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DEPARTMENT FIELD MANUAL

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LANDING OPERATIONS ON HOSTILE SHORES

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WAR DEPARTMENT FIELD MANUAL
FM 31-5 — CONFIDENTIAL

This manual supersedes FM 31-5, 2 June 1941, including C 1, 23 January 1942, and Supplement,
4 October 1943

LANDING OPERATIONS
ON
HOSTILE SHORES

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WAR DEPARTMENT,
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FM 31-5, Landing Operations on Hostile Shores, is published for the information and guidance of all concerned.

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By ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
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For explanation of symbols, see FM 21-6.

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This manual supersedes FM 31-5, 2 June 1941, including C 1, 23 January 1942, and Supplement, 4 October 1943.

Chapter 1

GENERAL

Section 1. GENERAL

1. SCOPE OF MANUAL. a. This manual treats of the responsibilities and functions of the Army in landing operations on hostile shores, referred to throughout the manual as amphibious operations. Information of related naval doctrines, responsibilities, and functions, found in detail in Navy Department publications FTP 167 (Landing Operations Doctrine) and FTP 211 (Ship-to-Shore Movement), is included only so far as necessary for understanding of the subject matter.

b. Details of technique are generally omitted, inasmuch as they are undergoing continual improvement and their current application will be taught army units at appropriate centers for amphibious training.

2. DEFINITION AND PURPOSE OF AMPHIBIOUS OPERATIONS. An amphibious operation (fig. 1) is any expedition dispatched by sea for the purpose of making a landing assault on a hostile shore. It usually is of considerable magnitude, requiring joint execution by ground, naval and air forces. Its purpose may involve any or all of the following:

a. Seizure and securing of a beachhead from which to initiate major land operations.

b. Seizure and securing of an area for use in connection with other military operations, or for use as a naval or air base from which to initiate further operations.

c. Seizure and securing of an area to deny its use to the enemy.

d. The destruction of enemy forces, installations, and facilities.

3. TYPES OF AMPHIBIOUS OPERATIONS. a. Amphibious operations have been classified frequently as "shore-to-shore" or "ship-

NOTE.—For military terms not defined in this manual, see TM 20-205.



Figure 1. Amphibious operation on coast of Normandy, 6 June 1944.

to-shore” from consideration of the fact that assault transports were or were not employed. Such classification is seldom accurate. Some vessels are used to carry army elements throughout from the ports of embarkation to their direct debarkation upon the hostile shore. Others are incapable of placing these elements upon the landing beaches, but require a transshipment at sea of personnel, equipment, and supplies to landing craft. Modern amphibious operations will include both types of movement except those occasional operations in which all assault elements of a landing force make the entire voyage in the same landing ships and craft from which they debark upon the landing beaches.

b. In this manual the terms will be used as follows :

(1) The term “amphibious operation” will be used to describe any operation involving landing on hostile shores.

(2) The term “ship-to-shore” will be used to describe a transshipment of troops, equipment, and supplies from any type of suitable seagoing vessel to smaller landing craft, and the subsequent movement to the landing beaches.

(3) The term "shore-to-shore" will be used to describe the movement of particular elements of a landing force directly to the landing beaches without transshipment at sea.

4. OBJECTIVES OF AMPHIBIOUS OPERATIONS. Amphibious operations may be classified generally according to objectives as follows:

a. Demonstration. An expedition intended only as an exhibition of force, implying attack.

b. Raid. An assault expedition involving relatively small forces designed to land, accomplish a mission, and retire within a limited time.

c. Occupation. An assault expedition to seize and hold a prescribed area without continuing a land operation.

d. Invasion. A major landing assault with extensive forces and resources, involving continued operations on land against an active enemy.

5. PHASES OF AMPHIBIOUS OPERATIONS. Execution of an amphibious operation is divided into the following general phases:

a. Planning. Preparation and coordination of plans for the expedition.

b. Concentration and specialized training. Concentration of forces selected for the operation, their organization into an integrated task force, and their joint training.

c. Embarkation. Assembly of troops, equipment, supplies, and vessels at places of embarkation, and actual combat loading of the landing force in assault vessels.

d. Voyage. Sea journey from points of embarkation to the landing area.

e. Landing. Assault against the hostile shore.

f. Consolidation. Tactical organization and consolidation of beachheads, establishment of major supply points ashore, and unloading of adequate supplies and reinforcements.

6. CONSIDERATIONS AFFECTING LANDING OPERATIONS. **a. Nature of Operations.** (1) An amphibious expedition ordinarily will have initiative which will permit choice of objectives and lines of approach to them, within limits prescribed by higher authority and by the supporting ability of the Navy and Air Forces. Mobility, combined with the use of demonstrations, may enable the attacker to secure tactical surprise. Mobile reserves afloat provide means for exploitation of successes ashore.

(2) Certain unfavorable conditions inherent in landing operations should be appreciated. Numbers and types of suitable ships and

craft are limited. The task force composition and the equipment and supply to accompany assault elements are restricted to the capacity of available vessels. More time is required to attack from the sea than from land. Assault troops, particularly vulnerable to all enemy land, sea, and air weapons, cannot take a fully effective part in combat until ashore. Troops land on and fight over comparatively unfamiliar terrain where knowledge of hostile dispositions may be meager. They must assault when not at their best physically. Suitable landing places for large forces may be limited. Assault troops may be landed on wrong beaches. Underwater conditions and strong defense may deny desirable beaches. Types and number of aircraft may be limited due to the long distances of the landing area from friendly air bases. Ships carrying essential troops and cargo may be lost. Darkness, low visibility or smoke cannot be entirely relied upon to provide concealment during the approach. Unfavorable tides and weather may prevent landings. Ships may be forced by enemy action to leave the transport area after debarking troops but before supplies, vehicles, or equipment can be unloaded. The bulk of the fire support in initial stages must be furnished by naval guns and aviation. Supporting arms and services function only in limited manner initially, increasing difficulties of control supply, and communication.

(3) Considerations affecting choice of objectives may be governed by the necessity of obtaining ports to support future operations. Where no ports exist within the zone of the landing operations or adjacent thereto, it may be necessary to select beachsites with a view to their future development as terminals of the water line of communications.

b. Special organization. Special organization of army units is required to facilitate debarkation of appropriate intact combat units, to reduce ship cargo requirements, to provide increased small-arms, machine-gun, and other fire in lieu of normal artillery support, and to insure mobility of the first units ashore. Similarly, special naval organization is required to embark, convoy, debark, and land army forces, including provision for effective artillery support until army artillery units are established ashore. Air organization must be such as to insure adequate air defense during the voyage, the landing, and the beach operations, as well as adequate offensive action prior to, during, and after the landing.

c. Special equipment. (1) Tactics and technique of amphibious operations are dependent largely on availability of suitable ships, landing craft, weapons, vehicles, and other equipment and matériel

necessary to perform assigned tasks. Forces participating in a landing assault should be equipped with, train with, and exploit the maximum capabilities of the latest type of equipment available.

(2) Terrain and other geographical features of the landing area will affect the type and quantity of special amphibious equipment which may be used in an operation. The type of equipment used must conform to landing capabilities of ships and landing craft.

(3) Special amphibious equipment may include equipment designed for landing operations, or equipment substituted for normal articles because of peculiar requirements of an operation.

7. PATTERN OF AMPHIBIOUS ASSAULT. Assault landings on defended shores may conform to distinctive phases somewhat as follows:

a. Naval and air preparations.

b. Debarkation from ships into landing craft (ship-to-shore movement), unless transshipment is unnecessary (short-to-shore movement). Naval gunfire and air bombardment of shore defenses continues.

c. Organization of assault waves, passage across line of departure, and movement to the beach. Naval bombardment moves inland as assault waves near the beach and air operations are executed on the landing beach.

d. Assault waves land, breach obstacles, and reorganize without delaying bold and rapid advance. Local defense forces are destroyed. Terrain immediately inland from landing beaches is occupied. Reserves are kept mobile afloat.

e. Rapid building up of force ashore with additional troops, weapons, equipment, and supplies. Air operations and naval gunfire support on call. Advance continues to terrain securing the beach from light artillery fire. Troops prepare to meet air and ground counterattacks. Shore organization begins.

f. Initial assault tasks accomplished. Advance proceeds to establish beachhead preventing medium artillery fire on the beach. Shore organization improved.

g. Enemy counterattacks in strength are met. Division beaches are consolidated. Shore organization is established.

h. Enemy counterattack is blocked or if the operation is a raid, withdrawal is effected.

i. Landing forces proceed as tactical situation indicates.

j. Additional troops, equipment, and supplies arrive.

k. Action ashore becomes a normal land operation as operational conditions permit.

8. GENERAL DOCTRINES. a. Amphibious operations are conducted by army troops in accordance with the same military principles as those for land operations described in FM 100-5.

b. General doctrines which are particularly applicable to amphibious operations as a whole are :

(1) Unity of command is essential.

(2) It is a function of command to coordinate the tactics and technique of the ground, naval, and air forces, as well as those of the arms and services subordinate to these forces, in order to develop the teamwork essential to the success of the operation. There must be the closest coordination and cooperation at all levels, in both planning and execution of the operation, from its inception to its conclusion.

(3) Each amphibious task force should be organized, equipped, trained, and rehearsed, specifically for the task it is to perform.

(4) Administrative and tactical plans must be developed concurrently, and the administrative plan must be adequate to support the landing plan.

(5) Plans and orders must be as complete, simple, flexible, and detailed, as the situation will permit.

(6) Accurate and comprehensive intelligence forms the basis for planning.

(7) Plans must include consideration of the possible effects of adverse sea and weather conditions on the operation.

(8) Landing beaches should be chosen after consideration of sea approaches, beach gradients, defenses, nature of beach and hinterland, beach exits, surf and tidal conditions, and future use to which they must be put, such as their development for port operations.

(9) Superiority of forces, to include command of sea and air, at the time and place of landing, is essential.

(10) Frontal attacks on strongly defended beaches should be avoided whenever possible. If frontal assault is unavoidable, it should follow maximum preparation by naval and air bombardment.

(11) The time of landing should be carefully considered.

(12) Successful execution demands vigorous assault. Fire support from all available means will be required against defended beaches.

(13) Enemy weaknesses should be exploited by prompt commitment of reserves.

(14) Surprises must be sought continually. Strategic surprise usually will not be possible. Tactical surprise may be maintained until the main landing force is committed.

(15) Plans should provide for dispersion of key personnel, matériel, essential supplies, and vital communication equipment among ships and landing craft to lessen the possibility of disastrous loss.

(16) Initial quantities of ammunition and other supplies must be adequate to support the landing plan.

(17) Combat loading is essential for all ships and craft in the assault landing.

(18) Each boat team should be a small task force with sufficient combat strength to fight to its objective without regrouping.

(19) Individual equipment of assault units should be the minimum necessary for sustained action.

(20) Successive boat waves should be so timed as to prevent either undesirable congestion or defeat in detail.

(21) Effective control and communications must be secured and maintained.

(22) Organization and operation of shore logistic functions require specially trained and equipped personnel.

9. OPERATIONAL PRINCIPLES. a. Disposition of assault forces and the composition of the assault waves are planned to produce initially the maximum fire power and mobility in the landing attack.

b. Every element of the assault force should have a specific mission.

c. Supporting combat units should be landed as early as practicable to strengthen the fire power ashore.

d. Shore group units should land early enough to organize landing beaches prior to the arrival of vehicles and supplies. Where plans contemplate the future use of the beaches for port operations, continuity of the essential transportation and supply functions must be assured.

e. Ships and craft must be unloaded rapidly to permit their withdrawal from vulnerable positions.

f. Unloading of supply must be planned on a continuous basis.

g. Sufficient personnel should be provided to keep the beaches cleared.

h. Alternate plans must be prepared prior to sailing to provide for contingencies which may arise en route to the landing areas. These plans must be within limitations imposed by the combat loading for the principal plan and the limited communications afloat.

i. Assault landings on designated single beaches or fixed portions of shore line usually are made by battalion landing teams.

j. Shore group units support the landing through organization and improvement of the beach area, and operation of supply maintenance and evacuation functions therein. They are used for combat tasks only in case of utmost necessity.

Section II. OPERATIONS WITH JOINT FORCES

10. COMMAND. a. An amphibious operation is a joint operation in which Army and Navy units operate together as a single force, usually under a designated joint commander who does not command any component of that force. This commander exercises his command through the three separate commanders of the ground, naval, and air components, as though all were a single service. This principle of unified command is extended downward, as necessary, in the organization of subordinate forces.

b. Occasionally the joint commander may function in a dual capacity as commander of one of the components of the force, but only when explicitly directed by higher authority. Such variation from the concept of unified command usually will take the form of limited unity of command, in which the commander of the component having paramount interest in any particular phase of the operation functions as the joint commander during the phase. Under this arrangement, the naval commander may be the joint commander until such time as the landing has been made and the landing force commander is in a position to assume command of the operation.

c. Regardless of how the joint force is to be commanded, the directive which creates the force will be specific in its delineation of the relationship between the several commanders.

d. This manual has been written on the premise that there will be a joint commander with three separate subordinate commanders of ground, naval, and air components. The fact that one of these three commanders may be directed to serve also as joint commander does not affect the principles involved.

e. For complete discussion of command and joint action see FTP-155 (Joint Action of the Army and Navy) and Joint Chief of Staff Agreements.

11. BASIC RESPONSIBILITIES IN JOINT OVERSEAS MOVEMENTS. When joint overseas movements are ordered, normal responsibilities and functions are to:

ARMY

a. Assemble army troops, together with their equipment and supplies, at designated ports of embarkation.

b. Provide and operate army ports of embarkation.

NAVY

a. Maintain sea lanes of supply.

b. Procure, man, equip, and operate vessels necessary to transport army personnel, equipment, and supplies.

ARMY

c. Load transports, whether provided by Army or Navy for transportation of army personnel, equipment, and supplies, subject to naval approval as to stability of vessels.

d. Load, in readiness for operation, such equipment and armament as can be made available to assist the Navy during movement at sea or during landing operations.

12. BASIC RESPONSIBILITIES DURING LANDING OPERATIONS. During landing operations on a hostile shore, normal responsibilities and functions are to:

ARMY

a. Deploy into boats used for landing.

b. Man naval weapons on ships and landing boats when requested by proper naval authority. When requested, set up and operate army weapons on vessels in which army troops are carried.

c. Deploy from landing boats and gain a foothold on shore.

d. Remove obstacles from normal grounding point of assault landing craft inland.

e. Provide such details as are required to expedite loading and un-

NAVY

c. Assemble necessary vessels at designated ports of embarkation at times specified by commanders of ports of embarkation or by the joint force commander.

d. Provide for security of vessels at sea, and provide adequate reconnaissance.

NAVY

a. Provide, man, equip, and operate landing ships and craft required for landing operations. All or part of the landing boats may be furnished occasionally by army engineer amphibian boat units.

b. Provide defense against enemy naval forces.

c. Land army forces in accordance with the army plan of operation (unless prohibited by uncontrollable circumstances) and support the landing with all available forces.

d. Remove underwater obstacles up to the normal grounding point of assault craft. (Joint teams are frequently employed.)

e. Unload vessels in accordance with army debarkation plans and

ARMY

loading. Normally, these details are elements of the supporting shore party.

f. Organize, operate, and control shore installations used primarily for debarkation of army personnel, equipment, and supplies.

g. Organize and conduct operations to extend the beachhead. Conduct operations beyond the beachhead for accomplishment of the mission.

h. Evacuate casualties to the beach and care for casualties on the beach (aided by naval medical personnel).

NAVY

requirements. Operate ship and boat equipment necessary to accomplish army requirements.

f. Provide, in outlying ports, means for embarkation or debarkation of army troops, equipment, and supplies when such means cannot be provided or obtained by the Army.

g. Organize and operate necessary sea lanes of supply for forces on shore.

h. Evacuate casualties to ships and assist in care of casualties on the beach.

13. DIRECTIVE FOR AN OPERATION. The initial directive for an amphibious operation states the purpose of the proposed operation and the specific task to be accomplished by the force as a whole, conveys appropriate and unquestioned authority to those designated as responsible for results, indicates means to be placed at the disposal of respective commanders, and initiates steps to place all required elements of services involved at the disposal of these commanders.

14. GENERAL PLAN OF OPERATION. a. Because of the great detail in which all planning must be accomplished it is essential that the commanders designated in the basic directive formulate and establish promptly their broad plans and policies for the operation.

b. Basic plans should include essential intelligence data, the area of proposed landing attack, the target date of attack, the ground, air, and naval forces to be used, the training and embarkation areas, the amounts and type of supplies, vehicles and equipment to be taken, the subsequent supply arrangements, the strategic scheme of maneuver, the specific purposes and tasks of the various forces of the joint force, and such other basic information necessary to permit subordinate commanders to prepare preliminary detailed plans.

ORGANIZATION

Section I. GENERAL

15. GENERAL. a. Forces selected for participation in an operation usually are designated in the basic directive from the Joint Chiefs of Staff, Theater Commander, or other appropriate agencies. The directive includes specific units and vessels to be available.

b. Ground, air and naval commanders of a joint expeditionary force, with their respective staffs, should be embarked on the same ship, as should the respective commanders of any subordinate joint force. This principle should be applied through all echelons of command.

c. Mutual exchange of highly qualified liaison officers facilitates cooperation between the ground, naval, and air forces. In joint operations, the commander of one service should have on his staff members of the other services.

16. JOINT TASK FORCE. The ground, naval, and air components are organized into a Joint Task Force under a designated commander. A joint task force may operate as one force or be divided into sub-task forces, each of which may be termed a Joint Attack Force. Joint task forces usually are given code designations.

17. JOINT ATTACK FORCE (fig. 2). A joint attack force is an organization capable of conducting a landing operation. The components of a joint attack force are:

a. The Landing Force, which includes all ground elements, both combat and service, participating in the landing operation. In this manual, the landing force is considered to be one reinforced infantry division. Smaller landing forces may be organized.

b. The Naval Force, which includes all naval elements (except air) involved in the landing operation.

c. The Air Force, which includes all naval aviation allotted to the joint attack force, and such Army Air Force aviation as may be al-

loted by the Joint Task Force commander. Normally, Army Air Force aviation will be held under command of the air commander of the Joint Task Force unless the Joint Attack Forces are separated so that all available land-based aircraft cannot cooperate with all the Joint Attack Forces, or unless distances are so great that the Joint Attack Forces are operating as separate Joint Task Forces.

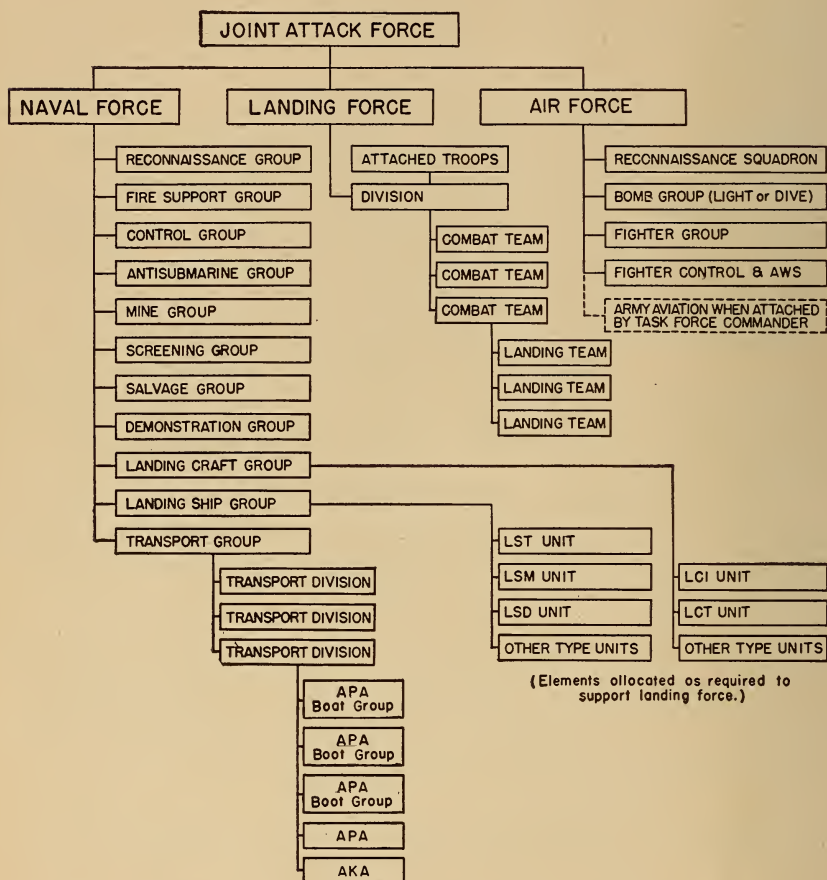


Figure 2. Elements of a typical amphibious force—One or more Joint Attack Forces may constitute a Joint Task Force.

Section II. LANDING FORCE

18. LANDING FORCE TASKS. The landing force must be organized to execute the following tasks, which are normal to the assault phase of an amphibious operation:

- a. Debark into landing boats.

b. Deliver all possible antiaircraft and support fire with its own weapons while landing, and furnish assistance in manning designated boat guns.

c. Assist Navy as required in location and demolition of underwater obstacles.

d. Provide amphibious scouts for shore reconnaissance and location of landing beaches.

e. Land and overcome enemy resistance on shore with support of naval and air bombardment.

f. Clear passages through and remove obstacles on the beach.

g. Organize the beachhead, to include initial supply functions of unloading ships and landing craft.

h. Operate beach and shore supply installations.

i. Organize and conduct combat operations to extend the beachhead as required.

j. Organize and conduct operations beyond the initial beachhead for accomplishment of the mission.

19. COMPOSITION. a. **Combat elements.** Combat elements of landing force are selected in accordance with the mission. Supporting combat elements for attachment to an infantry division include any type or quantity of unit required to form a suitable landing force. They may include tank, tank destroyer, chemical weapons, field artillery, antiaircraft artillery, combat engineer, barrage balloon, amphibian tractor, amphibian tank, amphibian truck, and medical battalions.

b. **Service elements.** The vast amount of equipment and supplies which must be unloaded and moved to supply points to support a major landing operation, and the peculiar difficulties which are encountered in such operations, require organization of a specially trained and equipped shore group to execute these logistical functions.

c. Reinforcing units should be attached to the infantry division for administration and tactical employment throughout the period of preparation for and execution of the landing attack and as long thereafter as required.

20. ORGANIZATION. a. Troop and cargo-carrying capabilities of combat-loaded ships and landing craft are limited, as are numbers of landing craft available to an embarked force and the initial facilities for debarkation and organization of matériel on shore. These and other limitations impose definite restrictions on the organization of a landing force. Requirements for the safety of ships may limit seriously their time in the landing area for unloading. Therefore,

special planning is required to reduce ship cargo requirements, assure maximum utilization of space, facilitate rapid debarkation of intact assault units, provide maximum fire power and essential equipment in assault waves, assure sufficient mobility to initial units, and provide logistic elements for shore supply organizations.

b. No standard landing force organization can be established except in very general form.

c. Regimental combat teams, reinforced, constitute normal subdivisions of a division landing force, and naval transport divisions are organized to carry such teams.

d. An infantry battalion specially reinforced by necessary combat and logistic elements is the basic unit for planning an assault landing. So organized, it is referred to as a Battalion Landing Team (BLT). A typical battalion landing team is described in paragraph 157.

e. Based on tactical requirements, and considering economy of loading, the landing force is organized for loading into embarkation groups consisting of all elements which are to embark in one ship or a fixed group of ships. Necessity for accurate organization for embarkation arises from the vital relationship between embarkation and subsequent debarkation for assault.

f. For the movement to shore, the landing force is subdivided into landing groups, each consisting of a battalion landing team, or its equivalent, plus such miscellaneous elements of higher headquarters, liaison groups, or other units as may be embarked with it. The battalion landing team normally is carried to shore by a boat group, plus additional boats attached from one or more ships of the transport division.

g. Organization of the landing force must be such as to permit employment of battalion landing teams in independent action afloat and ashore, at least during initial phases of the landing assault.

21. SHORE GROUP. **a.** As initial organization of a beach normally requires considerable construction of roads, beach exits, and landing facilities, and removal of mines and obstacles, a specially organized and trained combat engineer group may compose the nucleus of the shore group for a reinforced division. When plans contemplate the future use of beaches as terminals of the water line of communication or when ports adjacent to the beaches are to be taken over and operated in support of the landing forces, continuity of transportation and supply is enhanced if the shore group contains elements of necessary port units. Special Engineer Shore Regiments, when available, are competent to perform all beach duties but will normally require the addition of other service units to complete all the func-

tions assigned to the shore group. In either event, the shore group organization provides an engineer battalion called the shore battalion for each combat team and an engineer company, called the shore company, for each landing team.

b. Additional service elements are attached to this nucleus as shore requirements demand and available shipping permits. Always required is a Joint Assault Signal Company for amphibious communications and a naval beach party for each landing beach to perform certain naval functions in relation to the operation of ships and craft. Additional reinforcements ordinarily are added.

c. Limitations in carrying capacities of ships may indicate some reduction in size and attachments of shore group elements. If this reduction is made, there must be provision in the assault plans to supply sufficient additional personnel from embarked combat units to insure a rapid and steady unloading of ships. Otherwise there is danger that the reduced shore group not only will be unable to handle its assault functions promptly, but may also become so exhausted as to cripple seriously the entire shore operation during the most critical period. The use of combat troops to perform service functions is an inefficient employment of man-power indicative of an unbalanced force, and should not be considered except as a last resort.

d. Normally, shore units remain attached to the assault division until the division advances to a point where control of group operations is no longer practicable or necessary. They are subattached to regimental combat teams and assault battalion landing teams in turn.

e. The basic unit of the division shore group is the shore party, the joint unit which supports a battalion landing team.

f. If a particular operation does not require initial commitment of all assault landing teams, shore parties for uncommitted battalions either may be held in reserve to exploit subsequent organization of regimental and division beaches, or may be used to reinforce shore parties on initial assault beaches. When beaches are abandoned or consolidated, shore parties on them are moved or consolidated promptly to make most effective use of personnel.

g. Shore group elements, usually organized to handle shore logistic functions for a single assault division, can be expanded to operate installations for supply of forces subsequently landed over the same beaches. They may also continue to perform logistic duties for a task force for a considerable length of time after assault.

h. In order to improve standards of logistic performance in landing operations, shore units preferably should be withdrawn after each operation in time to train as an integral part of the next task force.

