CHAPTER 8

COMBAT SERVICE SUPPORT PLANNING

Section I. COMBAT SERVICE SUPPORT FORCE PLANNING

8-1. General

a. Combat service support (CSS) planning consists of two major planning areas—force development and force deployment. Force development is concerned with the building of a CSS force structure which will adequately support tactical operations. Force deployment is concerned with the time-phased movement of the CSS force, its accompanying supplies and equipment, and necessary resupply and personnel replacement from the Continental United States (CONUS) or other origins to the area of operations.

b. The mission, character, disposition, and capabilities of the enemy; the characteristics of the area of operations (to include terrain, climate, population, natural resources, and manmade works); the availability of troops and/or units; and the availability of transportation, supplies, and equipment determine the number and types of units for employment in a given operation.

8-2. CSS Force Development

Force development planning includes estimating personnel and equipment requirements to accomplish a mission based on tactical/strategic and logistics concepts and intelligence. Such planning normally conforms to the personnel strength ceiling authorized the theater and subordinate commands. Personnel and equipment are authorized for units in a command by The Army Authorization Document System (TAADS) (AR 310-49), which also provides the means to maintain total authorizations in the command. Planning guidance on units available to meet force requirements is given in JCSP volume II. These documents provide the centralized information needed for CSS force development planning.

a. Principles of Force Development Planning. The force planner must continually analyze requirements and insure the force list for any operation meets its operational requirements and that it consists of the minimum essential manpower and equipment to accomplish the mission.

b. Force Development Planning Requirements. Variable factors that influence CSS force requirements include:

(1) Number and types of troops to be supported, their mission, and the extent of CSS to be provided.

(2) Quantity, types, and distribution of equipment.

(3) Level of support to be provided.

(4) Maintenance policy.

(5) Construction and Real Property Maintenance Activity (RPMA) requirements.

(6) Climate and terrain.

(7) Status and availability of local resources in the area of operations.

(8) Size of the area of operations.

(9) Attitudes, availability, and capabilities of local civilians and prisoners of war (PW).

(10) Availability, capabilities, and limitations of CSS units.

(11) Enemy capabilities.

(12) Needs of the inhabitants of the area which must be met from military stocks.

(13) Medical evacuation policy.

(14) Extent of formalized agreements with host nation to provide logistical support.

c. Steps in Force Development Planning. The following steps are essential to sound force development planning:

(1) Determining tasks and resources.

(2) Determining workload based on quantitative considerations.

(3) Selecting types of units with required capabilities.

(4) Calculating the number of units required, including type B units (type B units are units with a certain percentage of military spaces filled by host nation support).

(5) Making provisions for command, control, and communications.

(6) Determining desired time-phased arrival of units at their destination.

(7) Selection of specific troop units to fill the force requirements.

d. Troop Ceiling. Within the troop ceiling, planners coordinate force requirements to achieve a balanced force that can perform the mission. Troop ceilings are fixed limits on force strength to include authorized strength on manning documents, patient, transient, and temporary duty (TDY) spaces. Therefore, a change in the requirements of one agency requires adjustments among other agencies. When a change has been justified, as a result of detailed planning, the Department of the Army (DA) may change a troop ceiling.

8-3. Planning Procedures

Force planning passes through three phases-estimation, calculation, and modification. The planner must accomplish the first phase, particularly in the case of the establishment of a new theater, with few, if any, tangible figures. He develops each successive phase with more concrete and accurate data than are available in the preceding phase until a balanced, sound troop list evolves.

a. Phase I Planning—Estimation. The planner must accomplish the initial step in the development of troop requirements with little specific data—often no more than a brief statement of the overall strength of the force to be employed or the number of divisions around which the force is to be built. Each planner uses broad experience factors, such as division force equivalents, troop and equipment densities, and replacement and consumption factors.

b. Phase II Planning—Calculation.

(1) Phase II planning begins when the planner receives phase I estimates in the form of initial, tentative troop lists. These troop lists should be more accurate than the estimates used to initiate planning in phase I. The margin of error between these initial lists and those finally accepted will depend on the adequacy of the planning factors and guidance available to the troop requirement planners, and the experience and judgment of the individual planner. At the review level, General Staff planning officers should carefully examine lists of the arms and services to determine whether the lists comply with guidance provided in the campaign plan scenario. In cases where branch strength requirements are largely dependent on total force strength, these planners should question any significant deviation from currently accepted percentages. However, environmental conditions, cultural development, and periods of time available for the buildup, to include force deployment and base development, are seldom identical in the different campaign scenarios. Certain types of troop strength requirements are highly sensitive to factors other than total force in the theater. For example, a given campaign plan scenario indicates that peak requirements for logistics support of operations will occur at a particular phase of the campaign; i.e., on initiation of the offensive at D + 90 days. Presumably, the airfields, roads, ports, terminals, and storage, maintenance, and other facilities needed to maintain the planned volume of logistics support will require approximately 12 construction battalion (CB) months to accomplish. If work were to start on D-day, four engineer CBS could do the work if they were in the theater. However, if the battalions were scheduled for deployment into the theater at 10-day intervals starting at D + 10 days, the task would require eight engineer CBs.

(2) Each planner reviews the consolidated initial troop list and decides, based on the new information, whether his next revision will increase or decrease the force and to what extent. The General Staff planning officers should appraise each planner's predictions for accuracy and recalculate the first revised troop list accordingly. The General Staff planning officers then furnish this information to all other planners so that each will be aware of the direction and limits of applicable changes.

(3) When this information is available, the planners continue phase II planning by preparing revised estimates. They discard the division force equivalent and other factors suitable only for initial estimation in favor of actual (or adjusted) figures extracted from the initial lists. They may make several revisions before they can balance lists with one another. Intelligent adjustment and careful prediction at each successive planning stage reduces the number of revisions necessary to arrive at a calculated, balanced troop list to complete phase II.

c. Phase III Planning—Modification.

(1) The consolidated troop list produced in phase II provides a balanced force, each element of which can perform its mission without modification. The planner then applies the modifications that policy, command direction, or conditions peculiar to the theater under consideration dictate in phase III. For example, the planner may substitute indigenous labor for military personnel at this stage.

(a) This action will throw the developed troop list out of balance, possibly requiring several successive revisions, such as those made in phase

II, to balance it. This substitution will affect various services differently; i.e., the impact on maintenance units will be relatively minor because the equipment density will not change significantly; but the impact on the medical troop list will be substantial because medical support is provided primarily on the basis of military strength. Other services will be affected to a greater or lesser extent, depending on the change in military strength and the equipment required.

(b) Because substitution of indigenous labor for military personnel in phase III will cause an imbalance and make additional revisions necessary, the planner should consider making such substitutions earlier in the planning process. Earlier substitution will simplify matters for some services, such as medical, interested primarily in military strengths; but it will complicate matters for those services that must prepare lists of equipment for the indigenous labor force. The chief of the planning group decides the procedures; but the various CSS representatives should present the advantages and disadvantages of each method and make an appropriate recommendation in each case. A 100-percent military troop list against which planners can make augmentations and comparisons is desirable.

(2) Planners frequently impose arbitrary personnel ceilings on the CSS elements. Planners should not apply these ceilings until phase III because the reduction in strength may not be proportional for all services or for all units within a service. If the planner knows the full military strength required to accomplish a mission, he can adequately appraise the effects of a reduced strength and report them to the head of the planning staff and force commander.

(3) The planner makes final distribution of troops by zone or area and determines the location of service areas and other major installations in phase III. If the planner has tentatively accomplished the foregoing for each troop list prepared in phases I and II, he should find the final determination is simple because of his increasing awareness of the deployment of troops of other arms and services throughout the theater and his adjustment of his own distribution to meet the probable load.

8-4. Designing the CSS Structure

a. The company is the normal basic organizational unit for CSS organizations. With few exceptions, there are no fixed organizations above this level. Normally, the company possesses the necessary organizational, administrative, and logistics capability to be self-sufficient. Companies can provide elements to support units for short periods of time. Cellular detachments and teams provide special capabilities when required and receive any organizational support necessary from the larger units to which they are assigned or attached. Units are organized to function, to the maximum degree, in either the combat zone (CZ) or the communications zone (COMMZ). Headquarters units serve as command and control elements for assigned and attached units that are selected in the required number and with the necessary capabilities to best meet the operational situation.

b. Flexibility in CSS organizations is essential to meet the full range of tasks that may arise. The force planner designs the CSS structure to accomplish the support mission in the most efficient and responsive manner. Use of company-sized units in this manner is known as the “building block” principle and is a fundamental technique in developing CSS organizations.

c. An important application that illustrates the building block principle is found in the Corps Support Command (COSCOM). COSCOM operations, organization, and capabilities are the composite of the CSS activities performed by the separately organized Table of Organization and Equipment (TOE) units that may be assigned or attached. In general, each of the various headquarters, companies, detachments, and cellular organizations is designed to perform a given workload in specific areas of CSS. These separate units, with proper adjustment to insure self-sufficiency, can be used to support organizations of less than division size. Battalion, group, and brigade headquarters are added when the CSS structure expands.

d. The TOE of the various CSS units express unit capabilities in quantitative terms and provide a ready reference for determining an appropriate CSS force list. To tailor any CSS force organization to meet the needs of the supported comander, the total CSS requirement must then be compared against the unit capability of the appropriate CSS unit to determine the CSS force requirement. The TOE mission and capability of CSS units to meet these requirements can be found in FM 101-10-1 for divisional CSS units and in FM 101-10-2 for nondivisional CSS units.

e. In certain situations, the planner may find that the CSS force structure is inadequate either in terms of quantity or required skills. This could necessitate a request for more CSS units, the increased use of host nation support (HNS), or in the most extreme case, change of the OPLAN concept.

Section II. SUPPLY PLANNING

8-5. General

a. Supplies include all items necessary for the equipment, maintenance, and operation of a military command, whether required for administrative or combat purposes. Supplies may be referred to as materiel (AR 31025).

b. The function of supply is defined in AR 700-126 as "the acquisition, distribution, care of materiel in storage and salvage of supplies, including the determination of kind and quantity of supplies."

