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# BASE DEVELOPMENT


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## PREFACE

This manual prescribes Army doctrine to assist commanders and staff officers in developing a base or bases in a theater of operations. It covers base development (BD) from early concept planning to program execution. The manual defines the roles, interrelationships, and functions of the various levels of command and support involved in BD in support of general war and contingency operations. Levels of command include the Secretary of Defense, the Military Departments, the Joint Chiefs of Staff (JCS), the unified and specified commands, the component commands (primarily Army), and subordinate unified and/or joint commands (when established). Oversea bases are developed as a result of policy decisions made at the highest level of Government and are designed to support contingency plans related to national defense. The decision to execute a contingency operation plan (OPLAN) is made at national level. The requirement for execution may be clear cut as the result of an overt attack on U.S. or friendly forces. However, a requirement for execution could occur as a result of an incremental response to an insurgent action.

The Secretary of Defense issues broad guidance to the Military Departments and to the JCS defining the limitations and level of effort required to implement the OPLAN most appropriate to the situation. The JCS evaluation of the situation considers the current base development plan (BDP), military posture, materiel resources, and other pertinent factors. From this evaluation, the JCS make the necessary decisions and issue authority to execute the OPLAN to the theater commander.

The theater commander is responsible for BD in the theater. In addition to the mission directives, the theater commander obtains guidance for BDP from documents published annually by the JCS.

The BDP, which is the product of concurrent planning by the commander of a joint command (if established) and the commanders of the component services, is the governing instrument for planning and establishing an advanced base. The purpose of the BDP is to insure the timely availability of personnel, materiel, and facilities required to support a contingency OPLAN.

In areas of the world where the Army's interest is exclusive or predominant and where a subordinate joint command has not been established, the theater commander normally will assign responsibility for BD planning and implementation to the theater Army commander. The basic concepts and requirements for BD are developed at the theater command level and forwarded to theater Army in the BD planning directive. The theater Army commander forms a BD planning staff which is responsible for developing the BDP and for staff supervision in the execution of the plan.

In the determination of BD requirements, the commander has many factors to consider; e.g.; mission and operational objectives to be accomplished, total force structure required to accomplish the mission, target dates, and expected duration of projected operations.

Broad parameters of the BDP are established during initial planning to visualize the total spectrum of requirements; e.g., gross facility requirements by service, by indigenous and allied forces (when applicable), and by major area locations for principal types of facilities. The commander assesses the facilities and real estate available in-country. By subtracting these from the gross facility and real estate requirements, he determines the net shortfall and then programs requirements based on the shortfall.

Depending on the nature of the contingency, programing and funding are two major considerations that impact seriously on BDP. The funding program must have the approval of the President and must be authorized by the Congress.

BDP has a twofold objective: To support the requirements for BD in a theater of operations and to serve as a vehicle on which to base Congressional authorizations and appropriations in the annual funding cycle. BD requirements are derived from the BDP and form the basis for initiating budget requests. When the requirements and standards have been determined, the component commanders of the joint command in-country translate the BD requirements into program budget requests and forward them through dual channels for validation and funding action.

Functional component systems have been designed by all three services for use in BD planning and execution. A functional component system consists of engineering data organized, coded, and stored in a data bank to assist in the planning and the execution of construction. The functional component systems designed are the Army Facilities Component System (AFCS), the Navy Advanced Base Functional Component System (ABFCS), and the Air Force Bare Base Mobility Package (BBMP).

The AFCS is published in three DA technical manuals: TM 5-301, which is basically the planner's manual explaining the concept and use of the system; TM 5-302, which is designed primarily for use by engineer units engaged in the construction of Army facilities and installations; and TM 5-303, which is for use by planners, construction units, and supply agencies since it contains an FSN listing of material required to build facilities identified in TM 5-301 and TM 5-302.

# CHAPTER 1
# INTRODUCTION

## 1—1. Purpose
This manual prescribes Army doctrine on base development. It is designed to assist commanders and staff officers in the development of a base or bases in a theater of operations. The levels of command discussed herein include the Secretary of Defense, the Military Departments, the Joint Chiefs of Staff, the unified and specified commands (theater commands), the component commands (primarily Army), and subordinate unified and/or joint commands (when established). The command and staff organization and responsibilities outlined in this manual are in consonance with JCS Pub 2, JCS Pub 8, and FM 1014.

## 1—2. Scope
This manual provides for an integrated system for base development ranging from early concept planning to program execution. It is designed for commanders and staff officers involved in base development planning, programing, and execution. This manual defines the roles, interrelationships, and functions of the various levels of command and support involved in base development in support of general war and contingency operations.

## 1—3. Recommended Changes
Users of this manual are encouraged to submit recommendations to improve its clarity or accuracy. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to the Commanding General, U.S. Army Combat Developments Command Institute of Combined Arms and Support, Fort Leavenworth, Kansas 66027. Originators of proposed changes which would constitute a significant modification of approved Army doctrine may send an information copy, through command channels, to the Commanding General, U.S. Army Combat Developments Command, Fort Belvoir, Virginia 22060, to facilitate review and followup.

## 1—4. Definitions
*a. Base*— A locality from which operations are projected or supported. An area or locality containing installations which provide logistic or other support.

*b. Installation*— A grouping of facilities located in the same vicinity, which support particular functions. Installations may be elements of a base.

*c. Facility*— An activity which provides a specific kind of operating assistance to naval, ground, or air forces, thereby facilitating any action or operation. An item of real property. It is the basic element of an installation.

*d. Base Development*— The acquisition, development, improvement, and expansion or rehabilitation of the facilities and resources of an area or location for the support of forces employed in military operations or deployed in accordance with strategic plans.

*e. Base Development Planning Directive*— A directive issued by a unified or a specified (theater) commander to the joint and/or component commanders directing preparation of specific base development plans. Normally, the directive includes specific guidance regarding the base selected, the assigned support mission, and the operational target date of the base as a prerequisite for the production of a base development plan. It may include other details, preliminary estimates, and instructions on which to base specific planning.

*f. Planning Factors for Construction*— Those logistic factors that convert operational supply and/or maintenance requirements into facilities required to operate, store, handle, transport, and/or administer the supplies for an operation. Resupply factors, number of days of supply to be stocked, and square feet of open and covered storage required per ton of supplies are typical

planning factors required for base construction (FM 101-10-1).

*g. Standards of Construction*— Level of quality of facilities which influences materially the level and amount of construction to be accomplished. Standards are based on factors such as the degree of permanency desired, cost, time available for construction, morale, and resources available. They normally are established by the theater commander.

*h. Designated DOD Construction Agents*— A single DOD construction agent for contract execution of all military construction programs of all Services for selected geographical areas throughout the world. Each agent has full and sole responsibility for accomplishing DOD construction contracts in his area of the world. Normally, the DOD construction agent is designated from the Army Corps of Engineers or the Naval Facilities Engineering Command.

# CHAPTER 2
# THE BASE DEVELOPMENT PLANNING SYSTEM

## 2—1. General

A theater commander is assigned the mission of planning and executing various military operations in consonance with national strategic objectives. Operation plans (OPLAN) are prepared in accordance with broad guidance issued by the Secretary of Defense to Joint Chiefs of Staff (JCS) who issue policy guidance and mission directives to the theater commander. An essential element of the OPLAN is the base development plan ( BDP), which is prepared for each OPLAN. The BDP is developed concurrently by the commander of a joint command (if established) and the commanders of the Service components. This document becomes the governing instrument for the development of a base or bases in support of the OPLAN.

## 2—2. Time Phasing

The base development plan is developed to insure the timely availability of personnel, materiel, and facilities required to support the OPLAN. Considering the combat, combat support, and combat service support force a deployed, base development planners carefully schedule, by time phasing, construction forces and materiel into staging and objective areas to permit timely completion of essential facilities and installations. Deploying too many support forces (to include construction forces) too early tends to develop a "snowball effect"; i.e., they require support for their own personnel and equipment. Moreover, construction materiel requirements usually impact heavily on transportation resources. Planners, therefore, phase in base development personnel, equipment, and materiel in the proper mix to prevent the inefficiencies that occur when personnel and equipment arrive in improper sequence. In addition, planners carefully consider the transportation net and throughput capability to prevent overloading the transposition lines of communications.

## 2—3. Base Development Planning Guidance

Requirements for oversea bases stem from national policies and commitments made at the highest levels of Government. These bases fall into two categories for planning purposes: The existing peacetime garrisoned bases and the expedient bases which must be wholly or partially constructed after approved OPLAN are ordered executed. The Secretary of Defense accepts responsibility for these commitments. He, in turn, passes on broad planning guidance to the JCS. In accordance with this guidance, the JCS issue policy guidance and mission directives to unified or specified (theater) commanders. JCS Pub 3 describes basic policy, establishes procedures and defines responsibilities for providing an integrated base development system for joint contingency operations.

## 2—4. Planning Procedures

Two general phases, each culminating in a specific document, make up the sequence of base development planning. These documents are-

*a. The Base Development Planning Directive.* When detailed planning for an operation begins, the theater commander issues a base development planning directive. This directive is transmitted to the appropriate subordinate commander or commanders. The directive is based on the operational concept and the force structure. The directive includes selected base sites, assigned support mission, operational target dates, preliminary estimates, and instructions required for specific planning. As a minimum, to insure inter-service coordination and to reduce competition, the following should be provided to the appropriate subordinate commander or commanders early in the preparation of base development plans. The directive has no prescribed format, but may—

(1) Allocate responsibilities to the component services for projects and functions.

(2) Specify priorities and completion dates for projects.

(3) Specify construction standards.

(4) Allocate facilities and real estate to subordinate commands.

(5) Indicate the command structure and

designate the commander or commanders charged with base development.

(6) Indicate the scope and magnitude of the logistic support capabilities of the base.

(7) Specify standing operating procedures and directives to govern operation of the plan.

*b. The Base Development Plan.* The base development plan is the product of concurrent planning by the commander of a joint command and the commanders of the component services accomplished in accordance with the planning directive. It is the governing instrument for planning and establishing a base. The plan is a compilation and extraction of all the information necessary for the theater commander and his staff to coordinate the efforts of subordinate commands in base development. It provides specific terms of direction and includes all phases of concurrent planning undertaken by the subordinate commands concerned. The base development plan sets forth the base facilities to be provided and the combat service support functions to be performed. It covers such matters as standards of construction, priorities, and restrictions on use of critical materials. The theater commander compiles and publishes the plan. The BDP should be included in the logistic annex to the OPLAN.

## 2—5. Base Development Plan Example

The basic format for a base development plan is prescribed by change 2 to JCS Pub 3. Appendix B provides an example of a base development plan which is in consonance with the JCS Pub 3 prescribed format.

# CHAPTER 3

# ARMY BASE DEVELOPMENT PLANNING IN A THEATER OF OPERATIONS

## 3-1. Roles and Functions

*a. General.* In the areas of the world where the Army's interest is exclusive or predominant and where a subordinate joint command has not been established, the theater commander normally will assign responsibility for base development planning and implementation to the theater Army commander. The basic concepts and requirements for base development are developed at the theater command level and forwarded to theater Army in the base development (BD) planning directive. Parameters in the base development plan are defined or indicated in the concept of operations and the logistic annex of the operation plan (OPLAN). The theater Army commander forms a base development planning staff which is responsible for developing the base development plan (BDP) and for staff supervision in the execution of the plan on implementation.

*b. Planning Staff.* On receipt of the base development planning directive from the theater commander, the theater Army commander forms a base development planning staff (fig 3-1). The base development planning staff will be provided representatives from—

(1) Theater service components.

(2) Theater Army general and special staff sections.

(3) Theater Army subordinate commands and agencies involved in base development planning and execution.

*c. Mission.* The mission of the base development planning staff is to develop the theater BDP for submission to and approval of the theater Army and the theater commander. The BDP staff also provides advice and recommendations to the theater Army commander in all matters pertaining to base development planning, programing, and execution.

*d. Functions.* The functions of the base development planning staff—

(1) In the *planning* phase are —

*(a)* To analyze and refine the base development concept of operations.

*(b)* To prepare and promulgate BDP directives and guidance.

*(c)* To gather and provide BDP intelligence.

*(d)* To review plans submitted by component, subordinate, and tenant commands and to prepare a consolidated BDP.

*(e)* To advise the commander of construction and engineering capabilities.

(2) In the *programing* phase are---

*(a)* To review component, subordinate, and tenant commands' programs to insure support of theater plans and operations.

*(b)* To recommend items for inclusion in the annual programs by the components.

*(c)* To review the Military Assistance Program (MAP) for items that will support contingency construction.

*(d)* To monitor Agency for International Development (AID) programs for items that will support contingency construction.

*(e)* To maintain current information on available construction resources (i.e., troops, contractual funds, and materiel).

*(f)* To maintain an inventory of current facility assets.

(3) In the execution phase are—

*(a)* To issue and insure compliance with base development directives.

*(b)* To monitor all construction resources that are used to support an operation and to coordinate the construction effort.

*(c)* To monitor and coordinate real estate acquisition and activities.

*(d)* To consolidate construction status reports.