The beach party in a shore party is withdrawn by the Navy soon after conclusion of the assault phase of the operation.

22. DUTIES OF SHORE GROUP UNITS. a. Duties of the basic units of a group are:

(1) Engineer combat group or engineer shore regiment: To unload vehicles and supplies, conduct reconnaissance for roads and supply points, establish and operate initial supply points, provide close defense for beach areas, decontaminate gassed areas (in absence of chemical companies), control beach traffic, stragglers, and prisoners of war (in absence of military police companies), and perform all engineering work on landing beaches, such as clearance of mines and obstacles, construction of beach roads, improvement of beach exits, and operation of equipment to facilitate unloading.

(2) Joint assault signal company: To provide communication sections for each shore party; to establish and operate all special amphibious shore communication in the landing assault.

(3) Naval beach parties: To perform naval functions on the landing beach, including control of boat traffic, salvage and repair of landing craft, and establishment and operation of initial beach medical installations for care and seaward evacuation of casualties.

b. Other units may be attached for specific operations. Some of these, with their general duties indicated, are as follows:

(1) Quartermaster service companies: To provide additional labor personnel for unloading ships, handling flow of supplies across the beach and into shore supply points, and for other general labor as required.

(2) Amphibian truck companies (Transportation Corps), quartermaster truck companies, or amphibian tractor companies: To unload and move supplies across the beach to shore supply points.

(3) Quartermaster railhead company: To establish, administer, operate, and issue from Class I, II, III, and IV supply points.

(4) Ordnance ammunition unit (usually a service or magazine platoon from an ammunition company): To establish, administer, operate, and issue from ammunition supply points. (See FM 9-5).

(5) Ordnance medium maintenance company: To maintain ordnance equipment contained in the group.

(6) Medical battalion: To handle and evacuate casualties received at the landing beaches. Its functions are coordinated with initial medical operations of the naval beach parties within a shore battalion. The medical battalion will take over from and supplant naval beach medical installations as soon as established.

(7) Medical depot company: To establish medical supply point.

(8) Chemical decontamination companies: To perform normal duties as necessary in the beach area.

(9) Military police company: To control traffic around shore supply points, assist in close protection of beaches, control prisoners of war, and perform general police functions on the beaches.

(10) Aviation engineer units: To construct and repair airfields.

23. SHORE BATTALION. a. The shore battalion, either an engineer shore battalion or a specially trained and equipped engineer combat battalion, comprises three shore companies, three or four attached naval beach platoons, and three signal communication teams from the joint assault signal company. It thus provides three shore parties. It normally is attached to the regimental combat team which it supports until its responsibilities are taken over by higher authority. It is commanded by the engineer battalion commander who functions as a special staff officer to the supported combat team commander and commands the regimental shore functions. A shore battalion may be augmented with elements of service units available in the shore group.

b. The naval beach platoons are commanded by naval officers called beachmasters, the senior of whom becomes the senior beachmaster on the regimental beach when it is established. In operations, the beach platoons are known as beach parties. The beachmaster is an assistant of the shore party commander.

24. SHORE PARTY. a. Shore party is the term applied to the composite group of military and naval personnel designed to organize and control beach activities in support of one battalion landing team. It is formed by an engineer shore company from the shore battalion, a naval platoon (beach party), and one communication team from a joint assault signal company. The joint shore party is commanded by the engineer company commander, who exercises control of the beach party through the naval beachmaster. It normally is attached to the landing team until beach operation responsibilities are taken over by higher authority. A shore party may be increased by attachment of other service units available within the shore group.

b. For tasks of shore engineer company and the naval beach party, see Section VI, Chapter 5.

c. For organization and tasks of a shore party communication team, see Joint Army-Navy Publication 100 (Joint Amphibious Communication) and appropriate Table of Organization and Equipment.

Section III. NAVAL FORCE

25. ORGANIZATION. a. A naval force assigned to a joint attack force usually consists of combat ships, transports, cargo ships, landing ships and craft, and essential supporting naval vessels. It is subdivided into such naval task groups as are appropriate to the various operations involved and the scheme of maneuver adopted. (Fig. 2.)

b. Normal naval tasks during a landing operation include:

- (1) Reconnaissance.
- (2) Protection against enemy naval and air forces.
- (3) Furnishing, manning, equipping, and operating ships and craft required for the landing force.
- (4) Mine sweeping.
- (5) Gunfire support.
- (6) Screening operations.
- (7) Fire from boat guns.
- (8) Removing underwater obstacles.
- (9) Signal communication between ships and shore.

26. RECONNAISSANCE GROUP. A reconnaissance group consists of vessels assigned the task of reconnoitering the area selected for the operation, and such other areas as may be considered desirable in order to deceive the enemy as to the point of landing. Its missions include:

a. Identifying fixed reference points on the beach and establishing other aids to navigation.

b. Securing photographs and panoramic sketches to assist boat group commanders in locating beaches, troop commanders in planning shore operations, and fire support groups in planning and executing supporting fires.

c. Ascertaining enemy naval dispositions within and in the vicinity of the landing area.

d. Determining suitability of beaches and areas for conduct of operations.

e. Locating mined areas, underwater obstacles, and other obstructions such as booms and nets.

f. Ascertaining if beaches have been contaminated with chemicals.

g. Locating enemy dispositions on shore and selecting suitable targets, landmarks, and aiming points for fire support ships.

h. Securing information regarding the enemy air forces.

27. FIRE SUPPORT GROUP. A fire support group or groups consists of all vessels assigned gunfire missions in support of landing and

subsequent operations. This includes combatant vessel and certain special close fire support vessels. (Chapter 7.)

28. TRANSPORT GROUP. a. A transport group or groups consists basically of transports and supply ships used to carry troops, equipment, and supplies. Its missions are to:

(1) Prepare and assemble transports, boats, and special equipment for the landing, and assemble and train personnel for operation of vessels, boats, and equipment.

(2) Assign boats to transports and organize boats into boat groups.

(3) Embark troops and matériel.

(4) Conduct the transport group in movement overseas.

(5) Debark troops and matériel.

(6) Designate boat rendezvous area or areas.

b. A transport group is organized normally into transport divisions, each including the assault transports (APA) and assault cargo ships (AKA) necessary to transport a regimental combat team or division troops, or other units of comparable size. A normal transport division for a regimental combat team would be four assault transports and one or two cargo ships. It may include other vessels. The APAs and AKAs normally carry sufficient landing craft, vehicle-personnel (LCVP), and landing craft, mechanized (LCM) to land the troops embarked.

c. Small class support craft (LCS), capable of being carried aboard ship accompany boat groups in assault.

29. LANDING SHIP AND CRAFT UNITS. a. The great variety of modern landing ships and craft has introduced unusual flexibility into amphibious operations.

b. Landing ships and large landing craft, organized into units as desired, are assigned to joint attack forces as required for operations.

c. Landing ships (LST, LSD, LSM) usually are assigned to transport amphibious vehicles, mechanized units, artillery, and other units containing heavy equipment, and supplies. Suitable types carrying landing boats or amphibian vehicles, may transport infantry for assault. Landing craft, infantry, large (LCI(L)) may be used for raiders and reserve or other combat elements but normally are not employed for initial assault against a defended beach. Their troop-carrying capacity for long distances or periods is limited.

30. CONTROL GROUP. a. A control group consists of vessels or small craft designated to regulate movement to the beach. Each control vessel is equipped to communicate directly with landing boats,

landing beaches, the flagship of the joint attack force, fire support groups, the control group, and other designated vessels. Control boats may be used in lieu of control vessels. The control boat has the advantage of smaller size and lower silhouette, and may be deckborne on an assault personnel or cargo ship.

b. The normal tasks of the control group are to :

(1) Mark control points to regulate craft movement, and such other points as may be designated.

(2) Control movement of all boats between rendezvous area and the beach.

(3) Keep appropriate commanders informed as to progress of movement to the beach, the landing of waves, and the subsequent operations on shore visible from seaward.

(4) Assist in control of naval gunfire.

(5) Relay messages to and from landing beaches.

c. Normally, one or more control group vessels are assigned to each transport landing a combat unit on a separate beach.

31. ANTISUBMARINE GROUP. An antisubmarine group consists of vessels designated to protect the attack force from submarines. It may be given the task of laying smoke screens.

32. MINE GROUP. **a.** A mine group consists of vessels assigned the tasks of mine sweeping and mine laying. It also may remove underwater obstacles.

b. Part or all of a mine group may be assigned to a reconnaissance group for mine-sweeping operations in connection with preliminary reconnaissance of the landing area.

c. Particular attention is paid to mine sweeping of transport and fire support areas and approaches thereto.

33. SCREENING, SALVAGE, AND DEMONSTRATION GROUPS. Screening, salvage, and demonstration groups include vessels assigned, respectively, to provide security from enemy forces afloat, to rescue personnel and to salvage boats and equipment, and to make demonstrations outside the designated landing area. A salvage vessel or craft usually is assigned for each beach upon which landings are made. This vessel works in close coordination with the beachmaster on each battalion beach.

34. BOAT ORGANIZATION. Landing craft are organized into boat groups, divisions, and waves for purposes of control. (See Section III, Chapter 4).

35. HEADQUARTERS SHIPS (Amphibious flagships) (AGC).

a. Headquarters ships are available to provide adequate control afloat. In addition to headquarters ships provided for task force headquarters, a primary and a secondary headquarters ship normally are assigned for each joint attack force taking part in an operation and for each smaller unit operating independently.

b. Headquarters of lower echelons are established on assault transports or other vessels, e. g., regimental combat team primary headquarters on the transport flagship of the transport division in which the regimental combat team is embarked with the secondary headquarters aboard another vessel of the same transport division or a suitable landing ship.

c. Parallel and associated ground, air, and naval commanders embark on the same headquarters ship. When it can be avoided, headquarters should not be established on board combatant naval vessels, as such ships may be required to leave the immediate landing area to engage enemy surface craft.

d. Headquarters ships carry the necessary joint communication personnel and equipment to insure adequate communication with subordinate elements of the joint force under the command of their respective commanders, with higher echelon, and with supporting elements. An AGC functions as a complete tactical headquarters. Separate air control ships may be employed. Other normal headquarters facilities may be furnished by the ship or by the headquarters embarked. A special headquarters ship detachment (army) is a permanent part of the ship's complement.

e. For details of headquarters ships, see Appendix II and ONI 226.

Section IV. AIR FORCE

36. TYPES OF AVIATION. **a.** The aviation elements of a joint attack force, operating separately or at such distance from the other attack forces that central control of air operations is impracticable, includes both army and naval aviation. When the Army Air Force elements available can cooperate with all of the Joint Attack Forces taking part in the operation, these air elements are held under command of the air commander of the Joint Task Force, and the aviation directly under the Joint Attack Force commander is limited to naval and marine aviation, either land-based or ship-based, or both.

b. Heavy bombardment aviation normally will not be assigned directly to a Joint Task Force. The theater air force commander should plan for the diversion of any necessary heavy bombardment aviation from its normal mission for the purpose of augmenting the

air forces of the Joint Task Force or assisting in the accomplishment of the mission of the air commander of the Joint Task Force.

37. MISSIONS. Primary missions are to attain and maintain air superiority by destruction of the enemy air forces and air bases within operating range of the proposed area of landing, to isolate the battle area by destroying communications and enemy reserves and reinforcements, and to conduct air missions against targets on the immediate front of the landing forces. Appropriate types and quantities of planes and armament for air attack missions must be provided.

PLANNING

Section I. GENERAL

38. GENERAL. a. Planning phases considered in this chapter largely concern tactical plans which come within the responsibility of the commander of the ground task force and of the landing forces involved. The procedure discussed is intended to serve as a guide only, as the sequence will vary with operational conditions. Situation estimates leading up to issuance of the directive for an amphibious assault are made by planning agencies in the theater of operation or by higher authority. Detailed regimental combat team and battalion landing team assault plans are covered in Chapter 4, detailed administrative plans in Chapter 5.

b. A joint amphibious operation usually involves participation of other elements in addition to basic military and naval forces. These may include groups from civilian agencies for initial operation of civil government and to begin economic rehabilitation in occupied territories, civilian personnel for repair and operation of public utilities ashore, or personnel intended to establish contact with friendly civilian agencies in the area to be occupied. Plans must provide for these agencies.

c. For scope and nature of joint plans, see FTP 155, Joint Action of the Army and Navy.

39. COORDINATION OF PLANNING. Planning for an operation must be closely coordinated in all stages between participating services. A joint headquarters of designated commanders must be established at an early date, and if not in the same physical location at least in close proximity. Joint headquarters should have excellent means of communication with the port or ports of embarkation to be used, elements of the joint attack force, amphibious training centers and facilities, and essential supply and intelligence agencies.

40. ORGANIZATION FOR PLANNING. a. Detailed planning for operations must be accomplished by, or with the aid of, specialists in the respective services who have thorough knowledge of and experience in amphibious operations.

b. In large task forces, the time element, and necessary wide ramifications of subordinate plans, usually will require decentralization of subordinate planning to the joint attack forces.

c. Security requires that only such parts of operational plans are divulged to technical planning personnel as are necessary for proper performance of their planning duties. Failure to furnish timely information to all personnel who must participate in the preparation of final detailed plans is a false interpretation of security requirements.

d. Planning for an operation cannot be accomplished properly by commanders or staffs of any echelon if charged simultaneously with responsibility for direction of other combat operations. Designated commanders should be relieved promptly of other responsibilities and established at an appropriate location to accomplish the amphibious planning without interruption.

41. ESTIMATE OF THE SITUATION. a. The estimate of the situation is a joint estimate, leading to a joint decision. It follows the same principles as an estimate for land warfare, but must include naval and air appreciations. Accomplishment of the landing force mission is the primary mission of the joint force, and therefore is the governing factor in the joint decision. Acceptability of any element of the decision will be governed, however, by the practicability of its accomplishment from naval and air viewpoints.

b. Agencies which will be responsible for execution of the logistical plan must either participate in the preparation of the joint estimate or be given an opportunity to comment upon its conclusions. The joint decision can be reached only with the knowledge that a supporting logistic plan can be developed and executed.

c. Subversive agencies ashore, used in coordination with the landing attack, may assist an expedition. They can be used to obtain information, effect sabotage, influence civilian sentiment and morale, and give active military assistance against defending forces opposing the landing or against approach of hostile reserve forces. The estimate should consider their possible use.

42. ALTERNATE PLANS. Additional information received en route, or losses of vessels and equipment, may indicate necessity for some modification of the original assault plan or adoption of a new

one for the actual assault. To anticipate that possibility, several alternate attack plans should be prepared prior to embarkation and be made available to subordinate commanders for use on signal.

43. PLANS OF SMALLER UNITS. a. Operational plans for regimental combat teams, or smaller units to be embarked together in the ships of one transport division, should be prepared well in advance of the sailing date, as transmission of information between ships is very restricted during the voyage. Features of operational plans which affect embarkation of smaller units also must be prepared early to permit preparation of embarkation plans for these units.

b. Sufficient and timely information of plans must be furnished to all units to enable them to make adequate plans and preparation. Secrecy is maintained by proper analysis of planning requirements for all echelons and the proper screening and fragmentation of data furnished.

c. Commanders of units embarked in single ships should receive complete detailed plans of next higher units in sufficient time prior to sailing so that all possible misunderstanding or misinterpretation of orders and instructions can be eliminated before embarkation.

44. SEQUENCE OF PLANNING. a. Planning for an amphibious operation is a continuing process. Because of the great detail in which plans must be prepared by all echelons, much of the substance is interlocking and dependent on other elements of integrated plans for the whole group. This lateral and horizontal sequence is present throughout the entire planning phase.

b. Major elements of basic plans usually are determined in inverse order to their eventual execution, principal features of the landing attack and shore maneuver plans being decided before joint attack force plans can be completed. These joint force plans govern naval attack plans for embarkation and loading, plans for the passage overseas, and plans for air operations. In turn, these latter plans affect arrangements and schedules for movement of troops and supplies to port of embarkation. Landing attack plans also affect requirements for specialized training and rehearsals.

c. Certain phases of basic military plans in every echelon must be established before supporting plans of parallel naval echelons can be prepared.

45. TIME ELEMENT IN PLANNING. a. Time is the most important planning factor. It is usually desirable to establish a time schedule for the orderly progression of planning through all echelons. The base for such time schedules is normally sailing day (S-day) for

the expedition. S-day may be the date of final sailing, or the date of sailing for the final rehearsal for the attack. Intermediate planning phase lines also may be established for principal elements.

b. The time required for each phase of planning depends, of necessity, on the speed and efficiency of staff sections in each echelon of command which have responsibility for working out coordinated details of each element after major decisions have been made.

c. A general pattern for a major amphibious operation planning time table follows. It comprises a task force of several joint attack forces. It should be considered only as a reasonable estimate of the average time for completion of various essential plans and preparatory operations in normal sequence. The experience of the different components and variation in the range of the operation will affect the time necessary.

S-? Strategic decisions made, preparation of operational directive ordered. Task commander and commanders of the joint ground, air, and naval components given geographical alert to permit assembly of essential intelligence data.

S-100 Operational directive issued by Joint Chiefs of Staff or other appropriate headquarters. Ground, naval, and air commanders start estimates.

S-95 Joint headquarters established. Joint task force commanders and staffs begin conference.

S-90 Ground task force commander completes estimate and starts army plans. Conference continues.

S-60 Ground task force commander's plans completed. Landing force commanders start estimates. Naval and air task force commanders complete estimates and start naval and air plans. Staff conferences between landing force, naval force, and air force commanders begins.

S-35 Landing force commanders complete estimates and start plans. Naval task force commander completes force operation plan. Naval force and air force commanders start estimates.

S-23 Landing force commanders' plans completed. Naval task force commander's attack plans completed. Naval force and air force commanders complete estimates and start plans. Unit transport quartermasters begin unit loading and stowage plans.

S-13 Naval force and air force commanders' plans completed. Naval task force commander starts sortie, rendezvous, and cruising plans and orders.

S-8 Ship loading plans completed. Naval transport commander's plans completed. Transports and other ships made available for loading. Army loading and billeting parties arrive at port.

- S-7 Preparation for loading of supplies and ammunition begins.
- S-5 Loading begins.
- S-2 Loading of supplies and ammunition completed.
Loading of vehicles begins.
- S-1 Troops embark on assigned ships.
- S Sailing date.

d. The foregoing schedule does not include any additional time for a rehearsal before or after embarkation. Time would have to be allowed for the unloading and reloading of ships, the voyage to the rehearsal area, the landing operation, possible modification of plans, and changes in or repair to military or naval equipment. A reasonable additional time for rehearsal would be twelve days.

e. Subordinate time schedules are advantageous to insure necessary progress in the accomplishment of the various phases of embarkation. Thus, time schedules are prepared for movements of troops into staging areas and to embarkation points, for movements of supplies into the port area, for preparation of impedimenta, and for execution of loading.

f. It should be noted in connection with the planning time schedule, that although sequence of planning is largely fixed, sequence of operational functions included may be varied widely, except in the final loading stage. The availability of troops with previous amphibious training or experience, the extent to which final troop assault plans may be made a part of their training operations, the numbers of ships and craft available for training, the availability of proper supplies and equipment, and the possibility of accidents forcing ships out of availability, can affect greatly the sequence of preparatory operations for the expedition.

Section II. INTELLIGENCE

46. GENERAL. a. Intelligence for amphibious operations includes certain elements not ordinarily required by army units. Data, in great detail, often must be obtained by special means. Effective measures must be taken to obtain additional intelligence, or to check on prior data, during planning and preparatory phases. The task force normally will be required to furnish lower echelons most of the intelligence needed for initial planning, since they lack adequate organic means to secure it.

b. The army intelligence plan for an amphibious operation is prepared in accordance with principles prescribed for normal operations, with modifications necessitated by the joint nature of the operation.

Requirements of secrecy, lack of contact with the enemy before landing, and limitations on communications enroute modify somewhat their application.

c. For discussion of intelligence training for amphibious operations, see Section VIII, Chapter 11.

47. JOINT INTELLIGENCE. a. Intelligence agencies of ground, naval, and air components should cooperate closely, utilizing information and facilities available to all.

b. Intelligence on matters of joint interest, such as landing beaches and their approaches, air fields and their defenses, enemy coast defense and antiaircraft guns, defensive positions on the beaches, tides, visibility factors, weather conditions, underwater obstacles, bars, currents, surf, and other hazards to landing should be prepared jointly.

48. INTELLIGENCE REQUIREMENTS. a. For joint planning, the landing force commander must have certain additional intelligence as a basis on which to determine the practicability of various landing places and to understand pertinent naval portions of the estimate. Various items of such intelligence are needed in detail by army commanders, to include the lowest echelon.

b. Amphibious intelligence needs include:

(1) Coast defenses (especially in the immediate vicinity of beaches or on headlands covering beaches).

(a) Location of coast-defense guns, both fixed and mobile; their caliber, maximum effective range, rate of fire, and type of emplacements; their control and observation stations; searchlights; and the system of local defense against infantry and tank attacks.

(b) Location of antiaircraft artillery batteries and barrage balloons.

(c) Location, types, and fields of fire, of any other permanent defensive installations covering beaches, especially machine-gun and other small-arms positions; positions for field guns, antitank guns and rocket guns capable of effective antiboat fire, land obstacles (wire, walls) on or near shore, underwater obstacles (wire, pipe, stakes, concrete blocks, nets, booms), and mines (land and underwater).

(d) Strength, composition, disposition, and degree of mobility of enemy troops capable of interfering with the landing or establishment of the beachhead. Particular attention is given to motorized or mechanized artillery, antitank guns, antiaircraft guns, and other weapons particularly valuable as antiboat guns, and dispositions and field fortifications of troops in position to meet landing attack at the shore line.

(e) Location and extent of gassed areas or enemy potentialities for use of gas.

(f) Location of outposts along the shore line; their type, strength, alertness, and means of communication.

(g) Location of airfields, airdromes, and aircraft carriers and their capacities; number and type of aircraft within range of the landing area; length and surface of runways; and supply of gasoline and bombs.

(h) Location and availability of enemy naval craft capable of interfering with the landing.

(i) Location and capabilities of any special enemy craft designed for coast defense.

(2) Beaches.

(a) Exact location.

(b) Landmarks in the vicinity visible from seaward (detailed information).

(c) Length of any portion with clear approaches.

(d) Gradient of underwater approach as it affects beaching of landing ships and craft. (Includes area especially to line four feet below low water; including fifteen-foot line if practicable. Cross sections are valuable. Location of bars is especially important, to avoid unloading of landing craft at points separated from the true beach by depths of water unsatisfactory for personnel or vehicles.)

(e) Tides (complete statistics; horizontal movement of water line).

(f) Nature of bottom immediately off the beach (mud, sand, shingle, shell, smooth rock, jagged rock).

(g) Reefs, shoals, rocks, and other hazards to landing ships and craft.

(h) Currents, especially near shore.

(i) Physical consistency (mud, sand, shingle, or rock; difficulty of crossing for foot troops and for tracked and wheeled vehicles).

(j) Width.

(k) Terrain immediately behind beaches (dunes, swamp, jungle, cliffs, towns).

(l) Exits (roads, paths, or cross-country; for men and tracked and wheeled vehicles).

(m) Landmarks for night movement away from beaches (hedges, walls, streams, fences).

(n) Nearest cover for artillery positions and supply points.

(3) Shore lines other than beaches (dimensions, gradient, and physical consistency). Information generally desired is same as in (2).

(4) Surf conditions.

- (a) Severity of surf (expressed in height and frequency).
- (b) Distance from beach to outmost breakers.
- (c) Number, width, and location of lanes of unbroken water through the surf area.
- (5) Hydrographic information for ships.
- (a) Transport areas.
- (b) Gunfire support areas.
- (6) Wind conditions affecting currents, surf, handling of rubber boats, and use of smoke.
- (7) Water and air temperatures.
- (8) Terrain.
- (a) Observation (especially enemy observation of beaches and their approaches).
- (b) Fields of fire (especially enemy fields of fire on the beach from headlands or elsewhere).
- (c) Obstacles (especially underwater and those in the immediate vicinity of the shore line; relative practicability for passage of infantry and vehicles; swamps, lagoons, rivers, and cliffs).
- (d) Cover and concealment (especially for enemy reserves and artillery).
- (e) Roads, paths, and other routes of movement of troops and vehicles.
- (9) Emergency landing places for aircraft and terrain suitable for the construction of landing strips and fields.
- (a) Dimensions.
- (b) Nature of surface.
- (c) Local facilities for repair of runways.
- (10) Potable water.
- (11) Telegraph, telephone, and powerlines.
- (12) Railroads.
- (13) Shelter for hospitals and command posts.
- (14) Ports.
- (a) Piers and docks; dimensions, and depths alongside.
- (b) Anchorage facilities, inside and outside.
- (c) Facilities for unloading and moving supplies.
- (d) Effect of local weather.
- (e) Storage (warehouses, vehicle parks, supply point areas).
- (f) Ship repair facilities.
- (g) Estimated demolitions and obstructions practicable to the enemy.

