October 1969, p. 3 (CONFIDENTIAL).

(b) The Army has presently under study a proposed plan for a commercial construction equipment system. It contemplates buying equipment on a multiyear basis (5-year cycle) with open-end contracts for repair parts. In addition to furnishing an up-to-date construction equipment fleet for the Active Army, this procedure could be expanded to provide for a manufacturer-operated pool for CONUS reserve stocks. The delays inherent in procuring military standard equipment, as evidenced by our experience in Vietnam, can be obviated by such a procedure. Procurement arrangements should provide for single source acquisition.[39]

b. Navy

(1) The relatively favorable stock position of the Navy's PWRS was able to materially assist in the early stages of equipping the NMCBs, the contractor, and others. However, the eventual increase in the scope of program necessitated large-scale, expedited procurement of heavy construction equipment. The $25 million procurement by the contractor noted in paragraph 4a(1) is but one example.

(2) The situation that developed at NSA, Da Nang, regarding electric power generation typifies the problems that evolved in the equipment field. The following excerpt from an NSA, Da Nang, report regarding this matter is quoted:

> "The major support problem for utilities continues to be repair parts for generators. The number of generators maintained by Public Works Department Da Nang for the I Corps area has grown from 493 generators in January 1968 to 932 today, broken down as follows:
>
> | | | |
> |---|---|---|
> | I Corps Pool Generators | - | 711 |
> | Army Generators | - | 211 |
> | Miscellaneous | - | 10 |
>
> The number of generators deadlined for repair parts had increased from 75 in January 1968 to 96 in September 1968 . . . . Of the 96 generators deadlined for repair parts, twenty eight (30% of deadlined equipment) are 100 KW. . .generators.
>
> "The rise in the number of generators deadlined due to lack of repair parts has persisted despite the fact that the number of line items of repair parts carried by NSA Supply Depot in support of generators has grown from 2,750 in January 1968 to 4,450 today. There has been a gradual increase in the number of priority 02 outstanding requisitions for generator repair parts while the number of outstanding priority 05 documents has realized a net decrease . . . . The average processing time for a priority 02 document for generator repair parts is 84 days while a priority 05 document requires 105 days.
>
> "To resolve the above problem it was recently decided to requisition generator repair parts directly from CBC Port Hueneme vice NCS Oakland. It was also decided that the I Corps Pool Generators would be provisioned with an initial outfitting consisting of a 90 day parts requirement for non-overhaul type repairs. However, since I Corps Pool generators must be overhauled in Da Nang, a complete outfitting of repair parts to include major overhauls was requested from CBC Port Hueneme by NSA Da Nang message 200532Z August 1968. To carry out our mission, parts must be stocked to permit local overhaul of generators. . . ."[40]

c. Summary

(1) Many commercial makes and models of engineer equipment were, of necessity, introduced into RVN.

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[39] U. S. Army Mobility Equipment Command, Commercial Construction Equipment System Plan, 1 March 1970.

[40] Naval Support Activity, Da Nang, Point Paper for Adm. Husband's Visit, 17 September 1968.

(2) The large and diverse equipment population caused serious maintenance problems, particularly in the supply of repair parts, where consumption far exceeded the anticipated demands.

(3) It is noted that the DOD Project Manager for Mobile Electric Power has, in concert with the Services, made noteworthy progress in reducing the multiplicity of makes and models of power generators.

(4) Commercial equipment is mostly oriented toward general construction work and is more readily obtainable than military standard. Commercial equipment enjoys the ability of being rotated within the construction industry as a means of maintaining a modern peacetime reserve pool.

(5) It is noted that the Department of the Army presently has under development a program to establish commercial equipment as standard issue items (Commercial Construction Equipment System).

## 6. CONCLUSIONS AND RECOMMENDATIONS

### a. Conclusions

(1) Prior to 1965, construction stocks in-theater and in the continental United States were inadequate to support the buildup. The main causes were insufficient forecasting for and limited procurement of the General Mobilization Reserve Stocks and the Pre-Positioned War Reserve Stocks. Initially, these materials are not normally required in the objective area except for those items needed to provide first-phase air and water terminals. Long-lead-time material for these terminals, such as airfield landing mat and prefabricated piers, should be positioned as far forward as practicable in keeping with competing contingency requirements elsewhere (paragraph 2).

(2) Subsequently, the rate of construction was inhibited by shortages in stocks created by changes in programs and compounded by the long order and ship time involved (paragraph 3).

(3) An advanced base depot in the Western Pacific, outside of RVN could have provided balanced and timely provisioning by permitting the "call forward" of materials on an "as needed" basis and would also have precluded the discharge of low priority and bulky cargo at Vietnam ports at other than periods of low activity. Construction materials are peculiar, in that, although they are bulky as are Class I, III, and V cargo, they are not generally consumed at a determinable rate. Therefore, the scheduling of bottoms is difficult, and the use of air transportation is usually impracticable (paragraph 4e).

(4) The use of contractor procurement channels, as a supplement to standard military procedures, proved practicable and advantageous (paragraph 4a).

(5) The undesirability of attempting to obtain military standard equipment (mobile construction and fixed utility plant), when competitive commercial counterparts are available, is being recognized (paragraph 5).

(6) The incorporation of large quantities and many diverse models of construction and utility equipment (particularly electric generators), and the resulting multitude of maintenance problems, unfavorably impacted upon the accomplishment of the engineer mission. The inadequacy of repair parts supply was the paramount inhibiter. In many instances, the initial provisioning of parts fell far below consumption rates experienced indicating the need for tempering civilian experience with military judgment. Repair parts are characterized by their generally low weight and volume, approximately 10 percent of the tonnage shipped) and consequently are often suitable for direct supply from the continental United States to the consumer by expedited means (paragraph 5).

(7) The shifting of assets between the contract organizations and the troop construction was accomplished as changes occurred in their respective levels of effort (paragraph 3).

(8) Subsequent to the establishment of a Construction Director, the exercise of overall control of critical construction assets by the Commander, U.S. Military Assistance Command, Vietnam, provided for optimum use of materials and appropriate redistribution of imbalanced stocks (paragraphs 3 and 4d).

(9) The use of a separate construction contractor for selected major projects and using over-the-beach supply, as was done for the construction of Tuy Hoa Air Base, provides a means of minimizing the impact of such an undertaking on the balance of the program in-country. Piaster spending was minimal, critical cargo handling facilities and land lines of communications were not impacted, and the remaining construction assets were available for other priority work (paragraph 4a).

(10) In general, construction materials lend themselves to common supply channels and procedures. In the early stages of an expanding situation, such as Vietnam, common supply stocks would of necessity be limited to general usage items with a phasing in to increased coverage as the customers become capable of providing reasonably accurate forecasts (paragraph 4b). (See Chapter IX, Conclusions and Recommendations, Common Supply Monograph.)

b. Recommendations. The Board recommends that:

(CO-18) The instructions issued by the Joint Chiefs of Staff for base development planning in support of joint operations (SM-643-69) include consideration of the establishment of an in-theater forward depot geared to regulate (hold and forward on call) the flow of selected construction materials for each plan developed (conclusions (2) and (3)).

(CO-19) The Services, through the Joint Logistic Commanders, take under study the feasibility of the establishment of war reserve pools of critical commercial type construction equipment to be managed and rotated by the manufacturers concerned. (The Army's Commercial Construction Equipment System, presently under development, appears to have considerable merit regarding this course of action.) This would be enhanced by the use of sole source, multiyear contracts as recommended in Chapter VII, Supply Management Monograph (conclusions (1), (2), and (5)).

(CO-20) Initial provisioning of repair parts for construction equipment be reviewed by the Services with a view to increasing accompanying and follow-on spares to a level commensurate with realistic combat construction experience (conclusion (6)).

(CO-21) Common supply provisions be made in accordance with the recommendation in that regard in the Common Supply Monograph (conclusion (10)).

# CHAPTER X
# SUMMARY

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## 1. OVERVIEW

a. The Vietnam conflict placed heavy reliance on construction. The undeveloped nature of Vietnam, with its almost total lack of base facilities initially available, particularly with regard to ports and lines of communications, placed a premium on rapid construction as a prerequisite to effective military actions and the logistic support of the forces deployed. The fixed-base, enclave nature and long duration of the conflict encouraged the development of a higher degree of permanency of construction than had been the case in past wars. The most striking aspect was the magnitude of the task. The construction forces met the challenge with a military construction program that totaled $1.6 billion by mid-1968.

b. An exceptional feature of the construction program was the unusual reliance placed on civilian contractor forces to accomplish construction in a war zone. Because of the need to respond rapidly to demands for construction not foreseen in planning and the constraints imposed by the limited number of engineer troop construction forces on active duty (a situation aggravated by the fact that anticipated mobilization of Reserve and National Guard forces was not forthcoming), mobilization of a sizable civilian construction force proved to be imperative. Throughout the war, the contractor forces made a major contribution to the construction effort, although these forces were gradually reduced in size as engineer troop units deployed.

c. The strategy of graduated military actions and the dynamic conditions of warfare added to the difficulties of projecting requirements; however, it was necessary to anticipate the construction capabilities that would be required in sufficient time to provide for the lead time in building up these capabilities. By using broad measures, the overall contractor capabilities developed were adequate but not always timely or in ideal balance with the requirements as they actually developed. There were delays in gaining approval and developing the military engineer capabilities critically needed to fulfill requirements in direct or indirect support of combat operations scattered throughout the entire Republic of Vietnam.

d. The total capabilities of both troop and contractor construction forces were effectively employed. The contractor's forces, which rose to a peak strength of about 51,000 in 1966, dominated the construction scene initially; however, a more-balanced troop-contractor mix was later achieved. By the end of 1968, the engineer construction troops outnumbered the contractor's forces two to one. However, operational requirements placed heavy combat support demands on these construction troops, and therefore the capability of the two forces for military construction was about equal. In addition to these two primary construction forces, there were many other construction resources available to COMUSMACV and other commanders. These included such assets as TURN KEY contractors employed for special projects, facilities maintenance forces, self-help, and local contracting authority. These additional resources made a significant contribution to the construction program.

e. During the early stages of the buildup, the component and the Military Assistance Command, Vietnam (MACV), engineer staffs were inadequately manned for prompt development of plans and to perform the necessary coordination. The inadequacy of these staffs was particularly critical during the initial phases of the buildup since base development planning and the management of scarce resources required extraordinary engineer staff effort. The result of this situation was the creation on 11 February 1966 of a Construction Directorate (with a jointly manned staff) responsible to the Commander, Military Assistance Command, Vietnam (COMUSMACV).

f. The expansion of the scope of the construction program during the buildup greatly complicated real estate acquisition. For various reasons, a cumbersome system had evolved during the advisory era, and improvements were required to make it more responsive. Only limited improvements were possible, however, because of the problems of constantly changing officials, establishing equitable indemnification, and arranging for the disposition of graves. The process of construction was impeded in many instances by delays in real estate acquisition.

g. Difficulties in planning that had plagued the determination of force composition and base development requirements also deterred the accurate forecasting of construction materials during the period when the supply pipeline was being established. Initially, the Services shipped on the basis of "best estimates," which were balanced in accordance with the proportions established in the various functional component systems. Although this procedure filled the pipeline and prevented a lag in the troop and contractor effort, it also created some excesses and stock imbalances and tended to dictate priorities of construction by material availability rather than operational necessity. As the situation stabilized and the flow of material was based more on demand keyed to a somewhat firmer program, these deficiencies declined.

h. Initially, there was a shortage of heavy construction equipment with which to expand to the contractor's capability, to equip fully Army engineer units, and to fulfill the contractual commitments to the facilities maintenance contractor. The lack of reserve stocks of equipment encouraged stop-gap, large-scale procurement of available commercial equipment with a resultant proliferation of makes and models and attendant maintenance problems, the most significant of which was a shortage of repair parts.

i. The functional components of the Services greatly facilitated the early construction of facilities.

j. Low initial priorities and critical shortages in dredges, pile drivers, and prefabricated, portable piers resulted in long delays in developing the required ports.

k. Programming and funding procedures for Vietnam construction were established in the face of a continuing dichotomy at various echelons between those desiring program and financial control of each line item at the Washington level and those desiring complete flexibility at the theater command level. The ensuing compromises caused considerable confusion and a loss of motion of all echelons, particularly at the theater level where staff engineer capabilities were at a premium.

l. Programming and funding of construction requirements in Vietnam were essentially accomplished utilizing the inbeing military construction programming system that had evolved over many years primarily to satisfy peacetime construction requirements. It was a system that provided maximum visibility and minimum flexibility. When applied in a combat area, it resulted in an excessive amount of reprogramming, reevaluation, rejustification, and resubmission with all of the attendant administrative burdens.

m. The Congress of the United States was responsive in enacting the major appropriations in support of the Southeast Asia contingency. For example, less than 4 days were required to consider and pass the FY 65 Supplemental (65S) appropriation. Similar responses were experienced with both the FY 66 Amendment (66A) and FY 66 Supplemental (66S) appropriations, each of which required approximately 2 months to process and pass into law. On the other hand, the requests for funds submitted to the Congress, particularly those applicable to the 65S and 66A appropriations, did not reflect fully the stated requirements of the responsible commanders.

n. One of the major problem areas associated with the management aspects of construction in Vietnam concerned the limitations of the full-funding concept (the requirement to have all funds available prior to start of work). Although this may be a sound concept in a peacetime environment, it proved to be unduly restrictive in a combat theater. It did not recognize the magnitude of the contractor mobilization effort of early 1966, ignored the

unallocated portion of the funds appropriated by the Congress, and considered the construction resources of each of the component commanders and the Officer in Charge of Construction, Republic of Vietnam, separately rather than as interrelated elements of an overall program. This resulted in the deferral, reduction, or cancellation of many projects, with adverse effects on both the responsiveness and effectiveness of the overall construction effort.

o. Requirements were established for detailed management data that were reflected in the construction program by continuous and changing demands for extensive reports on the status of funds and construction progress. Considerable management effort was expended in preparing and analyzing these detailed reports, the full value of which appears to have been questionable.

p. Many urgently needed facilities were not constructed when needed. However, from an overall point of view, the construction program met the essential test of being responsive to the needs of the Services and the commander of the unified command. As General Westmoreland stated in 1968 in his Report on the War in Vietnam: "Despite [numerous] obstacles, the construction mission was successfully and efficiently performed and the face of Vietnam was changed."

q. The preceding paragraphs have provided a brief review of construction in Vietnam. The succeeding paragraphs of this summary highlight the lessons learned from these experiences and enumerate the recommendations developed. These summaries are necessarily brief and incomplete; the pertinent chapters of the monograph provide a full and documented background to the conclusions and the recommendations that were derived.

## 2. PLANNING AND READINESS

### a. Lessons Learned

(1) An analysis of the operation plans and base development plans applicable to the Vietnam situation indicates that detailed construction planning had been done that was in most respects suitable for the specific plan but of very little value as the situation actually developed. Thus the Vietnam experience highlighted the importance of construction planning that will minimize time and effort in adjusting to the changes in requirements which are inevitable in war. The need was demonstrated for a more flexible base development planning system based on gross requirements. Such a system requires adequate engineer staffs during the early stages of the buildup to adapt these gross requirements to actual field conditions.

(2) Experience in Vietnam stressed the importance of the interrelated subjects of functional components, preengineered structures, and construction standards to both base development planning and to the execution of the construction program. It is essential that there be a full interchange of information in these areas among the Services, the Joint Chiefs of Staff, and the Office of the Secretary of Defense. Also stressed was the need to prestock critical long-lead-time equipment and up-to-date, preengineered, relocatable structures.