## 3-2. Theater Army Base Development Planning System

*a.* When the theater commander tasks the theater Army commander with responsibility for the planning, programing, and development of bases within the theater, he provides the theater Army commander with guidance, the concept of operations, BDP available intelligence, and an allocation of resources. The theater Army

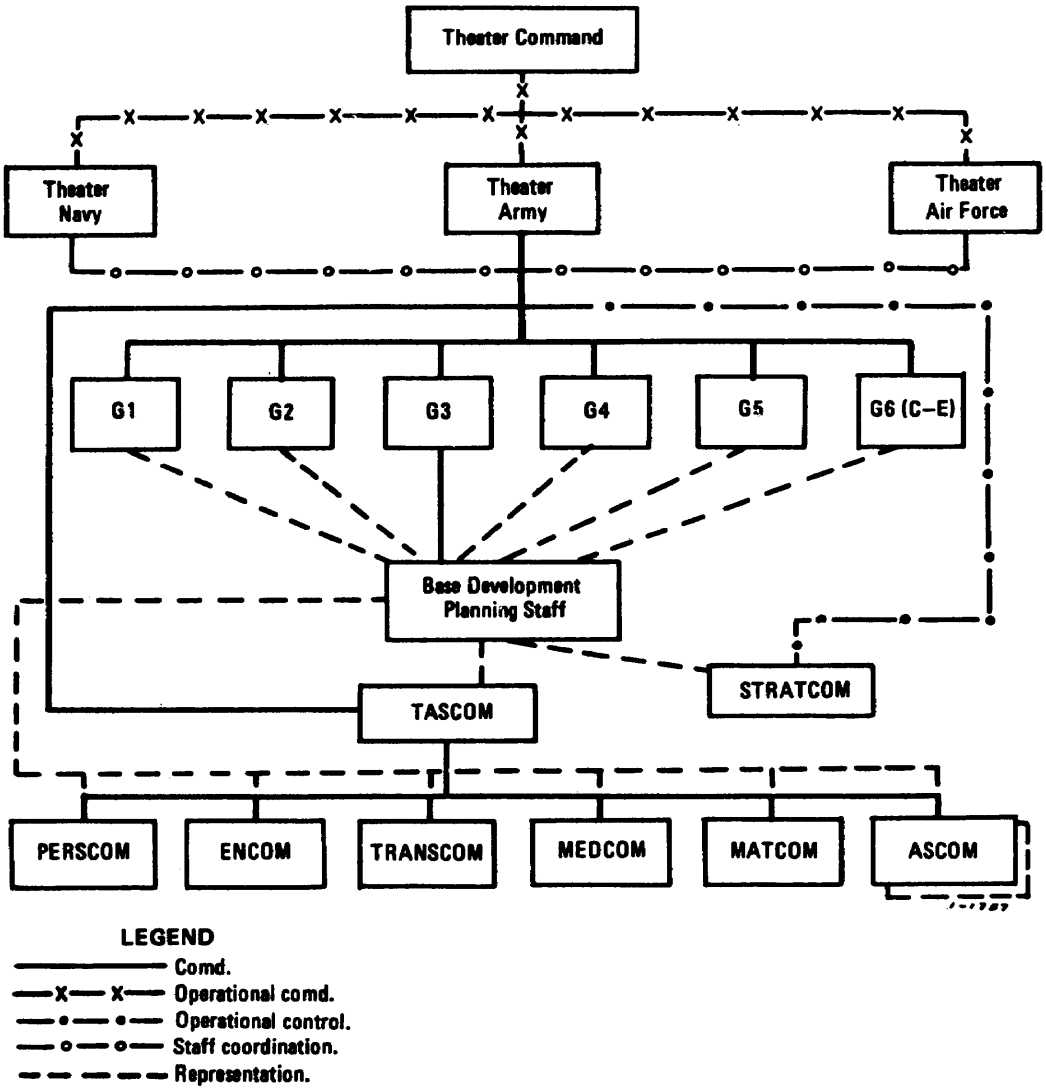



*Figure 3–1. Theater Army base development staff organization.*

commander then issues base development guidance to the theater Army base development planning staff.

*b.* Based on the commander's guidance, the OPLAN, and the concept of base development, the theater Army base development planning staff—

(1) Acquires, consolidates, and analyzes data on—

*(a)* Troop and equipment density.
*(b)* Standards of construction.
*(c)* Time phasing of troop/contractor construction forces, materiel, and development of facilities.
*(d)* Expected duration of the operation.
*(e)* Area site intelligence.

(2) Receives requirements input from subordinate commands and agencies, the other services, and indigenous and allied forces who require facilities and space in the base to be developed.

(3) Develops the gross requirements for facilities, real estate, and construction units. Available resources are then matched against the gross requirements to determine a net shortfall

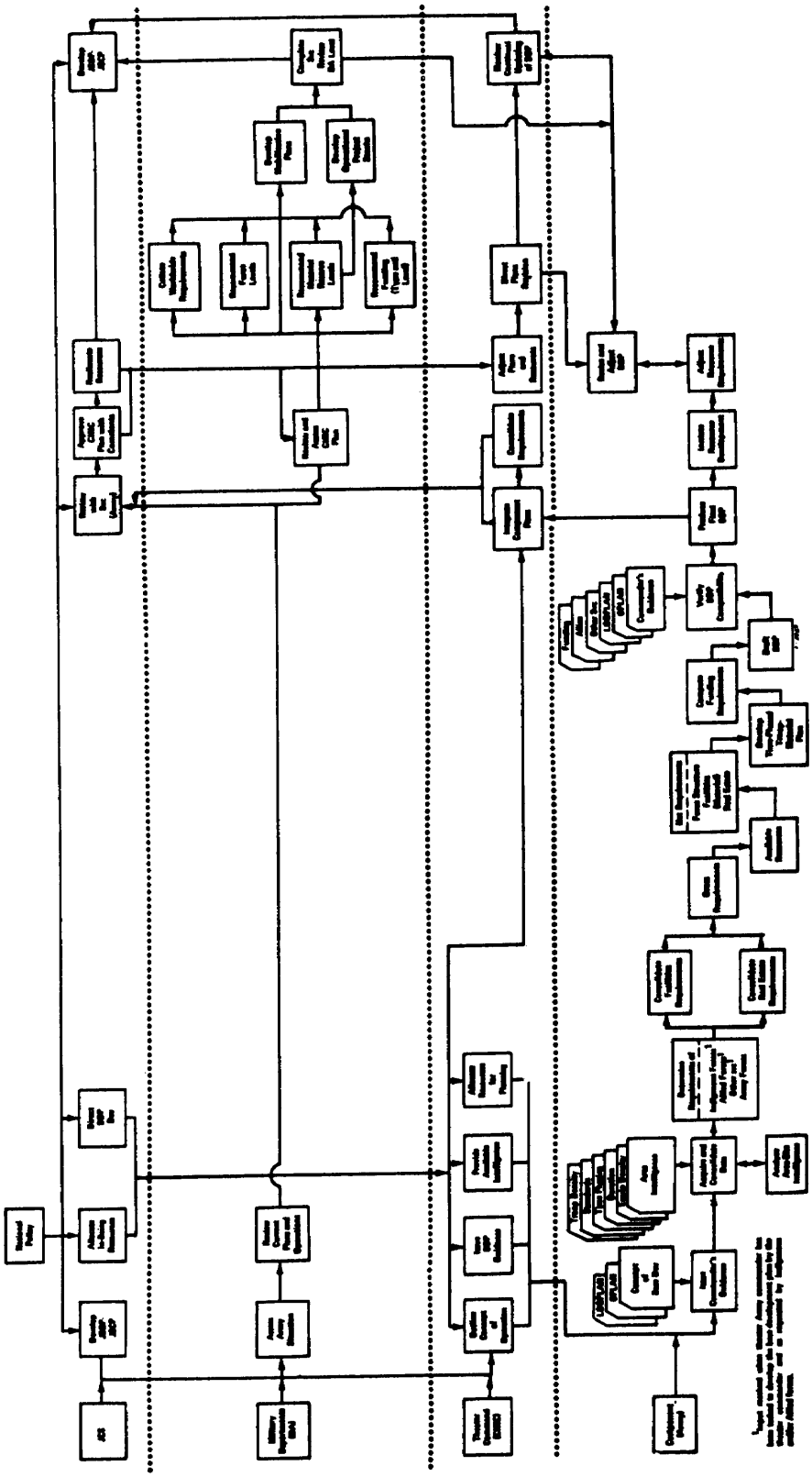


*Figure 3-2. System integration flow chart—Army base development planning.*

(if any) in the force structure, facilities, materiel, and real estate. Determination of requirements is discussed in greater detail in chapter 4.

(4) Computes funding requirements necessary for construction of all facilities, troop operating expenses, civilian contractors, local labor and materials, construction material, shipping, design, overhead, and any other construction costs directly associated with facilities to be constructed. Fund requirements are forwarded as described in figure D-2 with the final BDP for review and approval by DOD.

(5) Compiles draft BDP and checks it for compatibility with the OPLAN, logistic plan (LOGPLAN), requirements of other Services and Allied and indigenous forces, funding requirements, and the theater Army commander's original guidance.

*c.* The BDP is then finalized and forwarded to the theater commander for consolidation with other theater requirements and finalization of a theater BDP.

*d.* The cycle of the BDP then continues as outlined in figures 3-2 and C-1.

# CHAPTER 4
# DETERMINATION OF REQUIREMENTS FOR BASE DEVELOPMENT

## 4-1. Key Considerations in Determining Requirements

The key considerations in determining base development requirements are–

*a.* Mission and operational objectives to be accomplished.

*b.* Total force structure required to accomplish the mission.

*c.* Target dates and expected duration of projected operations.

*d.* Expected troop and equipment density by geographic location.

*e.* Standards of construction.

*f.* Phasing troops and equipment over stated time periods.

*g.* Assessment of the impact of environmental conditions in the area of operations.

## 4-2. Base Development Parameters

*a.* Broad parameters of the base development program are established during initial planning to visualize the total spectrum of requirements.

*b.* These parameters include gross facility requirements by service, by indigenous and allied forces (when applicable), and by major area locations for the following principal types of facilities:

(1) Operational facilities, such as airfields; communications systems; naval aids; petroleum, oil, and lubricants (POL) pipelines and dispensing systems; and ports and beaches (including number and capacity of berths and beach ingress and egress routes).

(2) Maintenance facilities, including aircraft, vehicles, marine, railroads, weapons, and electronics and communications.

(3) Storage facilities.

(4) Hospitals, dispensaries, and dental clinics.

(5) Administration facilities.

(6) Troop housing and community facilities.

(7) Electrical power and water.

(8) Lines of communications.

## 4-3. Determination of Gross Facility Requirements

*a.* These sequential steps normally are undertaken to determine gross facility requirements–

(1) The contemplated contingency operation is oriented to a projected geographical area.

(2) The basic maneuver elements necessary to undertake the desired operations are determined.

(3) The total of the basic maneuver elements then is used as the base point for determining the total of combat support and combat service support units required to constitute the entire force structure.

(4) A required buildup plan and schedule to execute the operation plan (OPLAN) are next established.

(5) The phased consumption needs of the force can then be translated into related facility requirements. This translation takes place through the use of planning factors based on anticipated consumption rates for all types of supplies, theater stockage objectives, theater equipment, and patient evacuation policies.

*b.* The translation of consumption and service needs to facility and installation requirements can be accomplished by relating the force structure to the required supporting facilities.

*c.* Force structure facilities include airfield parking aprons; truck parks; troop housing and messing; maintenance facilities; community support facilities such as exchanges, chapels, service clubs; dispensaries; and utilities. Construction planning factors utilized for these determinations include (but are not limited to) square yards of parking apron, square feet of maintenance shop per number of vehicles serviced, square feet per man for housing or administration space, and gallons of water required per man per day. Planning factors in a theater of operations are provided by the theater commander with input provided by subordinate commanders.

*d.* Facilities making up the logistic base in-

elude bulk POL storage and handling; helicopter facilities, airfield ruways, taxiways, revetments, and parking aprons; hospitals; personnel replacement facilities; ports, beach sites, and deep draft piers; covered, open, and cold storage; hardstand; ammunition storage; communication networks; and lines of communications. Logistic factors applicable to these facilities include theater stockage objectives for all classes of supply; consumption rates per man, vehicle, aircraft, or weapon; theater patient evacuation policy and personnel replacement policy; tonnage of supplies and materiel to be imported per day, per week, per month; and the rate of buildup to stockage objectives. Construction planning factors are then applied to determine the quantity of facilities required.

*e.* The construction planning factors at this stage in base development planning reflect the total broad requirements within prescribed functional facilities groupings. They do not substitute for the detailed compilation of planning data that must be accomplished for complete development of installations and bases.

*f.* To assist the planner in development of gross planning factors, the Directorate of Military Engineering, Office Chief of Engineers (OCE), Washington, D.C., has developed gross planning factors keyed to appropriate DOD category code numbers. They are developed from various published criteria and theater experience. These factors have not been published and may be obtained from OCE.

### 4—4. Assessment of Available Facilities In-Country

*a.* When possible, planners will utilize local facilities are available resources from in-country and neighboring countries that host countries are willing or able to provide. Planners can obtain information as to type, quantity, and quality of existing assets from National Intelligence Surveys, US. Military Assistance Programs (MAP), U.S. Agency for International Development (AID), and U.S. private corporations operating in the contingency area. Defense Intelligence Agency (DIA) area studies are good sources of information for determining local assets. The availability of existing local resources must be assessed conservatively until known otherwise. A safe assumption would be that only public facilities will be available.

*b.* The resources of U.S. corporations and industrial firms throughout the world may be available on a reimbursable basis. Construction firms, in particular, are valuable sources of technical assistance, construction equipment, and supplies. They may be able to provide contract construction support during early phases of the operation before major military construction resources arrive.

*c.* Planners utilize assets of the MAP and AID to support base development when possible. Nations receiving MAP assistance have complete control over the equipment and facilities released by the United States and, therefore, cannot be considered available to U.S. forces unless the host country is agreeable. The U.S. military has even less control over approved AID projects; however, the planner may contact the chief of the appropriate U.S. Military Mission or Military Assistance Advisory Group (MAAG) to ascertain what agreements are in effect or can be implemented for use of MAP facilities. The Department of State or appropriate U.S. embassy must be consulted concerning possible use of AID resources.

*d.* Host country troop construction support will rarely be available in underdeveloped countries. Generally, these forces have insufficient engineering capability to satisfy their own needs; more likely, they will depend on U.S. forces for facilities construction.

*e.* Planning must provide for acquisition, allocation, controlling, utilization, rehabilitation, and disposal of indigenous facilities including real estate for siting new facilities. When possible, real estate and facility usage agreements with host country are initiated before operations begin. Agreements cover length of occupancy, method and amount of reimbursement, modifications to be performed by U.S. forces, credit to the United States for facilities turned over to the local government, and use of the facilities (whether U.S. or combined). JCS Pub 3, section HI, provides detailed guidance on real estate policies and responsibilities in oversea commands.

*f.* The availability of indigenous manpower is evaluated in all base development plans (BDP). Although unskilled labor is available in most countries, skilled labor is generally in short supply. Therefore, to employ a balanced work force, skilled personnel may have to be provided from other sources.

*g.* Indigenous construction materials may be utilized when it is most feasible. The type, location, quantity, and accessibility of construction materials may be determined from intelligence

reports, and, where feasible, from onsite reconnaissance. Local procurement of construction materials provides savings in cost and reduction of leadtime for delivery.

### 4—5. Determination of Net Facility Requirements

*a.* By subtracting the available facilities from the total of gross facility requirements, the base development planner determines the net facility requirements to be satisfied through new construction, rehabilitation, or substitution by other facilities. The net requirements provide the basis for determining—

(1) Acquisition of red estate.

(2) New and/or rehabilitated facility construction.

(3) Materiel requirements.

(4) Combat service support forces to be added to the force structure given in the OPLAN.

(5) Contractual services.

(6) Time phasing.

Analysis of these factors may influence the OPLAN and the logistic plan (LOGPLAN) and require adjustments in force structure, standards of construction, readiness dates, and phasing of operational objectives.