49. SOURCES OF INTELLIGENCE. *a.* Certain intelligence is furnished by higher headquarters when the joint directive is issued

to the task force. It often will be advisable to request that specific information be collected for the task force by higher echelons. If otherwise unavailable, additional information is collected by reconnaissance to the extent practicable within limitations of secrecy, time, and means available.

b. Primary reconnaissance means prior to the operation are aerial photography and land or sea reconnaissance by specially trained amphibious patrols. Alternate means are patrol of the coast-line from the sea, patrol demonstrations, and photography by submarine periscope. The furtherance of surprise requires that reconnaissance measures likely to become known to the enemy cover all practicable landing areas and beaches, whether or not they are to be used.

c. Aerial photographs will furnish much of the information obtained prior to landing. Photographs taken at different tide stages and properly annotated with date, hour, and weather conditions affecting surf, will assist in determining the configuration of the floor of the beach and the relationship of weather to tide and surf conditions. Effort should be made to secure large-scale photographs of landing beaches and of the shore line for several miles on each side for the construction of relief models and study of terrain, hydrography, and coast defenses. Oblique photographs of the hostile coast taken from seaward at very low altitude assist in the construction of helpful models.

d. Relief models of landing areas may be made, utilizing the best available contoured map, aerial and submarine-periscope photographs, and other information. Models should be approximately 1:5000 in scale so that subordinate units of battalion landing teams may employ them for detailed study.

50. DISSEMINATION OF INTELLIGENCE. **a.** Early intelligence must be made available to the task force commander and his staff for the estimate and major elements of the plan. Intelligence for subordinate units should be ready before these units begin their planning.

b. Additional intelligence made available during planning and preparatory stages should be disseminated promptly to commanders and appropriate staff officers of units concerned with any planning which may be affected. Care must be taken not to compromise secrecy for the operation by too wide a dissemination of all information; care also must be taken not to withhold any item of intelligence from any headquarters which may have need for it.

c. Reports, maps, charts, photographs, and models are provided subordinate commanders as they become available. For study en-

route to the landing area, relief models should be available on each ship on which assault units are embarked.

d. Limited quantities of reports, maps, charts, and photographs, sufficient for planning only, should be distributed to include commanders of battalion landing teams or comparable units. Distribution in quantity, for reasons of secrecy, should take place aboard ship after final embarkation.

51. OPERATIONAL AIDS. a. Topographic models. Scale models of selected landing beaches and beachhead terrain in back of them are very desirable. Models should be three-dimensional, gridded, and of scale of approximately 1:5000. They should be provided for all assault ships and army units to include battalion landing teams and other troops designated for special operations. They should be available for study to all personnel embarked on assault transports.

b. **Shore-line sketches.** Sketches or low-altitude oblique photographs of the section of shore line selected for a landing, the latter taken under various conditions of light, offer great assistance in locating landing beaches on unfamiliar shores. Copies should be distributed to every landing boat coxswain and assault unit commander to include squad leaders.

c. **Beach studies.** Detailed studies of proposed landing beaches should be available when planning and selecting beaches.

52. RECONNAISSANCE. Subsequent to embarkation, need for additional detailed information covering a proposed assault landing may require further reconnaissance of the shore line and beach area just prior to landing. Such reconnaissance, and any demonstration in connection therewith, is conducted as may be necessary in accordance with intelligence plans for landing force operations, having due regard for the need for secrecy and for capabilities of reconnaissance agencies. Intelligence requirements preliminary to the operation are outlined in paragraph 48. Continuing reconnaissance by the landing force when ashore does not differ essentially from normal reconnaissance measures taken in any ground operation, except that added consideration must be given to essential elements which may affect continuing naval participation in the landing.

53. INFORMATION NEEDS AFTER EMBARKATION. a. Information desired from reconnaissance after embarkation usually comprises a last minute verification of previously known data, or procurement of some essential data previously unobtainable.

b. In order to secure information, it usually is necessary to employ some or all of the following:

(1) Air reconnaissance, visual or photographic, consistent with security.

(2) Amphibious patrolling and scouting.

(3) Placing of agents ashore.

(4) Capturing prisoners, at sea or ashore.

(5) Raiding or reconnaissance in force.

(6) Subversive elements ashore.

54. AIR RECONNAISSANCE. a. Visual. (1) Visual air reconnaissance prior to D-day is performed normally in conjunction with other air missions to avoid disclosing periodic reconnaissances.

(2) Air surveillance of all routes of enemy movement toward selected landing beaches is maintained after H-hour, or before if the presence of ships in the landing area is known to the enemy. Information relative to strength, composition, speed, location, and direction of movement of enemy forces toward main landing beaches is particularly important.

(3) Air crew members on all missions, and particularly observers in naval spotting planes, must be alert to and report all indications pertaining to essential elements of the army intelligence plan. Aircraft carriers, combatant ships, and airfields must relay promptly to the army headquarters concerned all such information acquired by their planes.

(4) Aircraft of any air unit operating directly with ground troops should be prepared to execute reconnaissance missions on request.

b. Photographic. (1) Photographic reconnaissance is provided by available air facilities. Missions to be executed from naval carriers must be provided for specifically in the joint intelligence plan as far as practicable.

(2) Sufficient copies of photo prints should be made initially so that immediate replacement can be made for any lost in attempted dropping on a ship.

(3) Photographic interpreters of both services should be embarked on all carriers in the task force to expedite prompt interpretation of photographs from both military and naval viewpoints and dissemination of the information. Information should be dispatched to appropriate army commanders even though delivery of print copies is impracticable at the time.

55. AMPHIBIOUS PATROLLING. a. General. Patrols, at sea along the shore or on shore, may be used to secure general or specific information. Size of the patrol, type of craft used, armament or other equipment taken, distance to be covered, means of communication used, and final place of rendezvous are governed by prevailing circumstances.

b. Personnel. Serious consideration should be given to the selection of personnel for an amphibious patrol. In addition to the military personnel, it is advisable, if practicable, to add natives of the area to be searched. This is particularly important in uncivilized territories where increased language difficulties will be found. Personnel who have knowledge of the overall plans of the attack force should not be chosen because of the possibility of compromising security.

c. Patrolling coast line from sea. Boat reconnaissance of the coast line is conducted for the purpose of obtaining information as to character of surf, suitability of terrain for land operations, location of obstacles, and similar information.

d. Patrolling on shore. Although all other possible means of obtaining information should be explored fully, the importance of actual patrolling on shore should be appreciated. Information obtained through such reconnaissances, whether positive or negative, is of utmost value. Land patrols provide a practicable means, through observation and the capture of prisoners, of obtaining other vital information.

e. Mission. (1) Amphibious patrols are used for missions similar to those performed by patrols in land warfare. Missions must be simple, owing to the unusual hardship of execution and difficulties of establishing undetected communication between shore and ship.

(2) Patrols are specially trained and equipped. They may be able to secure valuable information on beach approaches and beach installations otherwise unobtainable.

(3) Patrols landed at points removed from prospective landing beaches may be able to penetrate undetected to considerable distances inland. They may return to sea or remain ashore in observation. Communication with forces at sea will require special equipment and planning.

f. Conditions affecting landing. Amphibious patrols should be landed just prior to H-hour to obtain information only when :

(1) Discovery by the enemy will be too late to permit effective countermeasures against the subsequent assault landing.

(2) The enemy already is aware of the presence of the attacking force and is expecting attack at the planned place of landing.

(3) The coast line is so thinly guarded that scouts should be able to obtain the information without detection.

(4) They can be landed over such a wide front and over such an extended period of time that their discovery will lead the enemy to no correct conclusion.

g. Time of landing. Amphibious patrols may operate along the hostile shore for several months in advance of the projected landing

to obtain accurate data of terrain, water approaches to landing beaches, and hostile defense plans or dispositions. Landings for the purpose of obtaining information just prior to the attack should be made at least several days in advance to assist in secrecy of operation.

h. Method of landing. Patrols usually are landed by rubber boat, canoe, kayak, or by swimming. They may be transported to suitable areas in transports, destroyers, submarines, or other craft. They may be landed at sea from a flying boat, or dropped at sea or on shore by parachute. The mode of transportation must be considered in relation to the time available, secrecy of operation, method of landing, means of retraction, and equipment to be carried.

i. Patrol demonstrations. A patrol demonstration near the coast line for the purpose of obtaining information of enemy strength and dispositions involves a deliberate attempt to alarm the enemy and cause him to disclose his positions by opening fire and shooting flares.

j. Control of employment. The task force intelligence plan should state which subordinate echelons of the task force are required, permitted, or forbidden to use amphibious patrols and scouts. The general decision pertaining to their use must be a superior command decision for reasons of security.

56. AMPHIBIOUS SCOUTS. Amphibious scouts are specially trained and equipped individuals who may be used to precede the assault sufficiently to mark the landing beaches for the initial waves. They usually land a few hours before H-hour.

57. PLACING OF AGENTS ASHORE. **a.** Subversive agents may be landed from ships or other craft, dropped by parachute from the air in or near proposed landing areas, or dropped or landed at sea and provided with suitable craft to reach shore. Possibility of detection of transporting aircraft is reduced if the agent is dropped at sea. Night or fog provide excellent cover for such operations.

b. Communication and other equipment provided for use of dropped agents must be selected and prepared carefully to meet the particular circumstances of this method of landing and the mission to be performed.

c. Plans for the conduct of agents inland, their return by boat, or the return of information to forces at sea must be coordinated with all agencies involved.

58. CAPTURE OF PRISONERS. **a.** Although all types of patrols previously discussed seize any favorable opportunity to capture prisoners, these means may not be sufficient. Special patrols may be or-

ganized to secure prisoners, either by seizing enemy patrol boats or by capturing personnel on shore.

b. The capture of enemy craft and prisoners at sea is normally a naval function. Every effort should be made to capture or destroy any enemy craft with which contact is made. Valuable information may be gained from ships' papers.

c. Capturing prisoners on shore is accomplished either by landing a strong patrol or raiding party to attack a known isolated enemy post, such as may exist on a small island or peninsula, or by landing a small patrol to ambush enemy individuals.

59. RAIDS. Raids and reconnaissances in force may be accomplished from the sea in advance of a main landing assault. They may employ comparatively large bodies of troops and supporting vessels, and are planned and executed as are landings in force.

60. USE OF SUBVERSIVE ELEMENTS ASHORE. Information of value may be obtained from friendly civilian agencies or natives in the area to be attacked. Care must be taken to appraise the reliability of such information and to protect the communication channels from enemy espionage. (Par. 41.)

Section III. ADVANCE FORCES

61. GENERAL. Landing operations against serious opposition may be preceded by advance forces to conduct certain preliminary operations for purposes of reconnaissance, for creating diversions by means of demonstrations, for seizure of a supporting base, or for operations against defending air and naval defense forces.

62. SUPPORTING BASES. a. Supporting bases facilitate supply, permit employment of aviation, afford shelter for vessels, serve as a rendezvous for subsequent landings, and may deny landing fields and other facilities to the enemy. Supporting bases are of particular importance in shore-to-shore movements as they constitute a direct source of support and resupply comparable to supply ships in a transport area.

b. Generally, the defender fortifies certain areas; others are lightly held or unoccupied. It frequently is advisable to seize less strongly defended areas first for improvement as supporting bases in subsequent landings against fortified positions. The initial operation may be executed as a landing in force, or a foothold may be secured by advance forces.

63. OPERATIONS AGAINST AIRCRAFT AND NAVAL DEFENSE FORCES. a. Operations against defending aircraft are considered in chapter 8.

b. Opposing naval forces are cleared from sea areas required for conducting operations or neutralized during the course of the landing.

Section IV. MAIN AND SUBSIDIARY LANDINGS

64. GENERAL. Landing operations may involve a main landing, one or more secondary landings, and one or more demonstrations.

65. MAIN LANDING. The main landing is the one upon which the ultimate success of the tactical plan depends. In the assignment of troops, ships, and aircraft, it receives first consideration, and is provided with the forces necessary for its success. Detachment of any forces from the main landing for conduct of a subsidiary operation is justified only when the results reasonably to be expected are greater than if these forces were used in the main landing.

66. SECONDARY LANDINGS. a. Secondary landings are those made outside the immediate area of the main landing and which directly or indirectly support the main landing. They may be made prior to, simultaneously with, or subsequent to the main landing.

b. (1) Secondary landings are made to deny an area to the enemy; to provide flank protection; to delay or divert enemy reserves, artillery fire, ships, and aircraft from the main landing; or to seize an area which permits easy entry into action of field artillery and land-based aircraft.

(2) If the purpose is to divert enemy reserves or forces from other sectors, strength of the secondary landing force must be sufficient to seize or threaten an area important to the defender.

c. The term "secondary landing" is not used in orders. Secondary landings are conducted with the same determination as the main landing.

d. As a secondary landing ultimately may be exploited rather than the main landing, this fact should be considered in selecting landing areas and in tactical and logistical plans, including the employment of the reserve.

e. Demonstrations may be conducted in connection with reconnaissance prior to landing.

f. Raider operations in connection with the main landing assault may be a specialized form of secondary landing.

g. Airborne landings may be utilized effectively in conjunction with amphibious operations as a form of secondary landing.

67. DEMONSTRATIONS. a. A demonstration or feint is an exhibition of force, or movement, indicating an attack. It may contribute greatly to the securing of tactical surprise. Demonstrations may divert or retard movement of enemy reserves against main and secondary landings, or deceive the enemy as to the direction of attack. They usually are more effective and less costly than a weak landing.

b. Mobility of ships should be utilized to threaten important enemy objectives over a large area.

c. Demonstrations are coordinated with landing operations as to time and distance in order to divert enemy armored and motorized formations, aircraft, surface vessels, and submarines from the main landing.

d. Demonstrations conducted in conjunction with and in the vicinity of an actual landing are effective in causing a dispersion of enemy artillery fire. A few boats approaching a beach in darkness or accompanied by smoke and some gunfire may cause enemy batteries to open fire on that beach instead of the actual landing beach.

Section V. SELECTION OF LANDING AREAS

68. GOVERNING CONSIDERATIONS. a. The landing area comprises sea and land areas required for establishing a beachhead of sufficient depth to protect the beach from medium artillery. Its selection is governed by the mission, strength and disposition of the enemy, location of objective, available port facilities such as piers and wharves, number and types of beaches with approaches thereto and their usable exits, suitability of terrain for ground operations, station and maneuver areas for naval vessels, conditions affecting participation of the joint air force including suitability of terrain for early construction of landing strips, configuration of the coast line, time element, and weather conditions. In some shore-to-shore movements, the selection of the landing area may also be influenced by the range of small landing craft and their vulnerability and discomfort in passage.

b. Landing areas possessing the best beaches and most favorable approaches inland are usually those most strongly defended by the enemy. Conversely, landing areas with unfavorable beaches and easily obstructed avenues of approach inland are less heavily defended.

69. MISSION. The area selected should permit the landing of sufficient troops with requisite equipment and supply at a place from which they can reach their objective as planned and accomplish the mission for which the landing is undertaken.

70. ENEMY POSITIONS. a. Fortified areas are avoided if the mission can be accomplished from other beaches. They are attacked only when sufficient ships, aircraft, and ammunition are available to neutralize enemy weapons, or when their initial seizure by airborne troops can be supported promptly and successfully.

b. Probable location of enemy land, sea, and air reserves and the facility and speed with which they can be employed are given consideration.

71. BEACHES. a. A beach should be large enough for the landing of at least one battalion landing team.

b. Favorable beaches, from a physical standpoint, are those which permit beaching of all types of landing ships and craft sufficiently close to the shore line to permit rapid debarkation and movement inland of troops, equipment, and supplies, without undue interference from weather conditions or navigational difficulties.

c. Open beaches on the windward side, where surf is likely to break during the several days of a landing operation, are especially unfavorable, particularly where there are rocks or coral.

d. Gently shelving beaches, or those having offshore bars or reefs, cause landing ships and craft (except landing vehicles tracked) to ground at considerable distance from the shore line, lengthening the time for debarkation and increasing the risk from hostile fire.

e. Sea approaches to the beach should be free from natural or artificial obstructions to navigation under all conditions of tide. There should be sufficient room to seaward for landing craft to deploy into attack formations before coming under effective artillery or small-arms fire. Narrow entrances between islands and channels in reefs prevent early deployment.

f. Some of the beaches should provide suitable landing conditions and routes inland for armored and wheeled vehicles and tractors. These beaches may be captured initially or in subsequent operations, or they may be developed by the landing team when ashore. Other beaches may be suitable only for infantry or pack units. Precipitous slopes can be negotiated by determined foot troops and often offer dead spaces from enemy fire. Landing conditions at the foot of rocky cliffs, however, are hazardous and generally possible only in calm seas.

g. The area around a beach in which the defender can place weapons for direct fire on the beach is limited by the configuration of the ground and density of foliage. When the beach area permits the defender clear fields of fire and observation over a depth of several hundred yards, the immediate landing is difficult. Shallow areas are advan-

tageous in that they permit the attacker to deprive the defender of observation on the beach after a relatively short advance. Presence of woods or a bluff close to the beach can be advantageous, provided advance of necessary combat equipment is not seriously impeded, nor naval gun fire undesirably restricted.

h. The number of beaches required depends upon the size of attacking force, scheme of maneuver, and amount of resistance expected. A landing area with a large number of beaches is desirable even for a comparatively small force, for it causes a dispersion of the defender's efforts, permits the attacker to land on a broad front, and favors tactical surprise.

i. The shore line need not be suitable for landing throughout, but the selected landing beaches should permit mutual support by landing teams and lend themselves to eventual organization into a consolidated beachhead.

j. In operations for which supply will be maintained indefinitely over assault beaches, special consideration must be given to their suitability for the contemplated supply operation. Formation of the beach, natural exits from it, and proximity of suitable areas for extensive supply installations are essential factors.

k. Tactical necessities may require that landings be accomplished on a shore without suitable beaches. Special consideration must be given to types of landing craft that can be used, limitations that adverse sea and weather conditions place on such landings, and capabilities for landing required equipment with the troops. Generally, special training is required for landings on rocky or other difficult shores.

72. SUITABILITY OF TERRAIN FOR GROUND OPERATIONS. **a.** Influence of terrain on ground action does not differ from that in normal land operations. Examination of the proposed zone of advance includes road and rail nets, covered routes of advance, natural and installed obstacles or defiles, observation points, maneuver room, landing fields which permit early employment of land-based aircraft, and areas suitable for landing and operation of airborne units.

b. Advance along a coast line will afford protection to at least one flank and will facilitate supply, for the shore supply base may be shifted as the action progresses to secure shorter and more easily protected lines of communication. Field artillery fire can be augmented by naval gunfire under suitable conditions.

73. AREAS FOR NAVAL FORCES. **a.** Naval forces require station and maneuver areas free from enemy mines and underwater ob-

structions and with suitable approaches. Areas must be located conveniently with respect to selected landing beaches.

b. Water deep enough for maneuvering vessels close inshore enables ships supporting landing boats to deliver fire at short range.

c. A sheltered transport area materially decreases time required for unloading troops and equipment and lessens danger of interruption of the operation by unfavorable weather.

d. Water with depth suitable for anchoring marking ships or buoys is desirable. Occasionally, anchoring transports or even firing ships may be practicable. Water of less than ten fathoms furnishes considerable protection against large submarines if the shallow depth extends to maximum torpedo range. Antisubmarine protection also may be provided by mine fields laid around the transport areas.

e. If a convenient supporting base is not available for anchorage and protection of naval forces during the period between the initial landing and the securing of a suitable new base, the landing and operations ashore should be planned with a view of securing a sheltered anchorage as quickly as possible.

74. CONFIGURATION OF COAST LINE. a. Favorable landing conditions usually are found in harbors, bays, and indentation in the coast line. However, such indentations favor concentration of enemy artillery fire on the entrances and permit flanking fire upon boats from automatic and other weapons. These weapons must be neutralized before boats carrying the main force come within effective range.

b. Land projections aid attack by facilitating flanking fire by naval guns and permitting attacking units to rest both flanks on the water. However, the base of a peninsula may constitute a strong enemy defensive position. Seizure of such projections as a supporting measure for other operations may be advisable.

c. A chain of small islands offers certain advantages as a landing area, and it may be advisable or necessary to seize one or more prior to the main landing. Even though the islands may be capable of mutual support by fire, effective use of general reserves by the defender usually will be impossible. An island once seized may be used as a base for further operations. Frequently, field artillery can be landed to support a subsequent or main landing.

d. A continuous coast line of suitable length and land formation on which forces can be landed simultaneously at dispersed points from all types of landing craft is ideal for a shore-to-shore movement. Landings by small forces are dependent upon availability of natural flank protection, such as rivers or mountains coming down to the sea, and upon the presence of suitable terrain corridors inland from the coast line.

75. TIME ELEMENT. Certainty of getting ashore is of primary importance, but the landing force must be able to reach its objective in time to carry out its mission. It may be necessary to land relatively near the objective regardless of enemy dispositions. If more time is available, the landing may be on beaches less heavily defended, even though more prolonged shore operations are required subsequently.

76. METEOROLOGICAL CONDITIONS. Meteorological conditions influencing selection of landing areas include humidity, temperature, snow, fog, prevailing winds, storms, direction of sun, phase of moon, and tide.

Section VI. TIME OF LANDING

77. GENERAL. a. In selecting date and hour of landing, consideration is given to influence of tide, predicted weather, enemy situation and opposition capabilities, and visibility as affected by daylight and darkness. Visibility is considered particularly as it affects surprise, air and naval gunfire support, landing on designated beaches, the enemy's sea, land, and air forces, navigation, and operations ashore. In shore-to-shore movements choice of hour of landing is influenced by the limited range and speed of small landing craft and the total water distance covered.

b. Principal advantages of a landing at night are that darkness aids tactical surprise and reduces effectiveness of the defenders' fire.

c. Principal advantages of a day landing are that air and naval superiority can best be maintained, navigation of ships and boats is facilitated, ships can better be defended against hostile air and submarine attack, and shore operations are easier to control.

d. By use of smoke, conditions similar to darkness or fog can be placed effectively upon all, or only parts, of the area to be attacked, whichever is more advantageous to the attacking forces.

e. Initial assault elements of the landing force frequently will be brought in under cover of darkness, with debarkation, movement to shore, and landing being effected before daylight. The attacking force should have sufficient troops with supporting field, antiaircraft, and antitank artillery ashore by daylight, or soon thereafter, to meet enemy reaction, air and ground.

f. Under other circumstances, debarkation and movement to shore will be in darkness, the landing at dawn or soon thereafter, and operations ashore conducted principally during daylight.

78. TIDE. Stage of the tide and tidal range are considered as they affect passage of underwater obstacles, offshore bars, reefs, or shoals,

beaching of landing ships and craft, stranding of ships and craft by a falling tide, width of beach to be crossed by assault troops, and requirements for naval pontoon gear or ramps to facilitate debarkation from landing ships.

79. WEATHER. a. Predicted weather conditions are considered as to their effect upon the unloading of ships and upon surf which may increase the difficulty of debarking assault troops. Partially protected transport areas and shores may permit landings even under adverse weather conditions. Fog or haze may be advantageous as well as disadvantageous.

b. Alternate plans either should provide for landings in areas tactically less advantageous, but which may be less affected by adverse weather conditions or provide for a change in date of landing.

80. SURPRISE. a. Darkness increases the chance of securing some measure of tactical surprise. It restricts the defender in maneuver of his forces to meet the attack. Illumination of water areas at night by searchlights and flares is not completely effective.

b. During daylight hours, the defender can secure rapidly complete and accurate information upon which to move defense forces and means. This disadvantage to the attacker can be lessened by use of smoke.

81. AIR OPERATIONS AND NAVAL GUNFIRE SUPPORT. Darkness or limited visibility reduces maximum utilization, control, and effectiveness of air operations and naval gunfire support. This may be overcome to some extent by use of flares and radar fire control.

82. ENEMY SEA, LAND, AND AIR FORCES. a. Enemy night bombing, though less accurate than in the daytime, cannot be prevented regardless of the extent of friendly air superiority. Antiaircraft firing will be hampered by darkness, the availability and disposition of searchlights, and availability and disposition of radar, gun-laying sights, and shore-based antiaircraft batteries. Consequently a night operation involving the anchoring or laying to of transports or beaching of large landing ships for several hours in the face of an active enemy air force is hazardous. This hazard may be reduced by use of destroyers or small craft not so vulnerable to air attack to land troops of initial assault echelons. Very low altitude barrage balloons on ships are useful in protecting against low altitude bombing and strafing attacks, especially at night. The employment of carrier-based night fighters in quantity plus a strong

concentration of combatant vessels with adequate radar-controlled antiaircraft armament is essential for protection of transport areas in range of enemy air bases which cannot be neutralized completely.

b. The attacker's control of the sea in the area of operations does not preclude the defender from launching night attacks with destroyers and other small surface craft, making day and night submarine attacks, and conducting mining operations in transport areas. Effective countermeasures during darkness are possible by means of radar detection, protective mining, and fire control.

c. During the day, effectiveness of the defender's fire may be reduced by use of smoke and other chemicals.

83. NAVIGATIONAL CONSIDERATIONS. Navigation of ships and handling of small boats are facilitated by daylight operation. On an unfamiliar coast, without thorough reconnaissance, establishment of navigational aids, and employment of radar-equipped control craft, there is no assurance that a landing can be made at night on designated beaches. Establishment of navigational aids or radar direction-finding apparatus may deprive the attackers of the surprise sought in a night operation, but they should not be dispensed with where it is important to land at specific points. Navigational hazards may dictate a day landing.