8-6. Responsibility for Supply Planning

a. Joint Commander. The joint commander is responsible for insuring that forces in the theater receive adequate supply support. In principle, each service is responsible for its own supply support, except as otherwise provided in agreements. In practice, in some areas, the dominant service will supply all service-peculiar items to all US forces. The joint commander allocates supplies among the services when necessary.

b. Theater Army (TA) Commander. The TA commander is responsible for supplying US Army forces in theater and supporting the US Navy, Air Force, and other forces with Army items as directed (see subparagraph *a).* The TA commander:

(1) Operates the Army supply system through major subordinate commanders. He provides broad supply plans and policies to guide the subordinate commands.

(2) Establishes policies for allocating resources among major subordinate commands. Normally, he does this by policy directives covering several classes of supply. He may allocate specific items because of their special nature or critical status.

(3) Arbitrates differences among major subordinate commands with respect to supply support.

(4) Reviews and recommends approval to Headquarters, Department of the Army (HQDA), for operational project requirements.

(5) Within DA-authorized theater levels, establishes supply levels for the COMMZ and CZ.

c. Theater Army Area Command (TAACOM). The TAACOM commander is responsible for the provision of specified CSS on an area basis through its subordinate organizations to all Army forces located or passing through its assigned area of the COMMZ. The TAACOM also provides intermediate (GS) maintenance in support of the theater supply system and GS supply to the corps that the particular TAACOM supports. It may also provide specified support to other US and allied forces as directed by the theater Army commander.

d. Corps Commander. The corps commander supplies corps units, supplies common items to other services as directed, and supports civilian agencies as directed. He exercises supply control over corps supply operations. He receives estimates and recommendations from elements of his command (and other agencies for which he has supply responsibility) and obtains supplies from CONUS and local sources. He allocates critical, regulated, and command-controlled items and announces controlled supply rates for class V to subordinate elements. He allocates special ammunition to include specifying the number of complete rounds authorized for expenditure during a specific period or phase of an operation.

e. Division Commander. The division commander is responsible for supply to his own elements and for making their needs known to the next higher supply echelon. Normally, divisions obtain supplies in accordance with a prepared distribution plan direct from general support (GS) supply units in the corps rear area.

8-7. Requirements Determination

a. General. Supply requirements are the statement, in a plan or request, of the need for specific quantities of supplies and equipment over a specific period of time. Theater requirements are computed based on knowledge of strategic and tactical plans, accumulated demand data or previous experience factors, troop strength, end item density, and other guidance available at each echelon of command. As a basis for other planning estimates (e.g., transportation, troop, and construction requirements), General Staff planners develop gross tonnage estimates of supply requirements. Materiel Management Centers (MMC) at TA and COSCOM develop quantities of each item required when this is not determined in CONUS by US Army Materiel Command (AMC), Defense Logistics Agency (DLA), General Services Administration (GSA), and other similar agencies.

(1) *Levels of Supply.* HQDA prescribes levels of supply authorized for oversea armies in terms of days of supply. Usage factors and experience data vary somewhat among different items of supply. To provide uniform methods of calculation, days of supply are converted to pounds per man per day, to numerical quantities of items, or to their quantitative units. Collectively, these levels constitute the stockage objective of the command concerned

and permit requisitioning, control, movement planning, and associated activities. The stockage objective includes all stocks except those in the hands of using units. The TA commander echelons supplies, within DA authorized totals, by prescribing levels of supply for the CZ and the COMMZ.

(2) *Authorized Stockage List.* Targets for ASLs and prescribed load lists (PLL) are established by AR 710-2. These targets should be considered as guidelines only. The objective is to maintain an average demand accommodation of 80 percent, using variable stockage criteria and accommodation by materiel category. Additional items maybe justified and retained if considered essential by the theater commander. The operating level (OL) for CONUS is 15 days and OCONUS is 30 days. The safety level (SL) for 00NUS is 5 days and OCONUS is 15 days. Mandatory Stockage List (MSL) and Mandatory Parts List (MPL) stockage must first be established with priority over other inclusions, in accordance with DA Pam 710-3 and other pamphlets in the 710-2 series, under the Combat ASL and PLL programs.

(3) *COMMZ Levels.* An established theater COMMZ stocks 30 days of non-air lines of communications (AI-DC) combat essential items which are normally shipped by sea from CONUS, such as ammunition, fuel, food, major end item assemblies, and heavy tonnage class IX items. This level should not exceed 10,000 lines. Class IX and selected class II ALOC items are shipped directly to the DS/GS users.

b. Initial Requirements. Determination of initial issue quantities is made by using current TOEs, tables of distribution and allowances, equipment modification lists, and similar authorizations. When computed, "in-country" computations depend on knowing the following:

(1) The number of troops and the allowances under which the troops and installations will be supplied.

(2) Status of supplies in the hands of troop units.

(3) Dates of arrival or activation of troop units.

c. Replacement and Consumption Requirements. Replacement and consumption (R&C) require ments are necessary to keep initial equipment at authorized quantities and to replenish supplies consumed, expended, lost, or destroyed. When supplies are received daily, needs can be met with a minimum operating level of supply. When supplies are received less frequently, it is necessary to increase the levels of supply. Computation of replacement and consumption requirements is based on authorized days of supply and the following:

(1) Projected troop strength for the period.

(2) Changes in composition of the forces supported.

(3) Seasonal requirements.

(4) Anticipated operations that create special requirements such as operations in a nuclear chemical environment.

(5) Revision of replacement factors and consumption rates as a result of added experience.

d. Reserve Requirements. Reserve requirements represent quantities of items which are excess to immediate needs, but are required to meet anticipated demands. Ammunition, fuel, food, major end items, selected class II, IV and IX (heavy tonnage items) are normally shipped by sealift. This sealift support from CONUS may not be adequate for the first days of a conflict. Airlift support for these items will not be available due to higher priority loads. To overcome this transportation shortfall, combat essential non-ALOC supplies and equip ment should be pre-positioned in the theater as pre-positioned war reserves (PPWR). TA commanders will have to justify their requests for reserve stocks. The actual stocking of reserves is authorized in DA controlled programs. Responsible commanders issue directives and guidance to subordinate commands for accumulating, rotating, maintaining, and replenishing reserve stocks.

e. Project Requirements. Project requirements are supplies to perform a specific task that are not part of normal allowances. An approved project requirement is one for which DA has authorized the issue of supplies.

(1) Project requirements involve all classes of supplies and include initial issue equipment as well as replenishment supplies. Project requirements are classed as follows:

(a) Operational Project Requirements. Additional equipment or supplies for tactical operations.

(b) Development Project Requirements. Supplies for construction, reconstruction, development or remodeling of military installations, utilities, and facilities.

(c) Maintenance Project Requirements. Quantities of class IV supplies for normal day-today maintenance of military installations, utilities, and facilities.

(2) Project requirements may originate overseas or may be a part of the DA plan for a specific operation. Commands submit project requirements early so that DA can consolidate all demands. Because of long procurement leadtimes, DA may ini-

tiate requirements before an Army commander is designated. Project requirements so initiated are later revised based on the commander's recommendations.

(3) Project requirements include bills of materials, which are technical documents listing the supplies and components needed for a particular project. Complete bills of materials may be prepared overseas, but frequently AMC prepares them based on a general statement of the task to be accomplished. The latter method has advantages, especially when construction is necessary, since technical specialists familiar with design, nomenclature, and sources of materials are usually more readily available in CONUS.

(4) The TA commander's responsibility for project requirements consists of:

(a) Reviewing DA prepared project requirements to determine their suitability and to recommend necessary changes.

(b) Determining the need for additional project requirements, and where applicable, obtaining HQDA assistance and approval.

(c) Issuing necessary directives to subordinate commanders to obtain needed supplies and to take action to complete the project requirement.

(d) Allocating tonnage made available for movement of materials to the theater.

(5) Examples of supply projects that must receive special considerations are:

(a) Fixed signal installations.

(b) Base installations, including depots, shops, assembly areas, port facilities, hospitals, rest areas, military confinement facilities, Prisoner of War (PW) enclosures, Army exchanges, and postal systems.

(c) Rehabilitation or construction of transportation facilities; airfields; petroleum, oil, and lubricant (POL) pipelines and related facilities; field fortifications and protective construction; and barrier and denial operations.

(d) Specialized equipment and increased levels of supply needed for special operations.

8-8. Preplanned Supply

a. Normally, an established overseas command gets supplies from CONUS by requisitioning them. Supplies for a new command, however, usually are shipped on a preplanned schedule both from CONUS and other sources. Units deployed to new areas take organic equipment and supplies for replacement and maintenance for a specified period. Accompanying supplies are initial issue and are the basic load, prescribed load, and mission load which sustain the unit until continuing resupply can begin. The composition and number of days of supply will differ for units deploying by air from those deploying by sea. Units deploying by air normally deploy with 2-5 days of combat essential classes I, III, and V, selected II and IV, VII and 15 days of class IX. Units deploying by sea carry their authorized loads (ASL, PLL, basic load of class V) plus added supplies for buildup of theater levels. (See also paragraph 7-4.)

b. Preplanned supply must be called forward by the theater MMC and phased into the theater before depletion of the accompanying and sustaining supplies.

c. As soon as possible, normal requisitioning procedures are established. DA sets the date on which preplanned supply ceases, based on the commander's recommendations. All supply agencies coordinate their actions to prevent an interruption of supply and to avoid duplicating shipments. In accordance with DA policies, the MMC transmits requisitions to the Defense Automatic Addressing System (DAAS) where they are screened by Defense European and Pacific Redistribution Activity (DEPRA) and then forwarded to the appropriate DLA, Service Item Control Center (SICC), AMC major subordinate commands, or GSA regional office. These requisitions indicate the ultimate consignee, wherever possible, to allow direct shipment from the ports.

d. Army-wide shortages may cause DA to except certain items from requisition and normal supply procedures. In such cases, commands may be required to report requirements, quantities on hand, due in, shortages, and expenditures. Based on these reports, DA allocates available supplies on a distribution schedule and has them shipped automatically in accordance with priorities. Alternatively, the commander may be informed of the allocation and be authorized to call the item forward by requisition. (Procurement Appropriation, Army (PAA) major items are always allocated.)