*b.* After the planner has determined net requirements for facilities, real estate, and the associated phase scheduling, he then evaluates the construction force requirements. Army engineer construction force requirements may be determined from factors given in the Army Facilities Components System (AFCS) and FM 101-10-1. This does not, however, identify requirements for special construction units, such as well-digging crews and equipment, civil contract construction firms, equipment support organizations, and special augmentation equipment. The planner also identifies those tasks that have to be accomplished by specialized units e.g., marine facilities by port construction companies, well drilling by engineer well-drilling detachments. Further, facility requirements are analyzed to identify important tasks for which special units or additional equipment may be required. For example, aggregate production required for roads, airfields, hardstand, and concrete building foundations should be compared with the gross production capabilities of the number of construction battalions approximated previously. This comparison ordinarily identifies need for additional rock-crushing plants, which may be provided for in the construction force in the form of engineer light equipment or construction support companies, 500-series TOE team and detachment, or by augmenting units in the force with additional military or commercial plant capability. Net requirements for facilities should also be evaluated to identify those that can or should be accomplished by contract construction forces. Factors to be considered are-

(1) Physical security and defense of construction site.

(2) Construction of a highly sophisticated or complex nature demanding skills and equipment normally not found in a troop construction unit.

(3) The ability of the contractor to mobilize a construction force in keeping with the phasing and priorities of the BDP. Similarly, an evaluation of facility requirements should be made to determine those that can be accomplished by occupying units under a self-help program. Such programs are particularly applicable to troop cantonment areas. With technical assistance, most military units can construct their own (temporary) billets.

*c.* The BDP of the theater commander may indicate that other construction forces are available such as Navy construction units (SEABEES).

*d.* In most situations involving base development, the total requirements likely will exceed execution capabilities for some time. Therefore, a system of priorities is established to insure that the most critical needs of the theater are met first. These priorities are established at the joint command or theater command level. The system established initially emphasizes operational and logistic requirements at the expense of personnel support and community support elements. The priority system is based on these broad categories of requirements:

(1) Operational and logistic facilities.

(2) Personnel support facilities including cantonments (shelter, mess, sanitation).

(3) Other personnel support facilities (those that provide improved living conditions).

(4) Welfare and recreational facilities.

*e.* Initial construction is limited to minimum essential facilities to reduce the scale of construction resources required as much as possible when shipping demands and other logistic requirements are at their peak. Careful phasing in of construction resources is necessary to preclude disproportionate demands on the logistic system. Command attention is required to balante the buildup and demand of construction resources with those necessary to launch and sus-

tain combat operations. Continued application of the priority system is necessary to avoid an imbalance in program execution and to preclude exceeding established priorities and construction standards. In this respect, the entire needs of the contingency area, including the needs of the separate services, should be treated within a single area priority system.

*f.* Closely associated with priorities is the requirement for a detailed coordinated time-phasing plan. Planners start with the desired occupancy date and work backwards to determine construction force deployment schedules and appropriate shipping dates for materials and equipment. Shipping and port schedules can then be worked out to meet construction requirements. Since sufficient resources are seldom available to meet all base development requirements for a military operation, planners try to balance requirements and capabilities. Various means to overcome shortages in engineer construction units have been discussed. The use of prefabricated buildings and other pre-engineered facilities provides savings in manpower and time for erection. Additionally, construction requirements may be reduced by lowering standards of construction to the lowest standard capable of fulfilling immediate essential requirements. Several options are available for reducing the amount of construction materials and equipment to be shipped during deployment. These include prepositioning theater reserve stocks, maintaining forward floating depots, prehostilities construction, and offshore procurement. The trade-offs inherent in employing each of these approaches must be evaluated in the light of specific conditions for each proposed operation.

**4—6. Troop/Contractor Mix**

*a. General.* Experience indicates that rarely has there been an adequate troop construction capability in being to satisfy the construction requirements of a major contingency operation in an underdeloped area or country. Therefore, U.S. forces have been forced to resort to a troop/contractor mix in base development planning.

*b. Considerations.*

(1) The troop/contractor mix is a major consideration for base development planners in the base development planning process. The mix considerations are complex and closely interface with other considerations in the total planning process. For example, the base development planner must consider the force structure, operational objectives, sensitivity of facility, availability of troop construction forces, contractor capability, availability of local skilled labor, magnitude, time phasing of construction requirements, and the estimated duration of the contingency. When the troop and indigenous contract construction capability is insufficient to execute large and/or complex construction programs in contingency situations, plans will be oriented toward use of a civilian contract. The number and size of the contracts will depend on the size of the program, geographical considerations, and required construction completion dates. Services of the designated DOD construction agent will be utilized in the establishment of construction contracts.

(2) Detailed analysis of the trade-offs involved in the decisionmaking process regarding troop/contractor mix in any given contingency must consider—

*(a) The availability of personnel resources.*

*(b) Materiel resources.* In industrialized nations, a sufficient base of materiel assets may exist; for example, mass importation of materiel through a long logistic pipeline may not be necessary as in long-distance underdeveloped areas.

*(c) Funds.* Adequate funding on a phased basis must be available.

*(d) Effort required.* The size and rate of the combat force buildup greatly influence construction execution.

*(e) Complexity.* The technical requirements of the task must be viewed in terms of available skills of the construction troops/contractor(s) to determine what, if any, augmentation of skills is required. For example, construction requirements may be concentrated in a narrow range of skills (road building), or they may include the full spectrum of technical skills (waterfront, pier development, dredging, electronics, electrical power production and distribution, heating, air conditioning, POL systems, structural design, and development). Many of these projects require skills and equipment beyond those found in normal construction units.

*(f) Mobilization/demobilization.* Establishment of the phaseout of contractor and troop units in-country requires time and funds. Planners must phase carefully to avoid excessive costs in movement of construction units in and out of country.

*(g) Security.* Enemy action at the construction site may help to determine whether civilian contractors will be allowed in the area. The degree of insurgency within the host country

will influence labor force security requirements and utilization of indigenous labor. Security conditions help to determine whether dependents, military or contractor, will be allowed in-country which, in turn, influences compensation for the U.S. and third-country national civilian workers.

*(h) Political aspects.* Agreements with host countries in a theater of operations normally address utilization of military units or U.S. or third-country national workers in-country. Coordination with local embassy and host country ministries is important to establishing a plan for utilization of troops or contractors, or both. Other factors influencing the mix are gold flow considerations, a requirement to maximize use of local labor, and programs directed to development of in-country economic assistance.

(3) As a basic concept on construction troop/contractor mix for a contingency operation, planners should consider the use of construction troops in the initial lodgment and buildup phases of base development, followed by the introduction of contract forces to perform constriction in enclave/secure areas. Later, troop construction forces can move forward with the tactical forces and devote their major efforts to supporting tactical requirements.

(4) Base development planners must insure that construction forces are not utilized to perform facility maintenance once the base has been developed. This represents a misapplication of resources and a dilution of already limited construction capabilities. Base development planners must, therefore, provide for essential facility *maintenance* forces to insure the availability of construction forces to perform their primary mission. Maintenance forces must be phased in to assume responsibility for facility maintenance on completion of construction. If U.S. force maintenance units are not available, the base development planner considers alternatives such as the use of civilian contractors or indigenous forces, or both.

*c. Steps To Determine Troop/Contractor Mix.*

(1) *Planning.*

*(a)* Develop construction requirements.

*(b)* Evaluate available assets and conditions in-country.

*(c)* Analyze potential workload against construction troop capabilities to determine whether contract augmentation is required for overall capability and/or sophisticated construction.

*(d)* Determine whether additional construction capability beyond assigned units is available.

*(e)* Recommend a troop/contractor work split so that a troop/contract scope can be defined.

*(f)* Adjust construction plans and troop/contractor work split in consonance with assets made available by higher authority.

(2) *Execution utilization.*

*(a)* Construction troops are utilized for forward area tactical support and other projects as required.

*(b)* Contractors are utilized in more secure areas and for more sophisticated projects in enclaves.

*(c)* Local contract capability is used if available.

(3) *Phase-down.* Once the construction program has stabilized, prepare for phase-down of contract operations to convert main effort to construction troops. Order of phase-down normal] y proceeds as follows (some may be phased down concurrently):

*(a)* Reserve units (if used).
*(b)* Major contractors.
*(c)* Newly activated troop units.
*(d)* Troop units.
*(e)* Local contractors.

**4—7. Other Planning Requirements**

BDP generates some information requirements in addition to those defined above and in JCS Pub 3.

*a.* The bases that the base development planner has provided for must be operated and maintained after they are constructed. The base development planner should insure that the necessary utility, operating, and maintenance teams required to operate those bases are included in the troop list.

*b.* The base development planner should identify and summarize those conditions that will adversely influence the base development program. The solution of these problems may be outside the responsibility of the base development planner, but he will be the first to identify the condition and it is his responsibility to define the problem area. These are the most probable conditions that will act as constraints on the base development program:

(1) The dispersal requirements in view of probability of a chemical, biological, or nuclear threat may generate serious problems on acquisition of real estate, dollar costs, and line of communications distances.

(2) The dollar cost may be excessive because of high standards of construction or unrealistic requirements of the OPLAN.

(3) Construction delays may be excessive because of the priorities, standards of construction, the concept of operations, or the small size of the construction force.

(4) Movement of construction supplies and materiel may be a constraint because of the existing line of communications network or the standards of construction that generate large transportation demands.

(5) The OPLAN may generate excessive construction requirements for a base at one specific location. The relocation of the base may significantly reduce the construction effort with little effect on the OPLAN.

# CHAPTER 5
# BASE DEVELOPMENT PROGRAM EXECUTION SYSTEM

## 5—1. General

The exact point in time when execution of a contingency operation plan (OPLAN) will be declared is hard to predict. The requirement for execution may be clear cut as the result of an overt attack on U.S. or friendly forces, or it may occur as the result of an incremental response to an insurgent action. After a decision to execute an operation is made at the national level, specific directions given to the Joint Chiefs of Staff (JCS) will include guidance necessary to define the limitations and level of effort required.

## 5—2. Base Development Execution

*a.* The JCS coordinate Military Department actions to implement the OPLAN most appropriate to the situation. The JCS evaluate the situation considering the current base development plan (BDP), military posture, materiel resources, and other pertinent factors. From this evaluation, they make the necessary decisions and issue authority to execute the OPLAN to the theater commander. The JCS allocate and reallocate resources from another theater to support the OPLAN. The Military Departments in coordination with the JCS prepare the initial funding requirement and forward it to the Secretary of Defense for approval and submission to Congress.

*b.* The theater commander, on order from the JCS, orders the approved OPLAN into execution. After having reviewed the BDP for adequacy and adjusting in-being resources, the theater commander then tasks a subordinate commander for implementation. The subordinate commander may be a joint force commander or a service component commander whose interest in the area of operations is exclusive or predominant.

*c.* The joint command commander (or the tasked service component commander if no subordinate joint command has been established) then—

(1) Utilizes the base development planning staff to supervise the implementation of the BDP.

(2) Reviews the BDP for adequacy and makes any necessary revisions.

(3) Orders the execution of approved OPLAN and BDP.

(4) Adjusts in-being resources.

(5) Controls all base development resources and allocates those resources as dictated by an updated evaluation of the situation.

*d.* The joint command service components and the DOD-designated construction agent conduct construction operations under the operational control of the joint command commander. The construction agent operates within his component service channels for contract management.

*e.* On direction to execute the OPLAN, the Military Departments prepare and submit to the Secretary of Defense funding requirements for the *initial* construction necessary to support the updated contingency plan. Simultaneous with the development of budget programs, Military Department resources in-being are made available to the theater commander as directed by the JCS. Base development forces are made available, existing war reserve stocks are released, and construction capabilities are marshaled.

*f.* The Secretary of Defense reviews and approves the Military Department programs and submits them to Congress for special legislation to support initial requirements. Construction requirements are expressed in terms of a level of construction capability based on gross facility requirements. On receipt of congressional authorization and funding, the Secretary of Defense—

(1) Passes the military construction program ( MCP) to the theater commander via the JCS.

(2) Releases funds and all other authorizations to the Military Departments.

*g.* On receipt of the military construction program authorization from the Secretary of Defense, the JCS review the program and pass it on to the theater commander. The JCS authorize the Military Departments to release any newly

created resources to the theater commander in accordance with the review of the updated BDP.

*h.* On receipt of authority and funds from the Secretary of Defense and the JCS, the Military Departments take the following action:

(1) Identify any shortfalls which resulted from inadequate funding or deletions made during the budgeting process and initiate any necessary reclama actions.

(2) Allocate military construction program funds to the in-theater DOD designated construction agent.

(3) Take necessary action to activate or procure those additional resources required to support the contingency OPLAN and BDP. This includes such actions as activating and equipping new construction units, call-up of reserve units, advertising construction contracts, and procurement of functional component materials.

(4) Release the created resources (except funds) to the theater commander as directed by the JCS.

*i.* The theater commander, in turn, allocates the required resources to the subordinate commander (joint or component) charged with the implementation of the base development program.

*j.* The DOD-designated construction agent functions within the assigned area of operations as determined by the Secretary of Defense based on recommendations by the JCS. All DOD contract construction in a contingency area will be accomplished by the DOD construction agent having construction responsibility for that area. However, on an exception basis, other arrangements for contract construction support may be authorized when such arrangements offer significant advantages. The DOD construction agent is fully responsive to the theater commander and to any subordinate commander charged with base development responsibility in the area of operations.

*k.* The joint or component commander tasked with base development controls all assigned construction resources and allocates resources as required. Base development support of the operation is thus implemented and underway in the area of operations.

## 5—3. Follow-on Base Development Program

The program described in paragraph 5-2 provides an initial capability for accomplishing base development. The development of any necessary follow-on programs is determined by a continual reassessment by the commander tasked for implementation of the base development program. Resource requirements, authorization, and procurement for base development follow-on programs recycle through the chain of command in a manner similar to that described in appendix C and figure C-1.

# CHAPTER 6
# FUNCTIONAL COMPONENTS AND STANDARDS OF CONSTRUCTION

## 6—1. Definition

A functional components system consists of pre-engineered design, bills of materials, and related materials cost and logistic data that are designed to support military operations. Some of the components are completely prefabricated and relocatable; others must be constructed from standard construction building materials. All items of a component have been identified by Federal stock numbers, drawings, specifications or manufacturer, make, and model numbers to expedite the procurement process. In some instances, procurement and prestockage are made on components when they are identified as contingency requirements. The engineering, logistic, and cost data for all components are organized, coded, and maintained in data banks to assist in base development planning and to maintain up-to-date information.

## 6—2. Functional Components

*a.* The magnitude of support needed for base development operations requires that an efficient system of planning and executing military construction be developed and followed. One step to more efficient construction support of contingency operations is the increased use of functional component systems. Functional components are provided through the Army Facilities Component System (AFCS), the Navy Advanced Base Functional Component System (ABFCS), and the Air Force Bare Base Mobility Package (BB-MP). These systems are discussed in more detail in paragraph 6-3.