Section VII. THE BEACHHEAD

84. BASIC CONSIDERATIONS. a. The first consideration ashore after a landing has been effected is the extension of the beachhead to a sufficient distance beyond the landing beaches to insure uninterrupted landing of troops, equipment, and supplies and to secure the requisite terrain features and maneuver space for subsequent operations. The initial beachhead should deprive the enemy of terrain and shore features most necessary to his defense. Establishment of a beachhead enables a landing force commander to organize and regain control of his units ashore while the situation is developing, and while he is landing reinforcements and securing information on which to base ensuing operations.

b. Although it is necessary to keep the enemy from the beaches, establishment of the beachhead is an offensive, not a defensive measure. It should be expanding continuously. It must facilitate further advance inland. Effort is made, therefore, toward early seizure of terrain and shore features, including ports, airfield sites, and airfields, which will accelerate this advance. Discussion of factors governing selection of a beachhead is contained in Section V, Chapter 3.

85. BEACHHEAD LINE. The beachhead line fixes the limits of the beachhead. It should be so located as to permit its early seizure from assault landing beaches. It is not considered as a defensive position to be occupied and organized as such except in the case of a mission of occupation. It is a tentative main line of resistance in case of counter-attack prior to advance from the beachhead, and is occupied and organized to the extent demanded by the situation.

86. RECONNAISSANCE AND SECURITY LINE. a. The security line prescribes the minimum distance beyond the beachhead line to which security detachments are pushed by units on the beachhead line. Active reconnaissance is conducted in the prescribed zone and beyond by designated units. Designation of the line permits control of the dispersion of the force as a whole by the beachhead force commander.

b. The reconnaissance and security line for landing operations differs from that employed in other ground operations in that it normally is closer to the beachhead line (the tentative main line of resistance) and becomes the outpost line in case the beachhead line is occupied for defense. It must be far enough in advance to screen and protect the beachhead line from hostile ground observation and attack.

87. EXTENT AND FORM OF BEACHHEAD. a. Depth and frontage of a beachhead will be dependent upon the force mission, size of landing force and naval and air forces engaged, nature of the terrain particularly as regards natural obstacles, time available for organization of the ground, and probable enemy reaction.

b. Battalion beachhead lines should be from 1,500 to 2,500 yards inland so as to prevent direct fire of machine guns and mortars on the beach, be readily identifiable by well-defined terrain features, and include terrain which will assist further advance.

c. The regimental beachhead line usually is located by the division commander to prevent enemy light artillery fire from being placed on the beach.

d. A division landing force beachhead should protect its central beaches from medium artillery fire. A landing force must guard against overextension of its units, particularly in early stages of assault, to avoid endangering its flanks, beach establishments, and land lines of communication.

e. A beachhead for a task force, or landing force the size of a reinforced infantry division, may be a consolidation of a number of smaller combat team beachheads established by the assault battalion landing teams. It should be of sufficient depth to permit efficient debarka-

tion of large quantities of supplies and numbers of reinforcements. This depth should be attained with maximum speed after the assault landing. Usually this will be possible only with comparatively strong forces.

f. The form of a beachhead will depend largely upon features of the terrain in back of landing beaches, and upon the extent to which available forces are able to expand initial landings and organize occupied ground. The relative desirability of initial defense positions against anticipated enemy reaction to the landing also may influence the general beachhead line. The form of the beachhead will not remain fixed usually but flow forward constantly as additional forces or shore facilities are installed. Constant effort will be made to improve the occupied area defensively against ground or air attack, and to include such additional terrain features as projected operations inland require.

88. SUCCESSIVE OBJECTIVES. The landing force commander may designate successive objectives to coordinate the advance from landing beaches to the beachhead line. These successive objectives permit reorganization of attacking troops, passage of lines, and coordination of field artillery and naval gunfire with the advance, and facilitate execution of an appreciable change in direction of the attack. They have the disadvantage of tending to create delays in the advance to the final objective line.

89. INTERMEDIATE BEACHHEAD LINES. Subordinate commanders may prescribe intermediate objectives or beachhead lines for their units, particularly when the landing force commander has not prescribed successive objectives. Such intermediate beachhead lines permit lower echelons to reorganize, bring forward supporting weapons, or establish contact with adjacent landing teams. They must not be allowed to cause unnecessary delay in the advance. Upon arrival at these lines, no halt should be made if the advance can be continued.

90. ORGANIZATION OF BEACHHEAD. Organization of a beachhead after landing includes all factors pertaining to tactical defense and offense in the area, as well as the installation of shore establishments for continuous operation of administrative functions to support initial assault forces and to meet requirements of projected tactical operations. Organization of a beach by individual assault elements extends only to logistic and local defense organization of the landing beach area. (Chapter 5.) A beachhead may in-

clude adjoining or separated beaches, ports, airfields, and any other coastal installation necessary for accomplishment of the mission.

91. EMPLOYMENT OF BEACHHEAD. a. A beachhead is organized for operation in accordance with the major plan of operations of the force. It can be designed to provide purely tactical advantages for rapid advance inland, having only temporary or restricted development, or it can be expanded and organized to provide a permanent base for logistic support of larger forces debarking over the original assault beaches as the inland campaign progresses. Variations in the projected employment of the beachhead alter materially the amount of organization and type of force required for its operation.

b. Plans for employment of a beachhead should include consideration of strategic facilities of the terrain, amount of construction and protection required for its expansion, ability to provide personnel and matériel to operate it, suitability of the shore line and offshore anchorages for vessels and landing craft to be used, and volume of supply equipment and personnel which beachhead facilities will be able to handle.

Section VIII. TASK FORCE OPERATION PLANS

92. GENERAL. The decision as to the general plan of operations to be adopted for the task force is determined largely by the many allied considerations and decisions which enter into the initial selection of the landing area. Once the landing area is determined, the principal features of the landing attack plan generally are decided.

93. TASK FORCE OPERATIONS PLAN. a. The master operations plan for the joint task force usually includes the general mission of the joint force, principal landing areas, tasks assigned to joint attack forces, the general plan of maneuver for all elements, the approximate date of landing, the general plan of supply for the force, the assignment of ships and troop units to elements of the force, and any other general consideration necessary to enable joint attack force commanders to formulate their respective landing attack plans.

b. The joint task force plan is based on the assault plans of the landing forces as modified by or integrated with naval and air capabilities.

c. Individual plans for employment of ground, air, and naval components of the joint force, based on the joint task force plan, are prepared by the respective commanders.

94. JOINT ATTACK FORCE OPERATIONS PLAN. The joint attack force plan, prepared in conference between commanders of ground, air, and naval components, is issued in the same manner as the joint task force plan. It includes the landing attack field order of the embarked landing force and covers all naval and air tasks in support of the landing attack. The form usually follows the standard five paragraph order.

95. LANDING ATTACK PLAN. a. The landing attack plan covers details for participation of ground, air, and naval components in the landing assault. The plan for the landing force usually is in the form of a standard field order, including:

- (1) Date and hour of landing.
- (2) Exact beaches to be used.
- (3) Formation for the landing.
- (4) Scheme of maneuver ashore in detail for each major element of the landing force.

- (5) Objectives on the beachhead line.

- (6) Any successive or intermediate objectives to the beachhead line.

- (7) Major scheme of shore group operations.

b. Parts of these supporting plans usually are very general in the task force plans, and are developed in greater detail in lower echelon plans. Supporting plans will include provision for:

- (1) Secondary landings and demonstrations.

- (2) Air operations.

- (3) Naval gunfire support.

- (4) Communication.

- (5) Intelligence.

- (6) Supply and evacuation.

- (7) Naval plans relative to the landing attack.

- (8) Antiaircraft protection.

- (9) Chemical operations.

- (10) Bomb disposal activities.

- (11) Initial defensive plans against land and sea attack.

- (12) Initial mine and fortification plan.

c. The operations plan for the landing and seizure of the beachhead must be prepared with minimum delay. Much detailed planning, particularly as to supply, communication, and air operations, waits on this plan. Additional intelligence usually will have to be obtained, particularly for landing plans of lower echelons.

96. FRONTAGE OF ATTACK. a. The frontage to be covered by the landings and the subsequent advance inland is an important con-

sideration in formulating the scheme of maneuver. The frontage of the landing is dependent to a large extent upon number, type, and relative position of beaches available in the landing area. If beaches are too widely separated, landing elements may not be able to provide mutual assistance against counterattack. However, a landing on a wide front may find weak spots which can be exploited by prompt commitment of floating reserves. The strength and equipment of the joint attacking force are almost equally important considerations.

b. During initial stages of the landing, naval guns and army and naval aviation provide fire support for the landing force.

c. The landing force attacks on a broad front in order to get ashore in minimum time and to cause dispersion of the defender's efforts; but it must not overextend. It must concentrate its effort and assign sufficient forces to the various tasks to insure their success. Units comprising initial assault echelons, apt to become disorganized during and immediately after the landing, cannot be expected to make deep penetrations against strong opposition. These leading assault units usually secure an intermediate beachhead to cover the landing of additional troops. In some instances, landings are not made on the entire front of the beachhead. This results in an increasing width of the zone of attack as the advance progresses, necessitating timely introduction of additional units in the assault. Sufficient reserves must be kept mobile afloat to insure exploitation of successes and to provide superiority of force for the attack to the final objective.

d. Success of the initial effort deserves first consideration, and forces necessary to it must be assigned before thought can be given to reserves for future contingencies. An operation rarely is justified which initially requires all of the attacker's forces to secure a foothold on the beach. Units must be assigned frontages which permit a depth of formation commensurate with the effort expected of them. Frontages suitable for assault companies and battalions are discussed in Sections III and IV, Chapter 4.

e. Naval gunfire and air operations must be concentrated in support of the landing. A small number of enemy machine guns and light artillery pieces, firing under favorable conditions have a devastating effect on assaulting units. Assault units may be unable to get ashore and advance against this fire without adequate naval gunfire, combat aviation, or close supporting fire from support craft. The scheme of maneuver may provide for adequate fire support either by restricting landings to beaches of such number and extent as can be supported adequately by available ships and aviation, or by timing landings so that ships and available aviation can support them in turn. (Chapters 7 and 8.)

97. INFLUENCE OF LANDING CRAFT AND OTHER ASSAULT BOATS. a. The speed with which troops, equipment, and supplies can be put ashore in an assault landing depends upon the efficiency of the original combat loading of vessels, the distance offshore or from the beach at which they unload, the freedom from enemy interference, the efficiency of the unloading organization on ships and shore, and the number and operating efficiency of landing craft and vehicles available. The scheme of maneuver in the general operation plan must take all of these factors into consideration, and particularly exploit to the maximum the mobility, capabilities, and landing characteristics of the varied types of landing ships and craft as well as other assault troops and cargo ships. This is especially important when there are insufficient small personnel boats in a transport division to embark all assault troops at one time.

b. Timely support of assault echelons and prompt exploitation of success may require provision for immediate embarkation of reserves in boats on call, or their maintenance afloat in landing craft. This may limit the number of landing craft otherwise available, and consequently limit the troops and frontages which can be assigned to initial assault echelons.

98. HOSTILE DISPOSITIONS. Advantage is taken of undefended or lightly defended portions of the shore line, even though they present unfavorable landing conditions, in order to outmaneuver hostile resistance or to gain a position from which flanking artillery or small-arms fire may assist the landing at more favorable beaches.

99. LANDING FORMATIONS. Formation of the landing force is determined by normal principles governing land warfare, modified by the special considerations discussed in preceding paragraphs. The task force may assault with divisions abreast or in column. Landing forces vary their individual formations in accordance with landing circumstances confronting them.

100. DESIGNATION OF BEACHES. Landing beaches assigned to landing forces of a task force may be designated by broad general locations or by specific designations. The degree of designation will be determined by the detail in which plans are prepared by the task force. Ordinarily, the task force effects coordination and removes danger of duplication by exact designation of all landing beaches. (Chapter 5.)

101. SCHEME OF MANEUVER ASHORE. a. The general plan for maneuver of the force on shore after landing is based on normal

considerations governing conduct of land warfare, modified by the special conditions which develop in a joint landing operation. Special consideration must be given to time and place at which reserve elements and supporting artillery are landed, availability of naval gunfire and air power for continuing operations, consolidation or reorganization of the landing force when elements are landed at widely separated places, and capabilities of the shore group organization to continue logistic support of the operation. For execution of the landing, see Section VIII, Chapter 4.

b. Plans for advance inland from the beachhead to the task force objective may be prepared simultaneously with the landing attack plan, particularly as such plans involve considerable coordination as to logistic and air operations. Such plans are governed primarily by principles of land warfare. Uncertainties of success of various landings and possibilities of loss of troops, matériel, supplies, and air forces, both in the passage overseas and in the assault landing, dictate need for great flexibility in such plans. Necessity for seizure of airfields and ports for inclusion in beachhead facilities for large forces is a further modifying factor.

c. Movement of assault forces inland from the initial beachhead requires provision for detachment of shore group elements from assault forces and preparation for continued independent operation of shore installations by shore group units until responsibility therefore is taken over by higher authority. Provision also must be made for continued protection of shore establishments from hostile land, sea, and air attack.

102. ALTERNATE PLANS. **a.** Alternate plans should be prepared within the latitude permitted by the mission and by the manner in which ships are loaded for the principal plan. Plans should provide for such contingencies as loss of a transport or transports with embarked troops and matériel, changes in enemy situation before landing, and changes in weather conditions which may interfere with the landing. Commanders of all echelons should have alternate plans.

b. Alternate plans should cover landing of reserves and supplies as well as assault units.

c. An important factor to be agreed upon is the means of communicating the decision to execute an alternate plan to subordinate units.

103. RESERVES. It is essential in a landing attack that substantial forces be withheld from the initial assault and be maintained as a mobile reserve, prepared to move rapidly from one landing area of the task force to another to exploit penetrations of enemy weakness ashore

or otherwise assist in the overwhelming drive of the assault. This usually will mean retention of such reserves in ships with suitable landing craft readily available until such time as their employment or landing is indicated. Essential considerations in the location and control of floating reserves are the need for their retention of mobility and landing capability, and the fact that communication in combat may be limited. Because of the fact that communications may temporarily become ineffective at a critical moment, it is essential that the reserve be given well in advance a definite plan of action in the event of this contingency.

Section IX. LANDING PLANS FOR LOWER ECHELONS

104. GENERAL. Plans for training, organizing, equipping, transporting, and landing of army units within the task force are prepared and executed by units as prescribed for normal land warfare.

105. PREPARATION OF ATTACK PLANS. Dispersion of forces in a landing attack, and unusual difficulties of communication, usually require that the final detailed planning for the landing be accomplished by commanders of assault regimental combat teams and battalion landing teams, working in conjunction with their opposite naval commanders and staffs. For security, much detail affecting these units may be prepared at times by respective higher headquarters; in such instances, care must be taken that such planning conforms to capabilities and current organization of the units concerned. Division and regimental combat team orders must reach an assault battalion in sufficient time to permit completion of detailed battalion landing orders before the sailing date.

106. DIVISION LANDING ATTACK PLAN. a. The division landing force landing attack plan may be the same as the task force landing attack plan. It is prepared in the standard form for a field order, and covers the elements prescribed in paragraph 95. Much detail prescribing actions of lower echelons may be included or outlined.

b. Division plans may prescribe combat team missions, landing formations for lower units, number of battalion landing teams to be used in assault, beaches on which landings are to be made, use to be made of available landing craft, time of initial landing, regimental beachhead lines, ultimate shore group organization, manner of employment of regimental reserves, and indicate supporting air operations.

107. REGIMENTAL COMBAT TEAM LANDING PLANS. a.

The landing plan of the regimental combat team normally includes:

(1) Reiteration of details prescribed by higher authority which affect the landing teams.

(2) Organization of landing teams and attachment of additional elements.

(3) Regimental and battalion beachhead lines and missions.

(4) Battalion boundaries.

(5) Means for regaining control of the combat team after dispersed landings.

(6) Consolidated landing craft requirements for elements of the combat team.

(7) Quantities and types of supplies, vehicles, and equipment to accompany troops.

b. For detailed discussion of the combat team landing, see Section IX, Chapter 4.

108. BATTALION LANDING TEAM PLANS. The battalion commander determines time, place, and manner in which each element of the battalion landing team will land, and its procedure ashore, in order best to carry out his scheme of maneuver to accomplish the battalion mission. (Section VI, Chapter 4.)

109. COMPANY, PLATOON, SEPARATE DETACHMENT, AND BOAT TEAM PLANS. Detailed landing attack plans for all elements in the battalion landing team are prepared by respective unit commanders as prescribed by the battalion commander. Each element coordinates its operational requirements with appropriate military and naval commanders.

Section X. ADMINISTRATIVE PLANS

110. GENERAL. a. Unusual requirements for special equipment and supply in the landing assault and follow-up, restricted carrying capacity of combat-loaded ships, time required for passage and resupply, and dispersion of initial actions ashore demand most careful consideration, balance, and compromise in administrative details. Inadequate plans for their execution, either prior to or during the landing attack, may cause such breakdown in supply, evacuation, and replacement systems that failure of the operation may result regardless of initial tactical success.

b. For detailed discussion of administrative planning, see Chapter 5.

111. ADMINISTRATIVE REQUIREMENTS. a. Administrative requirements include:

(1) Concentration, organization, equipment, and supply procurement required for both military and naval elements.

(2) Loading of ships and embarkation of the landing force at ports of embarkation.

(3) Debarkation of the landing force and unloading of ships in the landing area.

(4) Organization of logistic operations ashore in support of the landing attack until normal administrative procedure can be established.

(5) Withdrawal of any military or naval elements intended only for initial operations.

b. Preliminary considerations of supply for an amphibious operation must include close analysis of loading and unloading capabilities of vessels to be employed, type and capacity of lighterage to be employed, handling facilities ashore, and expected length of time for supply of forces over landing beaches before port facilities become available. Plans and basic supply policies must be established early for each echelon of command in order that supply services have sufficient time to assemble and prepare for combat loading the various items essential to the operation.

c. Preparation of plans for loading and embarkation require thorough understanding and appreciation of the force mission, its composition, the technique of combat loading in vessels of all types, the doctrinal employment of units, and the general tactical and logistic plans for the operation.

d. Plans for debarking troops for an assault landing and for unloading supplies to support the landing are based upon tactical plans for the assault and original combat loading of the vessels.

e. Plans for organization, expansion, and consolidation of landing beaches to provide shore facilities for logistic support of a landing assault are dependent upon tactical plans for the operation and their development.

112. PRINCIPLES OF ADMINISTRATIVE PLANNING. a. In general, basic principles of administration outlined in FM 100-10 are followed, except that some of the usual means for logistic support will be lacking during at least the initial phases of a landing assault.

b. Complete and detailed administrative planning prior to embarkation is essential to the success of a landing attack. In no other way can the tactical plan of assault be supported to complete success.

c. Administrative plans must be developed concurrently with tac-

tical plans, and the two must be coordinated throughout the planning phase.

d. Administrative planning should be highly centralized to provide for coordination of the necessary decentralized execution of plans during the initial landing phase.

e. Practicability of executing administrative plans in each echelon must be assured from a naval viewpoint by coordination of planning with associated parallel naval commanders.

f. Initial quantities of supplies must be sufficient to support the operation as planned, considering time of resupply and possible losses en route and during landing.

Section XI. FIRE SUPPORT PLANS

113. NAVAL GUNFIRE SUPPORT. a. In the initial stages of an amphibious assault, artillery support is provided largely by gunfire from combatant ships and other close support craft. Support continues as far as the range of the weapons or other naval considerations permit. Naval fires may augment artillery firing after army weapons are in position.

b. Plans for employment of naval gunfire are prepared prior to embarkation by joint staffs in accordance with army landing attack plans. The completed plan is an annex to the naval task force operations order.

c. Special characteristics of naval weapons, ammunition, fire capabilities, and methods of fire control require training and use of special shore fire control parties with each assault landing team ashore. (Chapter 7.)

114. AIR OPERATIONS. a. Local air superiority is essential to the success of a landing operation. Plans for air operations should include, whenever practicable, provision for air attacks on enemy positions on the immediate front of the assault troops. Wide dispersion of initial landings and the possibility that early stages of the attack may become a series of independent small actions, any of which may be vital to the whole, indicate a need for well-planned and organized air participation.

b. Air elements in an operation may be provided by either or both of the services engaged. If carrier-based aircraft only can be employed initially, consideration must be given to the special characteristics of these aircraft and the limitations of their operations. Provision must be made for early capture or construction of a suitable landing place for fighter aircraft.

c. Adequate air participation in an amphibious operation necessitates specially trained air liaison parties with their own communication facilities with each assault landing team to provide direct contact with the air control ship and cooperating aircraft. (Chapter 8.)

115. ANTI-AIRCRAFT ARTILLERY SUPPORT. a. Antiaircraft protection for ships and other craft of an assault convoy is provided by the Navy. Army antiaircraft artillery and barrage balloons may be used to augment this protection. Plans for the employment of embarked army antiaircraft weapons should contemplate early debarkation and installation to protect landing beaches and shore organization.

b. Plans must include air-antiaircraft artillery coordination, with particular emphasis on such factors as recognition and identification procedures and the establishment of special antiaircraft artillery defended areas over which flying is restricted or prohibited, specific rules for the engagement of aircraft by antiaircraft fire (including small arms and machine guns of other units), and provision for air-antiaircraft artillery liaison. (Section IV, Chapter 6).

Section XII. NAVAL PLANS

116. GENERAL. Naval planning for a landing attack, when concerned with matters of primary interest to army commanders, is discussed in appropriate parts of this manual. Naval plans that are purely of naval concern, are discussed in FTP 167, FTP 211, and other naval publications.

Section XIII. SPECIAL OPERATIONS PLANS

117. RAIDER OPERATIONS. a. Amphibious raiders are troops specially trained and equipped to execute difficult assault landings and special inland operations. Selected infantry units may be trained for this purpose.

b. Raiders may be used for reconnaissance or as part of main or secondary assault landings. They may be landed before or with the main assault to seize main landing beaches or to attack the flanks or rear of enemy coastal positions. Landings frequently are made at night or under adverse weather conditions in order to take maximum advantage of surprise. Plans for use of such units may contemplate continuing operations ashore or withdrawal upon accomplishment of a specified mission.

c. Plans for raider operations in conjunction with other assault landings must be coordinated carefully with all elements involved

as to time and place of landing, mission, scheme of maneuver ashore, supporting fires, communications, and final disposition.

d. Raider troops usually require considerable special landing equipment, such, as rubber boats, protective clothing, navigational gear, and communication apparatus. (Section II, Chapter 9.)

118. WITHDRAWAL AND REEMBARKATION. Plans for withdrawal and reembarkation of troops engaged in a landing operation or evacuation of forces by sea in the face of active enemy opposition must consider:

- a. Naval means available.
- b. Reembarkation points.
- c. Control of air and sea.
- d. Stages of withdrawal and sequence of evacuation.
- e. Coordination of protective fires from sea and air.
- f. Disposition of matériel which cannot be evacuated.
- g. Sea and weather conditions at time and place of reembarkation.
- h. Deceptive measures to confuse enemy.

119. PASSAGE OF UNDERWATER AND BEACH OBSTACLES. By joint agreement, the navy is responsible for detection, passage, and removal of all obstacles seaward of the grounding point of assault landing craft, and the army for detection, passage, and removal of all obstacles inland of that point. Tide and other assault conditions affect execution of this dual responsibility, and clearing operations of both services must be coordinated. (See Par. 12).

120. DEMONSTRATIONS. If demonstrations are contemplated, plans must be prepared prior to embarkation to load the necessary specially trained personnel and special equipment in proper priority to permit their use in hostile areas as desired.

Section XIV. AIRBORNE PARTICIPATION

121. GENERAL. a. In selecting appropriate missions for airborne troops, the tendency to dissipate their strength by scattered employment should be guarded against. Lightly armed, these troops should be used in mass to be most effective.

b. Airborne troops should be directed against objectives which are vital to the force as a whole, but only against objectives which cannot reasonably be attacked or neutralized by other means.

c. Inasmuch as the hostile reaction to a landing assault may likely take the form of armored counterattack, large airborne units should

not be landed so deep within the enemy area as to preclude reasonable prospect of their being given timely reinforcement by other ground forces.

d. These divisions should be relieved promptly by standard infantry divisions as soon as the divisions coming in over the beaches join them. Such special organizations should be taken out, reorganized, and re-equipped for future use. In the event that they cannot be relieved immediately they should receive over the beaches enough artillery, infantry heavy weapons, trucks, and other transportation, to give them the fire power and mobility of a standard division.

122. MISSIONS. a. In assisting an assault landing, the following are considered appropriate missions for airborne troops:

(1) To attack key points in or in the rear of coastal fortifications, such as gun positions inland from the beach.

(2) To block movement of enemy reserves.

(3) To assist in securing objectives of an assault landing force.

(4) To attack beach defenses in the rear.

(5) To disrupt enemy communications and supply facilities.

b. Airborne units as large as a division may be used appropriately to engage hostile reserves and to assist in securing the objective of the assault landing force. They may assist in blocking counterattacks of large enemy forces, but acting alone are incapable of holding hostile armor.

Section XV. SHORE-TO-SHORE MOVEMENT

123. GENERAL. In planning shore-to-shore movement, consideration must be given to the factors discussed in this section, in addition to those already covered which are common to all amphibious operations.