8-9. Supply Planning Procedures

a. Supply planning and, more specifically, the procedure for making quantitative supply estimates are important in planning and conducting CSS in large-scale combat operations. The importance of this procedure stems partially from the fact that the receipt, storage, and distribution of supplies is a principal mission of the CSS organization. Together with the maintenance and transportation systems, the supply system provides for the materiel needs of our forces. The significance of the supply estimate to the CSS planner is that

quantitative supply estimates provide a basis for other logistics planning procedures. The supply estimate is the quantitative requirement or the workload for the supply system. The distribution of supplies requires the utilization of transportation and the facilities associated with the movement of supplies forward to the CZ. The quantity of supplies to be distributed becomes the workload against which the transportation system is compared; thus, the quantity of supplies is significant in transportation troop planning. The quantity of supplies to be stored or distributed can be related to physical facilities and, thus, is significant in defining the construction effort required and the composition of the engineer command which will perform such construction.

b. The magnitude of the supply mission must be measured in terms of quantities of individual line items. In determining the composition of the basic loads of ammunition, the ASLs and PLLs and other supplies and materiel that are to accompany deploying troops, units compute quantities of individual line items required. Similarly, AMC national inventory control points (NICP) and SICCs compute resupply requirements by individual line items as described in paragraph 7-3. MMCs must be concerned with the details of requirements for and daily status of each item used by the forces in the theater. A meaningful unit of measure for planning purposes at unified command, TA, or corps level is pounds per man per day translated into tonnages or barrels.

c. The supply planners at unified command and TA must consider supply requirements in terms of reception, storage, and distribution.

(1) Estimates of supplies to be received and distributed throughout the COMMZ and CZ are generally categorized into dry cargo (which includes all classes of supplies except bulk fuel and water).

(2) Supplies stored within the COMMZ and CZ are generally categorized as dry cargo, ammunition, bulk fuel, and water. Based upon these storage restrictions, GS storage areas, ammunition supply points, petroleum facilities, and water facilities are developed to provide storage sites for tonnages required to sustain the theater of operations.

(3) The quantities of supplies to be moved into the theater and received, stored, and distributed within the theater are expressed in gross figures. These can be obtained by multiplying the strength to be supported times the pounds per man per day to be handled and then converted to tonnages and/or barrels. The results of this initial planning will normally not vary significantly from the final plans.

8-10. Logistics Estimates

a. Logistics estimates are prepared and used by the staff primarily to identify tonnages to be received, stored, and moved (distributed) within the various parts of the theater.

b. When estimating supply tonnages, three basic items of information are required: troop strength, consumption rates, and the level of supply (in days of supply) authorized for that theater or operation. For certain materiel supply estimates, an additional item of information is required: equipment allowances, which are the prescribed amounts of items of supply and equipment provided for an individual or organization.

(1) *Troop Strength.* Information on the troop strength to be supported is normally obtained from the plans of higher headquarters, or from personnel status reports of appropriate echelons for current operations. When there are multiple service components within the supported force (e.g., Army, Air Force) and when the various components consume supplies or categories of supplies at significantly different rates (i.e., Army in CZ, Air Force in COMMZ, and Army in the theater), troop strengths are broken down into categories that conform to those different rates of consumption. When supply tonnages are being estimated for analyzing distribution (movement) capabilities, troop strengths must be further broken down by location within the theater (e.g., Combat Zone or COMMZ).

(2) *Consumption Rates (Resupply Rates).* The rate supplies (or specific classes of supplies) are consumed is best obtained from experience data, assembled for a particular operation being supported. In the absence of experience data, FM 101-10-1, table 3-3, provides rates based upon modified World War II and Korean War experiences. These factors are referred to as consumption rates because they reflect the weight of items consumed at a uniform daily rate based on strength, and are expressed in pounds per man per day. For initial planning, these rates can be used for gross supply estimates. When consumption rates from FM 101-10-1 are used, the supply planner must apply judgment and modify those rates based on the particular situation. Resupply rates can be expected to increase drastically in a nuclear, biological or chemical environment due to potential excessive losses of supply and equipment.

(3) *Level of Supply.* Level of supply was previously covered in paragraph 8–7a(1) of this chapter.

8-11. Basic Supply Planning Computations

When preparing estimates of supply requirements (gross tonnages), the planner is concerned with three basic quantities of supplies to be handled: resupply, buildup, and storage tonnages. Specific procedures to be used for these computations are contained within chapters 3 and 6 of FM 101-10-1.

a. Resupply. Daily resupply requirements represent tonnages consumed each day by a specified force, and are normally expressed in "tons per day." They are computed on the basis of the average troop strength during the period for which estimates are being made. It is impracticable to compute daily resupply requirements for each day, thus, average strengths are used. The use of average strength figures may create an excess of sup plies based upon end strengths, and a shortage of supplies based on beginning strengths during a period of troop strength increase. These shortages and excesses should balance out over a given period of time, thereby, providing the supply planner a strength figure that will reflect the needs of the organization.

b. Buildup. Buildup tonnages represent the increased amount of supplies in addition to the daily resupply requirement needed to establish a specified stockage objective (level of supply), usually expressed in days of supply. TA will normally receive the mission to establish a specified stockage objective during a given period. While this mission could theoretically be accomplished by receiving or distributing all the required tonnages on the last day of the period, it is more efficient to constitute the stockage objective throughout the given period. Estimates of tonnages required will change whenever either or both of the following conditions exist:

(1) The prescribed stockage objective is changed during the period.

(2) The supported troop strength changes during the period.

c. Total Daily Tonnage. The total tonnage to be received each day in the theater includes the daily resupply requirement and the daily buildup tonnages. This estimate of supply tonnages is furnished to members of the staff to permit a comparison with the throughput capacity of ports, beaches, and airfields.

d. Storage Requirements. The staff, using all available information, estimates the total quantity of supplies to be stored in each portion of the theater during a particular time period. These estimates of tonnages to be stored are used in estimating construction requirements, allocating existing facilities, and estimating requirements for troop units. Normally, the commander will echelon supplies throughout the theater. Supplies to be stored within the COMMZ are normally divided among GS storage areas, POL facilities, ammunition supply points, and the Medical Supply, Optical, and Maintenance Units (MEDSOM). A breakout of the location of the various classes of supplies as they are stored in the COMMZ is as follows:

(1) *GS Storage Areas.*

(a) Class I—Subsistence.

(b) Class II—Clothing, individual equipment, tentage, organizational tool sets and toolkits, handtools, dry batteries, test equipment, and administrative and housekeeping supplies and equip ment.

(c) Class III—POL (packaged petroleum products) which include: lubricants, greases, and specialty items put into containers with a capacity of 55 gallons or less.

(d) Class IV—Construction materials, to include installed equipment and all fortification/barrier materials.

(e) Class VI—Personal demand items (nonmilitary sales items).

(f) Class VII–Major end items.

(g) Class IX—Repair parts (less medical-peculiar repair parts).

(h) Class X—Materiel to support nonmilitary programs.

(2) *POL Facility.* Class III-Bulk fuels.

(3) *Ammunition Supply Points.* Class V-Ammunition of all types (conventional and special).

(4) *MEDSOM Battalion.* Class VIII—Includes both supplies and repair parts related to medical-peculiar items.

(5) *COMMZ Storage Determination.* In determining the total tonnages of the various classes of supply to be stored in the rear portion of the COMMZ, the forward portion of the COMMZ, or the CZ, daily resupply tonnages are not considered because these supplies are consumed daily. To compute storage requirements, the basic formula can be found in chapter 6, FM 101-10-1.

e. Distribution Requirements.

(1) The staff estimates the total tonnages required to be moved into each portion of the COMMZ and CZ. A detailed comparison is then made of the transportation capabilities versus the transportation requirements within the theater.

(2) The estimates of daily tonnage required to be moved are used to determine the adequacy of the existing transportation network and to estimate the construction effort and the requirements for troop units.

(3) Using the total daily supply tonnage requirement, the planner determines and plans for the movement of supplies throughout both the COMMZ and the CZ.

8-12. Ammunition Supply

a. Ammunition (class V) supply consists of bombs, explosives, mines, missiles, rockets, propellants, and other associated items. It also includes components of class V items; e.g., boosters, rocket motors, jet assisted take-off devices, nonnuclear and nuclear warheads, and associated repair parts or assemblies which, because they contain explosives or are peculiar to ammunition, are supplied through ammunition channels. Its demands and consumption rates vary with the type of combat and within each unit as responses are made to demands of fire and maneuver. While the supply of ammunition is a logistical action, its expenditure is a matter of tactical command decision. Both conventional and special ammunition are allocated from higher to lower command. The logistician at intermediate headquarters cannot influence the control of supply or resupply of ammunition. He can and does provide the means to carry out the desires of the tactical commander.

b. The commander of a unified or specified command originating an operation plan (OPLAN) must have the internal capability to fully support his OPLAN or have made positive arrangements for that support from other commanders or through international agreements. The supported unified commander includes, within the ammunition appendix to his logistics annex of the OPLAN, the concept of nonnuclear ammunition supply operations, ammunition requirements to execute and support the OPLAN for a designated period of time, to include assigned US forces; augmentation forces being deployed to the area; resupply requirements; requirements for allies being supplied by the United States; and support of other agencies from US stocks. Also addressed are ammunition stocks on hand or available (such as Propositioned War Reserve Stocks (PWRS)) which can be used to satisfy requirements, the capability of facilities to store and handle ammunition, the ability to transport it, limiting factors and ammunition handling systems to support the OPLAN.

c. Supporting commanders and service component commanders develop plans to support the supported commander's OPLAN, to include the necessary orgainizations to provide ammunition support.

d. The characteristics of ammunition and ammunition planning must be understood by the logistics planner and are discussed in FM 9-6 and in paragraph 3-8, FM 101-10-1.

8-13. POL Supply

a. The responsibility for overall planning of petroleum logistics support rests with the supported unified or specified commander originating an OPLAN. Each OPLAN submitted to the Joint Chiefs of Staff (JCS) for approval contains a petroleum appendix to the logistics annex. This appendix provides the concept of petroleum supply operations. It addresses the POL requirements to execute and support the OPLAN for a period determined by the commander to include US forces in the theater, augmentation forces being deployed to the theatre, resupply requirements for these forces, and requirements for allies, civilians, and other US agencies to be supported from US stocks. The annex also considers the POL products on hand or available to meet the requirements, along with the availability and capabilities of facilities to store and handle the POL, and the capabilities to transport it to required areas of use and any limiting factors.

b. Supporting commanders develop plans and time-phased requirements for petroleum support during the deployment phase of the implementation of the OPLAN. The service component commanders develop supporting plans for requirements of forces in the theater and those being deployed to the theater, to include resupply requirements.

c. Of major concern is the supply of bulk fuel.