*b.* The advantages of using functional component are that they—

(1) Provide a more effective basis for base development planning.

(2) Facilitate meeting initial requirement of a contingency situation at the earliest possible time.

(3) Reduce in-country design, construction effort and construction time.

(4) Promote uniformity in construction criteria and standards.

(5) Minimize balance of payment impact related to both offshore materials procurement and for foreign labor use.

(6) Take advantage of the technology and the industrial capacity available in CONUS to meet oversea base development requirements.

## 6—3. Prefabricated/Prepackaged Functional Components

Prefabricated and prepackaged components are considered for the broadest spectrum of requirements. Particularly appropriate are those requirements that are repetitive and of significant volume. Some examples are–

*a. Piers.* Units such as the DeLong Pier and the Ammi Pier, together with approach spans, fenders, and lighting equipment.

*b. Electrical Power.* Package units of varying capacity, both low and high voltage, together with the necessary transformers, switch gear, control panels, distribution lines, and insulators. These are designed to cover typical area and installation requirements such as depots, ports, and cantonments, capable of employment in multiples.

*c. Water System.* Complete system equipment for production, treatment, storage, distribution, and use. Package may be designed for varying capacities such as 1,000-, 3,000-, and 5,000-man cantonments, capable of employment in multiples.

*d. Sewage Treatment.* Package treatment plants based on various levels of population or specific-type facilities such as hospitals or cantonments.

*e. Hospitals.* Complete packages containing all items necessary for laboratory, wards, operating suites, pharmacy, mess, nurses' quarters, utilities and laundries, based on prefabricated building cells such as metal buildings and trailers.

*f. Troop Shelters.* Based on prefabricated cellular unit capable of being assembled in multiples.

*g. Support Buildings.* A family of multipurpose prefabricated buildings suitable for use singly or in multiple for warehousing, administration, supply, post exchanges, and other similar-type facilities.

*h. House Trailers.* For BOQ, BEQ, or special office requirements.

*i. Laundries.* Trailer equipped with commercial washing machines and dryers, to include power generator but requiring water source.

*j. Heating and Cooling Units.* Package units for various size and types of space requirements.

*k. POL System.* All-inclusive various size plants from terminal to storage to dispensing with necessary tanks, pumps, and pipelines.

*l. Maintenance Shelters.* A family of prefabricated buildings that can be used singly or in multiples for aircraft and vehicle maintenance.

*m. Refrigerated Storage.* A cellular unit that can be combined in multiples to provide extensive refrigerated storage at depots, ports, and support centers.

*n. Landing Mats.* A family of landing mats adequate for the construction of airbases/airfields for aircraft, both tactical and logistic.

**6—4. Characteristics of Functional Components**

Desirable characteristics of functional components for construction include—

*a.* Mobility and durability consistent with the function to be performed.

*b.* Standardization and uniformity among the services; for example, to develop and prestock a personnel shelter that will meet the requirements of more than a single user is simpler and more efficient than to develop a different make and model for each separate user.

*c.* Commercially available off-the-shelf items to the maximum extent.

*d.* Economically recoverable for use at other locations.

*e.* Adaptability to use in multiples when feasible and required.

*f.* Minimum construction requirements.

**6—5. Systems In-Being**

*a. The Army Facilities Components system.*

(1) *The AFCS.* The AFCS is integral to base development planning. The AFCS series of technical manuals provides a simple, logical means by which the construction materials and effort required for engineer support of a military operation can be determined. The planner must be familiar with these manuals because they provide a basis for description of Army facilities used in base development planning.

*(a)* TM 5-301 is basically the planner's manual explaining the concept and use of the system. It contains an abbreviated listing of all the equipages and facilities in the system and a detailed listing of the installations in the system. It also lists the cost, shipping volume, and shipping weights of material. In addition, the approximate construction effort in man-hours is computed for each facility and installation.

*(b)* TM 5-302 is designed for use primarily by engineer units engaged in the construction of Army facilities and installations. It contains construction site layouts, plans, and details for the facilities and installations. It tabulates bills of materials for these facilities and installations.

*(c)* TM 5-303 is intended for use by planners, construction units, and supply agencies. Construction data have been developed on the "building-block" concept. The basic building block is a facility; others are installations and equipages. This manual contains descriptions of all facilities and equipages and a listing of all items in each facility and equipage. Each item in a facility or equipage is identified by a Federal stock number, abbreviated description, unit of issue, and the quantity required. The dollar cost, shipping weight, and volume for all materiel, together with the construction man-hours, are included in the description heading.

*(d)* Automatic data processing (ADP) aspects. All data published in TM 5-301 and TM 5-303 are coded on magnetic tape for use in digital computers. This simplifies updating as changes occur in the building blocks. The use of ADP is also a means of providing current data to supply agencies and oversea commands when requested. Revised ADP systems to support base development planning are being developed by the Directorate of Military Engineering, Office, Chief of Engineers (OCE), Washington, D.C.

(2) *Responsibilities for development.* AR 416-16 sets forth responsibilities for development and maintenance of the AFCS. The Chief of Engineers has the major responsibility for the development and maintenance of the AFCS. Staff agencies, major commands, and other elements of the Army that have missions in theaters of operations requiring construction—peacetime and contingency-are responsible for submitting operating criteria and general military characteristic of these facilities to the OCE on an annual basis. The Army component commanders in

a theater of operations provide the Army Matriel Command (AMC) with time-phased AFCS requirements for each base development plan requiring AMC support in their respective OPLAN. The AMC is responsible for providing staff guidance to commodity commands and other activities in support of the AFCS to include-

*(a)* Cataloging and standardization of materiel included in the AFCS.

*(b)* Procurement, distribution, and storage of equipment in required quantities for CONUS installations, oversea commands, other user agencies, including development of Army-wide supply and maintenance policies, systems, and procedures for materiel.

*(c)* Insuring timely supply of items included in the AFCS.

*(d)* Developing transportation data and initiating necessary action to insure shipment of items.

*(e)* Conducting necessary planning to insure supply and shipment of Defense Supply Agency/General Services Administration source items that are the logistic responsibilities of these agencies.

*(f)* Upon receipt of list of AFCS required, obtaining project codes to identify each assembly package and publishing these codes and other required information for all concerned.

*(g)* Providing guidance for including AFCS in operational project, as specified in AR 725-65.

(3) *Description of the system* Two groups of data are developed for the AFCS:

*(a)* Data that are related to combat support are identified with the combat zone in a theater of operations.

*(b)* The data related to combat service support are identified with the communications zone.

*b. The Navy Advanced Base Functional Component System.*

(1) *General.* The Navy ABFCS is a grouping of personnel and/or material designed to perform one of the specific tasks of an advanced base. The component as broken out by the Navy 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- to 90-day initial supply of consumables. The functional components are given names to indicate their function and unclassified code numbers consisting of a letter and number combination to provide easy reference.

(2) *Scope.* The Navy system encompassed more than 300 functional components, covering practically all significant tasks normally performed at various types of advanced bases. The entire list is subdivided into major functional groups, indicated by the letter prefix. Some examples are-

A—Administration.
B—Harbor Control and Defense.
C—Communications.
D—Supply.
E—Ship and Boat Repair.
F—Cargo Handling.
G—Medical and Dental.
H—Aviation.
J—Ordnance.
P—Construction and Public Works.

This system is unique in that the Navy construction troop units are a part of the functional component system. For example, a mobile construction battalion (MCB) is a P25 Functional Component. A construction battalion maintenance unit (CBMU) is a P5 Functional Component.

(3) *Use as a planning tool.* The ABFC system provides a means of planning by the selection of functional building blocks, each designed to provide for the performance of a specific task to be accomplished at the advanced base. In practice, broad base development planning is expressed in terms of complete functional components. When planning is done in more detail, specific functional components are tailored by the reduction, omission, or the addition of quantities of specific items to the standard outfitting lists. Also, those components which include covered working space, living accommodations, etc. may be designated as "tents or huts," and further refined as "tropical, northern, or arctic." This furnishes a means of providing components compatible with tables of organization (TO) standards and climatic conditions. Selection of a given functional component, appropriately designated, provides the number of square feet per man and the desired permanency of construction, in accordance with Navy standards. Once the total package has been selected, the following information can be derived quickly:

*(a)* The buildings and structures required.

*(b)* Materials and equipment for utilities.

*(c)* All equipment and material required to outfit the base.

*(d)* Initial stock of supplies.

*(e)* Military personnel required to operate the base, by rank and rating.

*(f)* Approximate land area needed for buildings and structures, cantonments, etc. Planning data include the land area required to provide space for each component. This constitutes a starting point for site planning without necessarily making detailed layouts of groups of buildings, structures, etc.

*(g)* A basis for estimating the construction effort required.

*c. The Air Force Bare Base Mobility Package.* The Air Force BBMP includes lightweight, small, easily erected, air-transportable structures and other facility components as well as construction equipment and supplies. The packages are organic to the deploying units. The structures and other components, erected by the personnel of the deploying unit, provide minimum essential facilities on an austere space basis and can be quickly repackaged, transported, and erected at another location.

**6—6. Standards of Construction**

The theater commander establishes standards of construction to insure uniformity of construction quality throughout the contingency area for all services. The basic principle in establishing standards is to provide the required facilities at the least cost in resources for the expected duration of use. Long-life materials may be used for short-time requirements provided increased costs do not result. While standards are primarily reflected in quality and durability of the completed facility, they have a definite impact on living and working conditions; e.g., masonry versus tents for living shelters. Running water and waterborne sewage are included in standards because of their impact on living and working conditions and cost. Categories of standards are based on the military situation, location, environment, anticipated duration of use, latest developments in prefabricated and prepackaged functional components, and cost considerations. As those factors change, a corresponding change in standards may be required. Six standards of construction have been prestructured into the AFCS system. They are identified in the system as follows, except for hospitals: (For greater detail and hospital standards, see FM 101-104, chap 7.)

*a. Standard 1.* No construction effort is programed. Units utilize organic equipment and materials. Personnel and facilities are housed in tents. Pit-type latrines are used.

*b. Standard 2.* Same as standard 1, except that construction effort is programed for clearing site) grading of roads, and erection of critical facilities and utilities. Improvements are confined mainly to those made on a shelf-help basis by the occupying unit using its organic equipment.

*c. Standard 3.* Same as standard 2, except that construction effort and materials are furnished to erect buildings for administrative and other major operational facilities. Water and electrical distribution systems are installed. Roads are stabilized with local materials. There is no waterborne sewage.

*d. Standard 4.* Same as standard 3, except class IV tents with floors and wood frames are provided for housing.

e. *Standard 5.* Same as standard 4, except that buildings are constructed for all purposes.

*f. Standard 6.* Same as standard 6, except that waterborne sewage is installed and all roads are paved.

# APPENDIX A
# REFERENCES

**A—1. Army Regulations (AR)**

| | |
|---|---|
| 415-16 | Army Facilities Components System. |

**A—2. Technical Manuals (TM)**

| | |
|---|---|
| 5-301 | Engineer Functional Components System Staff Tables of Installation, Facilities, and Equipage |
| 5-302 | Construction in the Theater of Operations |
| 5-303 | Bills of Materials and Equipment of the Engineer Functional Components System |
| 5-803-4 | Planning of Army Aviation Facilities |

**A—3. DOD Instructions**

| | |
|---|---|
| 4165.3 | DOD Facilities Classes and Construction Categories |

**A—4. Field Manuals (FM)**

| | |
|---|---|
| 101-5 | Staff Officers' Field Manual-Staff Organization and Procedure |
| 101-10-1 | Staff Officers' Field Manual: Organizational, Technical, and Logistical Data-Unclassified Data |

**A—5. Joint Chiefs of** Staff (JCS) Publications

| | |
|---|---|
| (O) JCS Pub 2 | Unified Action Armed Forces (UNAAF) |
| (C) JCS Pub 3 | Joint Logistics and Personnel Policy and Guidance (U) |
| (C) JCS Pub 6 | Vol. II, Part 4, Chapter 37. Contingency Construction Report (U) |

# APPENDIX B

# EXAMPLE GUIDE FOR FORMULATING A BASE DEVELOPMENT PLAN

The following extract from USARSTRIKE Operation Plan (OPLAN) 0000 1971 is quoted for reference for base development planners. Beginning with figure B-4 this example follows the format prescribed by change 2 to JCS Pub 3.

1. APPENDIX ( ) TO ANNEX ( ) TO LOGPLAN ( )—CONCEPT OF OPERATION

*a.* This plan provides for the introduction of Army forces of a joint task force by airborne assault in OPHIR to secure an operating base to accomplish the assigned mission. The forces will prepare for parachute assault and will then deploy to a final staging base and/or the objective area. If the forces deploy to a final staging base, COMUSJTF may decide to commit one company from the assault battalion(s) separately and ahead of the main force, either by airdrop or airland. If the decision is made to airland in the objective area, a company-size force will be landed first, followed by USAF aerial port detachments which are manned and equipped to offload and derig the assault forces.

*b.* COMUSARFOR will secure Airport Tyonek establish an operating base, and conduct subsequent operations as directed.

(1) Phase I. Pre-assault operations. The USARFOR assault force rapidly deploys from Skwenta Air Force Base through the final staging base. COMUSJTF may airdrop or airland at Airport Tyonek.

(2) Phase II. Assault operations. At D-day, H-hour, USARFOR airdrops or airlands to secure Airport Tyonek and establish an operating base. If an airlanded operation is conducted, a company-size force will precede the main force to secure the airfield. The USAF aerial port detachments will land immediately after the company-size force and will expedite the offloading of the main force.

(3) Phase III. Subsequent operations. COMUSARFOR orders deployment of additional forces of the task organization necessary to accomplish the mission; secures key U.S. and Ophiran installation as directed; opens Port of MEDFRA by D+30.

2. APPENDIX ( ) TO ANNEX ( ) TO LOGPLAN ( )

*a.* Troop Requirements.

Army forces: Airborne brigade
support forces
Transportation terminal company

*b.* Force Requirements List. This list is a time-phased arrival list by units and destination of the force. It is summrized as follows:

| Destination | Strength | Close |
|---|---|---|
| TYONEK | 5,058 | D+30 |
| MEDFRA | 504 | D+30 |

*c.* Logistics.

(1) Level of supply. A 15-day safety level and a 10-day operating level of supply will be established by D+60.

(2) Medical services. Medical evacuation. A 10-day evacuation policy will be established by D+60.

(3) Maintenance. Only organizational maintenance will be performed in the objective area. Direct support maintenance float will be called forward on order of COMARFOR.