124. CHARACTERISTICS OF MOVEMENT. a. The range of shore-to-shore movement is limited by the length of time or water distance over which types of landing ships and craft can carry troops safely and bring them to the landing beach in condition for combat. Living conditions on loaded landing craft and weather and sea conditions during the voyage are important limiting considerations.

b. The open-water distance covered between friendly and hostile shores may be considerably greater than that normally traversed between troopships and the shore during a ship-to-shore movement. The time required for round trips between near and far shores may be greater than for the turnaround in a ship-to-shore movement. This

factor effects accumulation of reserve units and supplies on the hostile shores unless large numbers of craft are available.

c. Original embarkation areas or intermediate fueling bases will be much closer to the landing area than is necessary where the journey terminates in ship-to-shore movement.

d. The proportionate number of landing craft available for a pure shore-to-shore movement usually is greater than for a ship-to-shore movement. This increase in boats permits wide variety in assault, and permits great flexibility in the concentration and movement of reserves and supplies.

e. The quantity and duration of employment of the friendly air forces is usually much greater due to the shorter distances involved. It will usually be possible for land-based aircraft to participate.

f. Embarkation can be conducted more quickly and efficiently than in a ship-to-shore movement.

g. Equipment and supplies are limited to the capacities of available landing ships and craft.

h. The entire facilities of the near shore are available for dispersion, concentration, assembly, or maneuver of troops, supplies, equipment, and boats in preparation for the assault movement.

i. The time necessary to plan and execute a shore-to-shore movement is less than for a ship-to-shore movement.

j. A pure shore-to-shore operation requires sufficient landing craft of appropriate types to carry in one trip all of the troops, equipment, and supplies necessary to seize, hold, and organize a beachhead for a required period before reinforcement.

k. The beach selected for the landing must be within the operating range of small landing craft either from the initial embarkation point or an intermediate fueling point.

l. Reserve and supporting units, not held afloat in immediate proximity to landing areas, may be held in readiness on the embarkation shore. Consideration must be given to the time necessary for their eventual embarkation and journey and to the possible necessity for additional boats.

m. Operations employing trained troops in a water envelopment which ultimately will connect with friendly forces ashore may be conducted with minimum detailed planning for logistic support and continuation of attack.

125. TRANSPORTING SERVICE. **a.** Execution of a shore-to-shore movement may involve the use of ships and craft supplied either by the navy or by the army, or both.

b. Engineer special brigades (amphibian engineers) are organized to provide boat element and shore logistic elements necessary for water transportation and shore support of a reinforced infantry division in a pure shore-to-shore operation. Frequently they have been employed in ship-to-shore movements, the boat elements functioning with the navy. The shore units provide normal logistic support.

126. SELECTION OF EMBARKATION AREAS. Selection of embarkation areas for any shore-to-shore movement requires consideration of all or part of the following:

a. **Distance from objective.** The embarkation area must be within suitable range of the objective, yet far enough removed to permit concentration and embarkation of troops, supplies, and craft without undue interference by the enemy.

b. **Hydrographic and topographic features.** The area selected must be suitable for covered movement, bivouac, and assembly of troops and matériel; must have suitable water approaches, covered dispersal areas, and loading places for landing craft with required operational facilities; and have adequate roads to the points of embarkation.

c. **Rail system and road net.** The transportation system must permit the necessary movement of troops, equipment, and supplies.

d. **Storage facilities.** Suitable protective storage space permitting ease of access with cover must be provided for supplies.

e. **Protection against enemy action.** Antiaircraft protection must be provided.

127. EMBARKATION POINTS. a. Embarkation may be effected either at an established port, employing all existing facilities, or directly from suitable beaches.

b. Engineer development may be necessary to make selected beach embarkation points suitable. Development may include:

- (1) Installation of causeways for large landing ships.
- (2) Improvement of beaches and their approaches.
- (3) Installation of communications.
- (4) Development of roads and supply point sites.
- (5) Installation and operation of naval maintenance and supply facilities, including water.
- (6) Facilities to receive and process casualties and prisoners of war.

MOVEMENT TO THE SHORE

Section I. GENERAL

128. GENERAL. a. Upon arrival in general rendezvous or landing areas offshore from selected landing beaches, transports and other vessels of the attack force take station in accordance with their missions. Vessels carrying landing craft lower and assemble them as prescribed in the boat employment plan in preparation for the ship-to-shore movement. Troops and equipment in initial assault waves are habitually rail-loaded when embarked on ships equipped with suitable davits and carrying landing craft approved for lowering loaded. Others are loaded alongside as rapidly as possible. Boats rendezvous in prescribed areas, organize into waves, and proceed to the assault in accordance with provisions of the landing plan. After discharging their assault loads at the beach, boats return, reload, and shuttle in troops, equipment, and supplies according to plan.

b. Troops and matériel loaded on landing ships or craft not requiring transshipment for beaching comply with the landing plan, completing the shore-to-shore movement.

129. TRANSPORT AREA. Transport areas are as close to landing beaches as enemy fire and depth of water permit; in the initial phase of assault, about 14,000 yards. The location of the area or areas should not disclose to the enemy the exact point of landing. Transport areas should afford smooth water for debarkation, protection against attack by surface craft and submarines, and should be free of mines. Two or more transport areas may be necessary if beaches are separated by considerable distances. As soon as the situation permits, transports close to the beach to facilitate landing equipment and supplies.

130. FIRE SUPPORT AREA. The number of fire support areas depends on the number of supporting ships, fire missions, and hydrography and topography of landing areas.

131. LANDING BEACH. A landing beach is that portion of the shoreline of a landing area normally required for the landing of a battalion landing team.

132. LINE OF DEPARTURE. a. The line of departure is a suitably marked offshore coordinating line to assist assault craft to land on designated beaches at scheduled times and to coordinate naval gunfire and air operations with their movement.

b. During daylight, unless prevented by reefs or other navigational hazards inshore of the line of departure, craft deploy into attack formation on or before crossing the line of departure. To insure that deployment will take place prior to the boats coming under effective small-arms or light artillery fire, the line of departure should be from 2,500 to 5,000 yards from the beach. The line should be so oriented that boats on that line will have a straight run for the landing beach.

c. In order that boats may land on schedule, it is highly desirable that the line of departure be located accurately. Normally marking and control are accomplished by a control ship or boat. If this is impracticable or incompatible with secrecy, airplanes may be employed to guide and regulate the approach to the beach.

d. A separate line of departure is designated for each beach, except where beaches are adjoining.

133. H-HOUR. H-Hour is the scheduled time for the first wave of assault elements in the main landing to reach its designated beach.

134. REFERENCE AND CONTROL POINTS. a. **Reference points.** For reasons of secrecy and to simplify preparation of plans and orders, it is convenient to designate reference points for prescribing limits of transport areas, fire support areas, and lines of departure.

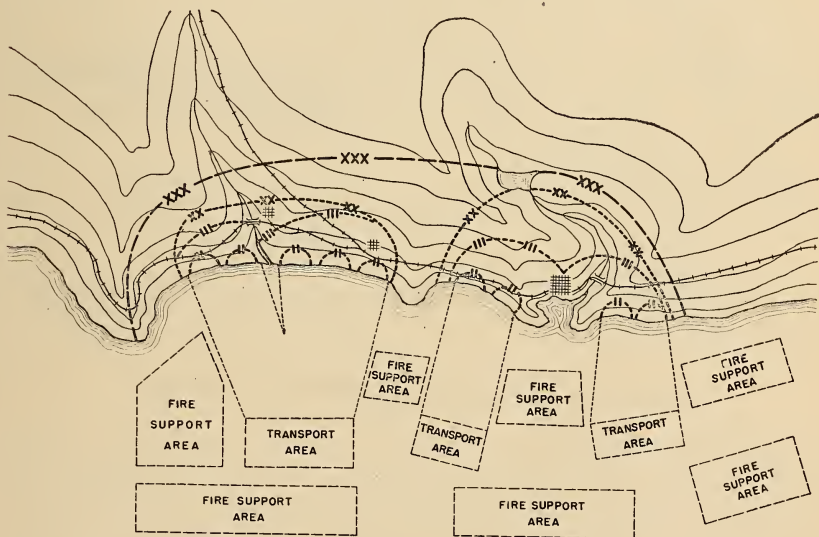
b. **Control.** (1) Control points are reference points marked by buoys, boats, or small craft as aids to navigation for vessels and boats of the attack force. They are established to aid the various supporting groups to move into the landing area, take accurate station therein, and conduct prescribed operations in the area in accordance with the time schedule.

(2) Marking vessels take accurate station on designated control points. They fly identifying flags by day and show lights to seaward by night. Marking vessels at an initial point and at certain control points within the landing area dispatch radio or other signals which may be picked up readily by craft of the landing force.

135. ILLUSTRATIVE DIAGRAMS. a. Figure 3 shows relative positions of transport and fire support areas in a landing operation with two divisional landing forces in assault.

b. Figure 4 shows a landing plan for a regimental combat team, using two battalions in assault with one of the battalions using two beaches. The third battalion remains in mobile reserve, together with regimental units embarked on the fourth assault transport (APA). Matériel loaded on the fifth ship, the AKA, is unloaded and taken ashore as planned. This formation for landing makes maximum use of all landing craft available in the transport division, concentrated to carry the two assault battalions ashore in minimum time. For simplification of the diagram, landing ships are not shown.

c. Figure 5 shows an operation which involves shore-to-shore movement only. Troops and equipment are assembled in bivouac areas convenient to embarkation areas. Initial supplies which are to accompany assault forces are on vehicles and landing craft. Landing force units, subdivided for the crossing, are loaded at embarkation points. Loaded landing craft are organized as required for the crossing. Upon arrival at designated rendezvous areas off the hostile shore, waves proceed to the assault on schedule and in accordance with the landing plan. After discharging, boats retract, regroup, and return to the



NOTE: NOT TO SCALE

Figure 3. Station and maneuver areas; division and task force in a landing assault, including beachhead lines.

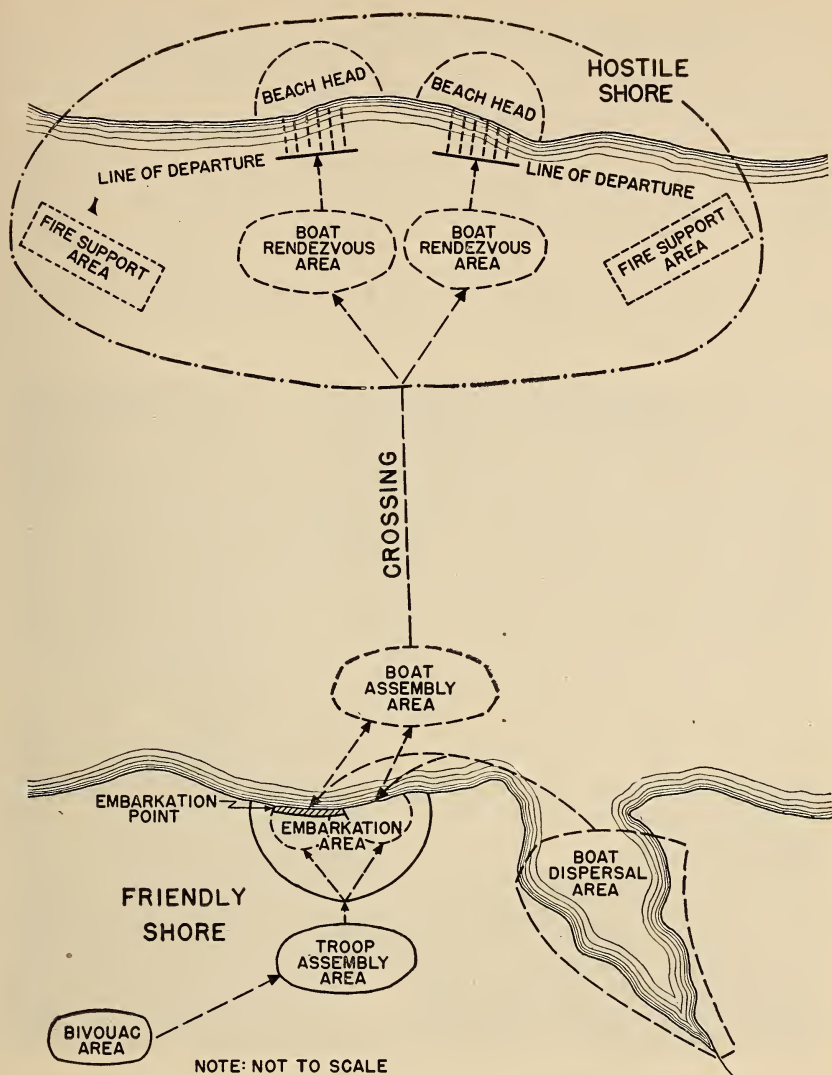


Figure 5. Schematic representation of an operation involving shore-to-shore movement.

b. The maximum number of landing craft available for the landing assault is limited to the numbers of each type that can be carried on assault transports, cargo vessels, or landing ships and be launched from ship davits or large capacity booms. Amphibian tractors and trucks, carried within landing ships, are driven directly from the ships at sea.

c. Detailed information needed by the Navy to determine boat requirements and the manner of their employment is furnished by the Army in debarkation plans. Basic data are developed from the joint plans of the task force commander.

d. The number of landing craft provided should permit unloading in one trip to the beach sufficient elements of landing teams and local reserves to gain and hold at least the first objectives of the assault battalions.

e. Landing vehicles, tracked (amphibious tractors), are a necessity if the landing is to be made on a beach over shallow coral reef or coral ridges as landing craft cannot be beached.



Figure 6. Amphibious tractors landing on Kwajalein Atoll.

137. SHIP AND BOAT TYPES AND CHARACTERISTICS.

Types and essential characteristics of ships and landing craft normally used in ship-to-shore movement are given in Appendix I. For detailed study, reference should be made to ONI 226 (Allied Landing Craft and Ships) U. S. Navy.

138. CAPACITY IN BOAT SPACES. a. The carrying capacity of small landing boats normally is calculated on the basis of weight, sometimes given in terms of "boat spaces" for personnel type boats.

A "boat space" is the space and weight required for one soldier with his individual equipment, considered as 224 pounds (1/10 of a long ton) and 13.5 cubic feet of space.

b. Boat spaces available for troops or matériel total approximately 80% of maximum capacity of the boat by weight.

c. Boats are not filled to capacity under adverse conditions of weather, sea, or surf. There should be room to keep troops low in the boat. If weapons are to be fired from the boat, space is allowed for their operation.

d. Consideration is given to the dimensions of each vehicle and to the height of the center of gravity of the load as they affect stability afloat. The remaining capacity can be utilized for personnel or general cargo.

e. For discussion of boat loading in the landing assault, see Section VII, Chapter 4, and Section V, Chapter 5.

139. SPEED. The speeds indicated in tables in Appendix I are average speeds with boats loaded, with engines in good order, and with fairly smooth water. Speed should be determined by actual tests under various conditions of weather, sea, and load. The speed of a boat used in towing is cut approximately 50 per cent when the combined loads of the boats in tow equal the rated capacity of the towing boat.

140. TIME TO LOAD. Time required to load and unload various types of landing boats and larger landing craft varies in accordance with the relative amount of personnel and matériel comprising the load, facilities of the transport for discharging, the training of military and naval personnel involved, and conditions of sea and visibility. The loading time allowed for each boat should be determined during training, using actual loads under various conditions, with allowances for delays to be expected under combat conditions.

Section III. ORGANIZATION FOR LANDING

141. LANDING GROUPS. a. For movement to shore, troops of the embarked force are subdivided into landing groups made up of reinforced battalion landing teams or equivalent units. A group debarks from one ship and moves to shore as an organized movement in one trip of boats. These groups furnish data to the transport division commander which permit him to plan the use of landing boats and landing craft at his disposal.

b. Personnel of the landing force not placed in landing groups are debarked with equipment and supplies. If it is desired that a

flow of such personnel from any ship be faster than can be handled in this manner, they should be allotted priorities the same as equipment and supplies.

142. BOAT ORGANIZATION. a. Landing boats assigned to carry landing force assault units from ship to shore are organized into boat groups and boat divisions.

b. A boat group comprises those boats designated to transport a battalion landing team or equivalent unit from a particular ship to shore. It is designated by number and is commanded by a naval officer. The boat group usually includes sufficient boats to embark at one time all combat elements of the battalion landing team with essential assault equipment and initial combat supply. It normally approximates forty personnel boats (LCVP) and six LCM(3)s, or fifty amphibian tractors if they replace boats. The major portion of the boat group usually is carried on the transport in which the landing team is embarked. The remainder are drawn from other ships in the transport division or convoy which are not carrying troops assigned to initial assault. The number of landing boats of each type which can be carried on assault transports and large landing ships varies.

c. The boat group is subdivided into boat divisions of two or more boats each. A boat division carries a tactical subdivision, such as a company or platoon. Each important boat division is commanded by a boat officer.

d. Boat divisions scheduled to land simultaneously constitute a landing wave. A wave may include only one boat division. The senior boat division commander in a wave is the wave commander. Waves are numbered successively from front to rear.

e. The army personnel embarked in a landing boat constitute a boat team. It is commanded by the senior army officer or non-commissioned officer present, called the boat team commander.

143. ASSIGNMENT OF BOATS TO BOAT GROUPS AND BOAT POOLS. a. Landing boats are assigned to boat groups by appropriate naval commanders on the basis of the data given in the form for organization of landing groups.

b. In addition to boats assigned to boat groups, a pool of all types of boats may be provided to aid or replace disabled boats.

144. EMBARKATION OF BOAT GROUP AND LANDING GROUP OFFICERS. To insure essential close cooperation between boat group officers and landing group officers who are to operate together, these officers should be embarked on the same troop carrier.

Such personal contact permits changes to be made readily in the plan for movement of the unit concerned.

Section IV. BOAT OPERATIONS IN LANDING

145. LOADING FROM RAIL. a. Upon arrival at designated points in the transport area, troop ships are stopped and all boats are lowered. Vessels suitably equipped debark troops by lowering loaded from the rail.

b. To expedite embarkation, equipment of troops to be loaded at the rail from Wellin (multiple bank) davits should be stowed in the boats prior to debarkation time.

c. There are normally enough boats carried in Wellin davits of an assault transport to boat two or three assault waves, depending upon the individual ship and the boat assignment table for the ship. In order to lessen seasickness and fatigue from exposure, rail-loaded troops should be embarked after those loaded alongside. They ordinarily should be assault troops of the first two or three waves, inasmuch as they are the troops it is most desirable to land in top physical condition.

d. Immediately upon being lowered, loaded boats proceed to the rendezvous area where they join boat divisions and form landing waves.

146. LOADING ALONGSIDE. a. **Boat assembly areas.** Ships not equipped for rail loading lower empty boats. As soon as unloading boats are in the water they proceed to boat assembly areas convenient to their assigned vessel until called alongside for loading. Location of assembly areas when debarking from one or both sides of the ship is shown in figures 7 and 8.

b. **Debarkation stations.** Troops debark by nets over the side of the ship at debarkation stations. Each assault transport normally has not less than four debarkation stations on each side, and each cargo ship, two per side. Debarkation stations are designated by number and color from fore to aft. Loading stations for vehicles and cargo are located adjacent to hatches.

147. LANDING VEHICLES, TRACKED. a. When amphibious tractors are employed to transport assault elements they are normally loaded within the landing ship, tank (LST), or landing ship, dock (LSD), and launched therefrom in close proximity to the line of departure.

b. Transfer may be made from landing craft to amphibious tractors for waves subsequent to the assault.

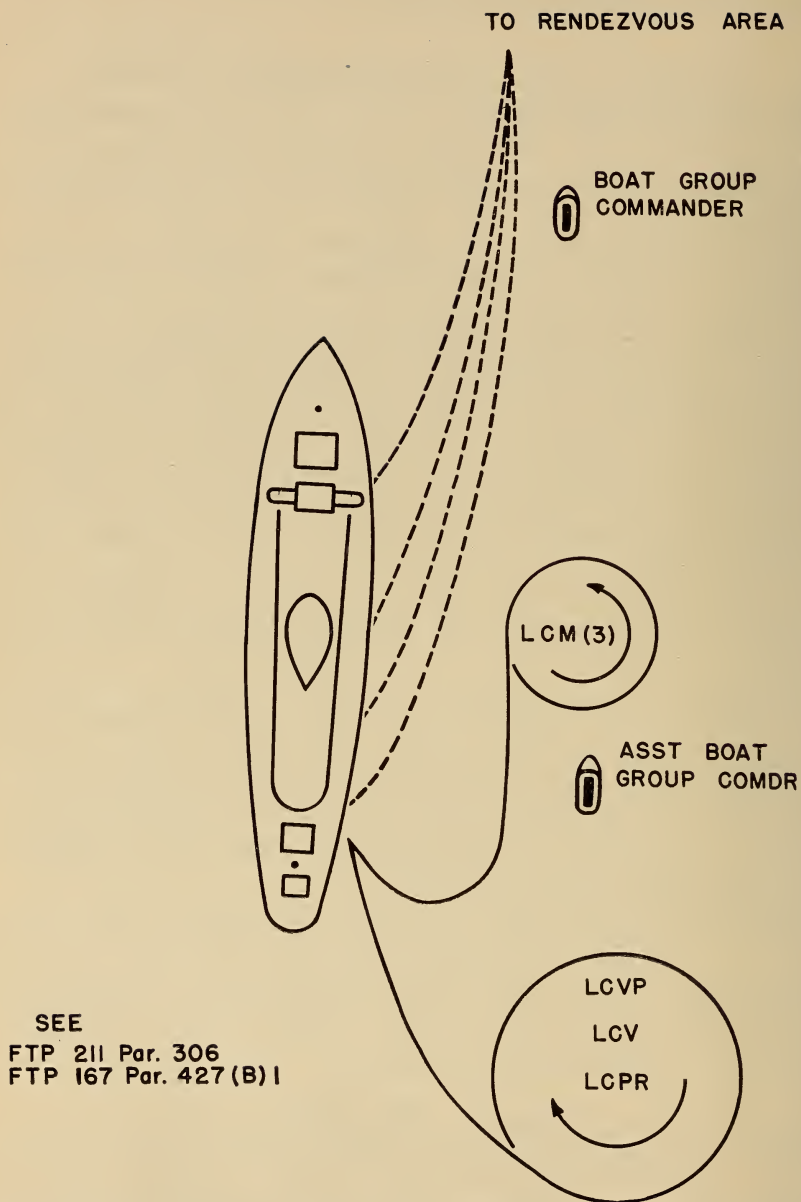


Figure 7. Boat assembly and rendezvous areas, when debarking from one side only. Debarkation may be from port as well as starboard.

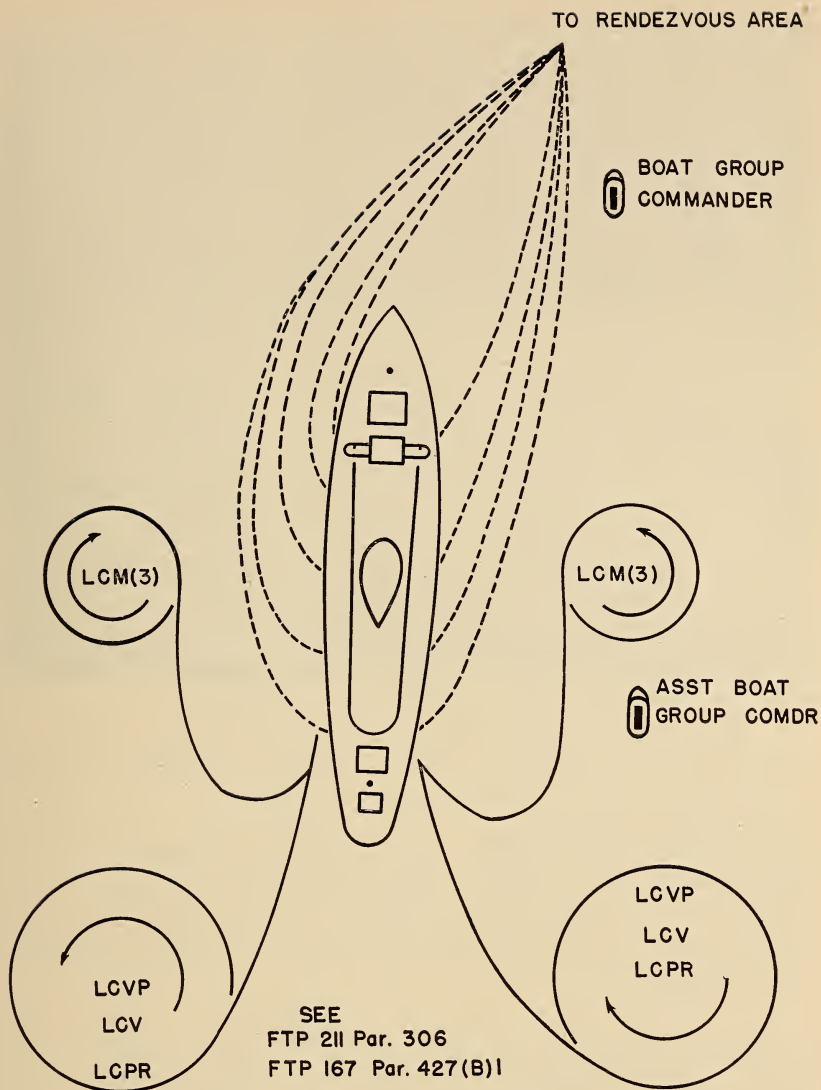


Figure 8. Boat assembly and rendezvous areas, when debarking from both sides.

148. BOAT IDENTIFICATION. A designated member of each boat team carries a board displaying a number. This numbered board, during the loading and while in the boat, identifies the craft for control purposes. Each coxswain has a landing diagram showing the number of the wave in which his boat belongs and the position in that wave. (Appendix II.)

149. CONTROL OF BOATS. a. The primary responsibility of naval personnel attached to transports is to land troops, equipment and supplies in accordance with tactical plans of embarked troops. In execution of this responsibility, the authority of both officers or coxswains concerned in the purely naval function of proper operation of boats shall not be impaired.

b. Tactical control of troops in the movement to the shore is the responsibility of the troop commander. This control is executed by prescribing boat formations corresponding to tactical disposition of troop units, and by prescribing times and places at which these units shall land.

c. Commanding officers of troop units in individual boats or larger boat formation check on movement of their craft, particularly after passing the line of departure, to assure landing at the proper place. If the course being followed is not correct, the troop commander points out the error and requests the naval commander of the boat unit to correct it.

d. If a landing is about to be made at an incorrect beach, and correction is not readily apparent, the boat or boat unit should be maneuvered until the proper landing beach can be identified, or other landing instructions obtained. The troop commander may require a landing at any suitable point under such circumstances.

e. Modification or cancellation of plans or orders is based on the general rule that the commander of any unit of troops is the final authority as to where and when his unit shall land.