(3) The RVN experience indicated that it would be appropriate to expand the activities and tenure of the recently established Joint Staff/Services Construction Board for Contingency Operations. This Board is now charged to exchange information concerning results of Service functional component and retrievable concept research and development programs and to develop construction standards and planning factors for adaption to various contingency operations. The activities of the Board need to be expanded to provide advice and assistance to the Joint Chiefs of Staff in coordination of the establishment of construction policies and capabilities responsive to contingency requirements. Initially, the Board needs a full-time technical staff to overcome the backlog of work and to develop procedures that will facilitate discharge of the Board's responsibilities. Thereafter the Board should be assigned full-time assistance as necessary to accomplish specific tasks. (See Notes to Recommendation (CO-2).)

b. Recommendations

(CO-1) The Joint Chiefs of Staff ensure that the following are accomplished:

(a) Ensuring a continuing full exchange of information among the Services in major aspects of base development planning.

(b) Identifying any interface problems among the Services and unified chains of command in base development planning and related information.

(c) Monitoring progress in regard to standardization and planning factors.

(d) Monitoring overall readiness to meet contingency construction needs, the status of major deficiencies identified in the contingency planning process, and the availability of any specific assets of such critical importance that the lack of them would limit significantly contingency plan implementation.

(CO-2) In order to assist the Joint Chiefs of Staff in the accomplishment of the preceding responsibilities, the Terms of Reference of the Construction Board for Contingency Operations be amended as indicated in Appendix F to this monograph.

Note 1: While agreeing with Recommendation (CO-1), the Navy Member of the JLRB does not agree with those portions of Appendix F which would change substantially the purpose of the Construction Board for Contingency Operations. The Navy Member set forth the following reasons:

"Following a review of the report of the Special Military Construction Study Group by the Joint Staff and Military Services, actions on several of the Study Group items were combined into a recommendation promulgated by JCS Memoranda (SM-801-68, SM-802-68, SM-803-68) of 11 December 1968, namely:

'That a Joint Staff/Service board be established to exchange information concerning results of Service functional component and retrievable concept research and development programs. The use of pre-engineered units which can be retrieved and relocated will be examined in detail. The Board will develop construction standards and planning factors for adaptation to various contingency situations.'

"I concur with the Terms of Reference as promulgated by JCS memorandum SM-352-69 of 4 June 1969 to implement the recommendation. Every effort should be made to fulfill the responsibilities so assigned at the earliest practicable date including the assistance of personnel working full time to the extent necessary. In addition, I believe it would be appropriate to task the Board also with monitoring progress in the application of the standards and planning factors developed, and in ensuring a continuing full exchange of information on the technical aspects of base development planning for contingencies.

"In my opinion, other recommended changes to the Terms of Reference would extend the purpose and responsibilities of the Board into matters to do with policy, command relationships, programming, requirements, planning, and acquisition of material highly inappropriate for a specialized board. It would, I believe, inject the Board into matters which should be the subject of coordinated efforts within the Joint Staff and at the higher levels of the Military Services; tend to compartmentalize matters related to the construction aspects of planning and readiness; increase the danger of by-passing the responsible chains of command; encourage redundancy and duplication; and result in inefficient use of personnel.'

Note 2: The USMC Member comments as follows:

"While agreeing with the great importance of both planning and execution of those aspects of the Military Construction Programs that relate to Base Development in Support of Joint Contingency Operations, I have certain reservations regarding the course of action recommended by the majority of the JLRB which is proposed as a means of improving existing procedures.

"The Joint Chiefs of Staff have been acutely aware of the shortfalls that manifest themselves in the support of operations in the Republic of Viet Nam after 1965 and have taken a number of positive

actions since 1968 designed to identify causes, fill voids, promulgate uniform procedures and undertake review and monitoring of the processes.

"It is apparent that action has been initiated by the Joint Chiefs of Staff to remedy many of the shortcomings in the area of base development and construction which occurred in the Vietnam buildup. The most prominent of these actions by the JCS are the issuance of SM-643-69 and establishment of the Construction Board for Contingency Operations. Other appropriate actions are known to be in work and continuing.

"In my view, it is too early for either the JLRS or the JCS to have reached definitive conclusions as to the overall pattern by which the JCS will achieve and retain the high degree of control that is essential to the success of base development in support of future contingency operations.

"I am in agreement that the detailed responsibilities set forth in the Construction Monograph and the need for the full time assistance for the Contingency Board are valid and need to be assigned to suitable subordinate functionaries of the JCS, but the alignment and delegation of authority should be based on the evaluation which will only be possible when the ongoing preliminary steps have been completed. I, therefore, suggest this alternate be adopted."

(CO-3) Because of their importance, high priority be assigned to the completion of tasks assigned to the Construction Board for Contingency Operations and officers be assigned to work for the Board on a full-time basis as necessary to complete these tasks.

(CO-4) Rather than concentrating on specific details such as individual line item identification and siting, contingency base development planning place emphasis on the following:

(a) Determination of gross requirements derived from typical site layouts.

(b) Troop and contractor effort requirements.

(c) Funding required under variable parameters of force levels, locations, types of operations, and climatic conditions.

(d) Key construction items with long lead times with particular attention to dredges, pile drivers, prefabricated piers, and rock crushers.

(CO-5) Provisions be made for the prompt augmentation of engineer staffs during the early stages of the buildup to adapt gross construction requirements to actual field conditions.

## 3. EXECUTION AND IMPLEMENTATION

a. Lessons Learned. Based on the Vietnam experience, the consensus of the Services is that troop construction units were preferred as the primary construction resource in the combat zone and that planning for future contingencies should be based on the use of engineer troops as the hard core of construction forces. However, the experience of Vietnam clearly demonstrated the feasibility and, under similar conditions, the desirability of employing a civilian contractor in a combat zone for major projects in relatively secure areas. This points up the need to consider contractor employment during planning for contingency construction and the extent to which the contractor will be dependent on the Services for administrative and logistic support. In Vietnam there were varying solutions to the problem of how contractors should be supported, but these evolved on a case-by-case basis without prior establishment of overall policies or guidance.

b. Recommendations

(CO-10) Planning for major contingency operations be based on the employment of a hard core of engineer construction troops augmented to the extent practicable by contractor forces.

(CO-11) In the case of plans for major contractor effort, the requirements contained in the instructions for base development planning in support of joint operations, recently issued by the Joint Chiefs of Staff (SM-643-69), be expanded to require, as appropriate, such specifics as:

(a) The time-phased plan for the mobilization of the contractor level of effort.

(b) The number and types of contractors to be employed.

(c) The degree to which the contractors are to be administratively and logistically independent (e.g., in such areas as procurement of construction materials and transportation).

## 4. COORDINATION AND CONTROL

### a. Lessons Learned

(1) The Military Assistance Command, Vietnam, engineer staff was initially inadequate to carry out fully the coordination and priorities responsibilities that had been delegated to the Commander, U.S. Military Assistance Command, Vietnam. The establishment of a Director of Construction with joint manning provided the required emphasis at a level commensurate with the importance of the construction program. The experience in Vietnam has shown that such a director should be directly under the command or part of the staff of the joint commander in the combat area to ensure effective and responsive coordination of the construction program with operations and logistic support.

(2) The ever-changing demands for detailed management information and differing formats for reporting dynamically changing programs imposed a heavy workload on the construction managers and responsible commands in Vietnam.

### b. Recommendations

(CO-8) The Joint Chiefs of Staff instructions regarding base development planning for joint operations (SM-643-69) require specific provision for the coordination and control of construction in the combat area, as suitable to the contingency operation planned. The planning should set forth the composition and role of a construction directorate on the staff of the joint field commander if warranted by the scope and complexity of the contingency.

(CO-9) The contingency reporting system under development by the Joint Chiefs of Staff stress simplicity, reduction of information requirements to key elements pertinent to a combat situation, capability for expansion without major changes in automatic data processing programs and format, and compatibility with the program and funding management requirements of the Services.

## 5. PROGRAMMING AND FUNDING

### a. Lessons Learned

(1) One of the outstanding by-products associated with the extensive use of a civilian contractor in Vietnam was the successful development and implementation of the Level of Effort Construction Management System (LOE). This system resulted in revolutionary procedures applicable to the management of large cost-plus type contracts encompassing numerous diversified activities and specifically tailored, although not limited to, a combat environment. The system, which focuses on cash flow and cost of capability, should prove to be an invaluable asset in situations of continuing instability such as experienced in Vietnam.

(2) Simplified programming procedures should be established in advance and should not be revolutionized during a contingency operation as was the case during two separate occasions in Vietnam, each of which necessitated the complete restructuring of three major programs. Furthermore, different procedures should not be imposed on the different appropriations within the overall construction program.

(3) The need for flexibility was duly recognized by the military departments and the commander of the unified command; however, the extent to which it was provided, prior to 1966, was negligible. Further, the modifications thereto, promulgated early in 1967, essentially reverted to peacetime procedures, imposed an undue and monumental paper workload, and were not commensurate with command responsibilities.

(4) Sufficient funds were not provided in a timely manner. The appropriated amounts, particularly prior to the FY 66S program, were below the required and requested level. The experience in Vietnam showed that, when the level of construction funds must be reduced, the reduction should be exercised through allocation control rather than by means of reduced appropriation requests.

(5) There was little resemblance between facilities originally programmed and those ultimately constructed. The early preparation of program definition by line item, months before the initiation of construction, accordingly resulted in the constant necessity to reprogram. Considerable effort was required to formulate the initial programs in great detail; much of this detail was of questionable value. Gross requirements programming would have been more responsive and effective.

(6) The unmodified application of the full-funding concept precluded the full utilization of the construction capability that had been mobilized.

(7) The programming and funding procedures employed to control the construction program in Vietnam were essentially peacetime procedures and were inappropriate for such a contingency. They did not provide the unified and Service commanders with the degree of flexibility required by and commensurate with their responsibilities. The experience in Vietnam clearly demonstrated the need for simplified procedures.

b. Recommendations

(CO-6) Subject to overall controls, the flexibility provided to the commander of a unified command in the execution of the construction program in a combat area be broad and commensurate with the responsibilities assigned and the exigency of the situation. To achieve this, the Office of the Secretary of Defense should develop and sponsor a completely new appropriation with established formats, programming procedures, and limitations specifically tailored to achieve an optimum balance of flexibility, responsiveness, visibility, and good management. This appropriation would be temporary in nature and applicable only during the contingency situation. It is suggested that such an appropriation be called "Contingency Construction Appropriation" and that the development of such an appropriation, and the management thereof, be based on the following:

(a) Definition of programs on the basis of gross requirements identified bv a limited number of standard Department of Defense facility category groups.

(b) Appropriation of funds commensurate with the level of effort to be mobilized and maintained, in keeping with the gross requirements, the completion schedules, and the troop-contractor mix.

(c) Mobilization and demobilization costs funded separately from other construction costs.

(d) Introduction of line item identification at the construction directive stage of program execution.

(e) Authorization to make exceptions to "full funding."

(f) Allocation of construction funds in a single account for each Service without fiscal year identification of follow-on funds. Such follow-on funds should be additive to the accounts applicable to facility category groups in the total program.

(g) Control of construction above the unified command level not based on detailed line item approval but exercised through broad guidance and veto power, with base "Complex Reviews" and established reporting systems providing the necessary data for decision-making.

(CO-7) Construction programming procedures to be employed in future contingencies be developed in advance between the Department of Defense and the appropriate congressional committees and that legislative proposals be drafted to implement the procedures agreed upon.

## 6. CONSTRUCTION MATERIAL

### a. Lessons Learned

(1) The construction stocks in-theater and in the continental United States were inadequate to support the buildup in 1965. The main causes were insufficient forecasting for and limited procurement of the General Mobilization Reserve Stocks and the Pre-positioned War Reserve Stocks. Construction of essential air and water terminals would have been facilitated had long-lead-time material for these terminals, such as airfield landing mat and prefabricated piers, been pre-positioned well forward in the theater.

(2) The establishment of an advanced base depot in the Western Pacific (outside Vietnam), with adequate shallow-draft lighterage, would have provided balanced and timely provisioning by permitting the "call forward" of materials on an "as needed" basis and would also have precluded the discharge of low priority and bulky cargo at RVN ports at other than periods of low activity. Construction materials are unique, in that, while bulky as are Class I, III, and V cargo, they are not generally consumed at a determinable rate. Therefore, the scheduling of bottoms is difficult, and the use of airlift is usually impracticable.

(3) The introduction into Vietnam of many diverse makes and models of construction and utility equipment (particularly electric generators) unfavorably impacted on the engineer mission. This situation arose because standardized items of military equipment had not been established and, at the onset of the buildup, it was thus necessary to purchase any item of commercial equipment that was available. The impact of this practice was evidenced in maintenance and repair parts supply problems. Additionally, the situation was aggravated by inadequate initial spare parts provisioning. These Vietnam experiences showed that, when standardized items of critical military construction and utility equipment are not available or appropriate, a program should be established to standardize available commercial items.

### b. Recommendations

(CO-18) The instructions issued by the Joint Chiefs of Staff for base development planning in support of joint operations (SM-643-69) include consideration of the establishment of an in-theater forward depot geared to regulate (hold and forward on call) the flow of selected construction materials for each plan developed.

(CO-19) The Services, through the Joint Logistic Commanders, take under study the feasibility of the establishment of war reserve pools of critical commercial type construction equipment to be managed and rotated by the manufacturers concerned. (The Army's

Commercial Construction Equipment System, presently under development, appears to have considerable merit regarding this course of action.) This would be enhanced by the use of sole source, multiyear contracts as recommended in Chapter VII, Supply Management Monograph.

(CO-20) Initial provisioning of repair parts for construction equipment be reviewed by the Services with a view to increasing accompanying and follow-on spares to a level commensurate with realistic combat construction experience.

(CO-21) Common supply provisions be made in accordance with the recommendation in that regard in the Common Supply Monograph.

## 7. REAL ESTATE

### a. Lessons Learned

(1) The procedures established by the Government of the Republic of Vietnam were the major cause of problems in timely real estate acquisition.

(2) The absence of a "country-to-country" agreement--or draft agreement--in support of the Republic of Vietnam contingency plans impaired expeditious real estate procurement. The failure of most base development plans to address adequately real estate requirements further complicated this issue.

(3) Because of the rapid and unpredictable nature of the buildup of forces in RVN, it was not possible to predict accurately real estate requirements and locations. This condition further complicated the problem of adequately staffing sections to handle the real estate processing.

(4) It is noted that the Joint Chiefs of Staff have taken action to:

(a) Require the development of procedural plans as an initial step in the advance preparation of real property negotiating folios to be used when appropriate.

(b) Provide for the inclusion of real estate requirements in base development plans. (Note: This is an expansion of the data currently contained in the U. S. Base Requirements Overseas Report and is intended to provide more detail.)

### b. Recommendations

(CO-13) The Office of the Secretary of Defense, in coordination with the Department of State, establish a file of draft real estate proposals suitable for the most likely host nations.

## 8. RESPONSIVENESS

### a. Lessons Learned

(1) Although on an overall basis the construction accomplished in Vietnam was responsive to operational requirements, a substantial backlog of work existed throughout the conflict. This in turn meant that much important but lower priority work was deferred or not accomplished. It is doubtful that a construction force large enough to ensure a consistently small backlog of construction could be mobilized under most war conditions. In fact, the establishment of such a large construction force would probably be an unwise allocation of available resources. However, improvements recommended above in the fields of gross requirements planning, gross requirements programming, and level of effort funding should lead toward a more nearly optimum balance between total requirements and the construction effort available.