(1) Bulk fuel inventories are made up of Peacetime Operating Stocks (POS) and PWRS. The military services compute pre-positioned war reserve requirements (PWRR) by grade or product and location based on the annual Secretary of Defense Planning and Programming Guidance, approved force structure, and joint strategic planning guidance. Procedures for computing PWRRs are prescribed by each military service. PWRRs for all services are consolidated by the Defense Fuel Supply center (DFSC) and storage space allocated in defense fuel support points. PWRSs are pre-positioned and maintained in accordance with Secretary of Defense and JCS guidance at installations of ultimate use, as much as possible. That which cannot be stored at installations of ultimate use is stored at a terminal storage facility. Planning for the movement of PWRS from storage lo-

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cations between bases in CONUS and to the point of use in oversea areas in an emergency is the responsibility of DFSC. However, inland distribution of all US-based forces of all DOD components within an overseas theater of operations is the responsibility of the Army. Petroleum stocks held by the military services and DLA are subject to allocation by the JCS and overseas by the unified commanders. However, normally, PWRS will not be reallocated.

(2) It is necessary that essential PWRS class III products exist before D-day, to insure adequate support to military forces during the initial phases of a war.

(3) Adequacy of bulk fuel storage capability in the deployment area; the reluctance of commercial contractors to build storage facilities to support military demands; and the time required for the services to obtain program authority to construct adequate facilities to efficiently use tankers expected to be available must be considered in planning class III support. To provide for adequate storage and distribution facilities, the unified commander and the component commanders accomplish long-range coordinated planning on a 5-year projection, when possible. If it is determined that large-scale new petroleum facilities are required, the preferred order of priority for providing them is:

(a) Military construction.

(b) Contractor construction, leased to the military for operation.

(c) Contractor construction and contractor management under specific conditions providing for adequate US Government control to protect the Government's investment.

(d) Contractor construction augmenting existing commercial facilities with clear contract provisions to establish military preferential priorities.

(4) Requirements during the first 60 days of a general war are considered critical. During this period, requirements are to be satisfied from the following sources, to the extent possible:

(a) Current contract/defense fuel support sources.

(b) New procurement by DFSC.

(c) Allocation from the FEMA, GSA/DOE, and the Department of Transportation (DOT).

(d) Defense fuel support point PWRS.

(5) Class III supply planning is discussed in paragraph 3-6, FM 101-10-1. The procedures for management of petroleum products are contained in Department of Defense (DOD) Manual 4140.25-M.

8-14. Water Support

a. General. Water is a critical combat commodity required for personal consumption; sanitation; cooking; maintenance; equipment operation; decontamination of personnel, equipment and facilities; and a host of other purposes. In an industrialized area or in an environment where fresh surface and subsurface water is sufficient to provide the requirements of the force, water supply is an operational requirement involving a minimum of management except in emergencies.

b. Responsibilities.

(1) The Army was designated DOD Executive Agent for land-based water resources on 22 September 1980. As the DOD Agent, the Army will coordinate policy and procedures concerning joint plans and requirements for all DOD components having responsibility for water resources in support of land-based forces; accomplish water resource research development and acquisition for all DOD components; and develop, in coordination with the services, OJCS and other DOD agencies, joint doctrine for employment of water resources in support of joint operations. Each Service will provide its own water resource support. However, water resource support beyond a service's capability in a joint operation will be provided by the Army or another service, as appropriate.

(2) Within the theater, the TA commander is responsible for the control and distribution of water to US Army forces; other US services; and as required, to allied support elements. The senior TA engineer headquarters and its subordinate organizations, are responsible for the detection of subsurface water, drilling, construction, and the repair and maintenance of support facilities. The command surgeon performs the functions of testing associated with water source approval, continued monitoring of finished water, and provides interpretation of the water testing results. Water quality monitoring is primarily the responsibility of the preventive medicine aspects of the MEDCOM/corps while routine testing is performed by water supply units. Supply and Service (S&S) water elements will provide direct support, and water supply companies will provide general support within the theater.

c. Operations.

(1) Potable water resupply in temperate and tropical regions will normally be accomplished by supply point and limited unit distribution from water points operated by elements within the S&S

structure. S&S elements will draw and purify water from ponds, lakes, streams, existing wells, or wells drilled by engineer units. They will also provide DS to elements supported by the supply point.

(2) Within the corps, potable water supply is on a demand basis. When divisions are unable to provide sufficient water for their use, a request is made to the COSCOM for assistance. Water supply points are established in the corps as far forward as possible depending upon the location of available water sources, consuming units and the commander's tactical plan. The most forward point is normally located in the brigade support area. Supported units draw water from supply points using organic transportation. Units are augmented with storage and distribution equipment to support operations when required. Water support in the corps rear area is provided on an area basis by nondivision S&S companies. The organic water supply section provides water purification and storage of water supply points using approved water sources.

d. Planning Considerations. The focus of Army planning has been to provide water support in a desert environment. Care must be taken in establishing total requirements for mobile operations in a desert, especially with regard to supply and means of distribution. Quartermaster water units have adequate capabilities for water treatment on temperate, conventional battlefields. However, additional water purification capacity is required to provide for greatly increased requirements in hot, arid theaters and on integrated battlefields. Augmentation of water supply units produces a significant increase in transportation distribution requirements.

8-15. Repair Parts (Class IX) Supply Planning

a. Repair parts (class IX) supply and maintenance related class II supply must allow for the adequate flow of combat essential items, without building up unnecessary stocks. Key elements include combat essentiality and the ability to receive, handle, and move the supplies.

b. Some class IX and selected class II items such as handtools, small test equipment, and hardware are eligible for routine air shipment to selected Supply Support Activities (SSAs) under the ALOC distribution system. ALOC SSAs normally "pull" these items by requisition under the Direct Support System (DSS) from CONUS. The goal in peacetime, as in wartime, is to maximize throughput to reduce handling at intermediate transship ment points and shorten overall order ship time (OST). The goal is 80 percent throughput shipments to the SSA, from CONUS supply sources. Heavy tonnage items such as track vehicle track, artillery gun tubes, engines, tires and batteries are normally shipped by sea.

c. The items within unit ASLs are determined by the type of units and equipment to be supported. The organization of a particular division is fairly stable, but since they support on an area basis, nondivisional DSUs need to know what units or type units are to be supported so that ASLs can be constituted. It is imperative that the logistics portion of Army component supporting OPLANs assign supporting responsibilities for general support units (GSUs) and nondivision DSUs prior to deployment so they can make up their accompanying ASLs. Assistance in developing the ASL/PLL can be obtained from AMC item managers and the US Army Materiel Readiness Support Activity (MRSA).

d. While ALOC eligible materiel is normally pulled by requisition from CONUS PWRS and preplanned resupply, package shipments may be authorized by the TA commander where single line requisitioning cannot be accomplished. These packages should not exceed 1,500 lines per commodity area. The NICPs and SICCs, together with the Army component planning agent, should develop preplanned supply packages and pre-position requisitions for these class IX and II items as emergency resupply packages in the event of breakdown of computer capability and/or communications lines.

e. Published field manuals in the 42 series provide reference data to logistics planners and item mangers. These manuals assist in forecasting mission essential maintenance and associated repair parts requirements for contingency operations and war reserve planning. They provide information on mission essential maintenance operations (MEMO), mission essential repair parts, and repair part quantities for selected combat significant equipment.

f. The Army Standardized Combat Prescribed Loadlist and Authorized Stockage List (combat PLL/ASL) Program also establishes mandatory repair parts stockage in support of TOE units. The mandatory parts lists (MPL) are published in DA pamphlets in the 710-2 series and are keyed to individual TOE numbers.

Section III. MAINTENANCE PLANNING

8-16. Introduction

a. General. Materiel maintenance is all action taken to keep materiel in a serviceable condition, restore it to serviceability, or update and upgrade its functional utility through modification. It includes inspection, testing, servicing, classification as to serviceability, repair, modification, overhaul, and reclamation. The materiel maintenance functions, performed as an integral component of CSS, include the plans and operations involved in maintaining materiel and determining requirements for evacuation. The maintenance support unit mission may include the responsibility to provide repair parts resupply and operational readiness float (ORF) support to operating units. At the Intermediate (GS) maintenance level, the maintenance support unit mission includes the repair of certain items for return to the supply system. Inherent in the maintenance mission is a dependence on the capabilities and responsiveness of using units and maintenance units in the corps to discover and report deficiencies in materiel and to recommend corrective action through appropriate channels to AMC.

b. Materiel Maintenance in a Tactical Environment. Materiel maintenance activities in the field are those internal to theaters of operation and/or those performed by and in support of the missions of deployable commands, organizations, and units in CONUS or those deployed in oversea areas. These maintenance activities sustain the operational readiness of the force. They activate and operate the intermediate maintenance support system, in accordance with the plans and equipment publications prepared by a national maintenance point (NMP), to maintain in a serviceable condition, materiel sufficient to satisfy prescribed operational requirements.

c. Maintenance Management.

(1) Maintenance management is the process of establishing maintenance objectives and the planning, obtaining, organizing, directing, coordinating, controlling, and evaluating the use of resources to accomplish these objectives.

(2) Maintenance management includes forecasting the maintenance workload and determining the personnel; training; tools; test, measurement, and diagnostic equipment (TMDE); calibration equipment; facilities; funds; spares and repair parts; other maintenance supplies; technical data; and management information and procedures needed to effectively and economically accomplish that workload on a timely and responsive basis.

(3) The periodic evaluation of maintenance concepts, policies, doctrine, plans, and procedures to insure that they provide the most effective maintenance support for technical equipment is a function of maintenance management. The technical supervision and management of major maintenance programs and activities are included in these evaluations.

(4) A primary function of maintenance management at the unit maintenance level is to insure that adequate time is allocated and/or scheduled for the performance of maintenance training and maintenance operations, particularly those involved in the performance of preventive maintenance (PM).

8-17. Objectives of Maintenance

The overall objective of materiel maintenance is to support the combat readiness and effectiveness of the Army by sustaining weapons and equipment in a mission ready condition as effectively, responsively, and economically as possible.