150. RENDEZVOUS AREA. After loading, boats move to marked rendezvous areas 500 to 1500 yards from the transport and on the line between the ship and the center of the line of departure. Boats in each wave are assembled under control of wave commanders as prescribed in the landing plan.

151. MOVEMENT TO LINE OF DEPARTURE. a. Boat waves leave the rendezvous area for the line of departure in accordance with a time schedule. A control vessel conducts the first wave to the line of departure followed by succeeding waves at correct time intervals. (Fig. 9.)

b. Landing waves adopt assault formations near the line of departure and start for the landing beach on signal of the control vessel.

c. If attacked directly by aircraft or surface craft, boat guns and other designated weapons open fire without orders. Riflemen do not fire unless directed.



Figure 9. Boat movement in transport area and to line of departure.

152. DASH TO THE BEACH. a. It is extremely difficult for boat commanders, if dependent solely upon compasses and observation of the shore line, to approach the beach at full speed and land in formation at the point desired, particularly at night or during other periods of poor visibility. Use of all available marking or direction-finding aids is required.

b. Scout boats may precede the leading wave to assist in guiding it in to the beach. Succeeding waves preserve prescribed time and distance intervals. (Fig. 10.)

c. The time and place of landing of each boat division and wave is executed in accordance with the landing attack plan of the army unit transported.

153. LANDING. a. During daylight, boats of the first wave may commence firing on a favorable target on the beach as soon as within range. Fire of boat guns may be supplemented by fire from other suitable weapons of the landing troops. When boats are about to beach, fire is concentrated on the target designated by the boat team commander.



Figure 10. The dash to the beach.

b. Landing craft, support (LCS-S or LCS-L) or LCI gunboats furnish the bulk of close supporting automatic and rocket fire. These craft furnish a base of fire for the initial operations ashore.

c. In order to obtain surprise effect in a landing under cover of darkness, it is desirable to withhold all fire until surprise is lost.

d. As each landing boat of the first wave is beached, the assaulting troops, under cover of fire from support craft and boat guns, spring out, deploy, and advance rapidly across the beach.

154. SUBSEQUENT BOAT MOVEMENTS. **a.** Each boat retracts immediately after its load is on the beach and returns individually to its assigned vessel. If necessary to land other units in formation in a second trip, assembly and reorganization of the boats may be accomplished at the transport or other vessel in which the units are embarked. Otherwise, boats operate independently on second and succeeding trips to the beach.

b. Boats landing regimental or division reserves in their first trip rendezvous at a designated control vessel until ordered to land.

c. When transports are forced to put to sea or otherwise change position, while or after debarking troops, boats may be directed to

rendezvous on a control vessel until their further disposition is decided.

Section V. BOAT GROUP FORMATIONS FOR LANDING

155. FACTORS. a. In naval usage, "distance" indicates the space between individual ships or boats measured in any direction, and "interval" indicates the space between groups of ships or boats measured between the corresponding ship or boat in each group in any direction. In this manual, naval usage is followed.

b. Formations, frontages, and distance employed within boat groups are governed largely by:

- (1) Types of boats available.
- (2) Extent of beach, form of coast line, and presence of obstacles.
- (3) Mission and scheme of maneuver of embarked troops.
- (4) Equipment and supplies to be carried.
- (5) Extent and type of anticipated opposition.
- (6) Necessity for maintaining integrity of troop units and landing those units in the desired tactical organization.
- (7) Effective use of boat weapons against enemy aircraft and beach defenses.
- (8) Vulnerability of the formation to fire of beach weapons and aircraft.
- (9) Time intervals between waves which permit prompt support by following units, yet are sufficient to prevent congestion of boats and intermingling of units on the beach.

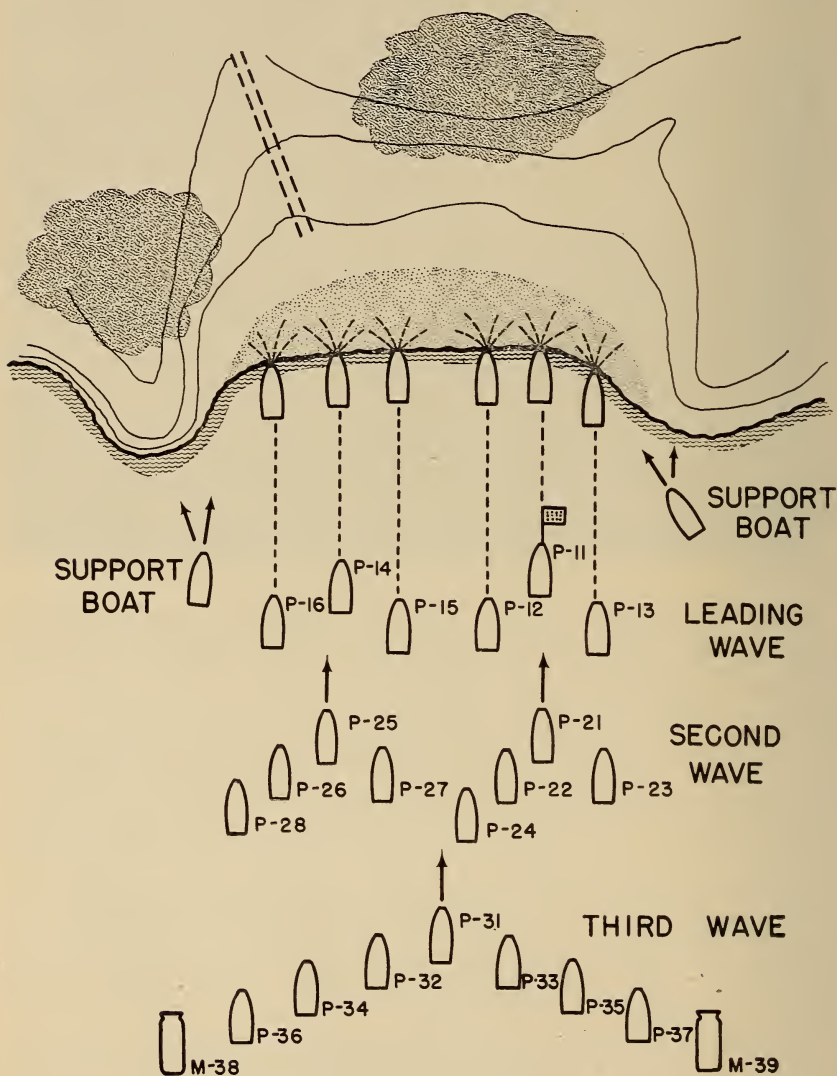
156. ASSAULT WAVE FORMATION. a. The formation adopted by an assault wave approaching a hostile beach (fig. 11) should facilitate effective leadership and control from the command and guide boats, permit all boats to fire on the beach when necessary, give flexibility of maneuver, and reduce vulnerability to air attack. All boats should move toward the beach on zigzag courses while maintaining approximately their relative positions in the formation.

b. Support boats (LCS) follow or operate on the flanks of the leading wave, covering and supporting the landing with fire from suitable positions offshore.

c. Boats of the leading wave are distributed evenly over the landing front as indicated in the landing plan. Lateral distance between boats is normally not less than 50 yards, and distance between boat divisions is from 300 to 400 yards. Requirements for dispersion and maneuver room for final deployment usually will indicate wider distances between boats in initial waves.

d. Boats in succeeding waves employ formations best suited to proposed tactical operations of troops and equipment embarked in them.

e. Succeeding waves should follow at sufficient intervals to provide required close support, to permit the retraction and turn around of



(NOT TO SCALE)

Figure 11. Landing and deployment of troops in assault waves. (P=LCVP; M=LCM.)

preceding boats, and to allow troops and vehicles to clear the beach, avoiding undue congestion and intermingling of units. With favorable approach conditions, the minimum interval is ordinarily three minutes in daylight for the leading waves containing riflemen and light assault weapons. With darkness or less favorable conditions, the interval is increased.

Section VI. BATTALION LANDING TEAM

157. BATTALION LANDING TEAM. a. A landing team is a standard battalion combat team reinforced with the attached elements required for the operation. The resultant team should contain the means necessary to accomplish its objective and to permit sustained operations ashore until ground operations become normal.

b. A typical battalion landing team may include the following:

- (1) Infantry battalion.
- (2) Light field artillery battery.
- (3) Battery of self-propelled antiaircraft artillery automatic weapons.
- (4) Combat engineer platoon from organic division engineer battalion.
- (5) Platoon from infantry cannon company.
- (6) Platoon from antitank company.
- (7) Detachment from division cavalry reconnaissance troop (amphibious scouts and raiders).
- (8) Shore party, including special engineer company, naval platoon (beach party), and communication team from joint assault signal company.
- (9) Shore fire control party from joint assault signal company.
- (10) Air-liaison party from joint assault signal company.
- (11) Liaison detail, field artillery battalion.
- (12) Portable surgical hospital.
- (13) Other units as required. They may include detachments from such combat units as chemical weapons, field artillery, rangers, tanks, military police, or amphibian tractors or tanks; or such service units as quartermaster general service, chemical decontamination, and amphibian truck.

158. MISSION. a. The mission usually assigned to assault battalion landing teams includes the prompt seizure of a terrain objective ashore. This mission often will require rapid advance to a prescribed regimental beachhead line, with an intermediate pause for coordination or reorganization on a prescribed battalion beachhead line.

b. Execution of its mission demands unusually aggressive effort to overcome inherent disadvantages of landing operations.

159. SCHEME OF MANEUVER. a. The general scheme of maneuver is decided after considering the terrain, the portion of the shore line on which the battalion is to land, and the enemy situation. The plan must be kept as simple as possible.

b. The scheme of maneuver may be influenced considerably by capabilities of available naval gunfire and air power.

c. Personnel of the landing team should have a complete briefing on the plan and its execution in time to comprehend it thoroughly.

160. LANDING PLAN. The landing plan is based on the scheme of maneuver. Flexibility of the plan is necessary because available detailed information usually is limited. If a major change in the scheme of maneuver is indicated, the next higher army commander should be notified.

161. COMPOSITION OF ASSAULT LANDING TEAM. a. The general composition of elements which should land in the first trip of boats in the assault waves may be indicated frequently for the battalion landing plan by the attachments which are embarked with the battalion landing team. Authority may be delegated to the battalion commander to omit a part of the team from the initial trip of boats. All infantry elements usually will be in the first trip of boats.

b. Some transports carry a sufficient number of boats to permit embarkation of a satisfactory reduced force in the first trip of the boats. Such a condition is desirable as it avoids the difficulties in obtaining additional boats from other ships.

c. Most elements of the team not in the first trip will be needed shortly after the initial landing. Ordinarily, such elements should be boated as rapidly as possible and held in assembly areas near the ship, on call of the battalion commander. An alternate plan may be to hold them aboard ship in order that their boats may be used for other troops or supplies, landing them on a later time schedule.

d. The landing plan must be sufficiently flexible to permit waves, or individual boats of a wave, to be delayed in the vicinity of the line of departure out of small-arms range should it become desirable in order to meet unforeseen conditions on the beach. In practice, this may result in a drastic modification of the original landing diagram. Certain principles govern:

(1) Service elements, except reconnaissance details, should not be landed until the beach is clear of enemy resistance and the work of organizing the beach can be begun.

(2) Towed antiaircraft and antitank weapons and artillery should not be landed if the fight for possession of positions for these weapons is still in progress.

(3) Wheeled vehicles and towed weapons should not be landed until their passage of the beach is practicable, i. e. until the shore party has prepared the beach for their passage. Unless guarded against, there may be a tendency to bring in motor transportation before adequate roadways and exits are prepared.

162. ASSIGNMENT TO WAVES. The battalion commander assigns tactical units to waves and decides upon the time schedule for waves. Generally, assault rifle companies are embarked in the first two waves, the weapons company and reserve rifle company in the next waves, and the field artillery and antiaircraft elements in the later waves. Other attachments are landed as desired.

163. RIFLE COMPANIES. a. Rifle companies are assigned to waves in accordance with the scheme of maneuver ashore. When sufficient landing beach is available, seizure of a battalion beachhead usually requires a landing with elements of four rifle platoons in assault. For a formation of this type, a battalion front of 600 to 1000 yards is desirable. A triangular formation in landing assault usually is appropriate for rifle elements of the infantry company and battalion.

b. The landing beach should be so divided among assault companies that no company is required to land three platoons abreast, unless very weak opposition is anticipated or the battalion objective is close to the beach.

c. In the initial stages of landing, combat is waged by individual boat teams. Reorganization into platoons and companies usually will not be effected prior to reaching the company objective.

d. The boat teams of the leading waves are organized as self-sufficient assault teams to secure maximum power in attack. Each boat team, principally of lightly burdened riflemen, will include such personnel with assault weapons and demolition equipment as will assure rapid, aggressive advance inland.

e. It is desirable to land a reserve rifle company near the center of the battalion beach in order to place it ashore relatively intact. If possible, the reserve company should be landed behind the most successful assault company. Because of the possibility of impairment of radio communication, definite orders should be issued well in advance as to the specific location for the landing of the reserve company in the event of this emergency.

f. The initial attack may require early support of heavy weapons, particularly for flank protection. A heavy machine-gun section may be attached initially to each assault company for embarkation in the second wave. Ordinarily, they should not be landed so early as to risk dispersion of the section from enemy fire upon the beach. Remaining elements of the battalion weapons company should be landed promptly behind assault rifle companies.

164. ANTITANK WEAPONS. If enemy armored forces are present, or the terrain of landing beaches and adjacent shores is suitable for tank operations, antitank weapons are landed early. Combat team antitank weapons usually are landed sufficiently early to assist assault units in repelling counterattack during their advance inland.

165. FIELD ARTILLERY. a. Field artillery batteries of the landing teams normally are landed early on schedule, but may be held in the transport area on call. The LST and LCT are useful for transportation of field artillery.

b. Under suitable conditions, field artillery weapons may be used to deliver fire from landing craft en route to shore.

c. The 105-mm howitzers can be landed, emplaced, and displaced promptly by use of 2½-ton amphibian trucks (DUKW), sufficient of which should be equipped with A-frames for loading and unloading. Some vehicle modification is necessary for certain combat tires. Under certain conditions, field artillery, specially equipped with 75-mm pack howitzers, may employ LVTs.

d. Each piece with its prime mover and crew should be unloaded at the beach from the same craft. Each battery should take ashore, distributed in the same boats with its weapons, one quarter to one half of a unit of fire.

166. ANTIAIRCRAFT ARTILLERY. Attached antiaircraft artillery should be landed promptly with the exception that if not equipped with self-propelled mounts its landing should be delayed until the beach has been prepared for wheeled traffic. (Section IV, Chapter 6.)

167. CHEMICAL TROOPS. a. Smoke operations in early stages of a landing attack will be as planned by the joint force commander. Normally, it will be controlled by the naval force commander in view of possible hazards or hindrances which uncoordinated use of chemicals might make for navigation, fire control, and security of supporting naval vessels. It may interfere also with air operations.

b. Attached chemical troops may be required to smoke the shore in front of the battalion or other portions of the beach during the ap-

proach. Chemical weapons may supplement close-support fires ashore with high-explosive fire, either directly from the approaching boats or after landing.

c. Firing from landing craft necessitates certain preliminary emplacements which may slightly reduce the usefulness of these boats for other landing purposes until the emplacement is jettisoned or removed upon return to the mother ship. When chemical mortars are mounted on small landing craft the remaining available space is necessary to enable the gun crews to fire the mortars.

168. FLEXIBILITY OF PLANS. **a.** Flexibility in manner of landing weapons company and reserve rifle units may be obtained by alternate plans, the execution of which may be directed by an abbreviated message to embarked responsible commanders. Flexibility in use of supporting arms may be achieved by keeping them on ships or craft in the transport area on call.

b. Flexibility during advance from the beach to the battalion beach-head must be achieved primarily by means of alternate plans, because of difficulties in organization and communication.

c. Plans for naval gunfire and air operations to be directed from land by naval shore fire control parties or air liaison parties provide flexibility for their utilization.

169. EXAMPLES OF TACTICAL UNIT ASSIGNMENTS TO WAVES. **a.** Figures 12 and 13 illustrate adaptations of landing formations to the scheme of maneuver, or modifications of the scheme of maneuver to operating limitations of landing craft. A possible assignment of troops is given in the column "Remarks".

b. In figure 12, the mission requires rapid advance to and seizure of an objective at some distance inland. Elements behind the assault waves must land promptly to build up necessary concentration of force ashore as soon as possible. Artillery is included in the first boat trip.

c. In figure 13, the mission requires seizure of a wide, shallow beach-head, followed by advance only on regimental order. It is unknown whether a suitable battery position will be available for some time after landing. The situation permitting, tanks might be landed in leading waves to provide direct fire against the known enemy strong point.

170. ASSIGNMENT OF SHORE PARTY TO LANDING WAVES. **a.** Certain working elements of the shore party must be landed promptly. A principle of operation is that matériel, equip-

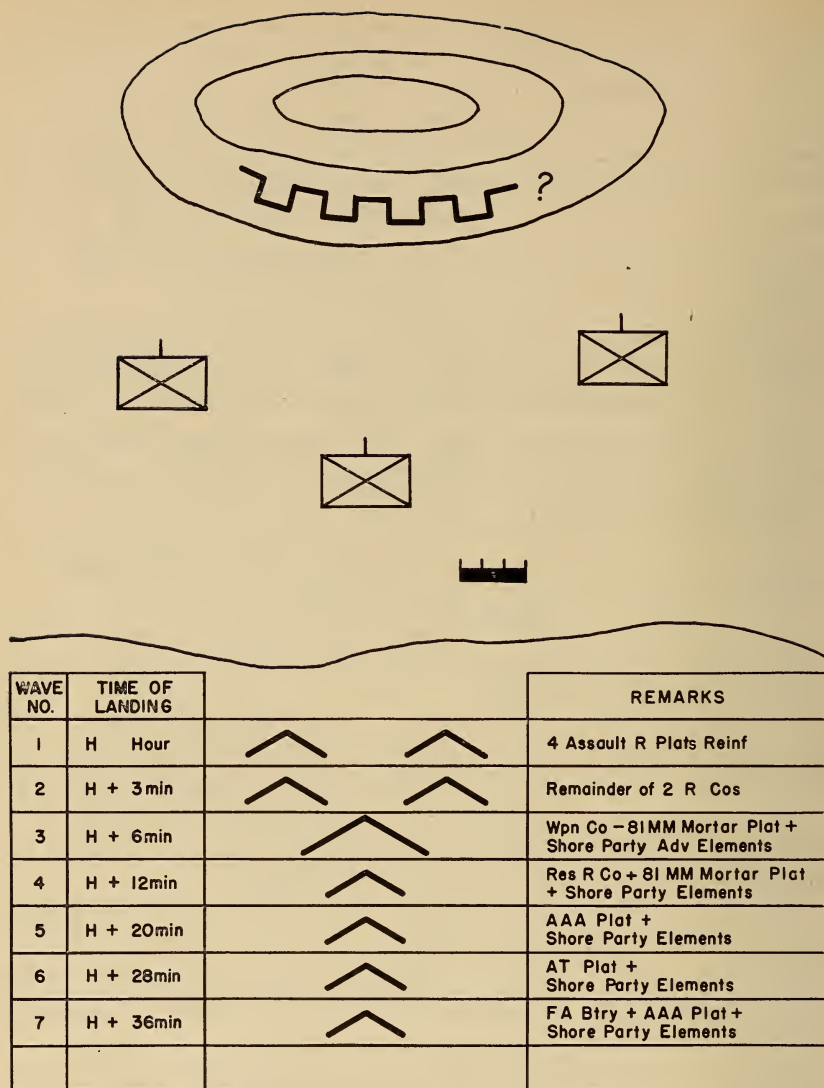
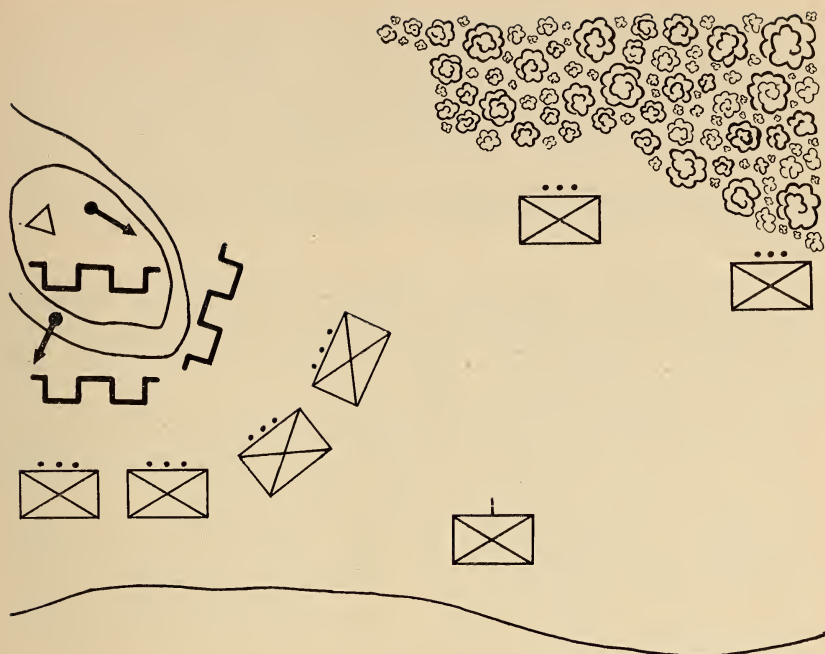


Figure 12. Landing formation adapted to scheme of maneuver involving advance to and seizure of an objective at some distance inland.

ment, and supplies should not be landed upon a beach until it is ready to receive and deal with them.

b. Among these elements are those for road making, beach marking and mine and obstacle removal to facilitate landing of matériel and vehicles. Bulldozers are required early to improve landing beaches,



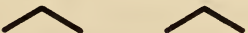






WAVE NO.	TIME OF LANDING		REMARKS
1	H Hour		4 Assault R Plats Reinf
2	H + 4min		Remainder of 2 R Cos
3	H + 8min		Wpn Co - 81MM Mortar Plat + Share Party Elements
4	H + 13min		Res R Co + 81 MM Mortar Plat + Share Party Elements
5	H + 20min		AAA Plat + Share Party Elements
6	On call		F A Btry
7	On call		AT Plat

Figure 13. Landing formation adapted to scheme of maneuver involving seizure of a wide, shallow beachhead.

make roads, cut exits from beaches, and provide additional motive power to drag vehicles and supplies across beaches.

c. The hydrographic section of the naval beach party, to locate and mark underwater hazards to landing craft; and the boat traffic control and communication sections must be landed early.

d. The main body of the shore party must be landed and ready for work prior to arrival of supplies and heavy equipment. Additional elements attached for specific duties are landed at appropriate times to prepare for accomplishment of their missions. The plan must be sufficiently flexible to permit holding elements whose presence are not required on the beach out of small-arms range in the vicinity of the control boat by delaying the landing of a wave or individual boats of a wave.

171. ASSIGNMENT OF REMAINING ELEMENTS. a. Advance command elements of the battalion land behind assault companies, to take control of the action at the earliest practicable moment. They are accompanied by communication personnel.

b. In order that the battalion commander may obtain close cooperation from air forces and gunfire support ships, the air liaison party and the shore fire control party normally land in his wave.

c. Command, reconnaissance, and initial communication elements from assault units precede the main bodies of the shore party, field artillery, antiaircraft artillery, and other major supporting elements.

d. A guide indicating possible locations for other small elements is as follows:

(1) To assault platoon waves: small combat engineer detachments for demolitions or construction reconnaissance.

(2) To support platoon waves: battalion scouts.

(3) To weapons company and reserve company waves: reconnaissance, initial communication, and primary command elements of the battalion, shore party, artillery, air liaison party, and shore fire control party.

(4) To the reserve company wave: bulldozers of the shore company.

(5) To a rear wave: remainder of battalion headquarters detachment.

172. OPERATIONS ON SHORE. a. The battalion plan includes designation of objectives for assault companies. Only under exceptional circumstances will provisions be made for platoon objectives.

b. Objectives of boat teams are in the immediate vicinity of the beach, selected to reduce aimed small-arm fire on the beach. Dunes, tops of cliffs, and parts of front edges of woods or towns may be objectives for boat teams. Portions of these features usually can be identified during low visibility. Boat teams continue rapidly from their objectives to the company objective without interruption or pause for platoon reorganization. Platoon commanders may regain control of their platoon at the company objective.

c. The company objective should be an easily identifiable line a few hundred yards from the beach, the seizure of which will decrease all enemy small-arms fire on the beach and where reassumption of control by the company commander and continuation of the advance are facilitated. From this objective, the company advances without delay to the battalion objective.

d. All operational plans should be studied aboard ship with maps and models of the landing beach, adjacent shore line and hinterland.

173. SUPPORT OF INFANTRY LANDING ATTACK. a. During the period between the landing of the first wave of infantry and the emplacement of organic artillery, fire support is furnished by aviation, naval gunfire, and specially equipped support craft. The landing force plan should provide for powerful air operations on the fronts of the most critical battalion sectors. Naval gunfire support usually is available for each assault battalion.

b. Initial positions available to field artillery ashore often prevent complete flexibility of fire. Battery positions should be kept clear of beach installations, and fires coordinated with other elements in the battalion landing team.

c. Battalion fire-direction for field artillery may not be possible for some time after landing. Naval gunfire supplements field artillery during this period and for some time thereafter. Air operations continue, but are decreased after initial phases of the landing if airfields or carriers are distant from landing beaches and other fields do not become available promptly.

d. Certain air operation and naval fires are scheduled initially. Support fires during the advance inland are delivered on targets of opportunity on call through the air liaison or the shore fire control parties. (Chapters 7 and 8.)