(2) The elaborate procedures that were employed to request construction and have it approved, funded, and built contributed significantly to the lag between recognition of a requirement and construction of a facility.

(3) One of the key factors affecting user satisfaction in Vietnam was found to be the degree to which organic capabilities to accomplish construction existed. Although centralized control of construction resources provides efficient overall management of a construction program, commanders need to retain some organic capability to accomplish small construction projects essential to the accomplishment of their mission. In the absence of such a capability, a vast number of requests for small projects must be processed through already saturated administrative channels with the result that much small, urgent work simply cannot compete with larger projects of interest to the higher levels of command for the limited construction effort available.

(4) A need has been demonstrated for the early specification of construction standards by the commander of the unified command and the subsequent enforcement of these standards to eliminate many of the real and fancied complaints of inequitable treatment, particularly where units from different Services are collocated.

(5) A requirement was also established for consideration, during contingency planning, of the manner in which the Army's responsibility to provide troop construction support to the Air Force is to be discharged.

b. Recommendations

(CO-14) The Services establish simplified procedures for requesting and approving construction in the combat zone.

(CO-15) Following the development of construction standards and planning factors by the Construction Board for Contingency Operations, operation plans and implementing orders specify the standards to be used and provide necessary guidance to adapt the standards and factors to the circumstances of the plan.

(CO-16) Contingency planning provide for adequate organic construction capabilities and appropriate delegation of approval authority to permit commanders to accomplish minor, urgent construction projects in a timely manner.

(CO-17) Contingency plans and base development plans address the way in which Army troop construction support will be provided to meet Air Force requirements.

# APPENDIX A

# MISSION AND FUNCTIONS OF THE MACV DIRECTOR OF CONSTRUCTION

# APPENDIX A

# MISSION AND FUNCTIONS OF THE MACV DIRECTOR OF CONSTRUCTION

The Deputy Secretary of Defense's memorandum of 6 January 1966 establishing the position of the MACV construction director is quoted below. The mission and functions outlined in JCSM-891-65 are attached as Annex A1 and an extract of the MACV implementing directive is in Annex A2.

"MEMORANDUM FOR THE CHAIRMAN, JOINT CHIEFS OF STAFF

"SUBJECT: Construction Management in Vietnam (U)

"I concur in the need for an "engineer construction boss" under the Military Assistance Command, Vietnam, and approve the mission and functions as outlined in the appendix to your JCSM-891-65 of 20 December 1965. You are hereby requested to proceed with implementation.

"It should be clearly understood that the "engineer construction boss" has full authority to discharge the responsibilities placed upon him, and that such authority rests in him and not in the MACV-J4. If he needs additional authority, I will expect you to let Secretary McNamara or me know so that terms of reference can be modified promptly.

"Copies of the approved mission and function are being sent to the Secretaries of the Military Departments."

(NOTE: This quotation is downgraded from CONFIDENTIAL to unclassified with the permission of the office of origin--Office of the Deputy Assistant Secretary of Defense (Properties and Installations).

Attachments - Annexes 1 and 2 as shown.

# ANNEX A1

# MISSION AND FUNCTIONS OF THE MACV ENGINEER*

## MISSION

Direct, manage, and supervise the combined and coordinated construction program to meet MACV requirements and coordinate all Department of Defense (DOD) construction efforts and resources assigned to MACV or in the Republic of Vietnam (RVN).

## FUNCTIONS

The Engineer will be responsive to the Commander, U.S. Military Assistance Command, Vietnam (USMACV), for the accomplishment of the following functions:

a. Advise the Commander and his staff on military engineering and base development matters.

b. Exercise direct supervision and directive authority over all DOD construction commands and agencies, both military and civilian, in the RVN except for those construction/engineer units organic to or assigned to major combat units. Directive authority is the authority to utilize resources to accomplish the construction mission of the command. Exercise supervision of interservice facility maintenance matters. Authority extends to the direct assignment of specific projects to the several construction commands or agencies, and to the adjustment of equipment, material, and other resources as necessary to meet MACV priorities.

c. Determine present and future construction requirements by supervising and coordinating the accomplishment of joint master base development plans.

d. Forecast construction force requirements and capabilities, both U.S. troop and contract, as well as the Republic of Vietnam Armed Forces and third countries, to accomplish the present and future construction mission.

e. Manage the construction effort executed by construction commands and agencies, to insure that construction standards, criteria, and schedules are met and related projects of all of the Services and other claimants are properly phased.

f. Arrange for and coordinate real estate acquisition for U.S. forces and U.S.-funded construction effort, allocate this real estate and provide staff supervision over problems related to leasehold or occupancy of lease or tenure.

g. Exercise authoritative direction and control over application of program authority and DOD funds available for construction in the RVN within departmental limitations. Fiscal accountability will be retained in Service channels.

h. Establish and supervise progress of accomplishment of the construction of new projects within the guidance provided by the Secretary of Defense.

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*Source: Joint Chiefs of Staff, Memorandum 891-65, 20 December 1965.

i. Establish and change, when necessary, the priorities for construction, material, and equipment.

j. Approve and, when necessary, establish design and construction standards and criteria.

k. Develop and manage a project status reporting system.

l. Provide technical engineering support to the Republic of Vietnam Armed Forces, U. S. Operations Mission, and third countries supporting the U. S. forces in the RVN. This function excludes the MACV advisory effort with the Republic of Vietnam Armed Forces troop units.

m. Provide required topographic support.

# ANNEX A2
# MISSION AND FUNCTIONS OF THE MACV DIRECTOR OF CONSTRUCTION*

1. MISSION. The mission of the Military Assistance Command, Vietnam, Director of Construction (MACV-DC) is:

a. To direct, manage, and supervise the combined and coordinated construction program to meet MACV requirements and coordinate all Department of Defense (DOD) construction efforts and resources assigned to MACV or in the Republic of Vietnam (RVN).

b. To advise and assist the Army of the Republic of Vietnam (ARVN) Chief of Engineers and operating agencies under this command.

2. STAFF RELATIONSHIP. MACV-DC is a special staff officer on the staff of the MACV commander (COMUSMACV).

3. FUNCTIONS. MACV-DC is assigned the following functions:

a. Advise the commander and his staff on military engineering and base development matters.

b. Exercise directive supervision and directive authority over all DOD construction commands and agencies, both military and civilian, in the RVN, except for those construction/engineer units organic to or assigned to major combat units. Directive authority is the authority to utilize resources to accomplish the construction mission of the command. Authority extends to the direct assignment of specific projects to the several construction commands or agencies, and to the adjustment of equipment, materials, and other resources as necessary to meet priorities established by COMUSMACV.

c. Exercise supervision of interservice facility maintenance matters.

d. Determine present and future construction requirements by supervising and coordinating the accomplishment of joint master base development plans.

e. Forecast construction force requirements and capabilities, both U.S. troop and contract, as well as RVN Armed Forces and third countries, to accomplish present and future construction mission.

f. Manage the construction effort executed by construction commands and agencies to insure that construction standards, criteria, and schedules are met and related projects of all of the Services and other claimants are phased properly.

g. Arrange for and coordinate real estate acquisition for U.S. forces and U.S.-funded construction effort; allocate this real estate and provide staff supervision over problems related to leasehold or occupancy of lease or tenure.

*Source: MACV Directive 415-2, Construction, Mission and Functions of the Director of Construction Military Assistance Command, Vietnam, 15 February 1966 (extract is not verbatim).

h. Exercise authoritative direction and control over application of program authority and DOD funds available for construction in the RVN within departmental limitations (fiscal accountability will be retained in Service channels).

i. Establish and supervise progress of accomplishment of the construction of new projects within the guidance provided by the Secretary of Defense.

j. Establish and change, when necessary, the priorities for construction, materials, and equipment.

k. Approve and, when necessary, establish design and construction standards and criteria.

l. Develop and manage a project status reporting system.

m. Provide required topographic support.

n. Provide technical engineering support to the Republic of Vietnam Armed Forces (RVNAF), U. S. Agency for International Development, and third countries supporting the U. S. forces in the RVN.

o. Advise and assist the ARVN Chief of Engineers in:

(1) Planning, programming, and budgeting.

(2) Organization, training, and operation of engineer units.

(3) Operation of the Engineer School, Engineer Depot, and Post Engineer establishment.

(4) Development and execution of the RVNAF construction program, including budgeting and funding.

4. IMPLEMENTING INSTRUCTIONS

a. Construction Standards. MACV Directive 415-1, 4 June 1965, specified standards that are equally applicable to military construction (MILCON), operation and maintenance (O&M), and nonappropriated funded construction projects and construct-lease construction on bases. These standards will not be exceeded without specific and prior approval of MACV-DC.

b. Priorities. Component commanders, chiefs of advisory groups, and other DOD agencies will recommend priorities for execution of their respective programs. The Director of Construction will integrate these several lists into a single theater priority list.

c. Assignment of Projects. Component commanders, chiefs of advisory groups, and other DOD agencies will recommend, and MACV-DC will assign projects in coordination with the construction agencies. Assignment will be by issuance of project directives, specifying authorization, approved scope and costs, and required completion date. Construction agencies will not accept assignment without such directives, including O&M, nonappropriated, and minor MILCON projects costing in excess of $25,000.

d. Funding of Projects. Construction directives will be issued as MACV authority to specified military services to cite funds to construction and procurement activities. Without such authority, funds will not be cited for construction.

e. Control of Critical Materials, Plant, and Equipment. MACV-DC will specify items deemed critical and maintain controls thereon, to include allocation of such items.

f. Project Initiation. Requirements may be submitted to COMUSMACV by component commanders or by chiefs of advisory groups; or they may be directed for component submission by COMUSMACV. Prior to submission through channels for departmental consideration, approval by COMUSMACV or his designated representative is mandatory.

g. Reprogramming. MACV-DC is authorized to transfer authorization and funding as allocated from one functional category to another, provided the functional category is not increased by more than 10 percent, and provided further that he will notify immediately the Office of the Secretary of Defense and the military services. Component commanders may initiate reprogramming requests to COMUSMACV, or COMUSMACV may initiate by direction to the component commanders.

h. Emergency Approvals. Unanticipated and unprogrammed requirements, including scope changes, will be submitted by COMUSMACV to the Joint Chiefs of Staff through the Commander in Chief, Pacific, for approval. Contingency funds for Vietnam construction are held by the Secretary of Defense.

i. Minor Construction/Procurement. O&M, nonappropriated funds, and construct-lease projects costing in excess of $25,000 (including materials, labor, and equipment) will require prior approval of MACV-DC. Single material procurements from local or offshore sources, in excess of $25,000, will require approval of MACV-DC regardless of the scurce of funds.

# APPENDIX B

# EXTRACTS FROM U.S. NAVY TABLE OF ADVANCED BASE FUNCTIONAL COMPONENTS

# APPENDIX B

# EXTRACTS FROM U.S. NAVY TABLE OF ADVANCED BASE FUNCTIONAL COMPONENTS*

1. Purpose of this Table. This publication presents to commanders and their planning staffs the Advanced Base Functional Component System for the establishment of Naval Advanced Bases. It is envisioned that the Advanced Base Functional Component System of advanced base establishment and development will be used in any future hostilities. Advanced Base Functional Components described herein are not necessarily pre-stocked nor are the items of material described held in the Bureau stocks of material. The groupings of material making up Advanced Base Functional Components represent pre-planning in that materials necessary to perform a prescribed function are identified and listed. Specific standby procedures to obtain, assemble, and ship Advanced Base Functional Component material when needed, are in existence. Determination of material requirements, whether or not stated in terms of Advanced Base Functional Components is a separate matter as is procurement of material and determination of stock levels to be maintained.

Both the Advanced Base Functional Component System and this publication, which is its current index, will be maintained for use in implementing mobilization plans, logistic plans, and emergency plans. Only a brief description of each component is given in this Table; for a more detailed description of personnel required, listings of material by Bureau contribution and other details, BUSANDA (Bureau of Supplies and Accounts) Instruction 4040.31B, described in paragraph 10 below, should be consulted.

2. Functional Components. An Advanced Base Functional Component is a grouping of personnel and/or material designed to perform one of the specific tasks of an advanced base. A functional component contains the technical personnel and the technical equipment necessary for the performance of their tasks, including, as pertinent, workshop, housing, vehicles, boats, shop and office equipment and a 30-90 day initial supply of consumables. Where components contain material only, the operating personnel are supplied by other components. Housing and messing facilities, medical facilities, defensive ordnance, communication equipment, and, in many cases, power plants and water supply, are NOT supplied with each component and are themselves service components to be integrated into an over-all base plan, providing services to other components. The functional components are given names to indicate their functions, and unclassified code numbers, consisting of a letter and number combination for use in easy reference.

3. Advanced Base Units. An advanced base unit is a grouping of advanced base functional components so arranged as to establish an advanced base. It may be a repair base, supply base, an airfield, an air base, a medium all-purpose naval base, small all-purpose naval base, or any type of naval shore establishment at an overseas location. (An example is attached as Annex B1.)

4. Planning an Advanced Base. Standard units have been set up for planning, training and assembly purposes and are intended to meet approximately average requirements. In planning for any advanced base neither standard units nor standard components are mandatory. The standard units listed are guides for the planners. They form a convenient aid for the area commanders who should request modifications for any unit or component as necessary to meet the individual requirements.

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*Extracted from OPNAV Instruction P4040.22C, Introduction.

5. Echeloning. Advanced base units may be so large -- running into many ship loads -- that assembly and movement by echelon may be necessary. Care should be taken that each echelon has only the personnel and material necessary for a particular stage of the installation and that each echelon is sufficiently well balanced to be self-supporting until the next one arrives. Provisions should be made for early arrival of cargo handling battalions, so that ships can be unloaded with a minimum delay. Each echelon should be separately organized, have its own administration, and report to higher authority on arrival at the target. Staging of material for components and units at intermediate bases should be kept to a minimum. Material staged for extended periods at intermediate bases is often subject to extensive shortages upon arrival at its ultimate destination.

Echeloning data will be available . . . for the purpose of designating material according to its use in sequence of base development as follows:

| | |
|---|---|
| Construction phase | Code 1 |
| Fitting Out phase | Code 2 |
| Operational phase | |
| Repair Parts | Code 3 |
| Consumables | Code 4 |

Echeloning codes assigned to items do not predetermine the sequence of shipping. However, since under this system only like coded items will be packed together, they may move in echeloned shipments at the discretion of the area commander. Personnel are assigned echeloning codes in the same manner as items of material.

6. Assembly and Training of Personnel. Personnel for Advanced Base Functional Components receive basic training followed by necessary individual technical training. Personnel will then be trained as a group in the duties required in performing as an integral part of a functional component. In many cases such personnel will form and actually train as a functional component. Finally, when the Chief of Naval Operations orders the assembly of the component to which they are attached, they will be ordered to an Advanced Base Personnel Depot for "tactical" training as a unit under Chief of Naval Operations direction. During this final stage, personnel will be trained in simulated advanced base problems and operations. Sufficient technical training is continued during this final stage to permit the men to maintain their technical proficiency. While in this final stage, personnel will be processed for shipment overseas. From the personnel depot they will move directly to the port of embarkation.