3. SCOPE OF' THE BASE DEVELOPMENT PLAN

*a.* General. The foregoing information determines the scope of the base development plan. In the example quoted, base development will consist of the bases shown in figure B–1.

| Base | Location | Strength | Supported force |
|---|---|---|---|
| **Operating base** | **TYONEK** | **5,058** | **Airborne brigade** |
| **Port** | **MEDFRA** | **504** | **Airborne brigade and port terminal company** |

***Figure B–1. Bases for OPHIR.***

The general logistic parameters of the base development plan are contained in their 25-day supply level, 10-day evacuation policy, and the direct exchange maintenance policy.

*b.* Comment. The following parameters have not been provided:

(1) Standard of construction.

(2) Duration of the OPLAN.

These factors are related, i.e., a longer duration of operations is supported by a higher standard of construction. Usually these factors will be indicated in the OPLAN in the following terms:

> Logistics planning anticipates sustained operations for a period of 180 days. As the operation develops, the COMUSJTF will continually appraise the tactical situation to keep the BDP in reasonable balance. If there is assurance of a reasonable early termination at, say, D+120, then base development planning and execution should be curtailed to some degree. Conversely, if the tempo of military operations is on an increasing trend, base development activities assume greater importance and may be expanded and expedited accordingly; concurrent planning for projects may go beyond the scope of projects included in this BDP. Construction will be limited to austere and mimimum construction necessary to support the operation.

These items are assumptions for this example; austere construction is further defined as standard 2 with selected facilities to standard 3.

4. STATISTICS

OPLAN statistics are required for base development planning and are determined from FM 101-10-1; OPLAN 0000 statistics are shown in figure B-2.

5. REQUIREMENTS

*a.* General planning factors are direct multipliers of the foregoing statistics that will produce construction requirements for each DOD category code. The calculations for these requirements are shown in figure B-3. The planning factors used in these calculations were developed by the Engineer Strategic Studies Group (ESSG), Office, Chief of Engineers. They are examples only and should be validated before being used.

**STATISTICS BDP 0000** [a]

| *Item* | | *Bde base* | *S/A/B Inf Bn* | *Support force* | *Port terminal co* | *Total* |
|---|---|---|---|---|---|---|
| Strength | | 1,664 | 2,427 | 967 | 504 | 5,562 |
| Aircraft: | | | | | | |
| OH–6 | | 6 | ---- | ---- | ---- | 6 |
| UH–1D | | 8 | ---- | 6 | ---- | 14 |
| Wheeled vehicles | | 348 | 309 | 193 | 100 | 950 |
| Trailers | | 91 | 129 | 114 | 62 | 396 |
| Tracked vehicles | | 9 | ---- | 2 | ---- | 11 |
| Howitzer 105–mm | | 18 | ---- | ---- | ---- | 18 |
| CONSUMPTION | RATE | LB/MAN/DAY [b] | | | | |
| Supply class | I | 6.70 | | | | |
| | II | 7.04 | | | | |
| | III | 35.89 | | | | |
| | IV | 4.06 | | | | |
| | V | 24.00 | | | | |
| | VI | 4.50 | | | | |
| | VII | 2.97 | | | | |
| | VIII | .30 | | | | |
| | IX | 3.27 | | | | |
| | X | 5.90 | | | | |
| TOTAL | | 94.31 | | | | |
| CARGO | | RATE/MAN/DAY [c] | | | | |
| Ammunition | | 24 lb/.012 STON | | | | |
| POL | | 5.7 gal/.14 bbl | | | | |
| Dry | | 34.42 lb/.017 STON | | | | |
| Refrigerated | | 1.21 lb/.0006 STON | | | | |
| TOTAL | | 94.31 lb/.047 STON | | | | |

[a] Summary from the OPLAN and TOE.
[b] FM 101-10-1.
[c] Consumption rate transformed into standard units of measure for shipping.

*Figure B–2. BDP statistics.*

| Number | DOD code | Unit of measure | Planning factor | Force statistic | TYONEK | MEDFRA | Remarks |
|---|---|---|---|---|---|---|---|
| 111 | Runway | sq yd | 13,400 | Each location | 13,400 | 13,400 | This provides one C–130 capable airfield runway at each location. |
| 112 | Taxiway | sq yd | 8,100 | Each location | 8,100 | 8,100 | |
| 113 | Aprons | sq yd | 1,375 | Per RWA/C (20) | 27,500 | | |
| | | sq yd | 4,280 | Per C–130 | 12,840 | 12,840 | Three C–130 parking aprons |
| 121 | Fuel disp acft | bbl | 1/25 acft | RWA/C (20) | 1 | | |
| 123 | Fuel disp ldg veh | bbl | 1/50 ldg cft | Land vehicles (950) | 17 | 4 | |
| 124 | Op fuel stor | gal | 5.7 gal/men | Strength 5,562 | 144,153 | 14,364 | This provides 5 days of storage at each location. |
| 125 | Pipeline | mi | Site | | 75 | 8 | 6-inch pipeline |
| 141 | Land op bldg | sq ft | 100 | Per/acft (20) | 2,000 | | |
| 151 | Water front piers: | | | | | | |
| | Dry cargo | STON | .017 | Strength 5,562 | ------ | 95 | This is a daily requirement of .133 berths. |
| | POL | bbl | .14 | Strength 5,562 | ------ | 778 | This is a daily requirement of .006 berths. |
| | Ammunition | STON | .012 | Strength 5,562 | ------ | 67 | This is a daily requirement of .093 berths. |
| 211 | Aircraft maintenance | sq ft | 4,200 | Per aircraft | 4,200 | ----- | This space provides a covered maintenance area for unit maintenance of one aircraft at a time or four to six aircraft per day. Twenty-five percent of the aircraft in maintenance at one time. |
| 214 | Tank automotive | sq yd | 7.5 | Per vehicle (1,375) | 10,300 | ----- | This provides storage space for a maintenance float of 10 percent of the vehicles and trailers. |
| 219 | Maintenance post engineer | sq ft | 2 | Per man | 10,000 | 1,000 | |
| 411 | Liquid fuel storage | bbl | .14 | Per man/day | ------ | 15,573 | This provides 20 days of storage of POL in the area. |
| 421 | Ammunition storage | sq ft | .228 | Per man/day | ------ | 25,363 | This provides 20 days of storage of ammunition in the area; 5 days of supply is contained in the basic load. |
| 431 | Cold storage | cu ft | .23 | Per man/day | ------ | 29,432 | This provides 23 days of supply in storage with 2 days on hand in the units. |
| 441 | Covered storage | sq ft | .16 | Per man/day | ------ | 20,468 | This provides 23 days of supply in storage with 2 days on hand in the units. |

*Figure B–3. Calculations for base development requirements.*

| Number | DOD code | Unit of measure | Planning factor | Force statistic | TYONEK | MEDFRA | Remarks |
|---|---|---|---|---|---|---|---|
| 451 | Open storage | sq yd | .03 | Per man/day | ------ | 4,042 | This provides 23 days of supply in storage with 2 days on hand in the units. |
| 510 | Hospital | bed | .02 | Bed/man | 111 | ----- | This factor provides 10 days of hospitalization in the area. |
| 550 | Dispensary | sq ft | 2,000 | Per location not otherwise served | ------ | 2,000 | Dispensaries are provided for isolated locations. |
| 610 | Administration | sq ft | 6.2 | Sq ft/man | 31,359 | 3,124 | |
| 725 | Troop housing | men | -------- | Per individual | 5,614 | 504 | This included 10 percent additional space for transients at TYONEK. |
| 810 | Electricity source | kva | .7 | Per man | 3,930 | 353 | This provides lights in living quarters and administrative space. |
| 840 | Water supply | gal | 50 | Per man/day | 280,700 | 25,200 | |
| 850 | Roads | mi | .0016 | Per man | 8.9 | .8 | This provides roads between troop camps. |
| | Road maintenance | mi | 75 | ------ | ------ | ----- | Road between TYONEK and MEDFRA to be maintained by Ophiran Government. |

*Figure B–3. Calculations for base development requirements—continued.*

*b.* Comment. This example is only for an Army force; since the Army has logistic responsibilities for the other Service, extra construction may be required. In this example, the POL projects include Air Force requirements.

(1) POL delivery. TYONEK is 75 miles by road from MEDFRA. The road is two-way bituminous surface with a capacity of 3,800 STON. Military traffic will be 262 STON per day to support this brigade. The USAF force located at TYONEK is one tactical fighter squadron (TFS) and three tactical airlift squadrons (TAS). The daily POL requirement for this force is—

| | |
|---|---|
| TFS 24 aircraft at 2,000 gal | = [1] 48,000 |
| TAS 54 aircraft at 9,000 gal | = 486,000 |
| | 534,000 gal = 1,655 STON/day |

Additional daily supply tonnage for the air unite is 100 STON.[2] The total military tonnage is 2,017 STON/day over this road. The total POL load is 1,755 STON/day, which requires 216 5-ton truck tractors and 5,000-gallon trailer trips daily. This indicates that a pipeline between two locations is desirable.

(2) The correct basic Army requirements for some facilities may not be identified. An example is runway length. Army helicopters require a 450-foot by 75-foot runway;[3] however, major installations must be capable of being resupplied by air. In this case, the port at MEDFRA and the operating base at TYONEK must be capable of receiving Air Force aircraft for resupply activities. If only emergency supplies (class I, III, V) are considered this requirement will be—

| Class of supply | Daily tonnage |
|---|---|
| I | 18.6 |
| III | 99.8 |
| V | 67.0 |
| | 185.4 STON |

Air Force aircraft are assumed to be C—130 which require 3,000-foot by 75-foot runways. In addition, parking aprons for these aircraft must be provided for unloading the 185 STON/day. This is 12 C–130 loads, which at a 6-hour turnaround would require three cargo apron spaces at TYONEK. The force at MEDFRA would require less than one cargo apron.

6. REQUIREMENTS LESS ASSETS EQUALS CONSTRUCTION

*a.* The base development construction that will be necessary to support the OPLAN must be determined by comparison with existing facilities. The two areas of OPHIR that are the objectives of the OPLAN have some facilities that will be available to support military operations. TYONEK has an unused Ophir Army Station and a civil airport that have facilities suitable for use by the U.S. Army units. MEDFRA is a modern seaport with sufficient capacity to support this level of military operations. Details of these two locations are included in figures B-4 and B-5. (These are modified reproductions of sec I, tab A of JCS Pub 3 format for base development plans. )

*b.* The detailed tabulation of requirements, assets, and deficiencies is shown in figures B-6 and B-7. (These are from sec II, tab of A of JCS Pub 3.)

*c.* The construction projects from the above analysis are shown in figures B-8 and B-9. (These are from sec III, tab A of the JCS format.) Here, for the first time, the arrival times of the operating forces influence the BDP. In the case of OPLAN 0000, all the operating forces arrive prior to any construction work. Construction will start as soon as the engineer units arrive. This example has one engineer construction company available at D+30 and the complete battalion at D+90. Initial projects will be those with the highest priority to support the tactical force. Materials for the first projects must be available at the same time as the construction force begins work. The dates when the facilities are required in this example are as early as the construction force and material are available, consistent with their priorities. The time phase is the time when construction starts and it is consistent with the available labor force.

*d.* Comment. The pipeline between MEDFRA and TYONEK is included in the Tyonek section III for convenience. It could be a separate report.

7. MATERIEL DEFICIENCIES

The construction requirements may generate a need for special equipment or large volumes of common

[1] OPLAN.
[2] TACM 400–12.
[3] TM 5–803–4.

equipment. For this base development plan, there are two items of special equipment required; these are shown in figure B-10. (This fig. is in the form of sec IV, tab A.)

8. INTEGRATED TIME PHASED LIST OF CONSTRUCTION PROJECTS
This is tab B of the JCS format and represents an agreement on priorities of construction projects between the service components for each location. Figure B-11 is an example for the Ophir Operation. In general, the priorities O, I, D, and the location are significant in determining the overall priority.

9. CONSOLIDATED CONSTRUCTION MATERIAL REQUIREMENTS
The construction projects in figures B-8 and B-9 are summarized and aggregated by time periods to provide shipping information in figure B-12. (This is from tab C of the JCS format.) The values of STON and MTON and the costs and man-hours of figures B-8 and B-9 are from the individual facilities that are listed in the Army Facilities Components System, TM 5-301, TM 5-302, TM 5-303.

10. CONSTRUCTION FORCE ANALYSIS
Figure B–13 (JCS tab D) shows the analysis of the construction force. This figure is developed from figure B-11.

11. COST ESTIMATE
The cost estimate is developed from figures B-8, B-9, and B-12 and is shown in figure B-14.

*Note.* The following are examples of how to fill in the information required by the tabs in Change 2 to JCS Pub 3.

**DATE: 1971**
**HEADQUARTERS**
**USARSTRIKE**

**ANNEX A TO BD PLAN 0000**
**NAME OF BASE: TYONEK, U.S. ARMY**
**1. ( ) GENERAL INFORMATION:**

| | | | | |
|---|---|---|---|---|
| NEAREST CITY: TYONEK | COUNTRY: | OPHIR | COMPLEX: | TYONEK |
| LOCATION: | | | | |
| LATITUDE 76°0′N | RIGHTS: | Leased land | STATUS: | Temporary |
| LONGITUDE 66°30′W | | | | |
| LATITUDE 76°0′N | | | | |

**2. ( ) PRINCIPAL FUNCTION: Airbase and support area.**
**3. ( ) SCOPE:**

| | REQUIRED | PRESENT |
|---|---|---|
| ACREAGE | 2,940 | 8,425 |
| DOLLAR VALUE | | |
| MILITARY OFFICERS | 500 | |
| MILITARY ENLISTED | 5,008 | |
| U.S. CIVILIANS | | |
| NON-U.S. CIVILIANS | ---- | 890 |

**4. ( ) NARRATIVE DESCRIPTION: The base at TYONEK will support a brigade, a tactical fighter squadron, and three airlift quadrons. This is the major supply base for the surface line of communication. The base will be developed in three areas: The civil airfield, the Ophiran Army area (for the initial hospital), and a supply cantonment area.**

***Figure B–4. Base summary information—TYONEK.***

DATE: 1971
HEADQUARTERS
USARSTRIKE

**ANNEX A TO BD PLAN 7843**
**NAME OF BASE: MEDFRA**

1. ( ) GENERAL INFORMATION:
   NEAREST CITY: MEDFRA COUNTRY: OPHIR COMPLEX: MEDFRA
   LOCATION: RIGHTS: STATUS:
   LATITUDE 76°10′N
   LONGITUDE 67°0′W
2. ( ) PRINCIPAL FUNCTION: Port and storage.
3. ( ) SCOPE:

| | REQUIRED | PRESENT |
|---|---|---|
| ACREAGE | 1,200 | none |
| DOLLAR VALUE | | |
| MILITARY OFFICERS | 50 | |
| MILITARY ENLISTED | 454 | |
| U.S. CIVILIANS | | |
| NON-U.S. CIVILIANS | | |

4. ( ) NARRATIVE DESCRIPTION: MEDFRA is a civilian port, the largest in OPHIR. General military forces agreement of 1953 permits U.S. ships free entry as required into Ophiran ports. The base is planned as a port complex, with a logistic airfield. The majority of the supplies will move directly to TYONEK by truck. Storage at the port is planned for 2 days. The POL line to TYONEK would utilize existing civilian tankage for the necessary port terminal.