174. INTELLIGENCE PLAN. a. In the regimental operation plan the battalion commander may note important details on which he desires additional information for preparation of the battalion plan. He should make prompt request upon the regimental commander for such information. Extensive use must be made of available maps, photographs, and models.

b. The use of amphibious patrols and scouts is discussed in Section XIII, Chapter 3, and Section IV, Chapter 9.

c. Advance to the battalion beachhead line usually is too rapid to permit thorough reconnaissance. Battalion scouts should land in early waves prior to the landing of the battalion commander. At the earliest practicable moment reconnaissance must be pushed beyond

the initial beachhead line to secure indications of enemy counterattacks and to prepare for further advance.

d. The intelligence plan of higher authority may provide for delivery of enemy information direct to the battalion. In early phases of the landing, however, little intelligence should be expected from outside sources.

e. Request may be made for performance of air reconnaissance missions by supporting aircraft of any type through the air liaison officer.

175. EQUIPMENT OF ASSAULT TROOPS. Troops in assault waves should carry only ammunition, rations, life saving device, and personal equipment essential to initial stages of combat ashore. They are subjected to unusual difficulties from which they can better extricate themselves if lightly equipped. They may have to swim ashore from grounded or wrecked craft. They may have to rush an obstructed beach under fire, to climb cliffs, or to wade swamps. Maximum physical exertion and maximum speed of advance will be required. Measures must be taken to bring necessary additional supplies and equipment to these troops promptly after landing.

Section VII. DEBARKATION AND SHORE MOVEMENT PLANS

176. GENERAL. a. Successful execution of a ship-to-shore movement is dependent upon thorough preparatory organization of boats and landing forces, proper assignment of troops to boats, rapid and orderly debarkation, proper operation and control of boats, and careful timing of movement to the shore. Planning in minute detail, training, and complete coordination of all elements are required in every phase.

b. Plans for debarkation and movement ashore of landing teams and all other elements of the landing force should be prepared and completed prior to embarkation in order that the loading and billeting aboard ship will support debarkation and assault requirements.

c. Debarkation plans in each echelon are based on data supplied by higher authority as to availability of landing boats within the transport division and for each transport, scheme of boat employment to carry assault landing teams, plan of maneuver to and on shore, composition of landing teams, and landing capabilities of assigned craft.

d. Proper coordination of all elements requires that certain essential forms and tables be prepared by or for battalion landing team commanders and their associated boat group commanders.

e. The discussion in this section, while referring directly to ship-to-shore movement, is applicable with slight modification, to shore-to-shore movements.

177. BOAT AVAILABILITY TABLE. a. A boat availability table (Appendix II) is used to tabulate for each ship in the transport group, by transport divisions, and within landing ship units, the number of landing craft of each type carried on each ship.

b. The form is prepared by transport group commander and is issued as part of the joint force landing attack order.

c. Boats reserved for particular use, such as boat group commander and emergency ship salvage party, and those boats authorized for rail-loading, should be indicated.

d. In port, when preliminary loading plans are being prepared, the transport quartermasters obtain this boat availability information from the transport division commander or captain of the ship. Any subsequent changes through loss or damage should be noted promptly.

178. MASTER BOAT EMPLOYMENT PLAN. a. A master boat employment plan (Appendix II) is prepared by the transport division commander in conference with the staff of the embarked regimental combat team. It is based on the data in the boat availability table and indicates the manner in which available boats in the transport division will be used to transport embarked assault battalion landing teams. It is issued as an annex to the joint force landing attack order. A copy also should accompany the combat team operations order.

b. A transport usually does not carry enough landing boats to embark simultaneously an entire battalion landing team. Necessary additional boats for assault battalions usually are obtained from other vessels within the transport division. If sufficient extra craft of required types are not available within the transport division, they are obtained from ships of the transport group carrying reserve units or divisional troops. When this assignment is necessary, the details are planned jointly by the landing force commander and the transport group commander, as the vessels to supply such boats must be specified by that naval commander.

c. Boat assignment tables and landing diagrams are prepared on the basis of boat employment plans.

179. BOAT ASSIGNMENT TABLE. a. A boat assignment table (Appendix II) is the principal plan for the assault landing, as it establishes the sequence in which all elements of the assault force will land. It is prepared by each battalion landing team commander to show in detail the assignment of personnel and matériel of assault elements to

each boat in the assault waves. It is executed simultaneously with the landing diagram (par. 181) after conference with transport, boat group, and boat wave commanders. It is their guide as to type of boats required, and where and when the craft are needed to debark the assault force.

b. This table must be made out in complete detail for the first trip of the boats carrying assault elements. Certain general limitations on assignment may be prescribed by landing force or regimental combat team commanders to insure that the landing assault is made in accordance with broad plans.

180. COMPOSITION OF BOAT ASSIGNMENT TABLE. a. Distribution of troops among craft represents a balance between two principles:

(1) It is desirable to boat small elements as whole units.

(2) It is necessary to disperse to reduce possibilities of severe loss.

b. Successful loading entails distribution of personnel, weapons, and equipment in a balanced manner. Units which comprise the only available elements of their kind, such as command and reconnaissance groups and shore fire control and air liaison parties, should be divided among several boats. Other units, such as crew-served and towed weapons, should be embarked as units with weapons, prime movers, crews, and initial ammunition supplies together in the same boats. Vehicle drivers and crews habitually accompany their vehicles on shipboard and in landing.

c. If spare boats are not available for replacing any inoperative at the time of debarkation, plans must provide for division of boat teams of inoperative boats among other craft of the wave. Under such conditions, initial plans may prescribe loads slightly under capacity.

d. The battalion landing team commander may be assigned a free boat which proceeds to the beach when directed and which constitutes his command post enroute from ship to shore.

181. LANDING DIAGRAM. a. A landing diagram is a part of the field order of the landing team commander. It informs the transport commander and subordinate military and naval officers on the ship of the tactical formation of the landing team in the attack. This form is developed from the boat assignment table and landing plan.

b. A landing diagram (Appendix II) is a diagrammatic record of the assignment of boat teams to boat waves, the relative position of boats in waves, and the formation of waves. It includes the time of landing for each wave, commencing at H-hour.

182. SUMMARY OF BOAT ASSIGNMENT BY WAVES. Preparation of a composite summary of the landing team boating plan frequently is desirable after the boat assignment table and landing diagram are completed. Such a summary provides a landing team commander with a convenient reference as to how various elements are embarked. The number of officers and enlisted men of each unit in each wave, and the number from each unit left behind in the initial trip should be shown.

183. DETAILED JOINT PLANS. Upon completion of boat assignment table and landing diagram, landing team commanders recheck the entire landing plan with transport and boat group commander. After any adjustment, and inclusion of the necessary control and support craft, the plans are adopted jointly and published.

184. DEBARKATION SCHEDULE. a. A debarkation schedule (Appendix II) is prepared by the landing team commander to organize and coordinate debarkation of boat teams.

b. This schedule indicates the time at which each boat team will reach its debarkation station and the type of craft to be ready to load. Calculations are based upon the time at which debarkation is to begin, information as to stations available, experience with time required for debarkation of various types of boat teams, and type of landing craft available for each team.

c. Debarkation is scheduled to reduce to a minimum the time which troops spend in landing boats prior to H-hour. Heavy equipment required for the assault should be loaded into landing boats before troops; assault rifle companies should be the last to load.

d. Assignment of boat teams to debarkation stations is planned to avoid physical interference in movement from billets to stations. Teams which include vehicles must debark at nets adjacent to the hatches from which their vehicles are unloaded.

e. Billeting should consider subsequent debarkation. For short voyages, it is imperative that boat teams be billeted as units convenient to their debarkation stations.

185. APPROACH SCHEDULE. An approach schedule (Appendix II) is prepared by the boat group commander. It specifies time schedule, distances, courses, and control points for movement of boats in waves from the rendezvous area to the beach.

Section VIII. EXECUTION OF THE BATTALION LANDING

186. PREPARATION FOR DEBARKATION. a. As the debarkation time approaches, assault landing boats are lowered and assembled.

Debarkation nets are lowered. Boats are called to nets by a naval debarkation officer. The battalion commander may detail an officer at each debarkation station with a guide from each boat team debarking at that station.

b. The first boat team to disembark at each station is assembled at the scheduled time. Other boat teams remain in billets. All teams check equipment and adjust individual equipment prior to movement to debarkation stations.

187. ADJUSTMENT OF EQUIPMENT. a. To reduce hazards to personnel debarking over the side of a ship, particularly in the dark and under rough sea conditions, individual equipment is worn so it will permit both free movement down the debarkation nets and rapid jettisoning in case of necessity.

b. Standard practice requires that the life belt be worn under all other equipment, which should be thrown off if the soldier must enter the sea.

c. The rifle is slung so as not to interfere with other personnel on the net. Other arms and equipment are suspended or attached so that they will not fall or catch in the net. The field belt is unbuckled.

d. Relatively light equipment not worn on the individual, e. g., machine guns, is lowered by hand lines into boats.

188. DEBARKATION. a. Personnel of boat teams assembled at debarkation stations descend the nets upon signal from the naval officer in charge at the station that the boats are ready for loading. The boat team commander is responsible for the execution of the loading.

b. Troops descend nets as many abreast as the width of the net permits.

c. The first men into a boat hold the net away from the ship and in the bottom of the boat to assist the others in debarking. The next men receive equipment lowered forward and aft of the climbing net.

d. As debarkation progresses, the army officer in charge at the debarkation station sends guides for succeeding boat teams.

e. Debarkation at night is carried out without lights, except for necessary screened signal lights for boat control.

f. Assault troops take station in a landing boat from front to rear in order of debarkation for attack. Troops in craft with vehicles or matériel station themselves so as to assist in debarkation. If the boat compass has been compensated for a specific loading of metal equipment, the boat should be so loaded.

g. Precautions must be taken to protect vulnerable equipment from waves and spray.

h. All army personnel except the boat team commander keep low in the boat after crossing the line of departure.

189. IDENTIFICATION OF SELECTED LANDING BEACH.

a. Although responsibility for the landing of troops at the proper beach at the scheduled time rests with the Navy, all possible joint precautions are taken to assure an accurate landing.

b. All maps, charts, and photographs should be marked with the selected landing beach with landmarks noted.

c. Low-altitude photographs of the shore line must be studied by all officers and boat team commanders, such pictures to be marked with the limits of the prescribed landing beach and important landmarks, accurately transposed from maps or charts. Due consideration must be given to aspects of the shore line as seen from different directions and distances and under varied conditions of light and tide.

d. Photographs of models, taken from elevations corresponding to those of boats during the movement to shore, may be used for study of the shore line. Caution must be exercised in acceptance of details.

e. Army personnel must be able to assist boat officers and coxswains to the landing beach in case the boat division in which they are embarked becomes lost.

190. ACTION AFTER INCORRECT LANDING.

a. Assault troops may make an incorrect landing, especially in a night operation. In a landing against opposition, they should initiate immediate aggressive action in furtherance of the general mission, without thought of reembarkation. The unit joins the nearest friendly force as soon as tactically advantageous.

b. If the incorrect landing is unopposed and at some distance from friendly forces, the unit moves to effect early junction. Use of landing craft might facilitate junction, if communications permit.

c. If troops are landed on a beach with another landing team, they must join and operate with that team until it is possible to rejoin their unit.

191. BATTALION COMMANDER ENROUTE TO SHORE.

The landing team commander while aboard ship enroute to shore notes particularly the movement of craft carrying his troops to see that they are being directed to the proper beach landing. He requests test of communications in the boat group commander's radio net as soon as permissible. He watches carefully for signals from rifle companies reporting successful landing, and notes volume and nature of enemy fire as they affect the employment of reserve troops.

192. APPROACH TO SHORE. a. Upon nearing the shore, in daylight and when safe beaching is assured, men remove life belts, fasten field belts, and secure equipment. In severe surf or other difficult conditions and at night life belts are not dropped until after the beach is crossed.

b. Engines of motor vehicles are warmed while still off shore.

c. Shortly before beaching, boat team commanders check equipment and insure readiness of their men for rapid debarkation. (Fig. 14.)



Figure 14. Position of boat team at beaching.

d. If a boat strikes an obstacle some distance off shore, the boat team commander details selected men to reconnoiter a route to shore by wading. Occasionally when water is deep between the boat and the shore, lateral movement along a bar or reef permits access to shore. Men who cannot reach shore with their equipment remain with the craft, unless it is about to founder or is under direct fire. Under such conditions they drop their equipment except their arms, adjust life belts, abandon boat, and proceed to shore.

193. OPERATIONS ON SHORE. a. It is important that assault troops clear craft speedily. As soon as the landing boat grounds and the ramp is lowered, the boat team should dash out over the sides of

the ramp, deploy promptly and move rapidly inland. They must not remain on or near the beach, but push forward with utmost vigor. Platoon commanders regain control of their platoons subsequent to seizure of boat team objectives. The company commander regains control progressively, usually at the company objective, signals success to the battalion commander, and begins without delay the advance to the battalion objective.

b. Advance of the battalion is accompanied by vigorous reconnaissance to front and flanks.

c. Each rifle company and early battalion command elements should leave guides near the beach to inform following command elements of the location of companies and the battalion command post. The shore party commander takes over this duty as promptly as practicable.

d. Infantry units landing behind assault companies also deploy promptly upon reaching shore, rapidly clear the beach, and move to designated positions.

e. Field artillery acts with boldness. Observation is pushed forward vigorously. Cub airplanes are very useful for observation and may be assembled ashore or flown from landing ships. Positions are selected to permit antitank fire. All available vehicles must be used freely in transporting ammunition from beach supply points or by amphibian vehicles directly from boats to battery positions.

194. ACTION OF SHORE PARTY. a. Leading elements of the shore party assist the landing of succeeding assault waves, primarily by guiding boats into suitable places for landing vehicles and by assisting vehicles to cross the beach safely and surely.

b. The main body begins to organize the beach, and establishes communication from shore to ship, with adjacent landing beaches, and the battalion command post ashore. Its primary concern is organization of the beach and handling of supplies for the landing team. It assists all troops landing on the battalion beach. The shore party reverts to control of the shore battalion commander on order of the regimental combat team commander.

c. The shore party is prepared at all times to assist in close defense of the battalion beach.

d. For further discussion, see Section VI, Chapter 5.

Section IX. LANDING THE REGIMENTAL COMBAT TEAM

195. GENERAL. a. Higher authority normally determines the number of landing teams to be used in the assault, the beaches on

which the landings are to be made, H-hour, regimental objective, initial availability of naval gunfire, degree of air participation, and use of smoke. It often will decide upon the regimental beachhead line. It may prescribe that the regimental reserve be landed only by its order, and that it be prepared to land outside the regimental area in support of other elements of the force.

b. The regimental commander normally will prescribe the assault battalions, battalion beachhead lines, boundaries between battalions, means of regaining control of the regimental combat team ashore, and plans for landing and use of regimental reserves. Jointly with the transport division commander, he prepares a composite table indicating boat requirements for the landing of the combat team.

c. In execution, the regimental combat team commander is concerned particularly with landing and employment of the reserve and other combat elements remaining under his direct control, with regaining control of his command ashore, and with supervising operations of his shore parties on the regimental beach. He may influence the action by control of requests from battalions for air support. He does not have direct contact with the naval fire control.

196. BATTALION OBJECTIVES. a. Unless it is believed that strong enemy reaction will be encountered by the battalions in a manner which cannot be predicted, halts on battalion beachhead lines should not be permitted. Upon passing the lines, battalions should so report to regiment and to adjacent assault battalions.

b. The battalion beachhead line may be omitted:

(1) When little initial opposition is expected.

(2) When there are no definite terrain features well located for the purpose.

(3) When the regimental beachhead line is unusually close to the coast.

197. ALLOTMENT OF BOATS. a. Landing boats available in the transport division are allocated for the ship-to-shore movement in accordance with the landing plan of the regimental combat team. Simplicity must govern allocation to avoid complications in assembling of boats.

b. Sufficient craft should be available to boat the entire battalion landing team in the first trip of boats or amphibian tractors. Should it be impracticable to boat simultaneously the entire number of assault landing teams desired, it is preferable to reduce the number of teams rather than omit essential parts of any team. Forward command, reconnaissance, and initial communication elements of the

regiment and attached elements should follow assault battalions as promptly as possible.

c. Sufficient landing craft may be withheld from initial assault waves to assure immediate mobility for the reserve battalion landing team. Unless the fire of beach batteries or that of air attack is probable at the time of movement of reserves to shore, large landing craft may be used in preference to small boats. Larger units of reserves thus may be boated intact and landed in minimum time.

198. DEBARKATION OF RESERVES. **a.** When there is possibility of early need for regimental reserves, at least the reserve combat elements should be loaded immediately into boats and held in readiness out of range of shore batteries, conveniently located with respect to probable landing beaches, yet near enough to the transport area to receive protection from air attack. Communication with the regimental commander must be provided

b. In rough sea or bad weather, or when it is probable that reserves will not be needed for some time, they should be held aboard ship to avoid seasickness. If the reserves may have to move a considerable distance along the coast before commitment, it should remain on the ship. Debarkation can be carried out on schedule or on call of the regimental commander.

199. TIME, PLACE, AND FORMATION OF LANDING RESERVE. **a.** The reserve is landed so as best to insure accomplishment of the regimental mission.

b. The reserve landing team is landed to:

- (1) Exploit success of an element already landed.
- (2) Support established elements against anticipated enemy counterattack.
- (3) Reinforce elements which have established a small beachhead.
- (4) Take up positions within the regimental beachhead as soon as a sufficient terrain is seized.

c. Permissible places of landing being limited by higher authority, or by naval considerations of practicability, alternate regimental plans should be prepared to cover all probable situations. Means for prompt transmission of orders from the regimental commander to the reserve are essential. Alternate landing plans require that the reserve battalion landing team commander prepare corresponding alternate plans of operation on shore.

d. Reserves should be prepared to make assault landings on beaches other than those used by the assault landing teams, especially if the battalions have made little progress or if the beaches are under

heavy fire. Provisions for such landing should be incorporated in alternate joint plans.

e. In most operations, the reserve landing team will land on some part of a beach used by an assault landing team. Advantage should be taken of the best hydrographic conditions in the approach to the beach, and of the improvements in landing facilities already installed by shore parties. Wide deployment of boats in landing is less necessary than for the assault battalions.

200. LANDING OF REMAINING TROOPS AND SUPPLIES. a.

Subject to higher authority, troops, vehicles, and supplies of the regimental combat team not included in the battalion landing teams are landed as prescribed by the regimental commander. Usually, they are landed after the first trip of boats. Any priorities required for debarkation of units should be established prior to preparation of the original embarkation plan.

b. The regimental headquarters and the headquarters of attached units should be landed early, usually ahead of the reserve. Vehicles, ammunition, rations, and remaining combat troops should be given unloading priorities in accord with the situation, to the extent permitted by the loading of the ships and availability of craft.

c. Transports may have to put to sea quickly and remain away from the transport area for considerable periods to avoid air and submarine attack. Low priority troops and supplies may not be landed for a number of days. Kitchen sections of units are included in the last element to debark.

d. Troops, equipment, and supplies not belonging to the regimental combat team, but embarked in the transport division, are unloaded in accordance with the plan of higher authority.

e. The regimental transport quartermaster or other experienced officer should remain aboard after the regimental command post has been established ashore. He should remain on the ship with the transport division commander as representative of the combat team commander until completion of debarkation.

f. Should that portion of the regimental command group embarked in another ship land ahead of the primary group, its personnel should establish a command post and initiate communication according to prearranged plan.

201. FIELD ARTILLERY BATTALION. a.

The leading echelon of the light battalion headquarters lands at the same time as the forward echelon of the regimental combat team command group, initiates prompt reconnaissance, establishes the command post, and in-

stalls communications. It determines targets requiring immediate attention and the status of naval gunfire support. Secondary elements of the headquarters landing from other ships initiate this action according to plan if they land ahead of the primary element.

b. As promptly as possible and practicable, batteries ashore are brought under battalion control. Batteries which are attached to reserve battalion landing teams are moved into centralized position upon landing, under battalion control. If a medium battery be attached to a regimental combat team, it is landed as soon as suitable facilities exist ashore for its movement and is attached to the light battalion. The battalion selects routes to suitable positions and provides guides.

c. Transportation equipment of the artillery, other than its essential vehicles, usually is carried in an assault cargo ship or landing ship, and is debarked as prescribed by the combat team commander. Landing ships, when available, reduce the unloading time of the assault transport.

d. Care must be taken to maintain suitable quantities of ammunition at battery positions in view of the usual initial shortage of transportation in the beach area.

e. The medium artillery may be equipped with self-propelled 105-mm howitzers or other weapons in lieu of its normal armament.

202. TRANSPORT DIVISION FLAGSHIP. **a.** The regimental combat team commander normally is on the flagship of the transport division in which the team is embarked. With him are usually the commanders of reinforcing units, particularly the field artillery and shore battalion commanders. The major part of the headquarters and headquarters companies of these units are embarked in this ship, as well as most of the troops not included in battalion landing teams. The flagship usually does not carry troops of assault battalion landing teams.

b. The senior commander of troops embarked on the flagship is designated commanding officer of troops. He performs the same functions as the battalion landing team commander in preparation of detailed plans for landing as required by the regimental combat team commander. If a shore party is not embarked in the ship, the troop commander provides troops to perform the functions of the ship platoon in unloading.

203. SHORE ENGINEER BATTALION. **a.** The shore engineer battalion operates in accordance with instructions of the regimental combat team commander.

b. The shore battalion commander, as regimental shore party commander, supervises the work of shore parties until division beaches are organized and the shore group commander assumes command. During this period, changes in priorities for landing supplies and equipment which become necessary through unforeseen circumstances are responsibilities of the regimental commander. (Section VI, Chapter 5.)

204. LANDING OF TRANSPORTATION VEHICLES. Combat unit loading requires that a minimum of transportation vehicles be loaded on assault transports for tactical and supply requirements of assault troops. Remaining vehicles taken with the regimental combat team are loaded in the one or two assault cargo ships of the transport division or on landing ships. These vehicles and the supplies with them in the ships are landed in accordance with planned priorities. Alternate plans may provide for priority landing of considerable ammunition, instead of rations and transportation, to meet unexpected early enemy opposition. To insure that both primary and alternate plans are workable, some sacrifice of ship capacity may be necessary.

205. OTHER TYPES OF LANDINGS. a. One or more infantry battalions may land under regimental control as raiders on the flanks of main landing beaches. Such troops may be embarked in landing craft (LCI-L), destroyer transports (APD), submarines, or other fast ships permitting rapid debarkation.

b. One or more reserve battalion landing teams may be embarked in landing craft (LCI-L), their transportation and supplies being embarked in LST or cargo ships (AKA). Infantry elements of this reserve, minus transportation, may be landed promptly in large groups. Beaches already seized by assault battalions are preferable for such landings. When LST are used for such elements, vehicles and supplies also can be landed quickly.

Section X. LANDING LARGE UNITS

206. INFLUENCE OF COMMANDERS. Owing to the difficulty of communication and the complexity of the operation, the influence of the task force and landing force commanders over the attack during the approach to the hostile shore and the landing is limited generally to decisions concerning adoption of alternate plans or the use of the floating reserve.

207. ALTERNATE PLANS. a. Decisions regarding use of alternate attack or logistic plans must allow sufficient time to permit subordinate units to restudy the plan, disseminate necessary intelligence,

and issue requisite orders to their subordinate units in turn. Even the platoon commander must have time for rapid review of the plan.

b. Alternate plans are placed in effect only upon order of the joint force commander, after the consideration of estimates of the commanders of the components. The landing force commander considers particularly the changes in the enemy situation ashore or the loss of troops during the passage, since such events may alter materially his ability to execute his mission. The naval commander is concerned with sea and weather conditions at time and place of landing and with unanticipated enemy naval capabilities as they affect his ability to land troops. The air force commander is concerned with air conditions at the alternate place of landing and the effect that the change may have upon his ability to participate with sufficient power.

208. TASK FORCE FLOATING RESERVE. a. The floating reserve of a task force may consist partially of division or regimental reserves which are withheld or established under force control. Force reserves usually should remain aboard ship, prepared for movement to a selected landing area and immediate landing in that area. If subordinate reserve elements are held under force control, provisions must be made for rapid communications so that the subordinate commander who needs his reserve may request timely permission to employ it.

b. Reserve commanders follow closely the action ashore and prepare plans for rapid landing and operations ashore at all locations where the reserve may be used.

c. Floating reserves may be embarked on landing ships and be maneuvered in large units in that way. In such instances, consideration must be given to the landing capabilities of the ships, and the effect of such limitations on possible employment of the reserve or on requirements for beach preparation at selected landing points.

ADMINISTRATION

Section I. GENERAL

209. ARMY AND NAVY LOGISTIC RESPONSIBILITIES. a. Army logistic functions for an amphibious operation are performed by units of Army Service Forces, army bases, depots, ports of embarkation, troop transport quartermasters, shore group elements, and normal administrative agencies of the landing force. Army responsibilities are:

(1) Concentration, organization, and equipment of the landing force by normal administrative agencies.

(2) Procurement, packing, and delivery of supplies and equipment to port(s) of embarkation. Preparation of supplies and equipment for the sea movement and for the landing attack (including waterproofing of vehicles, signal equipment, and other material by normal administrative agencies, ports of embarkation, and troop waterproofing personnel).