7. Assembly of Material. As material for these components is procured by the Material Bureaus of the Navy Department, it is held in one of the three following categories of readiness:

a. Provided Condition. Material is to be held in system stock, positioned as necessary to facilitate delivery to dockside when required.

b. Available Condition. All material completely and finally inspected and tested, properly labeled to identify the components, packed for overseas shipment, and located at depots capable of delivering the material to dockside within the readiness time allowed.

c. Assembled Condition. All material transferred from the "Available Condition," appropriately marked, and assembled into functional components at depots specified by the Chief of Naval Operations and with a specific readiness for outloading assigned. Modifications which apply during the pre-mobilization period are contained in OPNAV Instruction 004080. 6.[1]

[1] OPNAV Instruction 004080. 6, subject: Chief of Naval Operations Prepositioned War Reserve Stock for Fleet Support, 21 June 1962.

8. Chief of Naval Operations' Advanced Base Schedules. The Chief of Naval Operations issues directives concerning the procurement of material for functional components in accordance with approved plans. Schedules of assembly and shipment are not being distributed at present, but in the event of any hostilities or when advanced bases are to be activated through the use of functional components, the distribution of such schedules will be resumed. Requests for components must be forwarded through the Area Commander to the Chief of Naval Operations.

9. Dominant and Contributing Bureaus. A technical bureau of the Navy Department is assigned as the "Dominant Bureau" for each functional component. When the technical function of a component is a matter of responsibility of a bureau then that bureau is designated as dominant. When the function of a component does not fall within the field of a technical bureau, the bureau which furnishes the major portion of the material in the component is then designated as dominant.

a. The Dominant Bureau for each component has the following responsibilities and prerogatives:

(1) Continuing review of the advanced base component system to insure that it is an effective logistic tool, and in his field of responsibility, making recommendations to the Chief of Naval Operations for additions of new components to the system, or deletion of the obsolete and superseded components from the system.

(2) Continuing review of unit composition to ascertain whether or not the components for which dominant adequately support the mission of the unit and making recommendations to the Chief of Naval Operations for additions and deletions as necessary.

(3) Continuing review of the components for which dominant to insure that the component is up to date technically and that it will support its mission adequately.

(4) Initiating and conducting inter-bureau liaison with contributing bureaus in support of (3) above and submitting coordinated recommendations for revision to the Chief of Naval Operations for review and approval as necessary.

(5) When requested by the Chief of Naval Operations, coordinating reports on scheduling, assembly and readiness of the components to the Chief of Naval Operations.

b. The Contributing Bureaus for each component have the following responsibilities and prerogatives:

(1) Reviewing their contribution to the component continually to assure that the component adequately supports its mission, except that the Bureau of Supplies and Accounts will be responsible only for its contribution in those functional areas for which it has technical responsibility. Where the Bureau of Supplies and Accounts is the contributing bureau for Navy Stock Account material to support functions or equipments under the technical responsibility of another bureau, the technical bureau is responsible for support requirements for its contribution, reporting them to BUSANDA and performing the continuing review of their adequacy to successfully carry out the mission for which intended.

(2) Conducting inter-bureau liaison in support of (1) above and submitting necessary recommendations to the dominant bureau and the Chief of Naval Operations for review and approval.

(3) Furnishing reports on scheduling, assembly and readiness of their contribution to the component to the dominant bureau and to the Chief of Naval Operations, as required.

The Chief of Naval Operations coordinates the efforts of the dominant and contributing bureaus for each functional component, and reviews and approves as to military features suggested and revised components to insure proper logistic support for the combat forces.

The Chief of Naval Operations, by maintaining in full readiness a component system composed of the proper functional components and the necessary advanced base units, insures that this required logistic support can be met.

10. Advanced Base Initial Outfitting Lists (Abridged). For a more detailed description of functional components, Area Commanders are referred to the Catalog of Advanced Base Initial Outfitting Lists (Abridged) (ABIOL). This is a single volume edited and issued by BUSANDA as BUSANDA Instruction P4040. 31B. The lists are complete to the extent that they show all the equipment for each component in considerably more detail than in this Table, omitting only the itemized lists of minor items, such as spare parts, hand tools, and office supplies. The personnel and material lists in the ABIOL (Abridged) were developed for planning purposes. They do not constitute allowance lists for particular components. Planners should modify the personnel and material lists as necessary after consideration of the mission of the component and conditions known to exist at the planned location. The ABIOL (Abridged) is not suitable as an assembly or shipping list or a ship's manifest.

11. Advanced Base Initial Outfitting Lists (Detailed). Detailed Initial Outfitting Lists have been compiled for each functional component and are the itemized tabulation of the equipment in each component. These lists are for detailed reference, procurement, and assembly purposes. They are not in a form convenient for planning purposes. Each bureau contribution is contained on machine tabulating record cards. Copies of the appropriate detailed lists will be furnished by the dominant bureau to the Commanding Officer of each unit moving out and the Officer in Charge of any component ordered out separately. Requests and justification for ABIOL (Detailed) for planning purposes should be submitted to OPNAV (Op412E)

# ANNEX B1
# ADVANCED BASE UNITS
# CUB

A CUB is an advanced base unit consisting of all the personnel and material necessary for the establishment and operation of a small advanced naval base. It is made up of the functional components required to operate a small active port, to perform voyage repairs, to repair minor battle damage and provide logistic support for a typical small task group of light forces. It contains adequate harbor defense facilities, communications, supply, disbursing, medical, boat repair, ordnance and base maintenance facilities.

The installation of a CUB Unit requires the services of Construction Battalions and Cargo Handling Battalions. The number of CBs and CHBs needed for unloading and construction will depend on local conditions and the rapidity of erection desired. Approximately 24 Construction Battalion months are required to construct a standard CUB under the most unfavorable conditions, assuming no existing facilities or indigenous labor are available. For planning purposes, based on the foregoing assumption, a maximum of 4 CBs is required to construct a standard CUB in a 6-month period.

For establishment of a CUB in the vicinity of an existing city, town, seaport or airport where roads, docks, waterfront and/or airport facilities are available in whole or in part and where establishment is primarily concerned with erection of component facilities as distinguished from site clearance, waterfront development, major road building and comparable effort, the CB requirements may be assumed as 12 CB months.

A standard CUB for use in initial planning is outlined on following page.

The F1 and B5C Components shown are those normally required to unload in the stream a standard CUB plus 4 P1s. The B5C components are not required when unloading is accomplished at dockside and the numbers of F1 may be reduced should the number of P1 be reduced substantially.

| Component Code | Component Title | Number Required | Total Offrs | Total Men | Approx Long Tons | Approx Meas Tons |
|---|---|---|---|---|---|---|
| A2 | Administration (Medium) | 1 | 6 | 55 | 81 | 212 |
| A6 | Intelligence Office (Medium) | 1 | 2 | 3 | 11 | 32 |
| A7 | Shore Patrol Co HQ | 1 | 3 | 20 | 27 | 95 |
| B1 | HECP | 1 | 5 | 13 | 68 | 153 |
| B2C | Harbor Patrol | 1 | 0 | 6 | 26 | 137 |
| B3A | Underwater Detection Equip | 1 | 4 | 12 | 65 | 198 |
| B3E | Magnetic Loop | 3 | 0 | 12 | 3 | 6 |
| B3F | Hydrophone | 2 | 0 | 8 | 46 | 86 |
| B3G | Sonobuoy | 1 | 0 | 6 | 30 | 44 |
| B3H | Transportable Radar | 1 | 0 | 5 | 3 | 25 |
| B3J | Herald | 1 | 0 | 4 | 6 | 19 |
| B5A | Boat Pool | 1 | 1 | 3 | 73 | 246 |
| B5B | Barge Pool | 1 | 0 | 28 | 981 | 3,190 |
| B7 | Surface Detection Radar | 1 | 1 | 24 | 47 | 85 |
| B8 | Minesweeping | 1 | 1 | 1 | 78 | 59 |
| B9 | Fleet Moorings | 1 | 0 | 0 | Varies | Varies |
| B13C | Naval Port Services Office (Small) | 1 | 9 | 28 | 110 | 273 |
| C7 | Visual Sta Oper Base (Large) | 1 | 0 | 21 | 53 | 97 |
| C13 | Internal Communications (Med) | 1 | 0 | 21 | 32 | 66 |
| C17 | Teletypewriter System | 2 | 0 | 44 | 26 | 80 |
| C26 | Electronics Installation Detachment (Large) | 1 | 3 | 7 | 1 | 3 |
| C29A | Pole Line Material for Wire Communications (Small) | 1 | 0 | 0 | 160 | 352 |
| D3A | Tank Farm (Medium) | 1 | 1 | 13 | 2,132 | 3,881 |
| D5B | (Code 33) Base Equipment and Vehicle Repair Parts Support | 1 | 0 | 0 | Varies | Varies |
| D9 | Petroleum Products (for CUB) | 1 | 0 | 0 | Varies | Varies |
| D20 | Disbursing Office (Large) | 1 | 3 | 25 | 65 | 126 |
| D24B | Ships Store Facil (4000 men) | 1 | 3 | 46 | 854 | 1,856 |
| D31A | Supply, Storage, and Administrative Facil (Large) | 1 | 23 | 160 | 2,207 | 3,272 |
| D31C | Supply, Storage, and Administrative Facil (Small) | 1 | 5 | 30 | 386 | 615 |
| D32A | Refrigerated Storage Facilities (4000 men) | 3 | 0 | 66 | 1,716 | 4,293 |
| D32C | Refrigerated Storage Facilities (300 men) | 2 | 0 | 10 | 142 | 290 |
| D33A | Materials Handling Facilities (Large) | 1 | 2 | 70 | 601 | 2,359 |
| D33B | Materials Handling Facilities (Medium) | 1 | 1 | 36 | 317 | 1,066 |
| E3 | Ship Repair (Medium) | 1 | 46 | 904 | 3,974 | 7,640 |
| E6 | Ship Repair (Small) | 1 | 32 | 567 | 1,982 | 3,858 |
| E8 | Repair, Small Boat | 1 | 4 | 75 | 431 | 764 |
| E16A | Oxygen Generating (Small) | 1 | 0 | 9 | 182 | 292 |
| E17 | Acetylene Generating Plant | 1 | 0 | 13 | 306 | 683 |
| E19 | Typewriter Repair | 1 | 0 | 1 | .16 | .23 |
| E22 | Small Boat & Patrol Craft Repair (Tray Mounted) | 1 | 4 | 144 | 171 | 632 |
| E28 | Radiac Maintenance & Calibration | 1 | 0 | 10 | 27 | 50 |
| G4 | Hospital, 200-Bed | 1 | 37 | 121 | 1,221 | 2,341 |
| G8 | Dispensary, 25-Bed | 1 | 3 | 18 | 194 | 423 |
| G28 | Dental Clinic (Medium) | 1 | 11 | 18 | 132 | 258 |

| Component Code | Component Title | Number Required | Total Offrs | Total Men | Approx Long Tons | Approx. Meas Tons |
|---|---|---|---|---|---|---|
| H21B | Print Plant, Litho Reproduction (14" x 20") | 1 | 0 | 6 | 65 | 127 |
| J1 | Base Ordnance Shop | 1 | 1 | 18 | 129 | 221 |
| J3C | Magazine (5,000 T) | 1 | 6 | 99 | 1,573 | 2,381 |
| J4 | Bomb and Mine Disposal | 1 | 1 | 3 | 48 | 153 |
| J5D | Advanced Underseas Weapons, Aircraft Launched | 1 | 1 | 11 | 137 | 241 |
| J5F | Advanced Underseas Weapon (Surface Launched) | 1 | 2 | 38 | 189 | 303 |
| J10D | Ord Optical and Fire Control | 1 | 1 | 42 | 111 | 286 |
| J12B | Net Component (Medium) | 1 | 4 | 38 | 603 | 1,744 |
| J13B | Degaussing (Medium) | 1 | 4 | 17 | 150 | 370 |
| J15A | Personal Arms and Infantry Equip Enlisted (100 men) | 36 | 0 | 0 | 72 | 180 |
| J15B | Personal Arms and Infantry Equip Officers & CPOs | 269 | 0 | 0 | 3 | 13 |
| N1A | Camp, 250-man, Tents | 2 | 0 | 50 | 868 | 1,754 |
| N2A | Camp, 100-man, Tents | 2 | 0 | 28 | 382 | 830 |
| N3A | Camp, 50-man, Tents | 1 | 0 | 8 | 139 | 300 |
| N5B | Camp Bldgs, 250-man | 3 | 0 | 0 | 471 | 897 |
| N7A | Camp, 1,000-man, Tents | 3 | 0 | 243 | 4,023 | 8,100 |
| N8B | Camp Bldgs, 1,000-man | 3 | 0 | 0 | 855 | 1,818 |
| N10C | Adv Base Training & Educational Component (Medium) | 1 | 6 | 12 | 56 | 104 |
| N18 | Base Recreation, 5000-man | 1 | 3 | 18 | 7 | 43 |
| P2 | Base Construction Equip | 1 | 0 | 0 | 1,031 | 2,824 |
| P3 | Base Construction Equip Mechanical Consumables | 1 | 0 | 0 | 48 | 30 |
| P4 | Base Construction Building Materials | 1 | 0 | 0 | 660 | 1,168 |
| P5 | CBMU | 2 | 14 | 540 | 2,892 | 6,434 |
| P5A | Automotive, Construction Equip Service and Maintenance | 1 | 1 | 40 | 269 | 588 |
| P6B | Decontamination Detection & Group Protection for ABC Warfare Defense (Medium) | 1 | 0 | 2 | 433 | 798 |
| P9 | Wooden Pier | 2 | 0 | 0 | 943 | 1,241 |
| P12A | Fire Protection, Basic | 2 | 1 | 10 | 80 | 228 |
| P12C | Fire Protection, Waterfront | 1 | 0 | 1 | 14 | 25 |
| P12E | Fire Protection, Piping | 3 | 0 | 0 | 810 | 1,800 |
| P12F | Fire Protection, Fuel Depot | 1 | 0 | 2 | 31 | 83 |
| P15 | Base Power Plant | 2 | 0 | 18 | 1,400 | 2,000 |
| P16A | Trans Line Installation | 1 | 2 | 48 | 65 | 378 |
| P20 | Snow Removal Equipment | 1 | 0 | 0 | 351 | 995 |
| | CUB Total | | 257 | 3,949 | 37,875 | 78,614 |
| F1 | Cargo Handling Bn | 2 | 20 | 538 | 1,386 | 3,518 |
| B5C | Lighterage | 2 | 4 | 250 | 4,432 | 10,396 |
| N1A | Camp, 250-man, Tents | 2 | 0 | 0 | 868 | 1,754 |
| N7A | Camp, 1000-man, Tents | 1 | 0 | 81 | 1,341 | 2,700 |
| P1 | Construction Battalion | 4 | 132 | 4,328 | 17,400 | 44,000 |
| | Total, Construction Forces & associated components | | 156 | 5,197 | 25,427 | 62,368 |
| | GRAND TOTAL | | 413 | 9,146 | 63,302 | 140,982 |

# APPENDIX C

# EVOLUTION OF REPORTING CONSTRUCTION IN RVN 1965 - 1968

# APPENDIX C

# EVOLUTION OF REPORTING CONSTRUCTION IN RVN 1965 - 1968

In mid-1965, faced with a rapid escalation of scope of construction, which ultimately raised the contract construction rate to over $40 million per month, the Naval Facilities Engineering Command (NAVFACENGCOM) recognized that its management needs for control of Vietnam construction could no longer be met by the past techniques. More sophisticated means were needed for rapid handling, distribution, and digestion of massive quantities of information than could be provided by the manually prepared Project Status Report. Action was initiated in September 1965 to adapt the existing NAVFACENGCOM peacetime reporting system to the peculiar requirements for SE Asia as established by the Office of the Secretary of Defense (OSD) for the report RCS-I&L(Twl) 6526. This system, which became operational in early 1966, was the NAVFACEGCOM Program Assignment and Status Report, known as the 2318/2319 Reporting System. However, the complexity inherent in the system was not compatible with the Vietnam environment; this report was not a satisfactory management tool for RVN. As a consequence, steps were taken to automate the previously abandoned Project Status Report. On 17 May 1967, the automated revision, known as the 11013, formally replaced the 2318/2319 system in RVN for reporting by the Officer in Charge of Construction.[1]

The next evolution (after the 6526 report that stemmed from the FY 65S Appropriation) of the reporting system occurred subsequent to the enactment of the FY 66 Amended Appropriation Act – PL 89-213. By memorandum of 2 October 1965,[2] the Secretary of Defense advised that ". . . sufficient flexibility must be provided to permit realignment of the construction program to coincide with changes in the military situation." Accordingly, he liberalized the flexibility in executing the construction approved under the FY 65S and FY 66A programs. Changes in the total program were to be reported to OSD monthly. On 14 October 1965, the Deputy Assistant Secretary of Defense for Properties and Installations (DASD (P&I)) introduced the 6545 Report. The format of the existing 6526 report was not changed, but the data requirements were expanded to include:

a. Projects approved for accomplishment in SE Asia by Public Law 89-213 and subsequent laws.

b. A separate section for all minor construction projects over $50,000 approved for accomplishment in SE Asia in support of the Vietnam situation.

c. All major and minor projects outside SE Asia but justified as being in direct support of the Vietnam situation.