8-18. Levels of Maintenance

The Army Maintenance System consists of three levels of maintenance operations; unit, intermediate, and depot, which are described in AR 750-1 and discussed in paragraphs *a, b,* and c below. The purpose of this categorization is to relate maintenance to other military operations; provide organization to the system for maintenance; facilitate assignment of maintenance responsibilities to specific levels of command; and permit orderly and efficient distribution of maintenance assets. The mission of a particular unit or organization, the complexity and bulkiness of the items of equipment, the operational location of the unit, and requirements for constant readiness dictate the allocation of maintenance tasks to repairs authorized at the unit or organization. Maintenance allocation charts for each piece of equipment assign functions and repair operations to the lowest appropriate level.

a. Unit Maintenance. Unit level maintenance is performed by the operator, crew, and company/troop or battalion/squadron/brigade maintenance personnel. It is characterized by quick turn around repair by replacement, minor repairs, and performance of scheduled services. If the repairs are beyond the capability of organic maintenance personnel, the units request support from the intermediate direct support maintenance company. Unit level maintenance maintains a combat pre-

scribed load list consisting of the mandatory parts list and selected demand supported items.

b. Intermediate Maintenance. The intermediate maintenance level has two orientations, direct support and general support.

(1) The intermediate (direct support) maintenance (IDSM) is performed in support of the user. The focus of intermediate direct support maintenance is mobile support as far forward as possible, repair by replacement, and maintaining high volume, fast moving operational readiness floats.

(a) Divisional intermediate (direct support) maintenance units provide dedicated support to brigades and battalions including repair of selected high usage components.

(b) Nondivisional intermediate (direct support) is performed in support of the user on an area support basis. When performing a backup support mission, the unit is assigned highly mobile augmentation teams.

(c) Maintenance tasks at the intermediate (direct support) level include battle damage assessment, diagnosis, fault isolation, repair by replacement, repair of selected high usage components in support of the repairable management program, and establishment and operation of maintenance collection points (MCP) and base maintenance areas. MCP are located where skills, tools, TMDE, and repair parts are concentrated to quickly repair critical equipment for return to the using unit and evacuation or salvaging of nonrepairable equip ment.

(d) Intermediate (direct support) maintenance units maintain shop stock, if not colocated with ASL, for support of assigned maintenance missions. Units supporting combat brigades and regiments maintain combat authorized stockage lists to support the items stocked in supported units' combat PLL. Selected companies of the divisional maintenance battalion maintain combat ASL to support the combat PLL of the divisional units and the ASL of the forward maintenance companies. Nondivisional intermediate (DS) maintenance units assigned to corps and EAC provide repair parts to customer units in the geographical support area.

(2) Intermediate (general support) maintenance (IGSM) units are located at echelons above corps and perform maintenance in support of the theater supply system through the repair of assemblies, components and modules, repairable items, printed circuit boards (PCB), and ORF. Intermediate (general support) maintenance units are job or production line oriented for repair of class VII and IX items. Maintenance tasks at this level include diagnosis, repair of assemblies, components and modules, PCB, and maintenance of theater reserve stocks. Repair parts stockage in these units is limited to items required to support assigned maintenance missions.

c. Depot Maintenance. Depot level maintenance in support of the supply system is performed by AMC depots or activities, contractors, and host nation support personnel. Depot maintenance is performed in fixed facilities in CONUS and the theater of operation, and is production line oriented. Repair parts supply support for depot maintenance is limited to items to support assigned maintenance missions.

8-19. Effect of Maintenance Concept on Logistics Planning

a. The TA commander is responsible for determining maintenance support requirements; formulating plans and policies for provision of maintenance; and allocating maintenance units to major subordinate commands based on requirements, priorities, and availability of maintenance units. The TA commander's OPLAN should describe the concept of maintenance to include size and composition of ORFs, cannibalization policies, recovery and evacuation policies, night operations, time limits within which repairs must be made at intermediate maintenance levels, assignment of maintenance responsibilities and the role of AMC in the theater. The OPLAN should also include the concept of maintenance in a nuclear, biological or chemical environment. The TA commander is responsible for developing and maintaining a self-sufficient military capability and capacity for the intermediate level maintenance of the combat, combat support, and combat service support elements of his commands.

b. The maintenance concept in a theater without an established US base (such as Southern Africa or Southwest Asia) will differ widely from the concept for a theater where there is an established US base (such as Europe). In the former, initial maintenance efforts would be confined to replacement of modules, components, and assemblies obtained through repairable management procedures. There would be no repair of the unserviceable modules, components, or assemblies until such time as a COMMZ or possibly a corps rear area (for an undivided theater) is established. Intermediate direct support maintenance units would be employed in a forward support role. Cannibalization would be a significant source of repair parts to keep maximum numbers of critical combat items operational. The size and composi-

tion of the operational readiness float would be larger. Definite plans and procedures for the recovery, technical inspection, and evacuation of major items, components, and assemblies that cannot be repaired forward will be established. For reparable, combat essential items, plans should indicate in-country repair facilities (other US service, allied, host nation, or commercial) or evacuation to CONUS or other offshore bases. After a GS base and COMMZ have been established, more time-consuming maintenance can be performed. Maintenance in support of the supply system will normally be performed by echelons above corps IGSM units or other facilities. At this time, IGSM units will perform repair of assemblies, components and modules, DX items, printed circuit boards and ORF.

(1) In Europe the maintenance concept would be vastly different because mobile, semifixed, and fixed maintenance facilities (to include some depot capability) are in existence. Interservice support aggrements, agreements with allies, and host nation agreements are in effect or being promulgated as are commercial contracts. In effect, the maintenance system is already established. In time of conflict it would require some modification and expansion.

(2) In Korea, while facilities are not as complete and sophisticated as in Europe, a maintenance system does exist. It can be expanded and can exploit the capabilities of offshore bases in the area to reduce turnaround time.

(3) Planning will also differ in either scenario (established or nonexistent US base) if the forces entering the theater are inserted tactically or administratively. In the former, the proper selection and scheduling of units and the development of resupply and personnel replacement packages is paramount. Many units may be deployed in fragmented configurations. Accompanying supplies will be limited as will resupply due to constraints on transportation and line of communication facilities. The force must operate with what it brings in. If the forces are inserted into an area administratively, unit integrity can usually be maintained and larger quantities of supplies can accompany the troops. Scheduling and phasing of the units need not be so finite and personnel and equipment losses should not be so great as with a tactical insertion.

c. In summary, maintenance planning for deploying forces would consider:

(1) A short intermediate DS evacuation policy.

(2) Limited class IX stockage.

(3) Reliance on DSS and ALOC for class IX support.

(4) Emphasis on modular/component/assembly repair and/or major item replacement.

(5) Repair of only critical items.

8-20. US Army TMDE Support System

a. General.

(1) The US Army Materiel Command (AMC) is responsible for approval and publication of Army policy pertaining to TMDE and measurement standards research, development and acquisition. The Deputy Chief of Staff for Logistics HQDA (DCSLOG) is responsible for approval and publication of Army TMDE support policy and general staff supervision of the implementation of such policies by the major field commands.

(2) AMC is also responsible for developing, establishing, and maintaining the Army TMDE support system. The responsibility of supervising this system lies with its subordinate activity, US Army TMDE Support Group (USATSG), Redstone Arsenal, Alabama.

(3) The USATSG is responsible for providing Armywide command and control of specified AMC TMDE support activities, technical direction, and insuring logistics support for the Army TMDE support system. AMC activities under the command and control of USATSG with geographic area TMDE support assignments, are responsible for providing calibration and repair service to US Army organizations within their assigned geographic areas for general purpose and selected special purpose equipment. Intermediate maintenance units are responsible for providing calibration and repair service to units supported for special purpose TMDE as designated in TB 43-180. Organizational units are responsible for securing support service for their TMDE.

b. Policies.

(1) The Army TMDE support system is based upon the policies and responsibilities in AR 750-25 and the procedures in TB 750-25. The responsibility for general staff supervision of the Army-wide TMDE program is assigned to the Deputy Chief of Staff for Logistics, HQDA. The US Army Materiel Command manages, directs and controls the Army-wide TMDE Calibration and Repair Support (C&RS) program. AMC will maintain the USATSG to:

(a) Exercise Army-wide technical control of the TMDE support program.

(b) Exercise command and control of all maintenance battalions (TMDE), maintenance companies (TMDE), and Area Calibration and Repair Centers (ACRCs).

(c) Develop mobilization, operation, and logistics plans to insure TMDE C&RS during wartime for all active and reserve components.

(2) IAW AR 750-25, AMC is responsible for TMDE support planning for contingency purposes. That planning responsibility is further delegated by regulation to the US Army TMDE Support Group (USATSG) with HQ at Redstone Arsenal, AL.

(3) Although HQ, AMC continues as the MACOM planner, a direct line of communication between responsible Army component command planners and the USATSG will be established to effect detailed TMDE support planning for contingency operations. Direct communication on exercise or real world Time Phased Force Deployment Data (TPFDD) requirements and employment of forward deployed TMDE support assets is necessary to insure that adequate support is available for inclusion in AMC LOGPLANS in support of approved Army component command OPLANS as required.

(4) Because the USATSG has a worldwide support mission in peacetime, there are forward deployed subordinate elements in USAREUR, USAEIGHT, USARJ, WESTCOM, and SOUTH COM as well as CONUS. These elements are battalion level or lower, and as such, are not staffed for an extensive planning mission. Taskings related to TMDE support planning or MACOM-level exercise employment of TMDE assets will be directed to USATSG. This direct communication should preclude unnecessary shortfalls and after the fact efforts at contingency planning for TMDE support.

(5) It is imperative that the USATSG be included in the distribution of any data reflecting TPFDD assignments early in the planning cycle. This information will allow the USATSG to project the required support based on their analysis of TMDE requirements in the deploying units and subsequent assignment of that support to the TPFDD. The only data base that can provide the necessary finite information is maintained by the USATSG.

(6) Operation of TOE TMDE support organizations is addressed in FM 29-27, Calibration and Repair Service in the Theater of Operations, 15 March 1985. As specified in FM 29-27, the TOE structure for the Maintenance Battalion (TMDE) and Maintenance Company (TMDE) does not allow for operations as autonomous ATSTs. They are dependent upon the unit of attachment for messing support, communication support, POL support and maintenance of organic vehicles. Their defensive capability is limited to small arms. The host unit is responsible for providing the support required by the battalion and/or company elements and integrating them into the defensive plans.