*Figure B–5. Base summary information—MEDFRA.*

ANNEX A TO BD PLAN 0000
ASSETS—NAME OF BASE TYONEK

| DOD cat | Description | Unit of measure | Quantity required | Quantity assets | Quantity deficiency | Remarks |
|---|---|---|---|---|---|---|
| 110 | Airfield pavement | | | | | |
| 111 | Runway | sq yd | 13,400 | 137,160 | 0 | |
| 112 | Taxiway | sq yd | 8,100 | 50,000 | 0 | |
| 113 | Apron | sq yd | 40,300 | 144,600 | 0 | |
| 120 | Liquid fueling | | | | | |
| 121 | Aircraft | bbl | 1 | 0 | 1 | |
| 123 | Land vehicle | bbl | 17 | 0 | 17 | |
| 124 | Operational fuel storage | bbl | 3,600 | 0 | 3,600 | |
| 125 | POL pipeline | mi | 75 | 0 | 75 | 6-inch line required. |
| 140 | Land operations | | | | | |
| | Land operations buildings | sq ft | 2,000 | 15,000 | 0 | Utilize civil airfield facilities. |
| 210 | Maintenance facilities | | | | | |
| 211 | Aircraft | sq ft | 4,200 | 11,000 | 0 | |
| 214 | Tank automotive | sq ft | 10,300 | 24,000 | 0 | Hardstand only. |
| 219 | Post engineer | sq ft | 10,000 | | 10,000 | |
| 500 | Hospital | | | | | |
| | Hospital buildings | bed | 110 | 100 | 10 | No construction is planned for this deficiency. |
| 600 | Administrative | | | | | |
| | Administrative buildings | sq ft | 31,400 | 20,000 | 11,400 | |
| | Housing | | | | | |
| 725 | Troop housing emerg | men | 5,614 | 1,500 | 4,114 | 500-man transient camp included. |
| 800 | Utilities | | | | | |
| 811 | Electricity source | kva | 3,900 | 0 | 3,900 | |
| 841 | Water supply and storage | gal/day | 280,000 | 2,100,000 | | |
| 851 | Roads | mi | 9 | 2 | 7 | Intertroop camp roads. |
| 900 | Land | acres | 2,940 | 0 | 2,940 | |

*Figure B-6. Base requirements, assets, and deficiencies—TYONEK.*

HEADQUARTERS: USARSTRIKE
DATE: 1971

## ANNEX A TO BD PLAN 0000
## ASSETS—NAME OF BASE MEDFRA

| DOD cat | Description | Unit of measure | Quantity required | Quantity assets | Quantity deficiency | Remarks |
|---|---|---|---|---|---|---|
| 110 | Airfield pavement | | | | | Paving—mat-type on existing sand runway. |
| 111 | Runway | sq yd | 13,400 | 0 | 13,400 | |
| 112 | Taxiway | sq yd | 8,100 | 0 | 8,100 | |
| 113 | Apron | sq yd | 12,800 | 0 | 12,800 | |
| 120 | Liquid fueling | | | | | |
| 123 | Land vehicle | bbl | 4 | 0 | 4 | |
| 124 | Operational fuel storage | bbl | 360 | 0 | 360 | |
| 150 | Water front | | | | | |
| 151 | Piers | berth | 2 (1 POL) | 10 (2 POL) | 0 | |
| 210 | Maintenance facilities | | | | | |
| 219 | Post engineer | sq ft | 1,000 | 0 | 1,000 | |
| 400 | Supply | | | | | |
| 411 | Liquid fuel storage | bbl | 15,600 | 69,500 | 0 | |
| 421 | Ammunition storage | sq ft | 25,000 | 0 | 25,000 | |
| 431 | Cold storage | sq ft | 29,500 | 74,000 | 0 | |
| 441 | Storage covered | sq ft | 20,500 | 0 | 20,500 | |
| 451 | Storage open | sq ft | 4,000 | 0 | 4,000 | |
| 500 | Hospital | | | | | |
| 550 | Dispensary | sq ft | 2,000 | 0 | 2,000 | |
| 600 | Administrative | | | | | |
| 610 | Administrative buildings | sq ft | 3,000 | 3,700 | 0 | |
| 700 | Housing | | | | | |
| 725 | Troop housing emerg | men | 504 | 0 | 504 | |
| 800 | Utilities | | | | | |
| 811 | Electricity source | kva | 353 | 7,300 | 0 | |
| 841 | Water supply | gal/day | 25,000 | See remarks | 0 | Source estimated to be adequate. |
| 851 | Roads | mi | 1 | 0 | 1 | |
| 900 | Land | acre | 1,200 | 0 | 1,200 | |

*Figure B–7. Base requirements, assets, and deficiencies—MEDFRA.*

OPLAN: USARSTRIKE 0000
NAME OF BASE: TYONEK
PLANNING AGENT: USARSTRIKE

| Proj no | Using Svc | Op pri code | Time phase | DOD cat | Description | Qty | Unit of meas | Man-hours | Date rqr | Cost ($000) | Const by | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A | O | D+30 | 121 | Aircraft refueling | 1 | bbl | 10 | D+30 | 1 | Trp | |
| 2 | A | O | D+30 | 123 | Land vehicle refueling | 17 | bbl | 170 | D+30 | 17 | Trp | |
| 3 | A | O | D+30 | 124 | Op fuel storage | 3,600 | bbl | 120 | D+60 | 57 | Trp | |
| 4 | AF | O | D+90 | 125 | Pipeline | 75 | mi | 53,000 | D+180 | 963 | Trp | |
| 5 | A | I | D+150 | 219 | Post engr shop | 10,000 | sq ft | 3,100 | D+180 | 90 | Trp | |
| 6 | A | D | D+150 | 610 | Administration | 11,400 | sq ft | 7,400 | D+180 | 30 | Trp | |
| 7 | A | D | D+90 | 725 | Troop camp | 4,100 | men | 115,300 | D+180 | 527 | Trp | |
| 8 | A | D | D+90 | 811 | Electrical power | 3,900 | kva | 3,600 | D+180 | 482 | Trp | |
| 9 | A | D | D+90 | 851 | Roads | 7 | mi | 82,500 | D+180 | 21 | Trp | |

*Figure B–8. Base construction projects—TYONEK.*

HEADQUARTERS: USARSTRIKE
DATE: 1971

OPLAN: USARSTRIKE 0000
NAME OF BASE: MEDFRA
PLANNING AGENT: USARSTRIKE

| Proj no | Using Svc | Op pri code | Time phase | DOD cat | Description | Qty | Unit of meas | Man-hours | Date rqr | Cost ($000) | Const by | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | AF | O | D+60 | 111 | Runways | 13,400 | sq yd | 783 | D+90 | 673 | Trp* | |
| 2 | AF | O | D+60 | 112 | Taxiway | 8,100 | sq yd | 473 | D+90 | 406 | Trp | |
| 3 | AF | O | D+60 | 113 | Aprons | 12,800 | sq yd | 748 | D+90 | 643 | Trp | |
| 4 | A | O | D+60 | 123 | Liquid refueling land vehicle | 4 | bbl | 40 | D+90 | 4 | Trp | |
| 5 | A | O | D+60 | 124 | Operational fuel storage | 360 | bbl | 12 | D+90 | 6 | Trp | |
| 6 | A | O | D+150 | 219 | Post engineer shop | 1,000 | sq ft | 310 | D+180 | 9 | Trp | |
| 7 | A | O | D+30 | 421 | Ammo storage | 25,000 | sq ft | 17,500 | D+90 | 4 | Trp | |
| 8 | A | O | D+30 | 441 | Covered storage | 20,500 | sq ft | 6,000 | D+90 | 57 | Trp | |
| 9 | A | O | D+30 | 451 | Open storage | 4,000 | sq ft | 2,400 | D+90 | 2 | Trp | |
| 10 | A | O | D+150 | 550 | Dispensary | 2,000 | sq ft | 1,500 | D+180 | 4 | Trp | |
| 11 | A | D | D+150 | 725 | Troop camp | 500 | men | 1,400 | D+180 | 66 | Trp | |
| 12 | A | D | D+150 | 851 | Roads | 1 | mi | 9,000 | D+180 | 3 | Trp | |

*Figure B–9. Base construction projects—MEDFRA.*

HEADQUARTERS: USARSTRIKE
DATE: 1971

OPLAN: USARSTRIKE 0000

| Proj no | Material/equipment identification | Quantity | Unit of meas | Time period rqr | Cost ($000) | Remarks |
|---|---|---|---|---|---|---|
| | Base TYONEK | | | | | |
| 4 | POL pipeline | 75 | mi | D+30 | 963 | 6-inch pipeline |
| | Base MEDFRA | | | | | |
| 1 | Runway | 13,400 | sq yd | D+30 | 673 | Expedient airfield mat required for projects 1, 2, 3 |
| 2 | Taxiway | 8,100 | sq yd | D+30 | 406 | |
| 3 | Apron | 12,800 | sq yd | D+30 | 643 | |

*Figure B–10. Base construction materiel deficiencies.*

HEADQUARTERS: USARSTRIKE
DATE: 1971

OPLAN:

| Time-phase seq | Name of base or location | Proj no | Using Svc | Op pri | DOD cat | Description | Qty | Unit of meas | Man-hours | Date rqr | Cost ($000) | Const by | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D+30 | TYONEK | 1 | A | O | 121 | Aircraft refueling | 1 | bbl | 10 | D+30 | 1 | Trp | |
| | | 2 | A | O | 123 | Land vehicles refueling | 17 | bbl | 170 | D+30 | 17 | Trp | |
| | | 3 | A | O | 124 | Operational fuel storage | 3,600 | bbl | 120 | D+60 | 57 | Trp | |
| | MEDFRA | 7 | A | O | 421 | Ammunition storage | 25,000 | sq ft | 17,500 | D+90 | 4 | Trp | |
| | | 8 | A | O | 441 | Covered storage | 20,500 | sq ft | 6,000 | D+90 | 57 | Trp | |
| | | 9 | A | O | 451 | Open storage | 4,000 | sq yd | 2,400 | D+90 | 2 | Trp | |
| D+60 | MEDFRA | 1 | A | O | 111 | Runways | 13,400 | sq yd | 783 | D+90 | 673 | Trp | |
| | | 2 | A | O | 112 | Taxiway | 8,100 | sq yd | 473 | D+90 | 406 | Trp | |
| | | 3 | A | O | 113 | Aprons | 12,800 | sq yd | 748 | D+90 | 643 | Trp | |
| | | 4 | A | O | 123 | Liquid refueling land vehicles | 4 | bbl | 40 | D+90 | 4 | Trp | |
| | | 5 | A | O | 124 | Operational fuel storage | 360 | bbl | 12 | D+90 | 6 | Trp | |
| D+90 | TYONEK | 4 | A | O | 125 | Pipeline | 75 | mi | 53,000 | D+180 | 963 | Trp | |
| | | 6 | D | O | 610 | Administration | 11,400 | sq ft | 7,400 | D+180 | 30 | Trp | |
| | | 7 | D | O | 725 | Troop camp | 4,100 | men | 115,300 | D+180 | 527 | Trp | |
| | | 8 | D | O | 811 | Electrical power | 3,900 | KVA | 3,600 | D+180 | 482 | Trp | |
| | | 9 | D | O | 851 | Roads | 9 | mi | 82,500 | D+180 | 21 | Trp | |
| D+150 | MEDFRA | 10 | A | D | 550 | Dispensary | 2,000 | sq ft | 1,500 | D+180 | 4 | Trp | |
| | | 11 | A | D | 725 | Troop camp | 500 | men | 14,000 | D+180 | 66 | Trp | |
| | | 12 | A | D | 851 | Roads | 1 | mi | 9,000 | D+180 | 3 | Trp | |
| | | 6 | A | I | 219 | Post engineer shop | 1,000 | sq ft | 310 | D+180 | 9 | Trp | |
| | TYONEK | 5 | A | I | 219 | Post engineer shop | 10,000 | sq ft | 3,100 | D+180 | 90 | Trp | |

*Figure B–11. Integrated time-phased listing of construction projects.*

HEADQUARTERS: USARSTRIKE
DATE: 1971

OPLAN: USARSTRIKE 0000

| Time period | Svc resp for proc | Material/equipment identification | No rqr | Unit of meas | STON | MTON | Remarks |
|---|---|---|---|---|---|---|---|
| D+30 | A | Aircraft refueling | 1 | bbl | 0.4 | 3.0 | |
| | | Land vehicle refueling | 17 | bbl | 6.8 | 51.0 | |
| | | Operational fuel store | 3,600 | bbl | 21.6 | 42.9 | |
| | | Ammunition storage | 25,000 | sq ft | 13.5 | 13.5 | |
| | | Covered storage | 20,500 | sq ft | 94.0 | 93.0 | |
| | | Open storage | 4,500 | sq yd | 7.2 | 6.3 | |
| | | | | | 143.5 | 209.7 | |
| D+60 | A | Airfield paving | 84,300 | sq yd | 720.6 | 1,234.0 | |
| | | Land vehicle refueling | 4 | bbl | 1.6 | 12.0 | |
| | | Operational fuel store | 360 | bbl | 2.7 | 4.3 | |
| | | | | | 723.8 | 1,250.3 | |
| D+90 | A | Pipeline | 75 | mi | 2,519.0 | 3,873.0 | |
| | | Administration | 11,400 | sq ft | 80.0 | 118.0 | |
| | | Troop camp | 4,100 | men | 1,209.0 | 1,713.0 | |
| | | Electrical power | 3,900 | kva | 834.0 | 1,686.0 | |
| | | Roads | 9 | mi | 89.0 | 63.0 | |
| | | | | | 4,731.0 | 7,453.0 | |
| D+150 | A | Dispensary | 2,000 | sq ft | 220.0 | 31.0 | |
| | | Troop camp | 500 | men | 150.0 | 215.0 | |
| | | Roads | 1 | mi | 9.9 | 7.0 | |
| | | Shops | 1,100 | sq ft | 105.0 | 110.0 | |
| | | | | | 286.0 | 363.0 | |

*Figure B–12. Consolidated construction material requirements.*

| Time period | Location | Man-hours | Unit |
|---|---|---|---|
| **Requirements:** | | | |
| D+30–D+60 | TYONEK | 300 | |
| | MEDFRA | 25,900 | |
| D+60–D+90 | MEDFRA | 2,056 | |
| D+90–D+120 | TYONEK | 98,000 | |
| D+120–D+150 | TYONEK | 98,000 | |
| D+150–D+180 | TYONEK | 98,300 | |
| | MEDFRA | 24,800 | |
| **Available:** | | | |
| D+30–D+60 | TYONEK | 36,000 | 1 engr const co |
| | MEDFRA | | |
| D+60–D+90 | MEDFRA | 36,000 | 1 engr const co |
| D+90–D+120 | TYONEK | 108,000 | 1 engr const battalion |
| D+120–D+150 | TYONEK | 108,000 | 1 engr const battalion |
| D+150–D+180 | TYONEK | 108,000 | 1 engr const battalion |
| | MEDFRA | | |
| **Deficiency:** | | | |
| D+30–D+60 | TYONEK | 0 | |
| | MEDFRA | 0 | |
| D+60–D+90 | MEDFRA | 0 | |
| D+90–D+120 | TYONEK | 0 | |
| D+120–D+150 | TYONEK | 0 | |
| D+150–D+180 | TYONEK | 0 | |
| | MEDFRA | 15,100 | |

Remarks: The D+150 work at MEDFRA can be started at D+90 and completed on time with the extra effort available (10,000 man-hours time period for D+90 to D+180).