This change marked the transition from the unilateral OICC reporting system to the MACV coordinated system.

The January - March 1966 period produced (1) changes in the approval procedures, (2) the FY 66S appropriation request and, (3) establishment of the MACV Director of Construction. Each even contributed to the next evolution in the reporting system.

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[1] Office of the Joint Chiefs of Staff, Report by the Special Military Construction Study Group, 19 April 1968, pp. 311-312 (CONFIDENTIAL).

[2] Secretary of Defense, Memorandum, subject: Flexibility in Execution of the Military Construction Program in South Vietnam, 2 October 1965.

In January 1966, the Secretary of Defense established the Functional Facility Category Groupings (FFCG) for the Vietnam program, and the Services were subsequently directed to restructure the FY 65S, FY 66A, and FY 67S programs to the new categories.[3]

On 14 January 1966, the Secretary of Defense promulgated construction approval and reporting procedures for South Vietnam incorporating the new categories by memorandum to the Secretaries at the military departments and the Chairman of the Joint Chiefs of Staff. These procedures, known as "Management of Military Construction Programs in South Vietnam," were particularly significant in that they stipulated that COMUSMACV would provide the required reports to Secretary of Defense, CINCPAC, and the military services rather than following the long-established Service channels.

On 7 March 1966, Assistant Secretary of Defense (Comptroller) by memorandum, "Fiscal Procedures and Accounting for Construction in Vietnam," established the following responsibilities to implement the new approval procedures and to answer questions raised by MACV:

> "1. Supporting agencies (OICC, U.S. Army, Ryukyus (USARYIS), Construction Battalions, Pacific (CBPAC) will perform fiscal accounting as may be required to support military construction forces, i.e., troop units, as requested by COMUSMACV.
>
> "2. The OICC will perform fiscal accounting applicable to contractor efforts.
>
> "3. The OICC will furnish monthly financial status reports to all three military departments through the Department of the Navy in accordance with normal procedures."

On 17 March 1966 the 6545 Report was officially cancelled and three separate formats comprising the 6610 Report were disseminated by the Assistant Secretary of Defense (Installations and Logistics) (ASD(I&L)). Since the MACV Construction Directorate had become operational by this time, a construction bulletin was published for in-country implementation.

Brigadier General D. A. Raymond, as MACV Director of Construction, commented on the 6610 report as follows:

> "The 6610 was based on inputs from the OICC and troop construction agents in the form of project status reports. These data were transcribed into the Navy's 2318/2319 system. The revised 2318/2319 was punched on cards, sent to NFEC, and processed through a computer. A new 2318/2319 was produced. From the data bank, the 4444 detail report, and the 4452 summary were machine run versions of the 6610. However, the 6610 report was prepared manually from the 4452 and other reports since the reliability of the 4452 was poor until March 1967, at which time it was used "as is." The 6610 grew from 28 pages for the first issue in March 1966 to 114 pages in September and remained at a 100 page level thru February 1967.
>
> "As a construction progress report there was nothing wrong with the report format or the machine processing system. The difficulty was in obtaining valid detail for both contractor and troop inputs.
>
> "The contractor work-in-place was computed as a percentage of the current estimate. The Navy and the contractor did not have cost personnel on construction sites. Accounting personnel in the main office did not make cost distributions to projects on a timely basis. The time lags were such that the 6610 in effect gave a false picture. Periodically the OICC and the contractor updated all CWE's and in each case found that CWE's were above the programmed funds available. It is possible that with a greater number of accountants these conditions would have been brought to light much earlier. However, accurate costing was virtually impossible under the system employed."

[3] Office of the Assistant Secretary of Defense (Installations and Logistics), Memorandum, subject: Military Construction Programs in South Vietnam (U), 11 February 1966.

> "The troop project progress reporting was based on the troop constructing unit estimating percentage completion and passing this data up through channels where it could eventually be fed into the mechanized report. Since cut off date for machine reporting was the 20th of each month, the constructing unit in many cases was turning in an estimate about the 5th of the month. However, for the remainder of that month the troop unit might then be assigned to combat support. In summary, the troop reporting system has been fraught with reporting inadequacies despite continual supervision aimed at improvement."[4]

Eventually, the U.S. Army Engineer Construction Agency, Vietnam (USAECAV), published a 42-page directive as the means of obtaining the comprehensive data required to fulfill the management demands.[5]

The Navy, as DOD construction agent, saw a different problem. NAVFACENGCOM has written:

> ". . . The basis for the inconsistencies and errors in the 6610 Report was the instability of the program, i.e., trying to plan for and construct a moving target. The OSD control system resulted in a continuous and confusing gyration in the project makeup of the total Vietnam program which 6610 Report highlighted."[6]

The FY 67S and FY 68R Programs provided the impetus for the next evolution in the reporting system. In January 1967, the Secretary of Defense directed that the FFCG system be abandoned and the Service programs and program reports be converted to projects and applicable DOD facility categories contained in DOD Instruction 4165.3 by 1 April 1967. The same directive established new reprogramming approval procedures.[7] This was followed in February by OSD promulgation of new fiscal and accounting procedures, and in April by implementing instructions from ASD (I&L). The 6610 Report format was retained with "work projects" being listed in lieu of the functional facility categorization. In June 1967, ASD(I&L) prescribed the use of the 6727 Report, which was composed of two formats. Format I provided detailed construction progress and financial status that could be "sorted" in 12 subreports and Format II, which consisted of a summarized financial overview by Service.

The final evolution in the reporting system took place in November 1968 when the 6727 Report was replaced by a simplified version assigned Report Control Symbol DD I&L (M) 915. The 915 formats were the result of recommendations made by OICC, RVN, based on field experience with the 6727 Report.

In addition to the basic management reporting system, the following related and supporting reports were developed:

(1) Funds Commitment and Authorization. This was a monthly report showing commitment of all funds authorized for construction in RVN. This report showed, by service and FFCG, the status of military construction funds authorized and the portion committed by construction directive. The report was developed from memo accounting data maintained in the MACV Construction Directorate. It was a useful management report while the FFCG system was being employed and was disseminated to all military departments and their subordinate commands, Commander in Chief, Pacific, (CINCPAC), the Joint Chiefs of Staff, and OSD. This was oriented toward the FFCG system and was discontinued after the 31 March 1967 report.

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[4] Brig. Gen. D. A. Raymond, USA, Observations on the Construction Program, Republic of Vietnam, 1 October 1965 - 1 June 1967, pp. 63-64 (CONFIDENTIAL).

[5] U.S. Army Engineer Construction Agency, Vietnam, USAECAV, Circular No. 415-8, Troop Construction Cost Accounting and Progress Reporting System, 1 December 1968.

[6] Naval Facilities Engineering Command, Southeast Asia Coordinating Group Note, Volume 4, Item 8.

[7] Office of the Secretary of Defense, Memorandum, subject: Construction Approval Procedures for South Vietnam, 31 January 1967.

(2) The Restatement. A summary statement of the total program by Service, location, and scope initially was required by OSD in June and October 1966. From December 1966 until June 1967 it was required on a monthly basis. Starting with the October submission the report has been known as the "Restatement of the Military Construction Program SVN," or simply as the Restatement. OSD required the October and subsequent reports in an effort to explain the large escalation in cost estimates that plagued the program in CY 66 and early CY 67.

The Restatement provided both detailed and summary data by Service and a triservice summary. The original format contained projects by Service, location, FFCG, scope, program funds, and current working estimates (CWE). The FFCG's were converted to DOD category codes effective 1 April 1967, and the CWE's were temporarily discontinued since it was not possible to obtain meaningful values. The status of MAP programs was included in the 1 April report and continued on a montly basis therafter.

The Restatement was ultimately incorporated into the 6727 Report processed by the Contractor's computer in Saigon.

(3) Complex Review. This is a MACV review of the bases, their justification and rationale for the total facilities in each logistical complex. The review is a companion document to the 915 Report.

During the Secretary of Defense-CINCPAC conference on 8 July 1966, the Secretary of Defense requested that CINCPAC take a hard look at the South Vietnam Construction program from an operational standpoint, in total cost by base, and that the Joint Chiefs of Staff critically review the requirements at each base prior to forwarding them to the Secretary. The review provides an overall look at the construction program by major complex (Da Nang, Qhi Nhon, Cam Ranh Bay, and Saigon) with the following specific objectives:

(a) Computing the broad spectrum of facilities required utilizing MACV-developed planning factors and the programmed force levels.

(b) Relating requirements to forces and identifying these requirements with the combat and logistic support concepts anticipated for the period.

(c) Identifying additional requirements after considering available and programmed assets.

A separate analysis covers construction at 18 major geographic locations and is organized to present, in sequence, the installation mission and description, the forces supported in the area, status of funded construction programs, and a detailed analysis of requirements and assets by the functional facility category group--e.g., cantonments and ports--in the original editions, and by DOD category codes in the April 1967 and subsequent editions. Each area analysis is accompanied by a site plan.

In addition to the basic analysis, the review contains general comments that provide supporting rationale or additional explanation for conclusions appearing in the analysis, force structure summaries, aircraft beddown for major air bases, facility status summary sheets by complex, and MACV planning factors.

The first report was completed in late September 1966. Despite the heavy workload imposed by this report, the accrued benefits to all levels of management made it one of the most valuable management tools. It provides commanders with a comprehensive look at the construction program and supplies the component commands with a comprehensive requirements statement to assist in planning and programming management. The review is updated on an "as required" basis. The second and third editions were produced at about 4-month intervals, but the fourth edition was not produced until 1968--a period of about 9 months. (See Appendix D for additional discussion of the Complex Review.)

(4) Report Of Piaster Expenditures. This is a monthly report that shows the piaster expenditures by the OICC in support of the RMK-BRJ contractor and architect and engineer design firms under contract to OICC. This report is compiled by the OICC Comptroller and forwarded to the MACV Comptroller. The primary purpose of this report is for use in anti-inflation efforts, to ensure that contractor piaster expenditures do not exceed the established ceiling and to review spending for possible reductions.

(5) DOD Cost Activities Index Report. This semimonthly report, as of the 1st and 15th of the month, shows average prices for selected items in various locations where the contractor is operating. Reports are prepared by RMK-BRJ, forwarded to MACV Comptroller through OICC and MACV-DC. These reports are used to evaluate construction material price trends and establish countrywide averages.[8]

[8] Brig. Gen. D. A. Raymond, op. cit., pp. 63-68.

# APPENDIX D

# DESCRIPTION OF COMPLEX OR AREA REVIEW DEVELOPED FOR RVN MILCON PROGRAM

# APPENDIX D

# DESCRIPTION OF COMPLEX OR AREA REVIEW DEVELOPED FOR RVN MILCON PROGRAM

A Complex or Area Review is a comprehensive management tool designed to meet the special needs of any large and dynamic base development program in the theater of operations. The review defines the broad construction requirements necessary to support base development and relates these requirements to combat operations and logistical support, as well as to force structure. There is also an essential requirement to portray the geographical basis for operational and logistical facility requirements since geography is frequently the critical consideration affecting operations, especially logistical support. Operations in Vietnam illustrate this point. For operational and logistical support, Vietnam was divided early into four somewhat autonomous areas. Each of the four areas was developed with a major port and depot complex as a focal point (Da Nang, Qui Nhon, Cam Ranh Bay, and Saigon). This division recognized the realities of (1) the general absence of a suitable road net which could support interconnecting ground lines of communication; (2) the consequent reliance on sea lines of communications and ports; and (3) the time/space factors for responsive logistic support. Thus, in this case, geographical considerations determined the pattern of logistical operations and, therefore, the supporting base development.

In addition to a meaningful and integrated statement of requirements, a Review must present existing and programmed assets, an explanation of planning factors and other information required to provide a complete picture of base development.

The "heart" of a review is a series of basic analyses of facilities by major location within complexes or areas. This major location review first sets forth an Installation Description and Mission, which briefly describes the physical environment and the area development plan for facilities and explains the various missions requiring facilities support in the area. This section also includes a summary of the force structure by Service and a listing of major units as well as an appropriate site plan. The combined effect is to familiarize the reader with local operations and those environmental features that most influence both the need for facilities and the type of construction. The Installation Description and Mission is followed by an analysis of facilities requirements and assets by category group (11C-Airfield Pavements, 140-Land Operational Buildings, etc.). This analysis explains in detail for requirements, utilizing the appropriate gross planning factors, and discusses the assets that can be used to meet facility needs. These would include facilities already existing or those approved for construction. Emphasis is on area facility requirements although facility needs are identified by Service for programming and funding purposes. The analysis is then summarized on a Status of Facilities Summary, which tabulates requirements, current assets, and deficiencies by Service within each category group discussed in the analysis.

The analysis of base development at the selected locations (major location review) is followed by Summary Data, which provide a theater summary of the force structure, the aircraft beddown at various air bases, and a summary of the requirements, assets, and deficiencies for major areas or complexes and for the theater. Supplementary information can be provided in a General Comments Section, which explains special programs, facility requirements, or conclusions not sufficiently explained in other portions of the review. These could include such topics as lines of communication improvements, standards of construction, exchange facilities or Agency for International Development (AID) facility plans. A necessary portion of any Complex Review is a Summary of Planning Factors and the special rationale utilized in developing these factors. This should also include a summary of all theater stockage objectives that are used in determining total facility requirements.

The above description covers the essential elements in any base development review and seeks to strike a balance between necessary detail for effective management and broad enough coverage to provide depth and perspective in analyzing base development in a theater of operations.