(7) Communications relative to TMDE support planning will be directed to CDR USATSG, ATTN: AMXTM-OR, Redstone Arsenal, AL 35888 or by message address to: CDR USATSG REDSTONE ARSENAL AL//AMXTM-OR// with INFO CDR AMC ALEX VA//AMCTM/AMCRE-P//.

c. Responsibilities.

(1) Supported Army component commands will insure the USATSG is included in formulation of the TPFDD to insure early identification if applicable of Area TMDE Support Teams (ATSTs). It is incumbent upon Army component command planners to recognize that TMDE support is provided by AMC activities. That support is not organic to other Army maintenance elements, and must be separately analyzed and identified. A direct line of communication between the USATSG and component commands is essential to the provision of adequate TMDE support in wartime.

(2) The CDR, USATSG will insure ATSTs are deployed in sufficient number to support the units troop listed in applicable OPLANs. The number and configuration of ATSTs deployed is contingent on the TMDE density in the area of operations. Deploying USATSG subordinate elements will be prepared for overseas movement PERAR 220-10. Elements attached to active Army divisions will be processed for overseas movement by the division to which they are attached.

d. Procedures. The ATSTs are mobile and air transportable (when required) to support unit sites. Each team is equipped with tools, one set of secondary transfer standards, TMDE repair set, repair parts, and expansible vans in which equipment is transported and calibration and repair functions can be performed. The vans when expanded, provide a suitable work area for TMDE repair and secondary transfer calibration operations. Details on the expansible van are found in TM 9-2820-260-10.

Section IV. TRANSPORTATION PLANNING

8-21. General

a. Transportation planning is determining what is to be moved under varying constraints and selecting a mode of transportation to best fulfill a requirement. While most of the time-consuming detailed computations can be accomplished in minimal time with the aid of a computer, the planner must interpret and evaluate the computer output.

b. Transportation national emergency planning is centrally coordinated by the Office of Emergency Transportation (OET) of the DOT. The mission of this office is to develop preparedness programs for all modes of commercial transportation required to move passengers and freight for essential civil and military needs during emergencies, and develop controls of transportation resources to be applied in the degree necessary commensurate with the emergency. When controls are applied, the carriers manage their operations, industrial traffic managers perform normal functions, and the normal (shipper-carrier) relationship prevails subject only to the applied controls. Industry is expected to provide continuity of management protection of personnel and facilities and restoration of damaged lines. The Government would increase its control to insure continuous support of the Armed Forces should industry not be capable of providing the service.

c. The Deputy Director, J-4 (Strategic Mobility) of the JCS is responsible for the analysis, evaluation, and monitoring of all aspects of strategic movement planning and operations. Further responsibilities include joint transportation planning, policy, and guidance, including matters of joint and international transportation operations, the administration and support of the Joint Transportation Board (agency of JCS) and its elements. He also serves as chairman of the board and acts on behalf of the JCS for transportation matters. The Director of Army Transportation also serves on this board. Planning guidance, contingency plan evaluations, the Five-Year Defense Plan, and other plans that involve transportation directly or indirectly incorporate the systems analysis techniques and procedures for computer usage.

d. The Military Traffic Management Command (MTMC) is responsible for emergency highway needs for the DOD and for taking appropriate action for integration of these needs into public highway programs. Future planning must consider extensive disruption of transportation resources by a major nuclear attack. In such cases, controlled use of the remaining transportation facilities would be planned to support the needs of the Armed Forces, and restoration of the industrial activity as early as possible.

e. MTMC is responsible for a program called Contingency Response Program (CORE) which provides DOD service support and priority prior to and during contingencies and mobilization. The action arm of the program is the CORE team comprised of key senior officials of DOD, other federal agencies, and the commercial transportation industry, all of whom have security clearances. CORE quick reaction procedures utilized by the team significantly reduces the time required to muster civil rail, motor, bus, and air assets to meet DOD priority requirements. Authority of existing law in the Defense Production Act of 1950 *(as* amended) insures DOD transportation service priority if required to meet contingency needs.

f. The present concept of military participation in regulating US highway traffic during emergencies is that each CONUS Army commander will represent all services at State traffic centers in his area. State and local highway personnel, due to their familiarity with field organization and their facilities usability under varying conditions, are vital to any plan for maintaining highways. The MTMC provides national level interface between the US Army area commander and the US DOT.

g. The MTMC provides planning support to the Armed Forces on usage of commercial and military resources, to include DOD freight railway interchange fleet and the operation of common-user US ocean terminals. The operation of the railway interchange fleet involves control and maintenance of government-owned railcars used to augment commercial capability. In addition, the Army looks to the MTMC for strategic planning data required in the Army's planning mission. MTMC is responsible for determining CONUS transportation capability, analysis of emergency military requirements, and preparation of comprehensive CONUS commercial transportation movement plans. It is also responsible for guidance and assistance to the Army in the preparation of other joint, or unilateral plans where CONUS movements are involved. The command assists carrier associations and carriers in the development and coordination of their emergency plans as they affect the military departments and in the development and maintenance of up-to-date agreements with carrier associations.

8-22. Principles of Military Movements (Transportation)

The principles of movements (transportation) are applicable to all military transportation services. They remain constant in peace or war regardless of whether an automated or a manual system of operation is used. These are also principles to be addressed regardless of the planning level.

a. Centralized Control. Control of movements will be centralized to the highest level at which it can be adequately exercised. This means that centralized control must be exercised by the commander charged with providing total logistics support. He must be able to establish priorities, allocate critical resources, and identify and correct deficiencies. In carrying out this principle, TA and corps commanders are assisted by their respective support commanders (Transportation Command (TRANSCOM) and COSCOM). These organizations command most of the agencies involved in accomplishing movements. Movements are coordinated by the Movements Control Agency (MCA) at the TA level and Movements Control Center (MCC) located within the COSCOM headquarters.

b. Regulated Movements.

(1) The introduction of Automated Data Processing equipment into supply and transportation operations and the requirements to maintain and support highly mobile forces will greatly increase the requirement and capability for regulating movements beyond that experienced in any other war in which the US has been involved. Most supplies are moved from theater army General Support supply activities (and in some cases from ship side) to COSCOM GS supply activities or to Division Support Commands (DISCOM) direct support units. As a consequence, transportation equipment is constantly moving into and within the corps area, and detailed regulation and coordination are required to prevent congestion and conflict of movements.

(2) It is probable that in any future war US forces will have to share the available airfields and road, rail, and inland waterway capabilities with allied forces and civil commerce. In this case, only careful regulation of movements and close coordination can insure an efficient transportation system.

c. Fluid and Flexible Movements. The transportation system should provide an uninterrupted flow of traffic that adjusts rapidly to changing situations. A major goal of CSS is maximum throughput of supplies to the COMMZ forward area and the corps rear area thereby reducing rehandling. Attainment of throughput goals and effective use of all transport are impossible unless the capability exists throughout the transportation system to divert, reroute, and exchange or to take whatever action necessary to insure continuous movement of supplies to destination.

d. Minimum Use of Carrying Capability.

(1) Transportation assets which are not used cannot be stored for later use. Transportation assets are normally in short supply and advance planning can prevent shortfalls by anticipating future requirements Tactical consideration may preclude complete adherence to this principle (for example, vehicles designated and held for the movement of special weapons or aircraft delivering unit loads in combat support). This maximum-use principle permeates the entire field of transportation movements. It is evidenced by the three principles previously discussed, but the fourth principle is aimed at full use of the components of the system.

(2) Requirements fluctuate for transportation within a theater or a segment of the theater, depending on the tactical situation. Proper use must be made of each transport mode in accomplishing the commander's objectives. Air transport will be employed if speed of reaction is paramount or terrain features prohibit the use of other modes. Motor transport, with capabilities for wholesale and retail deliveries, complements air and the fixed modes of rail, inland waterways, and pipelines.

(3) In application of this principle of movement to the selection of transport mode, the following guidelines apply:

(a) The most economical mode for the complete movement will be used, consonant with the mission of the command; otherwise, that mode's available capability will be used as far forward as possible.

(b) Rehandling of cargo will be minimized or eliminated whenever possible.

(c) Backhauls and crosshauls will be avoided whenever possible.

(d) All available transport equipment necessary to fulfill known requirements will be allocated.

8-23. Planning for Support of Military Operations

a. Transportation planning in support of a unified commander's OPLAN addresses both intertheater and intratheater movement and reception of personnel, materiel, and equipment from point of origin to destination. In addition, the competing

requirements for limited strategic lift resources, mobility support facilities, and intratheater transportation assets must be assessed in terms of impact on mission accomplishment; priorities must be established; and a movement program must be prepared in light of both movement constraints and the concept of operations. The movement program is the basis for development of detailed transportation tables and schedules used in the implementation phase of the plan.

b. The payoff in transportation planning lies in the timely delivery to planned destinations of both effective combat forces and the means for their sustained support.

(1) Effective combat forces include both unit personnel and unit-related supplies and equipment.

(2) Sustained support includes support forces, replacement and filler personnel, resupply and buildup, and construction personnel, materiel, and equipment.

c. At the outset of transportation planning, all requirements data are assessed in terms of point of origin and destination. Having determined what is to be moved, requirements (e.g., force, personnel, and cargo increments) are sequenced in order of desired arrival at destination and the mode of transportation is selected; ports of debarkation (POD) and intermediate PODs are determined; time-distance factors are applied; departure date is reckoned; conflicting requirements for limited transportation assets and mobility support facilities are reconciled; and the movement program is tested for feasibility.

d. The objectives of transportation planning are to:

(1) Aggregate and sequence by destination and required delivery date (RDD) the movement requirements of all participants in the plan.

(2) Establish the lift mode, port of embarkation (POE), departure date, POD, arrival date, and priority of each force, personnel, and cargo increment.

(3) Assess lift allocations and the capacity of mobility support facilities for adequacy and identify shortfalls and limiting factors.

(4) Identify enroute support requirements of the transportation operation agencies (TOA).

(5) Provide data for the further refinement of the Time-Phased Force Deployment List (TPFDL), time-phased supply and equipment lists, and the Base Development Plan (BDP).

(6) Document transportation requirements data in a format that can be tested for feasiblity.