*Figure B–13. Construction force analysis.*

| | | |
|---|---|---|
| Cost of material | | $4,061,000.00 [a] |
| Cost of labor | | ([b]) |
| Shipping cost | | |
| 5,883 STON at $130 | = | 765,000.00 |
| TOTAL | | $4,826,000.00 |

[a] The material costs are from the Army Facilities Components System.
[b] Labor costs for troop construction are not a cost for base development.

*Figure B–14. Cost estimate.*

| | *Format heading* | *Data element* | *Descriptions* | *Remarks* |
|---|---|---|---|---|
| 1. | Requirements: | | | |
| | Time period | Time period | Indicates approximate time facility maintenance forces are required at facility. | Described in days, appropriate time period related to D-day (+ or −). |
| | Location | Location | Identifies the base or location where facilities maintenance personnel are/or should be assigned. | GEOLA code if different from base. |
| | Army | Army | Identifies number and type of Army facilities maintenance personnel. | |
| | Navy | Navy | Identifies number and type of Navy facilities maintenance personnel. | |
| | Air Force | Air Force | Identifies number and type of AF' facilities maintenance personnel. | |
| | Local aug | Local aug | Identifies number of local nationals to augment U.S. maintenance personnel listed in preceding column. | |
| | Contract | Contract | Identifies number of contract facilities maintenance personnel. | Number of personnel identified: U–U.S.; L–Local; T–Third Country. |
| 2. | Available | (Same data elements as above) | | |
| 3. | Differences | (Same data elements as above) | | |
| 4. | Remarks | Remarks | Provides for explanation of data when required. | |

***Figure B–15. Real property maintenance forces format.***

# APPENDIX C
# JOINT ROLES, RELATIONSHIPS, AND RESPONSIBILITIES IN BASE DEVELOPMENT PLANNING

## C—1. Roles and Relationships in the Planning System

*a.* Commanders of unified and specified commands are responsible for base development planning in a theater. The purpose of this planning is to enable the rapid and orderly establishment of a base. Lower echelons conduct their be development planning concurrently as directed by the theater commander. The theater commander may assign responsibility for implementation of base development to the theater Army, Navy, or Air Force commander whose interest is exclusive or predominant or to a joint command commander (if established). The theater commander assigns base development missions, tasks, and priorities to the subordinate commanders. The theater commander reconciles conflicting requirement of subordinate commands and agencies contributing to the plan and insures that the resources are available to implement the base development plan.

*b.* If a subordinate joint command is established within the theater, the joint command commander receives from the theater commander the concept, information, available intelligence, and allocation of resources, and base development planning guidance. The subordinate joint commander then—

(1) Issues detailed operation plan (OPLAN) guidance to include, but not limited to, objectives, landing areas, estimated duration of the conflict, and force levels by areas.

(2) Allocates, for planning purposes, assigned base development resources, to include construction troop/contractor mix, material, and funds.

(3) Issues detailed guidance, to include specific standards, planning factors, intelligence, and priorities to the component services.

(4) May assign responsibility for the planning, programing, and development of bases to the component commander whose interest is predominant; or he may retain this function within the joint command.

*c.* The component services develop the detailed plans, which include the base development plan (BDP), in support of the concept of operation. Lists of requirements and assets from subordinate units are combined with the concepts, guidance, and resources from those allocated by the joint command commander to make a detailed, complete BDP. In close coordination with other component commands, each component develops a BDP for support requirements which normally is consolidated by a designated component commander or by the joint command commander.

## C—2. Approval Authority

*a.* The completed BDP, as finally prepared, are forwarded to the theater commander through the subordinate joint command commander (when established) where they are reviewed for overlaps, gaps, and other deficiencies. The components' BDP retain their separate service identification for ease of review at higher commands; however, a summary joint command plan that includes the following is added:

(1) A joint command overall priority list of consolidated BDP construction requirement.

(2) Consolidated peacetime requirements for intelligence, facilities, forces, and material for use by higher commands in programing peacetime budgets.

(3) The joint command commander's overall evaluation of limitations on operations imposed by shortfalls in BDP and proposed solutions for overcoming these shortfalls.

*b.* The theater commander—

(1) With his component commanders, reviews the entire joint command plan.

(2) Integrates the component BDP's into a single plan that eliminates conflicts, overlaps, gaps, and other deficiencies.

(3) Consolidates component requirement into a single priority list. The component plans are all modified to agree with the theater commander's BDP, but they retain their service identity for review.

*c.* The JCS review and approve the theater

commander's BDP and add appropriate comments or limitations, or both. Comments indicate those requirements of the approved BDP that may be included in Military Department programs in peacetime. The JCS consider Military Department recommendations for reallocation of resources, approve them as appropriate, and assume control of those resources that are identified as critical.

*d.* The Military Departments review the theater commander's BDP, particularly that portion produced by their own service. They assess the plan for supportability, add any out-of-theater support requirements, and recommend reallocation of critical resources for support of the BDP.

*e.* The theater commander adjusts his plans and resource levels in accordance with JCS comments and reallocation of resources. He then passes the JCS-approved plan, with his comments, to the subordinate commands. The theater commander directs any necessary revisions of the original BDP, detailed support plans, and construction execution plans.

*f.* The subordinate commanders—

(1) Adjust their BDP in accordance with the theater commander's direction.

(2) Revise detailed logistic support plans and construction execution plan.

(3) Use and adjust construction resources in accordance with theater commander's instructions.

(4) Reassess requirements for support in terms of adjusted assets and submit adjusted requirements to the theater commander.

(5) Periodically reassess the BDP in accordance with changes in resources, assets, and/or requirements and recycle the BDP, with recommended changes to the theater commander. The listing of forces, materiel, and fund requirements is maintained current; and all levels of command are kept current and are advised.

*g.* Concurrently, the Military Departments are collating worldwide requirements for BDP support. They then recommend force levels, materiel reserve levels, and peacetime funding program for the support of approved BDP's to the JCS. The recommended level of support is *not* the total of all approved plans, but is a level that includes sufficient resources for prosecuting those contingencies considered by the JCS as most appropriate. Some resources will be allocated for support of specific plans, but the bulk of the resources requested by the Military Departments will be held in reserve for general support throughout the world. This planning includes use of the DOD designated construction agent and civilian contractors, as outlined in the approved BDP's.

*h.* The JCS recommend resource levels for support of the National policy.

*i.* The Secretary of Defense relays recommendations on force levels to the President. New guidance is then formulated that starts the BDP process recycling from the top.

*j.* The budget process includes Military Department preparation and support of the programs through Office of the Secretary of Defense (OSD) to the Congress. The Military Department programs reflect the peacetime facility requirements of approved theater command BDP's. Any contemplated change by a Military Department to the theater commander's approved requirements for contingency support is referred to the theater commander for review. Unresolved differences are referred to the JCS.

*k.* OSD receives the authorization and appropriation from Congress, assigns authority, and allocates funds to the Military Departments.

*l.* The Military Departments—

(1) Use appropriated funds—

*(a)* To procure supplies and equipment to maintain in-being resources that are administered through departmental channels.

*(b)* To recruit, organize, equip, and traffic new troop construction units that may reinforce a specific theater commander or may be kept in CONUS for general support.

*(c)* To equip and train the Ready Reserve construction units that may be called up during mobilization.

(d) To procure reserve materiel. Most of the materiel will be long lead time, long shelf life elements of functional components placed in general reserve or propositioned in various theaters and rotated with operating stocks during peacetime.

(2) Recommend distribution of departmental resources to the JCS for their use in the preparation of Joint Strategic Capabilities Plan (JSCP) and other JCS actions.

(3) Transfer Military Construction Program (MCP) funds' to the designated DOD construction agents located in-theater for peacetime contract construction of facilities.

*m.* The DOD construction agent executes the MCP and Military Assistance Program (MAP)

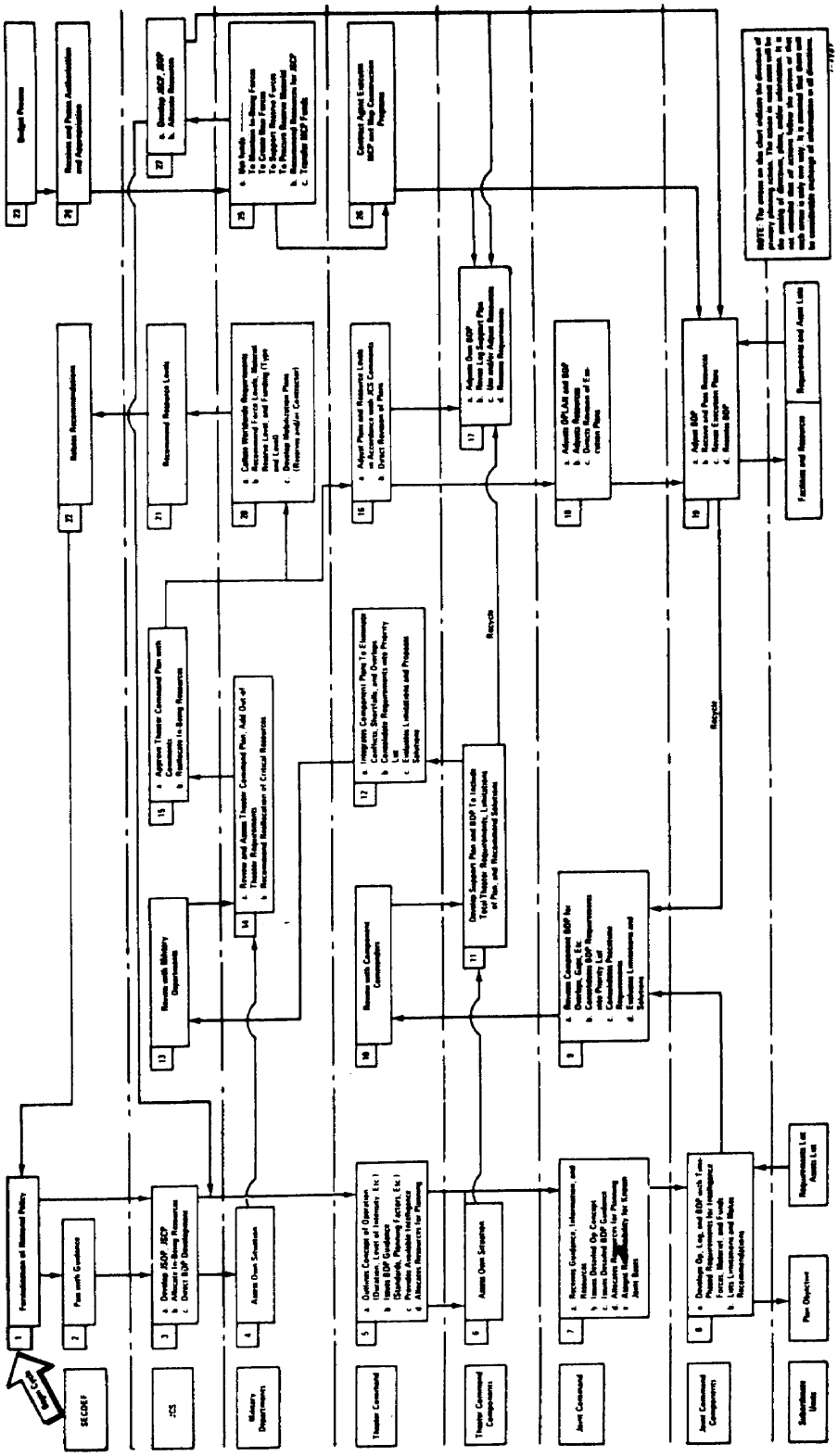


*Figure C–1. System for base development planning.*

contracts through field offices which coordinate the construction of facilities with the theater commander and/or the joint/component commanders and transfers the facilities to the component commands on completion of construction. Some funds may also be transferred to the components for use by troop units involved in MCP construction.

*n.* Concurrently, the JCS develop a new JSCP and Joint Strategic Objectives Plan (JSOP). The new JSCP may list new tasks that will require a new BDP, and the planning process is repeated for those tasks. Most tasks in the JSCP will not have changed significantly and will not require new BDP's. Newly created resources will be entered for recycling as appropriate.

*o.* The system for base development planning is shown in figure C-l.

# APPENDIX D
# BASE DEVELOPMENT PROGRAMING AND FUNDING

## D—1. Objective

The objective of the base development programing is twofold:

*a.* To support the requirements for base development in a theater of operations.

*b.* To serve as a vehicle on which to base congressional authorizations and appropriations in the annual funding cycle.

## D—2. Dual Channel Submission

Base development requirements are derived from the base development plan (BDP) and form the basis for initiating budget requests. When the requirements and standards of construction have been determined, the component commanders of the joint command in-country translate the base development requirements into program budget requests and forward them through dual channels for validation and funding action. The dual channel consists of the command channel and service component channel in which the command channel validates the budget request with the service channel providing input at each level as required to the Military Departments preparing the final budget request for submission to the Secretary of Defense (fig D-1).

## D—3. Validation of Base Development Budget Requests

Validation and approval of the base development budget request are accomplished as follows (fig D-2):

*a.* The service component commanders submit base development budget requirements to the joint command commander based on approved deployments by the Secretary of Defense. An information copy is provided to the theater command component commanders (1, 2, and 2A, fig D-2).

*b.* The joint command commander reviews and comments to the theater commander on the service component command commanders' submissions. An information copy is provided to the theater command's component commanders. The component commanders provide comments to the theater commander (3 and 3A, fig D-2).