# APPENDIX E
# FUNCTIONAL FACILITY CATEGORY GROUPS

# APPENDIX E
# FUNCTIONAL FACILITY CATEGORY GROUPS

1. CANTONMENTS (MEN)

Includes troop housing and facilities (720); community facilities: personnel support, morale, welfare, and recreational (730, 740, 750); supporting unit and installation cantonment facilities (except for aircraft; see category "Airfield Support Complex") for operations (140); training (170): maintenance (210); POL storage and dispensing (120); storage facilities for ammunition (422, 423); cold storage (432), covered storage (442); open storage (452); dispensaries and dental clinics (520, 530, 540, and 550); administrative buildings (610, 620, 690); support utilities (800).

2. AIRFIELD PAVEMENTS (SY)

Includes runways, taxiways, parking apron, miscellaneous airfield pavements (110); airfield lighting (136).

3. AIRFIELD SUPPORT COMPLEX (SF)

Includes unit and installation facilities in support of aircraft for operations (140); training (170); maintenance (210); navigation and traffic aids (133, 134). POL storage and dispensing (120); storage facilities for ammunition (422, 423); cold storage (432); covered storage (442); open storage (452); dispensaries and dental clinics (520, 530, 540, 550); administrative buildings (610, 620, 690); support utilities (800).

4. COMMUNICATIONS FACILITIES ($)

Includes communications buildings (131), communications facilities other than buildings (132) and communications lines (135).

5. PORT FACILITIES (MT/DAY)

Includes piers, wharves, cargo handling facilities, seawalls, bulkheads, quay walls, waterfront operational facilities (150); harbor and coastal protection facilities, moorings, buoys, dolphins, marine improvement, dredging, harbor and entrance control points (160), port navigational aids (133 and 134 applicable to port facilities); in-transit storage (431) and utility extensions (800) at these waterfront locations.

6. LIQUID FUEL STORAGE BULK (BBLS)

Includes depot, terminal, installation, and bulk type storage for POL, fuel oil, aviation gas, and other liquid fuel and accessory piping and utilities (411); pipeline, pumping stations, accessory equipment and appurtenances (125).

7. MAINTENANCE BUILDING (SF)

Includes facilities and shops for other than unit and installation maintenance (210); related utilities (800).

8. AMMUNITION STORAGE DEPOT (SF)

Includes igloos, magazines, and storage pads along with propellant storehouses for support of bulk storage mission (421); related utilities (800).

9. COLD STORAGE DEPOT AND IN-TRANSIT (CF)

Includes freezer and chill plants, cold and refrigerated warehouses and normal processing facilities combined therewith in support of bulk storage mission (431); related utilities (800).

10. STORAGE WAREHOUSE DEPOT (SF)

Includes warehouse, storehouse, and garage types of storage completely enclosed by walls for support of bulk storage mission (441(a)); related utilities (800).

11. STORAGE SHED DEPOT (SF)

Includes shed storage not completely enclosed by walls for support of bulk storage mission (441(b)); related utilities (800).

12. OPEN STORAGE DEPOT (SY)

Includes paved, prepared surface, and stabilized areas for support of bulk storage mission (451).

13. HOSPITALS (BEDS)

Includes in-patient hospital facilities such as hospital facilities at medical centers, major hospital installations and installation hospitals for complete in-patient care (510); related utilization (800).

14. ADMINISTRATIVE BUILDINGS (SF)

Includes headquarters and office type buildings for combat units larger than a brigade or wing and for similar level logistical and supporting units (610, 620); related utilities (800).

15. LOC IMPROVEMENTS (MILES)

Includes provision for all-weather traffic between major installations by construction and reconstruction of bridges and roadways (851) and railroads (860).

16. PLANNING ($)

Includes engineering studies, development of criteria and standards, preliminary planning, preparation of standard plans and specifications, and both preliminary and final design.

# APPENDIX F

# PROPOSED TERMS OF REFERENCE, CONSTRUCTION BOARD FOR CONTINGENCY OPERATIONS

## APPENDIX F

# PROPOSED TERMS OF REFERENCE, CONSTRUCTION BOARD FOR CONTINGENCY OPERATIONS

1. GENERAL. On 10 December 1968, the Joint Chiefs of Staff approved the establishment of a Joint Staff/Services board, hereinafter called the Construction Board for Contingency Operations.

2. PURPOSE. The purpose of the board is to assist the Joint Chiefs of Staff by:

a. Furnishing advice on policy pertaining to construction in support of contingency operations.

b. Providing a forum for the coordination of base development planning, in the resolution of interface problems, and in coordination of the development and acquisition of construction material and equipment assets.

3. SCOPE. These terms of reference are intended as a guide in orienting the scope of interests of the Board.

4. RESPONSIBILITIES. The responsibilities of the board include:

a. Ensure a full exchange of information among the Services regarding the construction aspects of base development planning to include planning systems and the results of Service functional component and retrievable concept research and development programs.

b. Assist in identification of any interface problems among the Services and unified chains of command in base development planning and related information.

c. Examine in detail the use of preengineered units that can be retrieved and relocated.

d. Develop construction standards and planning factors for use, as applicable, in various contingency situations.

e. Monitor progress in regard to standardization and planning factors.

f. Monitor the status of actions taken to overcome major construction deficiencies identified in base development plans to include the availability of specific construction material and equipment assets of such critical importance that the lack of them would limit significantly contingency plan implementation.

5. COMPOSITION

a. The membership of the board will consist of two members each from the Army, Navy, Air Force, and Marine Corps and one member from the J-4, Joint Staff.

b. The members should be assigned for a minimum of 1 year.

c. The board will be provided with officers to serve as a full-time technical staff as necessary to accomplish assigned responsibilities.

6. PROCEDURES

a. Chairman. The chairmanship will be rotated among the Services starting with the Army. The grade of the chairman will not be lower than 0-6. The period of the chairmanship is 1 year. Order of rotation of position of chairman will be Army, Navy, Air Force, and Marine Corps.

b. Recorder. The Service from which the chairman is a representative will provide the recorder.

c. Meetings. The board will meet on call of the chairman or as requested by any member. The number of personnel attending from each Service, agency, or organization is not restricted. When items are to be discussed affecting outside agencies, they should be invited to have representatives in attendance.

d. Agenda Items. Agenda items will be submitted by individual members to the chairman for action to be taken by the board.

e. Coordinations. The board may coordinate with appropriate DOD agencies as required.

f. Reporting. The board shall make regular reports regarding results of the meetings, conclusions reached, and recommendations as appropriate. The reports will be submitted to the Joint Chiefs of Staff and all members.

g. Administration

(1) Administrative assistance will be provided by the chairman of the board.

(2) Requests for travel in conjunction with field visits will be arranged by members of the board.

7. DURATION

a. The board will be activated on 1 July 1969.

b. The board will remain in existence until disestablished by the Joint Chiefs of Staff.

c. The terms of reference will be reviewed annually by the Joint Chiefs of Staff.

NOTE: The Navy Member nonconcurs with certain of the changes. He sets forth the following reasons:

1. "Following a review of the report of the Special Military Construction Study Group by the Joint Staff and Military Services, actions on several of the Study Group items were combined into a recommendation promulgated by JCS Memoranda (SM-801-68, SM-802-68, SM-803-68) of 11 December 1968, namely:

'That a Joint Staff/Service board be established to exchange information concerning results of Service functional component and retrievable concept research and development programs. The use of pre-engineered units which can be retrieved and relocated will be examined in detail. The board will develop construction standards and planning factors for adaptation to various contingency situations.'

2. "I concur with the Terms of Reference as promulgated by JCS memorandum SM-352-69 of 4 June 1969 to implement the recommendation. Every effort should be made to fulfill the responsibilities so assigned at the earliest practicable date including the assistance of personnel working full time to the extent necessary. In addition, I believe it would be appropriate to task the Board also with monitoring progress in the application of the standards and planning factors

developed, and in ensuring a continuing full exchange of information on the technical aspects of base development planning for contingencies.

3. "In my opinion, other recommended changes to the Terms of Reference would extend the purpose and responsibilities of the Board into matters to do with policy, command relationships, programming, requirements, planning, and acquisition of material highly inappropriate for a specialized board. It would, I believe, inject the Board into matters which should be the subject of coordinated efforts within the Joint Staff and at the higher levels of the Military Services; tend to compartmentalize matters related to the construction aspects of planning and readiness; increase the danger of by-passing the responsible chains of command; encourage redundancy and duplication; and result in inefficient use of personnel."

# APPENDIX G

# DETAILED ANALYSIS OF MAJOR MILCON APPROPRIATIONS

# APPENDIX G
# DETAILED ANALYSIS OF MAJOR MILCON APPROPRIATIONS

1. INTRODUCTION. This appendix provides a more detailed analysis of the programming evolutions leading to the major appropriations of 1965 and 1966. Chapter IV of this monograph is a summary of this analysis. A number of tables have been developed to highlight and summarize the major programs and some of the interrelated actions.

2. MAJOR APPROPRIATIONS. The appropriation of large sums of military construction (MILCON) dollars did not actually take place until the supplemental appropriations, the first of which, known as the 1965 Supplemental (FY 65S), was passed on 7 May 1965 as Public Law 89-18. This was followed by a number of additional supplemental and regular appropriations the last of which was enacted on 26 September 1968. A summary of the MILCON funds allocated to the Republic of Vietnam (RVN) construction effort is provided in Table G-1. This study will examine the development of the MILCON appropriations of 1965 and 1966, since these impacted so noticeably on the responsiveness of the overall construction effort. Major provisions, actions, and force levels to be supported shall also be considered in examining the evolution of these programs.

a. The FY 65S Appropriation. Following the landing of a Marine brigade at Da Nang and the planning concerning further deployment of organized U.S. forces to Vietnam, a conference was convened on 8 April 1965 which resulted in the development of the "CINCPAC [Commander in Chief, Pacific] Deployment Plan for Logistic and Combat Forces to Southeast Asia," which was forwarded to the Joint Chiefs of Staff by CINCPAC letter of 10 April 1965. Included in this plan was the identification of military construction facilities, by line item, with cost estimates, and required to support U.S. forces. These requirements, estimated at $305 million, are summarized in Table G-2.

During the course of the CINCPAC conference, the Assistant Secretary of Defense (Installations and Logistics) (ASD (I&L)), by memorandum of 9 April 1965, requested the Secretaries of the military departments, to submit their construction requirements grouped into three separate categories defined as follows:

Category I: Most urgent. Must be initiated in FY 65 and may be accommodated within available authorizations (in other words, through reprogramming actions if necessary).
Category II: Items that must be initiated before FY 66 authorizations become available, the latter assumed to be 1 August 1965.
Category III: All other requirements, in order of priority, and whether required in FY 66 or future years.

Although DD Forms 1391 were not required unless readily available, basic information of the same general nature was required to the degree necessary to establish the validity of the requirement and to support the standard, scope, and estimated cost of the items proposed. The method of design and construction planned for each line item along with a reflection of all costs, both funded and unfunded with a breakdown of the latter in terms of materials, equipment, and services was also required. Based on the CINCPAC stated program of $305 million, an extensive engineering effort would have been required to adequately develop the data requested of the departments. Such an effort would have been valid only under stable prerequisites and could never have been accomplished in the required period of 2 weeks.

TABLE G-1

RVN MILITARY CONSTRUCTION PROGRAM FUNDING SUMMARY

| Program | Authorization | Appropriations | Date of Appropriation | Section | Army | Navy | Air Force | Total |
|---|---|---|---|---|---|---|---|---|
| 65 | 88-390 | 88-576 | 2 Sep 64 | Reg | 1.4 | - | 7.0 | 8.4 |
| | | | | Emer | 13.4 | 9.4 | 8.9 | 31.7 |
| 65S | - | 89-18 | 7 May 65 | DOD | 36.1 | 17.4 | 20.9 | 74.4 |
| 66 | 89-188 | 89-202 | 25 Sep 65 | Reg | 1.4 | 17.2 | - | 18.6 |
| | | | | Emer | 4.3 | - | - | 4.3 |
| | | | | DOD | 23.4 | 13.1 | 13.5 | 50.0 |
| 66A | - | 89-213 | 29 Sep 65 | DOD | 35.9 | 32.9 | 39.2 | 108.0 |
| | | | | Subtotal | 115.9 | 90.0 | 89.5 | 295.4 |
| 66S | 89-367 | 89-374 | 25 Mar 66 | Reg | 285.9 | 157.1 | 96.5 | 539.5 |
| | | | | DOD | 72.6 | 20.5 | 51.9 | 145.0 |
| | | | | 66S Total | 358.5 | 177.6 | 148.4 | 684.5 |
| | | | | Subtotal | 474.4 | 267.6 | 237.9 | 979.9 |
| 67S | 90-5 | 90-8 | 4 Apr 67 | Reg | 217.6 | 76.1 | 100.2 | 393.9 |
| 68 | 90-110 | 90-180 | 8 Dec 67 | All | 72.4 | 26.7 | 27.2 | 126.3 |
| 68S | - | 90-392 | 9 Jun 68 | All | 16.4 | 8.7 | 14.9 | 40.0 |
| 69 | 90-498 | 90-513 | 26 Sep 68 | All | 40.5 | 28.2 | - | 68.7 |
| | | | | Subtotal | 821.3 | 407.3 | 380.2 | 1,608.8 |
| MAP Transfer Authorized Under 89-374 | | | | | 65.7 | 11.4 | 29.8 | 106.9 |
| | | | | Grand Total | 887.0 | 418.7 | 410.0 | 1,715.7 |

TABLE G-2

SUMMARY OF MILITARY CONSTRUCTION REQUIREMENTS IN SUPPORT OF U.S. FORCES
(DEVELOPED AT CINCPAC CONFERENCE OF 8-10 APRIL 1965)

| Location | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| Vietnam | 102.6 | 37.3 | 29.0 | 168.9 |
| Other | 21.6 | 37.1 | 77.5 | 136.0 |
| PACOM | 124.2 | 74.2 | 106.5 | 304.9 |

The Joint Chiefs of Staff, aware of the OSD (I&L) stipulation that said requirements be reflected by fiscal year, validated the CINCPAC submission (see Table G-3), and requested the military departments to submit their requirements through the normal departmental channels.[1]

In response to the ASD (I&L) request of 9 April 1965 for a "category" breakout of requirements, and taking into account the findings of the Joint Chiefs of Staff mentioned above, Service requirements were submitted as summarized in Table G-4.

It should be noted that the force levels used as a basis for the CINCPAC submission were in a state of flux at the time and is not surprising, therefore, that upon being apprised of these requirements, a special second conference was convened in Honolulu on 19-20 April.

Subsequent to this second conference, special guidelines were issued to the military departments for the preparation of statements for use by the Secretary of Defense in obtaining the release of FY 65S funds for those projects shown in Categories I and II. These statements were to be based on a decision reached by the office of the ASD (I&L) that the three categories of projects stay within a stipulated total of $200 million (OP-44 memorandum of 4 May 1965). The ASD (I&L) breakdown is shown in Table G-5.

By this time the President's request for a FY 65 supplemental appropriation had been forwarded to the Congress, and, in view of the urgent nature of the requirement, joint hearings were commenced on the morning of 5 May. Two days later, Public Law 89-18 was passed in the form of a Joint Resolution making available a supplemental appropriation of $700 million directly to the Department of Defense for transfer to any appropriation deemed necessary in connection with military activities in SE Asia (Figure G-1). During the hearings of 5 May the Secretary of Defense stated that approximately $100 million was required to satisfy the construction category.