(7) Develop a feasible movement program.

(8) Produce time-phased transportation requirements data.

e. The main elements of transportation planning are:

(1) *Requirement Listing.* Force, personnel, and cargo requirements that need movement, along with related movement characteristic data relating to all military forces which are integrated, sequenced by RDD and priority within RDD, summarized by destination, and compiled into a single time-phased listing.

(2) *Lift Mode to Destination*. The selected lift mode, or modes, identifies the type of transportation to be used in the movement of the force, personnel, or cargo increment between point of origin and destination.

(3) *POE Determination*. A POE is a geographic location (airport, seaport, land line terminal, or other area) at which strategic movement originates. The POE and the point of origin of a force, personnel, or cargo increment may be colocated or may be separate locations.

(4) *POD Determination*. A POD is a geographic location (airfield, seaport, land line terminal, or other area) at which a leg of a planned movement ends. Destination and POD may be colocated or may be separate locations.

(5) *Timing.* Transportation planning is concerned with the timely delivery of forces and the means for their sustained support. Flexibility in the movement program is the key to scheduling. To achieve this, timing of the beginning and ending of each leg is expressed in terms of earliest and latest dates for each force, personnel, and cargo increment. The basic constraints are:

(a) RDD at destination.

(b) The time when force, personnel, and cargo increments are available for movement at their point of origin.

(c) Time/distance factors between point of origin, POE, POD, and destination.

(d) Throughput capacities of related mobility support facilities.

(e) The capacity and security of staging bases and supply depots.

8-24. Transportation Planning

a. As discussed in chapter 5, transportation planning is an integral part of the Joint Operations Planning System (JOPS). Since the function of transportation is the movement of men, materiel, and equipment from origin to destination, plan-

ners must analyze and plan for the entire system, both intertheater and intratheater.

(1) Planning for the movement of troops, equipment, and supplies from CONUS or another theater to a theater of operations is a strategic mobility problem. Determination of the requirements (i.e., force structure and time-phasing of the force into the theater of operations) is the responsibility of the supported commander. Determining the availability of airlift and sealift resources to meet the transportation requirements is the responsibility of the Military Airlift Command (MAC) and Military Sealift Command (MSC). Any shortfalls in lift capability must be addressed and ultimately resolved by the supported commander. Planning for the movement of units and accompanying supplies from a CONUS installation to the POE is the joint responsibility of the unit commander, the installation transportation officer, and MTMC.

(2) Planning transportation, from the POD forward within the theater, is the responsibility of the supported commander. If the supported command happens to be a joint command, the commander will normally assign the responsibility for intratheater transportation planning to one of his service component commands. In most cases, this will be the Army component. If the Army component is a TA, the TA Deputy Chief of Staff for Logistics, will normally perform the transportation planning. If the Army component is of corps size, the COSCOM ACofS, Transportation, performs the planning.

(3) The transportation planner analyzes the commander's concept of operations and the terrain of the theater to determine what transportation requirements will be needed to provide adequate intratheater support. From this analysis, the transportation planner will derive two important inputs for the contingency plan. First, the type and quantity of transportation units needed in the theater; and second, identification of needed improvements to the existing intratheater transportation network that should be included in the BDP.

(4) The uniqueness of transportation planning for contingency plans is that the entire transportation system from within CONUS to the forward edge of the battle area (FEBA) must be addressed.

b. Transportation planning for current operations is the routine management planning necessary to insure that day-to-day flow of men and supplies is timely and efficient. Planning is based on those assets that are physically available. This planning includes revision of procedures to compensate for losses in transportation capability or to take advantage of circumstances which permit more efficient working arrangements. This planning is normally performed by the various MCCs within the theater.

c. Transportation planning for future operations:

(1) Includes planning for new operations and for new phases of the current operations. This planning normally is performed by the ACofS, Transportation, of the COSCOM.

(2) The plan for a new operation requires careful and comprehensive preparation. Transportation units may have to be relocated, new transportation networks may need to be opened up, and the transition period may be critical. Coordination with the other staff planners, both operational and logistical, will be continuous.

8-25. The Transportation Planning Process

Regardless of the type of transportation planning, the planning process will be basically the same. First, determine what must be moved. Second, determine what transportation resources are available. Third, balance requirements against resources. Fourth, determine shortfalls, critical points, and recommend priorities. Fifth, and most important, coordinate the plan with all affected. The transportation planner must determine the requirements of the supported units and then attempt to develop a transportation network to satisfy these needs.

a. Determining Requirements.

(1) Each requirement for troops or supplies generates at least one requirement for transportation. Initial transportation requirements can be expressed in terms of tonnage (or number of personnel) and distance. In later stages of planning, the tonnages become classes of supply and even distinct items and distances become routes between specific origins and destinations.

(2) The responsibility for providing adequate transportation support for the operation rests with the transportation planner who estimates total requirements based on the average supplies required for the supported forces and the average distances involved in the phases of the operation. This estimate serves as a point of departure and as a general check on the realism of requirements submitted by users to recognize every supply or personnel action as a transportation requirement and to refine those requirements as early as possible.

(3) Some requirements may be within the capability of transport organic to the requesting

unit. The planner must determine the extent of such capabilities and urge their utilization.

b. Determining Resources. An assessment of transportation resources involves consideration

(1) What type transportation units are available.

(2) Characteristics and capabilities of each mode of transport.

(3) Capabilities of available civilian transport, based on a survey of facilities, inspection of equipment, and agreements negotiated with civilian transportation operators.

(4) The availability of PW and local labor to supplement manpower resources.

c. Balancing Requirements and Resources

(1) The process of balancing requirements and resources determines if the transportation capability is adequate to support the operation. It also establishes the workload for each segment of the transportation service. This is the most time-consuming portion of the planning process.

(2) Providing complete transportation support requires consideration of factors other than the necessary operating units. The planner provides for adequate command and control by organizing units according to their missions, proposed locations, and area of coverage. He coordinates with planners of other services to insure that their plans include the necessary capability for support to the transportation units. He makes recommendations as to the location of supply and service installations in accordance with their requirements for transportation.

(3) A composite statement of total requirements for transportation expedites the planning process. Each planner selects the format that he finds most usable. One may use a chart listing of requirements, showing origin, destination, RDD, weight, quantity, and class of supply for each shipment.

(4) The process of establishing workloads for each transport mode varies according to the phase of operation. In the usual situation, the plan for the initial phase should provide sufficient motor transport for all cargo and personnel movements. Though some priority items will move by air, this quantity normally will be only a small percentage of the total supplies.

(5) Workloads are computed individually for each transport mode according to the characteristics and capabilities of the operating units of that mode. The final plan, however, must combine the units and operations of all modes into a single, integrated transportation system.

(6) During actual operations, the theater commander allocates a portion of the available airlift to TA for requirements usage. For planning purposes, however, air movement capacity is an assumption based on coordination with Army aviation and Air Force planners. This assumed capacity seldom exceeds the requirement for movement of priority cargo. If there is an excess, planners should use it for nonprogramed priority movements. Army transport aircraft capacity seldom exceeds the amount required for DS of combat operations. Therefore, plans should not provide for routine movements by air of other than priority cargo.

(7) In only a few areas of the world are there extensive inland waterway systems compatible with transportation requirements. Inland waterway systems are relatively vulnerable to enemy action and sabotage, and are difficult to restore to usefulness.

(8) The planner must be certain to include all types of workloads, such as: successive, direct, retrograde shipments of some cargo; documentation for rehandling, rewarehousing requirements, augmentation of unit's transportation, assistance to medical evacuation plan; and requirements to support allied and civilian organizations.

d. Determine Critical Points.

(1) In the transportation planning process, it is important to analyze the system and try to identify critical points such as facilities being used at maximum capability; a critical mode or segment of the system; or a critical time period when the entire system is taxed to its limit.

(2) Accompanying this critical point determination is an analysis of what alternative plans or control measures would alleviate possible bottlenecks. This builds flexibility into the system.

e. Coordination. Complete coordination among all planners is mandatory to insure integrated support. Since the original guidance is seldom valid throughout the planning period, constant coordination with the other staff planners on changes to the mission, commander's concepts, assumptions, intelligence, policies, priorities, allocations, locations of facilities, and other topics necessary to keep planning current, is an absolute necessity.

f. Flow of the Planning Process. The planning process is not complete until it is implemented. It should follow this logical flow.

Determine requirements → Determine the available transportation resources → Balance resources with requirements ⇝ Determine the critical points → Coordinate and refine the plan.

8-26. Transportation Planning Factors

a. The basis for planning transportation support is the size force to be supported and the schedule for movements of the force. From this the number of personnel and the tonnage of equipment and supplies to be moved each day is determined. The Time-Phased Transportation Requirements List (TPTRL) indicates the number of personnel and tonnages (short tons and measurement tons) of supplies and equipment to be moved each day.

b. Initial estimates of personnel and cargo to be moved can be obtained from the Type Unit Characteristics (TUCHA) data of type units in the Time Phased Force and Deployment Data (TPFDD). Non-unit personnel (replacements) and non-unit cargo (resupply) data is also obtainable from the TPFDD. The FORSCOM Computerized Movement Planning and Status System (COMPASS) can be used to provide Army unit notional data as well as current movement data for Army units. Capacities of transportation facilities can be obtained from Joint Operation Planning System (JOPS) files and from AR 55-357, Terminal Facilities Guide. The Army Force Planning Data and Assumptions (AFPDA) provides current transportation planning factors for use in large scale planning.

Section V. FIELD SERVICES PLANNING

8-27. General

Services are those general activities that support the missions and functions of Army units, installations, and facilities. CSS services include logistics or field services and personnel service support. Field service functions include laundry, bath, clothing exchange, food services, bakery, textile renovation, graves registration, fumigation, clothing sales, airdrop, and general duty labor. In the initial phases of combat, field service functions are performed by such units as the field service company, GS, and the supply and service company, DS. In an established theater, many of these functions are subject to interservice support, cross-service agreements, or can be performed by host nation or contractors. As the area of operations enlarges and a separate COMMZ emerges, more and more services will be performed by the single service concept, host nation, and/or commercial activities. For planning purposes, the types and capabilities of the units that provide these services are shown in chapter 17, FM 101-10-2. Graves registration services are especially sensitive and are usually controlled by the supported unified commander.