*c.* The theater commander reviews and comments to the Joint Chiefs of Staff (JCS) on the joint command commander's program validation in light of the respective theater command component commanders' comments (4, fig D-2).

*d.* The theater command component commanders review and comment to their respective Military Departments on the joint command commander's submissions in light of the joint commander's validation of the program. Information copies are provided to the theater commander (3A and 4A, fig D-2).

*e.* The JCS submit the validated program to the Secretary of Defense (4, fig D-2).

*f.* The Military Departments prepare and submit their respective budget requests to the Secretary of Defense.

*g.* The Secretary of Defense then submits the validated program budget request to the Office of Management and Budget (OMB)/President (after joint OSD/OMB hearings) (5, fig D--2).

*h.* The OMB/President then submits the budget request to Congress for fund authorizations (6, fig D-2). The submission of a base development program as described above results in the theater commander's having the requisite control over the base development program and enables its integration into the plan to provide the required construction and logistic support. To be fully responsive to the situation, the facility requirements should be in a format readily adaptable to an automatic data processing system (ADPS).

## D—4. Initial and Follow-on Programs

*a.* The initial program submission to Congress requests lump sum authority and funds for—

(1) Advance procurement of materials and equipment.

(2) Mobilization/demobilization of construction capability.

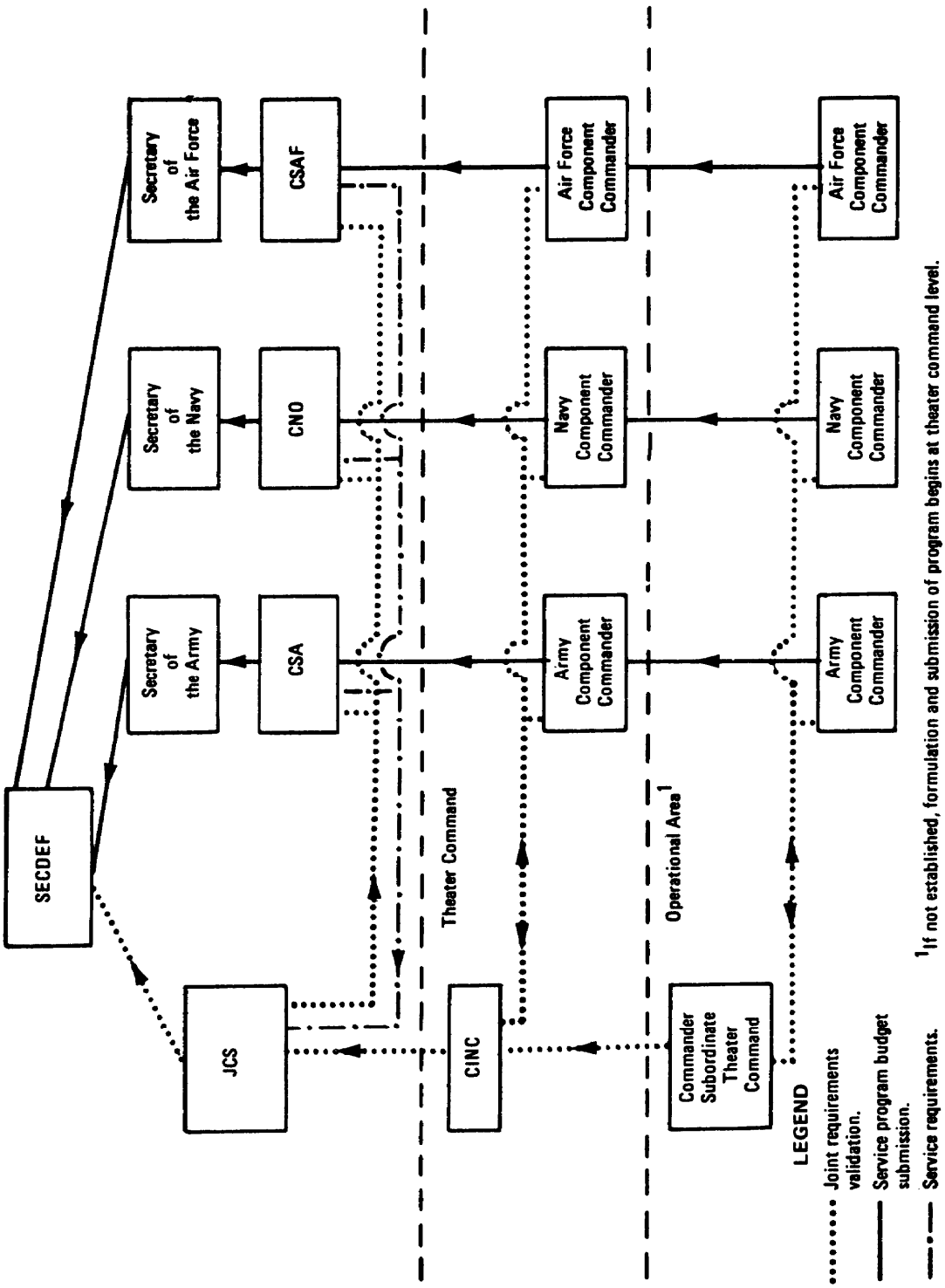



*Figure D–1. Dual channel flow chart.*

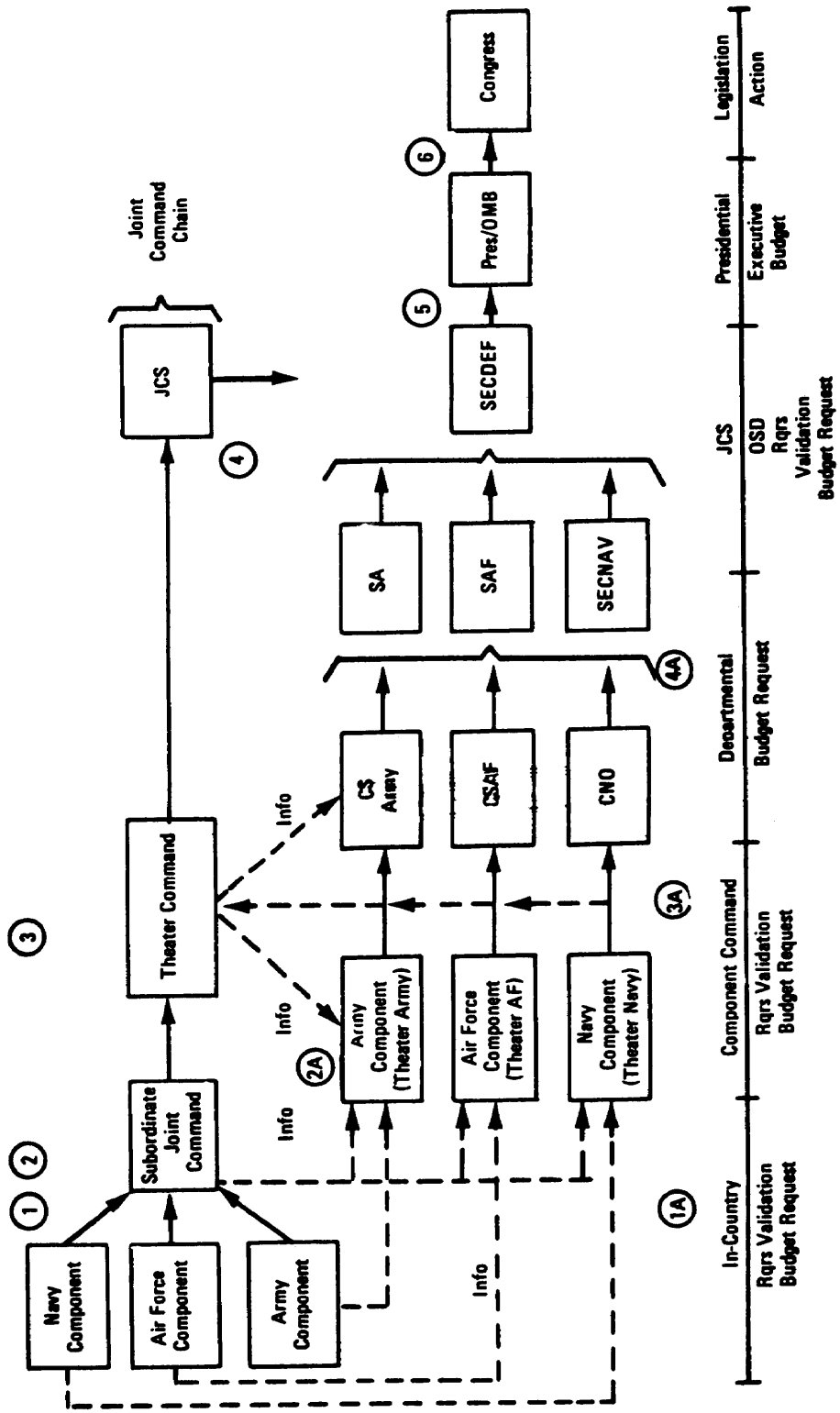



*Figure D-2. Base development program budget request.*

(3) Maintaining a level of construction capability over a specified time, presumably until the follow-on occurs.

(4) Acquisition of real estate as required.

*b.* Follow-on programs maintain or alter the construction capability which reflects in-country construction requirements in accordance with situation assessments and guidance from the theater commander. Follow-on programs are validated through the joint chain of command and budgeted for by the Military Departments. They define the level of construction capability consistent with gross facility requirements and include funds—

(1) To maintain the construction capability.

(2) To provide for contingencies.

(3) To reimburse the Military Departments for other funds used.

*c.* Although the contingency programing system for initial and follow-on programs will be used in most instances, there will be occasions, both before and during contingency operations, when a service secretary will submit requests to the Secretary of Defense in advance of and without regard to validation through the joint channel. Following each submission, the service concerned forwards an information copy to the JCS.

**D—5. Fund Management**

*a. Assignment of Funds.* As stated above, the primary objective of the initial contingency funding program is to obtain funds for advance procurement and for establishing and initially maintaining a construction capability in the operational area. These funds are assigned to the following broad categories for management:

(1) *Advance procurement.* Timely availability of material and equipment with which to initiate construction activities is vital to the effective employment of any construction force, troop, or contractor. Proper base development planning will identify requirements for the establishment of certain war reserve stocks of construction material and equipment. Peacetime fundings for procurement of this material can be assumed to be insufficient when the actual event occurs. Additional funds for "advance procurement" are required. Also, since issues from war reserve stock are reimbursable, funds to replace this drawdown are required and must be obtained as part of the initial fund package.

(2) *Mobilization/demobilization.* Authority and funds are necessary to mobilize troop/contractor capability consistent with the rate of construction needed to support contingency requirements.

*(a)* In the case of troop mobilization, funds are required for material necessary to construct facilities and installations such as camps, warehouses, depots, staging areas, and a basic line of communications.

*(b)* In the case of contractor mobilization, funds are required for the employment and transfer of personnel to the contingency area; construction of camps, warehouses, and depots; acquisition of staging areas; and procurement of basic supporting equipment. In addition, funds required for the ultimate demobilization of that force and for contractor closeout are included.

(3) *Construction capability.* Funds are required to maintain a level of construction capability until a subsequent funding cycle provides funds for additional procurement and replacement of material and equipment and their delivery to the area of operations. The funds required for initially maintaining the required level of construction capability provide for—

*(a)* Operational costs, e.g., salaries of the work force, equipment replacement costs, in-country transportation and communications, and equipment operating expense.

*(b)* Fixed costs, e.g., camp and depot operating expenses, out-of-country support costs, and contractor overhead.

(4) *Contingency funds.* Contingency funds held by the Secretary of Defense are required to permit alteration of the level of construction capability between funding cycles. These funds are released, based on need to increase the level of the capability to meet accelerated or unplanned construction requirements that cannot be deferred. In addition to increasing the capability, contingency funds may be used to provide relief if follow-on funding programs are delayed. Thus, a contingency fund sustains the level of construction consistent and in phase with the current construction execution plan for the budget period. The contingency fund should be a minimum of 20 percent of each funding increment. Requests to the Secretary of Defense for release of contingency funds are staffed the same as initial and follow-on requests.

(5) *Service support.* In addition to funds required to support in-country construction, out-of-theater support requirements such as training facilities, hospitals, and staging areas are included as follow-on programs. When determined critical to contingency support, these re-

quirements are included in the budget for funding under the initial program.

*b. Programming Responsibilities.* Each service component of the operational area command is responsible for providing input programing information on those facilities required primarily to support its contingency operations. The joint command commander in the operational area assigns responsibility for providing input for the programed facilities to be used jointly by service components to the service having primary interest. The designated DOD construction agent for the area provides each service component with an estimate of the initial cost of contractor mobilization/demobilization and other items required in direct support of the contractor effort.

# APPENDIX E
# CONTINGENCY CONSTRUCTION REPORT (CONREP)
# (REPORTS CONTROL SYMBOL JCS-6-II-4-37)

## E-1. General

In consonance with JCS Pub 6, vol II, part 4, chapter 37, the following contingency construction reports (CONREP) (RCS JCS-6-II-4-37) on construction programs provide summary information for the Office of the Secretary of Defense (OSD), the Joint Chiefs of Staff, (JCS), the commanders of unified and specified commands, and the Military Departments on the physical and funding status of construction programs in support of contingency operations.

## E-2. Base Development Reporting System

To provide effective management a various command levels, a reporting system compatible with the base development planning and programing systems is provided to report the status of construction programs. The base development reporting system will be in two parts, as follows:

*a.* Part I will consist of a summary review of the total construction program in the theater commander's area of responsibility, as related to operational requirements, reflecting facility assets and deficiencies. This report is organized for automatic data processing (ADP) and can be sorted into many configurations. The commander tasked for base development in the area of operations will prepare the report based on requirements, assets, and deficiencies furnished by the component commanders. The initial submission will reflect the base development plan for the contingency as actually initiated; therefore, it will basically reflect revisions to the base development annex of the operation plan (OPLAN) required to support the forces to be deployed or committed. The initial report and follow-on updates, if required, present a summary of the total theater contingency construction program and become a basis for future construction program decisionmaking. Other worldwide construction requirements to support the contingency will be added to the theater requirements during JCS/Military Department review of the theater commander's requirements. The format for this report will be developed in accordance with the format shown for base development in appendix B.

*b.* Part II will consist of a monthly report on the status of construction for each project, by component and base, which has been authorized and funded in the area of operations. This report will be prepared under the direction of the commander tasked with the base development operation and will be forwarded to the theater commander, the JCS, the Military Departments, and the OSD. The format is designed for processing by the ADP equipment used for maintaining base development plans, but can be processed manually if circumstances demand. (For a sample report form and method of completing the form, see JCS Pub 6, vol II, fig. 1 and part 4, chap 37, para 37.8.)