The allocation of these FY 65S funds for construction remained to be resolved since their appropriation was not tied to any specific line item authorization as is normally the case. CINCPAC, by message of 10 May, advised the Joint Chiefs of Staff that funds had been reprogrammed for all category I projects, that $100.9 million was required to satisfy the pre-FY 66 projects and that the FY 66 requirements remained at $140.6 million. By message of 16 May CINCPAC revised his 10 May statement, and by letter of 18 May the Secretary of Defense informed the President of his intended allocation. A detailed listing of the construction allocation was provided to Congress by letter of 4 June 1965. A resume of the two CINCPAC statements along with the Secretary of Defense allocation is shown in Table G-6.

Examination of the detailed backup list of projects included in each of the above requirements revealed that the following major changes had occurred with reference to the Vietnam requirements. Excluded from the 16 May list of Army requirements was a $3.3 million Logistic Facility that had been proposed for Quang Ngai (approximately 30 miles south of Chu Lai). The approved amount, although essentially equal in quantity to that requested, differed markedly in scope. Nearly $10 million was provided for the development of port and depot facilities at Cam Ranh Bay as well as air facilities at Long Binh. In the actual implementation, less than $3.0 million was used toward these requirements, the balance being reprogrammed for other facilities at these as well as other locations. To offset these items that had been excluded from the CINCPAC lists, adjustments were made primarily by scope reductions for items proposed at Vung Tau and Nha Trang.

Regarding the Navy variations, the CINCPAC reduction of $10.4 million represented the second increment of funding for the Chu Lai and Da Nang airfields and the construction of a hospital in Saigon. These projects estimated at $6.4, $2.0, and $2.0 million, respectively, were deferred to the regular FY 1966 program and were ultimately

[1]Joint Chiefs of Staff, Memorandum MJCS-81-65, subject: Southeast Asia Construction Plan, 20 April 1965.

TABLE G-3

SUMMARY OF JCS VALIDATION OF CINCPAC MILCON REQUIREMENTS SHOWN IN TABLE G-4

| Fiscal Year | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| 65 | 32.2 | 23.3 | 69.5 | 125.0 |
| 66 | 92.2 | 43.0 | 33.6 | 168.8 |
| Total | 124.4 | 66.3 | 103.1 | 293.8 |

TABLE G-4

SERVICE MILCON REQUIREMENTS BY CATEGORY

| Category | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| I | 14.1 | 5.4 | 0 | 19.5 |
| II | 18.1 | 20.2 | 15.9 | 54.2 |
| III | 92.2 | 48.2 | 70.6 | 211.0 |
| Total | 124.4 | 73.8 | 86.5 | 284.7 |

TABLE G-5

MILCON REQUIREMENTS BY CATEGORY AS RESOLVED BY ASD(I&L)

| Category | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| I | 14.1 | 5.4 | 0 | 19.5 |
| II | 18.1 | 13.4 | 15.9 | 47.4 |
| III | 43.1 | 25.0 | 65.0 | 133.1 |
| Total | 75.3 | 43.8 | 80.9 | 200.0 |

TABLE G-6

REQUIREMENTS/ALLOCATION OF FY 65S FUNDS FOR MILITARY CONSTRUCTION
($ millions)

| | RVN | | | | |
|---|---|---|---|---|---|
| Item | Army | Navy | Air Force | Total | PACOM Total |
| CINCPAC Rqmts of 10 May | 40.3 | 27.9 | 17.1 | 85.3 | 100.9 |
| CINCPAC Rqmts of 16 May | 37.0 | 17.5 | 14.1 | 68.6 | 100.3 |
| Secretary of Defense Allocation | 35.1 | 16.4 | 20.7 | 72.2 | 107.8 |

Public Law 89-18
89th Congress, H. J. Res. 447
May 7, 1965

# Joint Resolution

79 STAT. 109.

**Making a supplemental appropriation for the fiscal year ending June 30, 1965, for military functions of the Department of Defense, and for other purposes.**

*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled*, That the following sum is appropriated, out of any money in the Treasury not otherwise appropriated, for the fiscal year ending June 30, 1965, namely:

Department of Defense, supplemental appropriation.

## DEPARTMENT OF DEFENSE

### Emergency Fund, Southeast Asia

For transfer by the Secretary of Defense, upon determination by the President that such action is necessary in connection with military activities in southeast Asia, to any appropriation available to the Department of Defense for military functions, to be merged with and to be available for the same purposes and for the same time period as the appropriation to which transferred, $700,000,000, to remain available until expended: *Provided*, That transfers under this authority may be made, and funds utilized, without regard to the provisions of subsection (b) of section 412 of Public Law 86-149, as amended, 10 U.S.C. 4774(d), 10 U.S.C. 9774(d), and 41 U.S.C. 12.

77 Stat. 329. 70A Stat. 269, 590.

Approved May 7, 1965.

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LEGISLATIVE HISTORY:

HOUSE REPORT No. 286 (Comm. on Appropriations).
SENATE REPORT No. 176 (Comm. on Appropriations).
CONGRESSIONAL RECORD, Vol. 111 (1965):
May 5: Considered and passed House.
May 5: Considered in Senate.
May 6: Considered and passed Senate.

FIGURE G-1. PUBLIC LAW 89-18, JOINT RESOLUTION, 7 MAY 1965

funded in the stated amounts, nearly 6 months later. All of the remaining requirements identified by CINCPAC were earmarked for Da Nang; however, in allocating the funds, the Secretary of Defense provided $1.4 million for Chu Lai.

The variations in the Air Force program, with the exception of a few minor items, concerned the expeditionary airfield at Tuy Hoa. The initial CINCPAC submission included $9.2 million for this project; the subsequent submission requested only $6.2 million and the Secreatry of Defense allocation provided $12.5 million. None of these funds was used for the initially stated purposes, but were reprogrammed for other Air Force requirements, primarily at Tan Son Nhut and Bien Hoa.

Authorization to proceed with the specified projects were promulgated by Secretary of Defense memorandums of 27 May 1965. These memorandums modified the normal restrictions governing the execution of military construction programs by delegating, to the military departments, the authority to transfer projects from one location to another if the mission that originally generated the requirement had been reassigned to the new location.

b. The FY 66 and FY 66A Appropriations. The next major MILCON appropriations to be made available in support of the SE Asia requirements were enacted during the end of September 1965. The two applicable public laws were 89-202 and 89-213, dated 25 and 29 September, respectively. These two appropriations provided approximately $250 million in support of the SE Asia program of which $180.9 million ultimately was expended for Vietnam projects.

Subsequent to the FY 65 supplemental appropriation of 7 May 1965, the serious deterioration of conditions in Vietnam became more and more apparent and the present level of U.S. commitment was considered insufficient. CINCPAC, by message 290452Z of June, requested COMUSMACV comments and priorities for an FY 66 emergency MILCON program for RVN. By message reply 111351Z of July, COMUSMACV identified his requirements, by Service and by priority, and estimated them at $104 million. He further stated that his list was based on "currently planned deployments," which were then set at 75,000 U.S. troops. Clearly identified and excluded from his list were those items currently being programmed in the regular FY 66 program.

By mid-July, the consideration of strategic reviews at the highest national level resulted in the complete restructuring of requirements in order to support a total deployment of approximately 180,000 U.S. troops. This deployment was to be achieved by the end of the current calendar year. Accordingly, CINCPAC developed and provided an interim list of requirements to the OSD/Joint Chiefs of Staff Joint Service Team, which conferred in Hawaii on 23-24 July 1965. This list was slightly adjusted by CINCPAC message 290245Z of July. Total MILCON requirements for the Pacific theater were established at $560 million, of which $268 million was for RVN. Specifically excluded were those projects currently in the FY 66 regular program, and which amounted to $26.3 million, primarily for Navy requirements, and essentially funded in the requested amount. This represented an appreciable increase from the 11 July statement of requirements submitted by COMUSMACV; the latter however was based on 75,000 U.S. troops. The OSD supplemental budget of 26 July more closely approximated the 11 July RVN requirements and, with minor adjustments, became the basis for the FY 66 emergency appropriation, which was forwarded to the Congress by the President on 4 August 1965.

The resulting appropriation, known as the FY 66 Amendment, was much broader than the FY 65S in that the latter was solely for the SE Asia emergency. Title V of the FY 66A appropriation addressed the SE Asia emergency and was priced at $1.7 billion. By memorandum of 13 August, the Secretary of Defense advised that the total MILCON portion of the $1.7 billion would be approximately $160 million with $133 million being for PACOM requirements of which $90 million was earmarked for RVN proper. This was appreciably below the previous and essentially agreed to CINCPAC estimate of $560 million, and the RVN portion even fell below the earlier MACV stated requirement to support a total U.S. deployment of 75,000 troops. From the point of view of CINCPAC, construction requirements were being underfunded and underprogrammed by $427 million.

Although the approved force level was only 125,000 at the time that the FY 66A request was forwarded to the Congress, the President, on 7 September, approved the increase of this level to 175,000, which was essentially the basis for CINCPAC's $560 million. In addition, a level of 210,000 was under serious consideration at the same time, and was in fact approved in early October-all to be achieved by the end of the calendar year. The point here is that the FY 66A request was forwarded to the Congress on 4 August; it was not passed into law until 29 September; and that during this period the approved and seriously contemplated force level grew to 210,000 troops, a level nearly three times that which the submitted and approved program was designed to support. No evidence could be found indicating any intention to increase the requested amount. This bill was not line-item oriented, and the funds provided for the SEA section were not even oriented to any specific appropriation. This condition would have facilitated the submission of a request for the justifiable increase. The fact that a last minute change could have been introduced is further evidenced by the actual experience of the 65S appropriation, namely, that the passage of the latter only took 4 days from the time it was sent to the Congress until it was passed into law. Fortunately, some relief was provided by the $50 million included in the regular FY 66 program for use by the Secretary of Defense to meet emergency construction requirement. This entire amount was made available to the Vietnam program in November and December 1965. A resume of the evolutions leading to the FY 66A appropriations along with other relevant data is shown on Table G-7. All planning, design, and CONUS items have been excluded in order to reduce the data to a common denominator.

The constant dialogue on the subject of force levels contemplated and to be deployed, along with the attendant impact on construction requirements, prompted the Joint Chiefs of Staff to request a thorough CINCPAC review of the overall requirements to adequately support operations and approved deployments. This was especially required in view of the OSD reduced level of approval of 13 August 1965 vis-a-vis the CINCPAC stated requirements of 29 July. CINCPAC responded by message 240403Z of September, at which time the approved deployment was 175,000 U.S. Troops. The estimated cost of all requirements identified by Service, by country, and by line item totaled $671 million, again excluding planning and CONUS construction costs to permit comparison. This represented an increase over the July submissions of $111.6 million, a summary of which is shown on Table G-8.

CINCPAC identified requirements in three lists (A, B, and C) with approximately 60 percent of the RVN as well as the PACOM total requirements being in list A and B. CINCPAC also stated that funding was:

> "Inadequate to provide for the construction of facilities needed immediately to support currently approved deployments. To provide adequate support to operations and approved deployments, the entire program should be funded. As an absolute minimum, Tables A and B, should be funded immediately. Any other action would deny to CINCPAC the assets necessary to accomplish his assigned responsibilities in the time frame established. Incrementing the approval and funding of the 66 MCP (a decision already arrived at by OSD) can only result in inefficient construction operations and slipped BODs which in turn impair operational capability."

In regard to requirements outside of RVN, CINCPAC stated:

> "An essential element in support of the war in SEASIA is the bases maintained and operated by the respective Services in Okinawa, Japan, Taiwan and the Philippines. These bases provide a means of rapid response in (an) emergency and constitute relatively secure and highly accessible facilities for heavy maintenance of equipment and for storage of reserves. The escalation of the war and the consequent drain on logistic resources has brought to light the inherent inadequacies of these bases to support a war of the size and intensity now being conducted in SEASIA. There is an urgent and immediate need to fund facility requirements at key bases in these areas in order that construction of requisite facilities may keep pace with the demands being placed on them to support the war."

This new statement of requirements by CINCPAC had the effect of further increasing the "deficit" condition, an analysis of which is shown on Table G-9. Of particular interest is the fact that CINCPAC foresaw a deficit of $444 million in order to support 175,000 troops, all of whom were to be in-country prior to the end of that calendar year, by which time the approved deployment level had been increased to 393,700 U.S. troops.

TABLE G-7

EVOLUTION OF MILCON REQUIREMENTS INCLUDED IN FY 66A APPROPRIATIONS

| Location | Status | Date and Source: 7-11 MACV | 7-26 OSD | 7-29 CINCPAC | 8-13 OSD | 9-29 66A[1] | 11-11 PHASE II |
|---|---|---|---|---|---|---|---|
| | | Dollars Required (millions) | | | | | |
| RVN | | 104 | 98 | 268 | 90 | 101 | N/A[2] |
| Other | | N/A | - | 292 | 43[3] | 55 | N/A |
| PACOM Total | | N/A[4] | - | 560 | 133[3] | 156 | N/A |
| | | Personnel Required (thousands) | | | | | |
| U.S. Force Level in RVN | To be supported by Statement of RQMT | 75 | 75 | 180 | - | - | N/A |
| | Approved | 75 | 75 | 125 | 125 | 175[4] | 332 |
| | In-Country | 65 | 75 | 81 | 90 | 132 | 175 |

[1] Figures shown are those finally allocated and exclude approximately 6 percent for planning and design costs.

[2] N/A - Not Applicable.

[3] These two figures each exclude $19.3 and $7.3 for planning and CONUS construction, respectively, that the Secretary of Defense included in his 13 August list proposed for funding from the anticipated FY 66A appropriation. Their exclusion facilitates comparison with the other Statements of Requirement.

[4] Approved by the President on 7 September 1965.

TABLE G-8

SUMMARY OF DIFFERENCES BETWEEN CINCPAC MILCON

REQUIREMENTS OF 29 JULY AND 24 SEPTEMBER 1965

| Location | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| RVN | 19.1 | 53.4 | 13.6 | 86.1 |
| Thailand | 11.6 | - | -27.3 | -15.7 |
| Philippines | -1.1 | 11.5 | 18.4 | 28.8 |
| Other | 39.0 | -28.1 | 1.5 | 12.4 |
| PACOM Total | 68.6 | 36.8 | 6.2 | 111.6 |

TABLE G-9

DEFICIT ANALYSIS OF ADDITIONAL MILCON REQUIREMENTS ($ millions)

| Requirements | Date | Army | Navy | Air Force | Total |
|---|---|---|---|---|---|
| | | RVN | | | |
| Requirements - CINCPAC | Sep 65 | 92.9 | 148.0 | 113.4 | 354.3 |
| Source -66A | Oct 65 | 35.9 | 32.9 | 39.2 | 108.0 |
| Source-66 (403) | Nov/Dec 65 | 23.4 | 13.1 | 13.5 | 50.0 |
| Source-66 (REPROG) | - | 4.3 | 6.8 | - | 11.1 |
| Total (available | - | 63.6 | 52.8 | 52.7 | 169.1 |
| Deficit | - | 29.3 | 95.2 | 60.7 | 185.2 |
| | | OTHER | | | |
| Requirements - CINCPAC | Sep 65 | 137.3 | 63.5 | 116.2 | 317.0 |
| Source-66A | Oct 65 | 28.7 | 10.3 | 18.7 | 57.7 |
| Deficit | - | 108.6 | 53.2 | 97.5 | 259.3 |
| | | PACOM Total | | | |
| Requirements - CINCPAC | Sep 65 | 230.2 | 211.5 | 229.6 | 671.3 |
| Total Available Prior to 66S | | 92.3 | 63.1 | 71.4 | 226.8 |
| Deficit | | 137.9 | 148.4 | 158.2 | 444.5 |

Of further significance is the apparent imbalance in the service requirements reflected in the CINCPAC list, in particular, as applicable to Vietnam. Although the Army in-country force level was approximately 64 percent of the total in-country force level throughout the 1966, 1967, and 1968 time frame, the Army requirements, as reflected on Table G-9 were only slightly above 25 percent of the total. An analysis of this condition is provided in the following paragraphs.

c. The FY 66S Appropriation. The funding deficit, as it stood in late September with the adjustment of hindsight, represented what was to become the FY 66 supplemental appropriation. In the ensuing months, however, the approved force level was to jump from 175,000 to 393,700, the latter being the basis for the ultimate FY 66S program. The ratio of personnel by individual Service remained basically stable. Military construction requirements were affected; however, whereas both the Navy and Air Force requirements approximately doubled in estimated dollar value, the Army requirements increased fourteen-fold. The results of this analysis are shown in Table G-10. Because of this appreciable increase in the Army requirements, additional investigation was undertaken to reveal, if possible, the manner in which the initial deficit of $29 million grew to a total of $407 million. The results, shown on Table G-11 help to explain many of the frustrations that existed not only then, but to subsequently come to the fore. The major identification of requirements, at least dollarwise, occurred incident to the Phase IIA increase, which itself was relatively minor, representing a force level increase of less than 20 percent. In addition, these gross requirements were developed on short order resulting in a comparatively "soft" program. This is clearly revealed by comparing the total program approved versus funds actually allocated thru the FY 66S program. For example, whereas nearly $80 million had been programmed for medical facilities, less than $12 million was in fact allocated toward this end use; cantonment facilities were reduced to half, and port and depot facilities were more than doubled. Since a sizeable portion of the mobilization effort was based on this soft and relatively undefined program, it is not surprising that within certain categories, the materials procured exceeded the final requirements. Of equal, if not greater, significance were the shortages in materials and equipment that resulted due to the lack of program definition. This is a condition that will always occur to some degree when requirements are developed and a construction capability is fielded based on less than completely engineered plans and specifications. The price is small, however, when compared to the increased responsiveness provided to the operational commanders.