Section VI. FACILITIES PLANNING

8-28. General

In an oversea area facilities such as buildings, airfields, piers, access roads, railway spurs, water towers, and beacons, are usually grouped together in relatively fixed locations referred to as bases. In an established theater such as in Europe and the Pacific, these various facilities are grouped together in installations in much the same manner as in CONUS installations. The locations are fixed and the buildings, roads, utilities, etc., are of permanent or semipermanent construction. The planning and programing for the development of these facilities may be carried out similar to those for CONUS installations under the Installation Master Planning Process (AR 210-20) and the Military Construction Army Program (AR 415 series). Others identified in unified command OPLANs are the result of civil engineering support planning (CESP) also referred to as base development (BD) planning. It is this latter type planning which will be discussed in this section. These OPLANs identify the major facilities (ports, airfields, storage areas, troop camps, hospitals, security facilities, PW camps, etc.) to be repaired (battle damage) or to be constructed in support of the OPLAN. Basic engineering planning data are contained in chapter 6, FM 101-10-1.

8-29. Civil Engineering Support Planning

a. Base development (BD) is 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.

b. BD is provided for in a CESP which is an essential element of the joint theater OPLAN. It is analogous to the master plan and becomes the governing instrument for the development of bases. The BDP is developed to insure the timely availability of construction forces, materiel, and facilities necessary to support the OPLAN. The development of the BDP as part of the OPLAN is discussed in paragraph 5-14f.

c. The period of time during which a base is to be used determines the standards to which it will be constructed. The Joint Operations Planning Procedure and JCS Publication 3 define these standards.

d. The doctrine and procedure of BD planning are prescribed in FM 31-82. Construction facilities and responsibilities are discussed in chapter 13, FM 100-10.

e. The BDP must insure timely availability of facilities required to support the operation. Careful detailed planning of a base requires time and effort, but it is necessary to conserve resources and operate the base efficiently. The many details make it highly desirable that an experienced staff be employed in preparation of the plan. Advantage should be taken of experience gained during development of other bases in similar environments. When a given staff must be augmented for planning to support imminent operations, it is preferable to use personnel who later will be involved in actual development and operation of the base.

f. BD planning is analogous in many ways to city planning or the master planning of permanent military installations. Many of the same planning principles apply. The mission of the support base is the controlling factor in determining the extent of the development and the schedule for completing the facilities to be provided. ln determining what facilities must be provided, planners consider in-country facilities and those of neighboring countries that host countries are willing or able to provide. This includes military assistance and economic aid facilities which can be made available by agreement with the host country. Repair of war damaged facilities is accomplished before new construction is initiated. Local manpower, construction equipment, supplies, and materials are used to the extent feasible to reduce the requirements for US construction troops and materials.

g. Construction forces and materiel should be scheduled into staging and objective areas so as to permit timely completion of essential facilities. The early deployment of construction forces, as with other support forces, tends to develop a snowball effect; i.e., they require support for their own personnel and equipment. Moreover, construction materiel requirements usually will place heavy demands on transportation resources. Trade-offs often will be required between operational and logistics considerations. Hence, it is important, particularly in the early phases of an operation, to hold new construction to an absolute minimum.

h. Areas suitable for base support complexes may be limited in size or may be remote from tactically desirable areas. Also, space should be allocated in accordance with priorities established by the theater commander, with due regard to needs of the local populace and allied forces. Potential sites may be reserved for high-priority installations, such as airfields. User agencies should evaluate their situation promptly and release unsuitable or unneeded sites.

i. Construction programs conducted on a crash basis in foreign countries require special considerations in acquisition of real estate. Such acquisition and use of land by US forces are predicated on government-to-government agreements that designate the rights and responsibilities of each government. Immediate contact with potential host governments to ascertain their receptiveness to an expanded military presence and their support of US military real estate needs is essential. It cannot be assumed that the host government will expedite acquisition of real estate to meet US military requirements.

j. Various aspects of vulnerability will affect planning of the base. If the enemy possesses a nuclear capability, the requirements for dispersion, duplication of critical facilities, and passive defense measures, such as protective shelters, camouflage, and dummy installations, must be carefully considered. Vulnerability of the base to conventional attacks or to attacks by guerrilla forces may generate additional construction requirements. Camouflage requirements will be related directly to the capability of enemy airpower and ground surveillance. Command and communications centers, ammunition and petroleum storage facilities, and aircraft parking areas may require special protection. Tactical forces may be required to secure the base area, and special precautions may be necessary for the identification and processing of local labor.

k. The period during which a base will be occupied bears heavily on the standards to which it will be constructed. If it is to be used merely in the line of advance, the base should be of austere construction and its rollup (i.e., withdrawing of forces) should be expressly planned. When long-term or future peacetime use of a base is anticipated, higher standards of construction are appropriate to reduce subsequent operational and maintenance costs.

l. Chapter 2, FM 101-10-2 describes the types, characteristics, and capabilities of engineer units for force development.

8-30. Army Facilities Components System (AFCS)

a. The AFCS is a military engineering construction support system for commanders and military planners to use in selecting facilities and installations to be used in military theaters of operations. It consists of a series of DA technical manuals (TMs 5-301-1, 5-301-2, 5-312 and 5-303) which contain planning guidance, designs, bills of materials, logistics data, and an automated data base that describes preengineered facilities, buildings, other structures, and works commonly required by military forces for base development, lines of communications activities, and tactical operations. The system may also be used to support CONUS mobilization construction and, selectively, for disaster relief and peacetime temporary construction. The AFCS provides planning, construction, and logistics data for:

(1) Preparation, support, and execution of BDPs.

(2) Preparation of materiel requirements to support BDPs and operational projects.

(3) Estimation of material, costs, manpower, and tonnages required for military engineering support of military operations.

(4) Guidance to construction organizations as to site layouts, construction and erection details, bills of materials, construction effort, and equipment.

(5) Climatic options in facility designs suitable for use in temperate, tropical, desert, and frigid environments.

(6) Options in facilities designs for tailoring them to:

(a) Various degrees of operational responsiveness.

(b) Construction standards and methods suitable for either phased development or for the improvement of operational facilities.

(c) Initial construction standards adaptable to what construction materiel, manpower, and equipment are available.

(7) Expediting requisitioning procedures.

(8) Stockage and shipping.

b. The AFSC maintains catalogs of installations and facilities that can be selected to satisfy both the construction requirements of a military function, organization, or activity in various environments (a(5) above) and the standards of construction specified by the unified or component commander. The AFCS includes designs and construction details for built-in-place facilities as well as alternative designs and erection details for preengineered, prefabricated, prepackaged, and relocatable facilities. Publications pertaining to the system provide facility characteristics, construction drawings, materiel listings, and related logistics planning data. Construction and logistics data in the system are cataloged to permit full employment of automatic data processing (ADP) procedures.

Section VII. PERSONNEL SERVICE SUPPORT

8-31. Personnel Service Support Planning

a. Personnel Service Support (PSS) consists of the following functions: personnel service, administrative services, health service support, finance/comptroller support, postal services, chaplain activities, legal service support, morale/welfare support activities, public affairs and general purpose automatic data processing (ADP) support. These functions serve to not only maintain the command in sufficient numbers and MOSs to accomplish the mission, but also to maintain morale and the general welfare.

b. Planning requirements will vary depending upon the level of conflict (low, mid, high intensity) and whether or not a US presence has been previously established. In an established theater, the responsibility for performance of PSS functions will be well defined. These functions may be performed through organic capability, commercial contract, host nation or by another service. Planning should cover any required expansion of these functions to support augmentation forces being deployed to the theater. Planning should also identify those functions being performed by other than organic resources as new arrangements may be required. In a new operational area, PSS functions must be performed by the deploying force. Priority must be given to the combat critical functions; however, sustainment functions (especially chaplain activities and postal services) must be established as soon as possible in order to maintain morale. Mobility requirements will preclude the establishment of “permanent” locales dedicated to the performance of a given function.

Section VIII. SUMMARY

8-32. Summary

a. The planning for combat service in support of an Army component commander's OPLAN is a complex, time-consuming process. It is based on logistics principles enumerated in FM 700-80 and concepts and doctrine as stated in FM 100-10 and other functional services documents. It requires that planners have knowledge of the principles and doctrine of logistics as well as the Army logistics system in general. The Army-in-the-field support command commander should have some idea of how he will be supported by the wholesale system. Planners also should have knowledge of governing regulations and directives, pertinent supply bulletins, and technical manuals.

b. Some other general considerations for planning CSS are:

(1) *Logistics.*

(a) Maximum use of local resources.

(b) Maintenance of only essential stockage levels in the theater.

(c) Reduction of OST by heavy reliance on airlift for resupply of selected class IX and class II items.

(d) Maximum use of DSS and throughput.

(e) Maximum utilization of containerized shipments and less break bulk operations.

(2) *Personnel and Administration.*

(a) Maintenance of only emergency data and minimum records in the AO.

(b) Centralized finance and comptrollership operations in CONUS.

(c) Establishment of short evacuation policy.

(3) *Civil Affairs.*

(a) Minimizing civil affairs activities.

(b) Predominately employing command support civil affairs units.

c. Command and Control and Management Information Systems.

(1) The ability of the corps CSS elements to move rapidly from peacetime to wartime operations is dependent upon the flexibility of the ADP support systems to make the transition. Logistics planners are responsible for insuring the systems which support the CSS functional areas are planned to make this rapid transition. Some of the basic considerations involved in this planning are:

(a) Determining wartime requirements.

(b) Assessing current system(s) capabilities.

(c) Modifying current systems to meet wartime requirements.

(d) Designating systems and designing system modules which can be deleted for wartime transition.

(e) Operating systems in peacetime on the same equipment required for wartime processing or identifying wartime requirement and workload requirements.

(2) Command and control of CSS functions will depend to a large degree upon the information provided by the automated systems. These data must feed both the CSS decision process as well as the corps command and control requirements.

(3) Planning should include provisions for continuity of operations to include manual backup procedures. This can only be achieved by minimizing ADP requirements for CSS operations in theater and structuring ADP support for the CSS company unit organizations. Total reliance upon automated support for CSS functional systems cannot be accepted for wartime requirements. Manual backup must be planned.

(4) To the degree that automation supports CSS, it must be a major factor in planning for these functions. This planning must be an integral part of each step of force development and force deployment.