The Secretary of Defense, accompanied by the Chairman, Joint Chiefs of Staff, visited Vietnam on 28 and 29 November 1965. During this visit, COMUSMACV briefed the Secretary on his total construction requirements. The urgency and validity of the requirements were accepted by the Secretary and his guidance to COMUSMACV was, in essence, to move and to move promptly. Following the Secretary's return to Washington, the FY 66S program was developed and essentially included all requirements as stated by CINCPAC and COMUSMACV. The total supplemental appropriation requested for the Department of Defense amounted to $12.4 billion of new obligational authority, of which $1.238 billion (roughly 10 percent) was for military construction requirements. This program was submitted to the Congress on 19 January 1966 under the signature of the President of the United States. Of the total for construction, $1.1 billion was earmarked for the Pacific Theater, and the balance was for finance planning, design, and CONUS requirements. The Vietnam construction requirements amounted to $737 million.

TABLE G-10

COMPARATIVE ANALYSIS BETWEEN CINCPAC DEFICIT OF SEP 65, FY 66S MILCON PROGRAM, AND TOTAL ALLOCATIONS THRU 2-69

| Description | Army | Navy | Air Force | Total |
|---|---|---|---|---|
| **RVN** | | | | |
| CINCPAC Deficit of September 1965 As Developed On Table G-9 | 29.3 | 95.2 | 60.7 | 185.2 |
| * RQMTS Per Subject Issues Approved by DepSecDef 22 December 1965 | 402.7 | 214.4 | 110.6 | 717.7 |
| RQMTS As Shown In House Report No. 1316 of 11 Mar 66 (Approp. Com.) | 407.5 | 207.1 | 122.0 | 736.6 |
| Total $ Ultimately Allocated For MILCON from 66S Appropriations | 358.5 | 177.6 | 148.4 | 684.5 |
| Total Add'1 $ Ultimately Allocated for MILCON from Subsq Approp. | 346.9 | 139.7 | 142.3 | 628.9 |
| **Other** | | | | |
| CINCPAC Deficit of September 1965 As Developed on Table G-9 | 108.6 | 53.2 | 97.5 | 259.3 |
| * RQMTS Per Subject Issues Approved by DepSecDef 22 December 1965 | 137.0 | 51.0 | 198.9 | 386.9 |
| RQMTS As Shown In House Report No. 1316 of 11 Mar 66 (Approp. Com.) | 138.3 | 58.3 | 181.2 | 377.8 |
| Total $ Ultimately Allocated for MILCON from 66S Appropriations | 235.5 | 83.4 | 184.7 | 503.6 |
| Total Add'1 $ Ultimately Allocated for MILCON from Subsq Approp. | 132.1 | 71.5 | 126.6 | 330.2 |
| **PACOM Total** | | | | |
| CINCPAC Deficit of September 1965 As Developed on Table G-9 | 137.9 | 148.4 | 158.2 | 444.5 |
| * RQMTS Per Subject Issues Approved by DepSecDef 22 December 1965 | 539.7 | 265.4 | 309.5 | 1114.6 |
| RQMTS As Shown In House Report No. 1316 of 11 Mar 66 (Approp. Com.) | 545.8 | 265.4 | 303.2 | 1114.4 |
| Total $ Ultimately Allocated for MILCON from 66S Appropriations | 594.0 | 261.0 | 333.1 | 1188.1 |
| Total Add'1 $ Ultimately Allocated for MILCON from Subsq Approp. | 479.0 | 211.2 | 268.9 | 959.1 |

* Essentially alternate #2 of Subject Issues 940, 941, and 942. Minor adjustments have been made to exclude CONUS, Alaska, and planning costs, and to include prior program funds which were, at that time, anticipated thru reprogramming actions, but which ultimately did not materialize.

TABLE G-11

DEVELOPMENT ANALYSIS OF ARMY FY 66S MILCON REQUIREMENTS FOR RVN AND RELATED DATA ($ Millions)

| Category Group | Initial Deficit | Estimates of Rqmts to Satisfy: Phase I Increase | Phase II Increase | Phase IIA Increase | Total | Program Submitted to Cong. | Prior Programs | Total Approved Thru 66S | Actual Allocation Per 915 Report Dated 28 Feb 1969: Thru 66S | Total to Date | Applicable Cat. Groups From 915 Report Dated 28 Feb 69 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Force Level/Increases | 175 | 44 | 112 | 63 | 394 | | | | | | |
| OPS Fac | 14.7 | 0 | 4.1 | 0 | 18.8 | 23.0 | 22.9 | 45.9 | 15.2 | 21.8 | 110-120-140-170- |
| Cantonment[1] | 3.8 | 20.0 | 48.6 | 149.1 | 221.5 | 223.5 | 34.1 | 257.6 | 128.8 | 201.7 | 200-600-700-870- |
| Communication Fac | 2.9 | 0 | 6.9 | 0 | 9.8 | 9.8 | 4.2 | 14.0 | 6.1 | 11.3 | 130 |
| LOC | 0 | 0 | 18.8 | 10.0 | 28.8 | 28.1 | 6.0 | 34.1 | 18.6 | 95.0 | 850-860 |
| MACV HQ | 3.5 | 0 | 0 | 0 | 3.5 | 9.3 | 8.5 | 17.8 | 27.3 | 27.3 | - - |
| Medical Fac | 0 | 7.2 | 3.2 | 66.7 | 77.1 | 76.1 | 3.6 | 79.7 | 11.7 | 36.1 | 500 |
| Port & Depot Fac | 3.4 | 5.3 | 20.4 | 5.0 | 34.1 | 34.1 | 28.9 | 63.0 | 119.4 | 157.0 | 150-160-400- |
| Utilities | 1.0 | 0 | 0 | 0 | 0 | 1.0 | 7.6 | 8.6 | 79.7 | 129.9 | 800 Less LOC-870 |
| MAP | - - | - - | - - | - - | - - | 2.6 | 65.7 | 68.3 | 65.7[2] | 82.1 | All |
| Site Development | | | | | | | | | 37.4[3] | 41.3 | 930 |
| Mobilization | | | | | | | | | - - | 53.9 | 970 |
| Misc. | | | | | | | | | 21.1[4] | 21.3 | 940-950-960 |
| Undistributed | | | | | | | | | 8.2 | 8.2 | 980 |
| Total | 29.3 | 32.5 | 102.0 | 230.8 | 394.6 | 407.5 | 181.5 | 589.0 | 540.2 | 886.9 | |

[1] Includes community and support facilities as described in the Department of the Army MILCON program submitted to Congress in January 1966.

[2] Represents MAP Transfer funds only. This is the amount reported on the RCD: DD I&L (M) 915 Status Report. In addition to this, MAP facilities valued at $6.4 million were provided from prior year funds.

[3] Over 90% of this was for hydraulic fill at Newport ($9.8 million) and Dong Tam ($24.7 million). All of the former and at least half of the latter can be directly attributable to the development of port & depot facilities, thereby adding some $22 million to the 119 shown above thru FY 66S.

[4] Includes $5.8 million for A&E (Planning & Design) costs.

# APPENDIX H
# ANALYSIS OF CONTINGENCY PLANS

(This appendix is classified and is bound separately.)

# APPENDIX I
# LIST OF ACRONYMS AND ABBREVIATIONS

# APPENDIX I
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| | |
|---|---|
| A-E | Architect-Engineer |
| ADP | Automatic Data Processing |
| ABFC | Advanced Base Functional Component (Navy) |
| AFLC | Air Force Logistics Command |
| AFRCE | Air Force Regional Civil Engineer |
| AID | Agency for International Development |
| AIK | Assistance in Kind |
| ASD(I&L) | Assistant Secretary of Defense (Installations and Logistics) |
| Bare base | An Air Force system providing air transportable, packaged facilities |
| BOD | Beneficial Occupancy Date |
| BOM | Bill of Materials |
| BUSH | Buy U.S. Here |
| CBC | Construction Battalion Center (Navy) |
| CBMU | Construction Battalion Maintenance Unit (Navy) |
| CINCPAC | Commander in Chief, Pacific |
| CINCPACAF | Commander in Chief, Pacific Air Forces |
| CINCPACFLT | Commander in Chief, Pacific Fleet |
| CINCUSARPAC | Commander in Chief, U.S. Army, Pacific |
| COMSERVPAC | Commander, Service Force, U.S. Pacific Fleet |
| COMUSMACV | Commander, U.S. Military Assistance Command, Vietnam |
| CONUS | continental United States |
| CPAF | Cost-plus-award-fee (Contract) |
| CPFF | Cost-plus-fixed-fee (Contract) |
| CTZ | Corps Tactical Zone |

| | |
|---|---|
| CWE | Current Working Estimate |
| DCSC | Defense Construction Supply Center |
| DCSLOG | Deputy Chief of Staff for Logistics |
| DIRPACDOCKS | Director, Pacific Division, Bureau of Yards and Docks |
| DMZ | Demilitarized Zone |
| DOD | Department of Defense |
| DSA | Defense Supply Agency |
| EFCS | Engineer Functional Component System (Army) |
| FC | Functional component |
| FFCG | Functional Facility Category Groupings |
| FFV | Field Force, Vietnam |
| FYFSFP | Five Year Force Structure and Financial Program |
| FWMAF | Free World Military Assistance Forces |
| GAME WARDEN | A code name for a naval operation (River Patrol) |
| GAO | General Accounting Office |
| GVN | Government of the Republic of Vietnam |
| HSAS | Headquarters, Support Activity, Saigon |
| IMREC | Interministerial Real Estate Committee |
| JCS | Joint Chiefs of Staff |
| JGS | Joint General Staff (of the Republic of Vietnam Armed Forces) |
| JLRB | Joint Logistics Review Board |
| LCM | Landing Craft, Mechanized |
| LCU | Landing Craft, Utility |
| LCVP | Landing Craft, Vehicle/Personnel |
| LCOP | Logistics Control Office, Pacific |
| LOC | Lines of Communication |
| LOE | Level of Effort |
| LSD | Dock Landing Ship |
| LST | Tank Landing Ship |

| | |
|---|---|
| MACV | Military Assistance Command, Vietnam |
| MACV-DC | Director of Construction, Military Assistance Command, Vietnam |
| MAF | Marine Amphibious Force |
| MAG | Marine Air Group |
| MAP | Military Assistance Program |
| MARKET TIME | Code name for a naval operation (Coastal Patrol) |
| MCA | Military Construction, Army |
| MEF | Marine Expeditionary Force |
| MILCON | Military Construction (Construction is funded by Military Construction Appropriations) |
| MILSTRIP | Military Standard Requisitioning and Issue Procedure |
| MOOSE | Move Out of Saigon Expeditiously (a MACV plan) |
| MSR | Main Supply Route |
| MSTS | Military Sea Transportation Service |
| NAVFACENGCOM | Naval Facilities Engineering Command |
| NAVFORV | Naval Forces, Vietnam |
| NCF | Naval Construction Force |
| NICF | National Inventory Control Point |
| NMCB | Naval Mobile Construction Battalion (Seabees) |
| NSA | Naval Support Activity |
| OICC | Officer in Charge of Construction |
| OICC, RVN | Officer in Charge of Construction, Republic of Vietnam |
| OICC-SEA | Officer in Charge of Construction, Southeast Asia |
| OJCS | Office of the Joint Chiefs of Staff |
| O&M | Operations and Maintenance (funds) |
| O&ST | Order and shipping time |
| OPNAV | Naval Operations |
| OPN | Other Procurement, Navy |
| OSD | Office of the Secretary of Defense |

| | |
|---|---|
| PACAF | Pacific Air Forces |
| PACOM | Pacific Command |
| PA&E | Pacific Architects and Engineers |
| PEMA | Procurement Equipment and Missiles, Army |
| POL | petroluem, oil, and lubricants |
| Prime Beef | Base Engineer Emergency Force (Air Force) |
| PURA | Pacific Utilization and Redistribution Agency |
| PURM | Program for the Utilization and Redistribution of Excess Material in the Pacific Area |
| PWRS | Pre-positioned War Reserve Stocks |
| RCS | Reports Control Symbol |
| RED HORSE | Air Force Heavy Repair Squadron |
| RMK | Raymond, Morrison-Knudsen |
| RMK-BRJ | Raymond, Morrison-Knudsen, Brown and Root, and J. A. Jones |
| RVN | Republic of Vietnam |
| R&D | Research and Development |
| RDD | Required Delivery Date |
| RPMA | Real Property Maintenance Activities |
| RVNAF | Republic of Vietnam Armed Forces |
| SE Asia | Southeast Asia |
| Seabees | Navy Mobile Construction Battalions (NMCBs) |
| TCN | Third-Country National |
| TURN KEY | A contract that makes the contractor responsible for all phases of the work, to include administrative and logistical support, from design through completion of construction |
| TSFC | Tactical Support Functional Components (Navy) |
| USAECAV | U. S. Engineer Construction Agency, Vietnam |
| USARYIS | U. S. Army, Ryukyu Islands |
| USAMC | U. S. Army Materiel Command |
| USARPAC | U. S. Army, Pacific |

| | |
|---|---|
| USAPAV | U. S. Army Procurement Agency, Vietnam |
| USARV | U. S. Army, Vietnam |
| USBRO | U. S. Base Requirements Overseas |
| VNAF | Republic of Vietnam Air Force |
| VNN | Republic of Vietnam, Navy |
| WIP | work-in-place |
| WRM | war readiness materiel |

# APPENDIX J
# BIBLIOGRAPHY

# APPENDIX J
# BIBLIOGRAPHY


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