(3) Movement of the landing force to the port(s) of embarkation by normal administrative agencies.

(4) Embarkation of the landing force and loading of ships and craft with landing force matériel and supplies (subject to naval requirements for stability and safety of ships) by troop transport quartermasters, ports of embarkation, and stevedore units.

(5) Assistance in the unloading of ships and craft in the landing area, including provision of cargo-handling details aboard ships from ship unloading units of the shore group.

(6) Logistic organization and operation of beach areas, including unloading of equipment and supplies at landing beaches, and movement of supplies to shore supply points by shore group elements.

(7) Operation of shore supply points in beach areas by shore group elements or by other troops of the landing force.

(8) Logistic operations inland from the perimeter of the beach area by normal logistic agencies.

(9) Operation of port facilities by Theater of Operations Services of Supply.

b. Naval logistic responsibilities are:

(1) Procurement, manning, equipment, and operation of ships and landing craft required for embarkation, movement, and landing of the landing force.

(2) Unloading of equipment and supplies from ships into landing craft, amphibian vehicles, or onto docks. (For army assistance, see *a* (5) preceding.)

(3) Movement of troops, equipment, and supplies to landing beaches. (Amphibian vehicles are operated by army personnel.)

(4) Assistance in logistical organization of landing beaches prescribed for the naval component of the shore group.

(5) Evacuation from beaches.

(6) Operation of harbors.

210. BASIC DECISIONS. **a.** Basic administrative decisions are made as early as possible in order to give responsible service agencies the considerable time required to prepare and execute plans for procurement and assembly of ships, supplies, landing craft, matériel, and personnel.

b. These decisions include:

(1) Forces involved, their organization as task forces, and the principal objectives to be attained (tactical decisions effecting the administrative planning).

(2) Strength and composition of logistic units in the landing force and supporting elements.

(3) Matériel of the landing force.

(4) Supplies to be taken in initial movements.

(5) Levels of supplies to be maintained in the landing area.

(6) Delineation of major landing area (tactical decision affecting administrative planning).

(7) Location of resupply bases.

(8) Allocation of available shipping.

(9) Embarkation facilities to be used.

(10) Date for completion of embarkation.

c. In operations involving shore-to-shore movement, the following additional decisions are included:

(1) Location and assignment of embarkation areas.

(2) Level of supplies to be maintained in embarkation areas or bases on the near shore for purposes of resupply.

211. ADMINISTRATIVE PLANS. Detailed administrative plans are based on the administrative decisions listed in the preceding para-

graph. In addition to the limitations or requirements imposed by these decisions, the following considerations affect these plans:

a. Facilities for staging troops and for loading equipment and supplies.

b. Availability of required supplies and matériel in desired quantities, and ability to deliver them at time and place of loading.

c. Number, size, type, and loading characteristics of ships and craft available.

d. Availability of packaged loads (pallets or unloading drums) and equipment to handle them.

e. Number of available vessels that can be used economically or protected in one convoy.

f. Distance between base ports and landing areas.

g. Hostile capabilities en route and ashore.

h. Nature and characteristics of proposed landing beaches and their approaches and exits.

i. Dock, harbor, port, and transportation facilities within the beach-head area.

j. Estimated duration of beachhead organization required at the place of landing.

k. Time interval before resupply can be effected, or between arrival of successive convoys.

l. Time interval before landing fields can be built or captured, and capabilities of the air force to supplement the boat supply.

m. Supplies required en route.

n. Supplies available for exploitation in the theater of operations.

o. Climate and season of the year at the time of landing.

212. SEQUENCE OF PLANNING (fig. 15). a. After basic task force decisions have been made, tactical and logistical plans for the force are prepared concurrently. The logistical plan for the task force normally will include:

(1) A general plan of supply operation for the force, to include duration of beach organization.

(2) Types of supply and equipment to be used in the operation.

(3) Assignment of ships to joint attack forces.

(4) Specification of units of fire and days of supply to be embarked for the task force in ships of the assault convoy.

(5) Employment of task force logistical troops not attached to subordinate units.

(6) A plan for resupply, replacement, and employment of additional logistical troops arriving by later convoys.

(7) An emergency air supply plan.

(8) A plan for supply of permanent garrison troops if the landing force is to be withdrawn after accomplishment of its mission.

(9) A plan for supply of air units to be established on the acquired beachhead which should include the movement of assembled aircrafts on CVEs upon completion of air strips when the distances involved are too great to allow the aircraft to fly to the beachhead.

(10) Other administrative matters as prescribed by the task force commander.

b. Division landing force logistical plans usually are developed in the following sequence:

(1) General plan for operation of supply in the division.

(2) Composition of embarkation groups.

(3) Establishment of types and quantities of equipment and supplies to accompany each embarkation group.

(4) Assignment of ships and craft to embarkation groups.

(5) Establishment of priorities for loading and unloading.

(6) Computation of weight and cubic displacement of bulk supplies to be taken by each embarkation group and unit embarking on each ship, modified for landing ships and craft.

(7) Preparation of detailed loading plans by transport quartermasters.

(8) Orders for movement to port(s) of embarkation.

Section II. SUPPLY

213. QUANTITY OF SUPPLIES. **a.** The amount and type of supplies and equipment required for an amphibious assault operation will depend principally on the factors outlined in paragraph 211. The quantity of supplies carried on each ship of the assault convoy is governed by initial shore combat requirements, ship carrying and unloading capabilities, and availability of additional ships to permit early support by a follow-up convoy. Assault convoys should carry only sufficient supplies to insure adequacy of essential stores ashore pending arrival of a follow-up convoy. Assault ships carrying more than the necessary amount require excessive time to unload, resulting in exposure to enemy action from which they may be sunk or forced to leave transport areas before they are completely unloaded. Ships of follow-up convoys may be afforded more complete protection.

b. If sufficient shipping is available to permit arrival of a follow-up convoy at the landing area promptly after departure of the initial convoy, assault transports should carry only sufficient combat supplies to insure a minimum of five units of fire and fifteen days of supply



Figure 15. Fundamentals of logistical preparation prior to S-Day.

ashore for the landing force. Allowance must be made for losses enroute and during the unloading.

214. SPECIAL EQUIPMENT AND CHANGES AND ADDITIONS TO ORGANIC EQUIPMENT. a. Amphibious operations usually necessitate some changes and additions to standard equipment and basic allowances for most units. Changes are made necessary by the character of the operation and by cargo limitations imposed by assigned ships and craft. The decision as to what will be taken by the task force and by each individual unit will be based on operational conditions and available space.

b. Loads on assault ships must be confined strictly to weapons, ammunition, essential vehicles, rations (primarily of field variety), water tanks and carts, gasoline and oil, and the prescribed baggage for each man.

c. (1) Consideration of limited cargo space and the terrain of the landing beach area may necessitate substitution for or reduction of organic motor transport for the assault.

(2) Amphibian wheeled and tracked vehicles are valuable for unloading and moving of supplies. They can be carried by and debarked readily from landing ships. With proper selection of type of vehicle, it is possible to negotiate difficult surf conditions and to cross coral reefs, sandy beaches, and marshy ground. Trucks should be equipped with winch-powered A-frames, cranes, or other cargo-lifting devices to facilitate handling of supplies on the beach.

(3) Substitution of specially equipped trucks, $\frac{1}{4}$ -ton, 4 x 4, for field ambulances, is practicable.

(4) Substitution of trucks, $\frac{1}{4}$ -ton, 4 x 4, for many of the command cars and inclusion of numbers of these vehicles beyond basic allowances provides transportation necessary for liaison officers and enlarged staffs.

(5) Powerful bulldozers with A-frames are needed at all times by the shore group. Additional mechanical equipment, as developed, will be valuable.

d. Vehicles, weapons, signal equipment, medical supplies, and other items which may be damaged or rendered inoperative by exposure at sea are waterproofed, or are provided with waterproof covers. See TM 9-2853 for description and use of waterproofing kits.

e. Handling of cargo can be expedited by employment of pallets for supplies where suitable. (Sections IV and V, Chapter 5.)

f. Special items of demolition equipment for underwater and beach obstacles are included.

215. SUPPLY ECHELONS. a. Supplies of all classes are divided into echelons in order to coordinate loading and unloading and to facilitate provision of adequate initial combat supplies for units landing on separate beaches. These echelons of supply are classed as individual reserves, initial reserves, beach reserves, and landing force reserves.

(1) Individual reserves are rations and ammunition for one or two days issued prior to debarkation to individuals or for individually carried weapons, including initial combat loads debarked on vehicles.

(2) Initial reserves are all classes of supplies required for three to five days for all elements of a battalion landing team or similar unit. These supplies, segregated prior to embarkation, are stowed so that they are available immediately to follow assault troops ashore.

(3) Beach reserves are supplies of all classes required to insure continuity of supply for a period of five to ten days in the event of temporary interruptions by weather or enemy operations.

(4) Landing force reserves are supplies of all classes necessary for a period of ten to thirty days. They may be loaded at lower levels in ships than are other echelons of supply, and can be distributed among ships of the convoy. If practicable, these supplies should arrive in a later convoy.

b. Administrative orders should indicate the quantity for each echelon by class of supply as well as the quantity of each class to be embarked. Unloading priorities within echelons of supplies should be set up to assure balanced supply ashore during any phase of an operation.

216. SUPPLY PROCUREMENT AND EMBARKATION SCHEDULES. Supply procurement and embarkation schedules must be coordinated carefully to permit sufficient time for appropriate supply agencies to place supplies at the port(s), for transport quartermasters to prepare proper loading plans, for ports of embarkation to prepare supplies and equipment for loading, and for supplies and equipment to be loaded in accordance with prepared plans.

217. METHODS OF HANDLING SUPPLIES. a. Supply orders contain explicit instructions for packing, waterproofing, marking, and shipping.

b. Supplies are delivered to the embarkation point by the following methods:

(1) *Delivery to units in concentration or staging area.* This method is used normally for organizational equipment and for maintenance of technical equipment.

(2) *Shipment to port for units or for individuals.* This method often is used for last-minute items, the nature of which might indicate the overseas destination.

(3) *Shipment to port for specific ships.* Rations, common items of maintenance, and naval stores generally are handled in this way.

(4) *Shipment to port for ship group.* Ammunition, bombs, gas and oil, and similar supplies are shipped in this manner.

(5) *Shipment to port in bulk.* Last-minute items for distribution, maps, intelligence supplies, Class IV supplies, and at least a portion of the ammunition normally are shipped in this manner. Bulk shipments may be divided into identical lots, each containing a proportionate part of all items in the shipment, to facilitate loading.

(6) *Assemblies.* When preparation of supplies must be started prior to the development of definite shipping and loading instructions, assemblies can be prepared in such a way as to place in separate lots the approximate amounts likely to be required for each separate ship.

(7) *Division by convoys.* Supplies also may be divided to indicate shipment on preceding or following cargo convoys or on fast cargo vessels accompanying the main movement.

218. TYPE OF LOADING. a. All assault troops with their organizational equipment and supplies are combat loaded. (Section IV, Chapter 5).

b. Responsibility for loading ammunition and other supplies must follow the chain of command and be understood clearly by all. Unit commanders must verify that items essential to initiation of combat are loaded and are readily accessible.

c. Dispersion of supplies in loading is effected by loading only sufficient quantities for initial use of the landing force, unless early support by succeeding convoys is impossible. The whole should be distributed among ships and craft of the assault convoy to assure that each assault unit will have with it enough to be self-sustaining ashore for initial stages of the landing, and that loss of one or more vessels will not cause vital shortage for any of the remaining elements of the force.

d. A suggested type of loading includes:

(1) Individual and initial reserves loaded with assault units.

(2) Beach reserves loaded on low priority on ships of assault elements and on the assault cargo ship of each transport group.

(3) Landing force reserves loaded on the assault cargo ship or other cargo vessel in the assault convoy. Part or even the bulk of this reserve may be carried in a support element planned for immediate follow-up. With landing ships, effort should be made to have all

supplies mobile, i. e., loaded on vehicles ready for prompt unloading.

e. Quantities should be expressed in number of containers, total weight, and total cubic displacement. Issue of individual reserves to individuals, including such items as ammunition for crew-served weapons or that loaded on vehicles, is indicated in orders.

219. SUPPLY PHASES. a. (1) Each landing team establishes its own initial reserve supplies immediately inshore of the beach upon which it lands. Regimental and divisional supply points are established farther in from the beach in order to provide adequate dispersal areas for the larger quantities of supplies. It is desirable to establish divisional supply points containing beach reserve supplies at the earliest practicable time. They may be established immediately after bulk initial reserves have been placed in battalion supply points if the advance has progressed far enough to allow for their establishment; otherwise, beach reserve supplies are moved into regimental supply points until sufficient areas become available.

(2) The shore party moves supplies over the beach into initial beach supply points.

(3) Early in the operation, resupply of small units necessarily will be direct from beach supply points according to directed policies.

b. Subsequent to the landing of the assault battalions, one or more beaches in the combat team landing area is organized for the receipt of supplies. As the attacking elements proceed inland, supply points are established and, when transportation becomes available, supplies are moved to these points.

(1) When the shore party is augmented by service personnel and vehicles not required on the beach, such personnel establish and operate the supply points.

(2) When not so augmented, the senior combat unit landed provides personnel and vehicles for the movement of supplies into inland supply points from the beach and for the issue of supplies, employing organic supply elements of the unit with such reinforcement in vehicles and personnel as are necessary.

220. RATION SUPPLY. a. Emergency field rations of suitable types are used by all elements during an operation until conditions permit use of other rations.

b. Individual reserves carried by personnel in the assault echelon are ordered with a view to minimum weight.

c. Vehicles are embarked with emergency rations and water for crews.

- d. Beach distribution of rations is made to units from supply points.
- e. Navy is responsible for rationing of embarked troops enroute to the landing area and until debarked in the landing area. Army units may be required to load extra rations for the voyage aboard landing ships and craft. It may be possible for Navy to provide hot meals to elements ashore during early assault stages.
- f. Rations for prisoners of war and civilians in occupied territories are planned.

221. WATER SUPPLY. a. Men embark with filled canteens.

b. Navy is responsible for supply of water for the landing force en route to the landing area, and for procurement and delivery of water to landing beaches until a supply from land sources is available. The landing force is responsible for reception, stowage, and distribution of water ashore, and for location and development of land sources of water supply as rapidly as possible.

c. Information with respect to water supply in localities where operations are contemplated is a basic item of military intelligence.

d. All plans and estimates relative to water supply ashore include an ample safety factor to provide against enemy interference, leakage, evaporation, loss by imperfect distribution, and other emergencies. Requirements are based on usual considerations of climate and state of training of troops.

e. A considerable amount of water may be made available ashore from the distilling systems of transports and other ships of the convoy, and some additional water may be carried as cargo, particularly in water tanks of cargo ships and LSTs carrying small numbers of troops, or in 5-gallon containers.

f. To prevent serious shortage while embarked on ships, all personnel must observe water discipline and conservation.

g. Loading plans should provide for diversification of organic army portable water purification equipment among ships of the convoy by attachment of equipment and operating personnel to subordinate units of the landing force. Additional equipment should be available in event of loss en route or during landing.

h. Initial reserves of water are landed in 5-gallon cans on battalion landing beaches. Beach and landing force water reserves are established in shore reservoirs by shore group elements from water provided by the Navy. It is delivered ashore either in army 5-gallon cans or in special naval bulk tanks placed in landing craft and from which water is pumped to temporary storage tanks ashore. Sufficient supply of empty water cans must be embarked for this purpose. Each shore party should be provided with canvas tanks, pumps, and hose for recep-

tion and stowage of bulk water ashore if large naval water tanks carried in landing craft are to be used for source. Reserves should be established at a minimum rate of 2 gallons per man per day from ships until the ships leave the transport area, unless suitable local sources are developed for operation prior to that time.

i. If sufficient water is not available ashore from convenient sources, it may be necessary to sink wells. Portable salt water distillation equipment may be provided and operated by shore group elements.

j. Organic water supply equipment of division engineer combat battalions should not be used in beach areas except in emergency, but be kept intact for advance inland with the division.

k. Individuals and small units should be provided with emergency water purification items and be instructed thoroughly in their use.

222. CLASS II SUPPLIES. a. Normally, only a very limited issue of organizational or individual Class II supplies will be made until port or extensive beach facilities are in operation. Provision should be made for complete replacement of individual clothing and equipment for personnel that may have to discard equipment and swim ashore.

b. The supply plan should provide for fifteen to thirty days' equipment replacement and maintenance parts for essential items.

223. CLASS III SUPPLIES. a. Vehicles are embarked ordinarily with gasoline tanks filled to from 75 to 90% of capacity and crank cases filled with oil. Spare cans of gasoline, oil, and lubricants (10 gallons of fuel and 1 gallon of lubricants) should accompany each vehicle, loaded in the body or cab of the vehicle to prevent damage and consequent spilling of contents, and lessen danger of fire during loading or unloading from ships.

b. Initial, beach, and landing force reserves are established in shore supply points in 5-gallon drums in a manner similar to that for other supplies. The effect of terrain and weather conditions on gasoline consumption must be considered in establishing requirements.

c. Until dock or extensive beach facilities are available, resupply is effected through use of 5-gallon drums. Use of 55-gallon drums is not recommended during initial phases of a landing attack.

224. CLASS IV SUPPLIES. Class IV supplies are divided among echelons of supply according to the contemplated priority of utilization. Because of the bulk and weight of these supplies, initial requirements should include only minimum essentials consistent with considerations of probable losses and full exploitation of local resources of the landing area.

225. CLASS V SUPPLIES. a. The supplying of ammunition differs considerably from methods normally employed in land warfare.

b. Ammunition requirements, which include expected rate of expenditure and scale of reserve to be landed, are based on a staff estimate and must take into consideration:

(1) Degree of opposition likely to be encountered during and after landing.

(2) The number of all types of weapons landed with the force.

(3) Planned time of resupply for the force.

c. Ammunition tonnage and volume normally are greater than the combined tonnages of all other supplies of a landing attack. It must be loaded on ships in a manner which facilitates unloading by units of fire or fractions thereof in order to assure that ammunition placed on beaches with the landing teams contains each type of ammunition in proportion to the expected expenditure of that item. A reserve of ammunition in balanced loads should be sent ashore as soon as possible after assault elements to be assembled in shore ammunition supply points. Personnel thoroughly trained in care, handling, and storage of ammunition, preferably ordnance ammunition personnel, should operate these supply points.

d. Care must be taken to keep types and lots segregated. Separate loading ammunition must be loaded on boats, unloaded, and placed on beaches by complete rounds. All components must be loaded, unloaded, and stacked together.

e. Requests made on depots for shipment of ammunition to ports of embarkation should specify shipment in carload lots, designated and marked for each transport or battalion landing team. If shipment is made in carload lots by type of ammunition for the entire landing force, sorting and allocation must be accomplished at ports of embarkation.

f. Ammunition vehicles are combat loaded so as to provide balanced loads for each unit.

g. Individual reserves are issued prior to debarkation. Overloading of individual soldiers with excessive ammunition must be avoided.

h. Initial reserves are dispatched to battalion landing team beaches so as to provide balanced quantities ashore and to meet calls for specific types of ammunition required in emergency.

i. Beach and landing force reserves are dispatched to regimental and division beaches.

j. Vessels should be so loaded that ammunition can be sent to the beach on call from the landing team or higher commander to meet emergency needs for a specific type of ammunition.

k. Decision must be made, after careful consideration, as to what percentage of ammunition will be mobile loaded and what percentage bulk loaded.

226. CAPTURED AND SALVAGED SUPPLIES. A vital supplement to landed supplies can be realized by prompt action in salvage, repair, and utilization of captured or abandoned enemy materials. The importance of captured and salvaged supplies increases with the distance of the theater of operations from home bases. Special training in collection, repair, and use of such supplies will result in a saving of time and cargo space. Special salvage and repair units may be employed.

Section III. EMBARKATION

227. GENERAL. a. Execution of the embarkation phase normally will involve both Army and Navy. Military agencies are the landing force, the port of embarkation, transportation agencies, and supply agencies. Naval agencies are the Naval Operating Base, transporting vessels, the convoy escort, and any naval personnel included in the landing force. In addition to these, civilian and commercial agencies may be involved.

b. In shore-to-shore movements, there must be a logistical organization of specially trained troops and equipment on the near shore to develop and operate the logistic functions of embarkation, loading, resupply, and evacuation in support of the attack forces after their departure.

c. Each of the above agencies will have many subdivisions and subordinates. The unusual relationship between these agencies may result in confusion, unless properly coordinated and controlled.

228. ORGANIZATIONAL PRINCIPLES. Coordination and control can be attained by adherence to the following principles:

a. All echelons must understand clearly their own responsibilities and functions as well as those of other agencies with which they deal.

b. Responsibilities and tasks must be decentralized as far as possible to the agencies which actually will perform the work.

c. Arrangements for coordination and control must be clear, specific, and comprehensive, and must be enforced.

d. Direct dealing between individuals and between agencies, without proper coordination, must be avoided.

e. Each large headquarters should channelize operations through a single control officer.

229. CONTROL OFFICERS. a. Each major headquarters, office, unit, or agency, should designate a single officer to coordinate and control actions affecting the organization.

b. Control officers perform general coordinating functions rather than execute specific operational tasks. They act as liaison officers with other agencies, and keep in close touch with their own subordinate echelons.

c. A control officer may represent the army task force commander in effecting execution of the planned schedule for movement of the units of the force for a particular area. These officers should supervise all troop and supply movements until the embarkation of all intended units is completed.

d. Control officers for larger headquarters will require assistants, office space, transportation, and similar facilities. They should have offices in well-advertised control centers. During actual operation, it may be necessary to keep these centers open twenty-four hours a day.

e. Subordinate echelons normally will not require a specially designated control officer. The officer in charge will perform the functions of keeping higher headquarters, other agencies, and subordinates, informed as to his actions.

230. CONTROL OF TROOPS. Care must be taken to insure that there is no misunderstanding as to who commands and controls troops. Uncertainties may arise from the fact that various agencies are given tasks intended to assist the force commander in preparing for embarkation. It is essential therefore, that control of troops and of operations be fixed definitely during each of the following stages:

a. **Concentration and preparation of troops.** Command as well control generally is charged to local air and ground commanders.

b. **Training activities of troops.** Naval amphibious training commands may have control in regard to training.

c. **Duration of stay in staging areas.** Control must be exercised by the port commanders, through force command channels.

d. **Loading operations.** Control generally is the same as in the staging areas, although ships' captains exercise control over force personnel aboard individual ships.

231. PLANS. Embarkation plans usually are developed in the following sequence:

a. Determination of shipping requirements.

b. Allotment of transports, cargo ships, and landing ships and craft for the landing force.

c. Detailed organization of embarkation groups, transport divisions, and other vessels for the landing force.

d. Assignment of troops and matériel to each transport, cargo ship, or other vessel.

e. Preparation of detailed loading plans. (Section IV, Chapter 5.)

f. Orders for movement of the landing force to the port(s) of embarkation.

232. SHIPPING REQUIREMENTS. a. Shipping requirements are based upon the overall capacity required to carry the landing force personnel, equipment, and supplies, and upon the embarkation groups required by the plan of operations. After basic decisions as to major embarkation groups for the landing attack have been made, shipping requirements are determined, and necessary adjustments dictated by number or type of ships available are made.

b. In determining shipping requirements, a consolidated landing force personnel and tonnage table (fig. 16) may be prepared by the landing force commander and submitted to the associated naval force commander. This table, compiled from unit personnel and tonnage tables (Appendix II) and from task force consolidated requirements for supplies, indicates for each major army tactical group and for the entire landing force the total personnel strength and the cubic content and weight of cargo. It is the basis for allotment and organization of shipping by the Navy.

c. Similar data are prepared by the naval force commander, showing requirements for any special naval personnel or matériel to be embarked, and including the amount of subsistence required for the landing force while aboard ships.

d. Any air force needs are met similarly, based on data supplied by the air commander.

233. ALLOCATION OF TRANSPORTS AND LANDING SHIPS.

a. The naval force commander in conjunction with the landing force commander allocates naval vessels for the transport of troops and matériel, furnishing complete technical data concerning each vessel so allocated. This information usually includes the rated troop and cargo capacity; characteristics of the vessel, including each hold; number and type of landing craft carried and their ability to be rail-loaded; speed and draft of the vessel; capacity of booms; and other characteristics effecting embarkation. Figure 17 illustrates a table of characteristics for a typical assault transport. See Appendix I for general characteristics.

b. Special ships may be furnished for hospital or other purposes.

Figure 16. Landing force personnel and tonnage table.

(Text key: Par. 232.)

Unit	Personnel				Matériel							
	Officers	Enlisted men	Total	Troop space cargo (cubic feet)	Hold cargo				Deck cargo		Total cargo	
					General cargo (cubic feet)	Vehicles, guns, tractors (cubic feet)	High explosives (cubic feet)	Inflammables (cubic feet)	Inflammables (cubic feet)	Vehicles, avn. equip. (cubic feet)	Cubic feet	Long tons
1	2	3	4	5	6	7	8	8	10	11	12	13
TROOPS:												
RCT 1												
RCT 2												
RCT 3												
149th FA (M)												
1st Engr Bn (less 3 Cos)												
1st Med Bn (less dets)												
Etc												
116th Tank Bn (M) Tank Destroyer Bn												
1119th Engr (C) Gp (less 3 Bns)												
533d QM Serv Bn												
Etc												
LANDING FORCE SUPPLIES:												
Etc.												

NOTES:

1. It is assumed that prior to the preparation of this table certain basic decisions have been made, particularly the number of days of supplies and the number of units of fire to be carried in the initial movement. Based upon these decisions, tonnage tables are prepared from which are computed cargo requirements for each organization.
2. In the table, any large vehicles or other matériel (not inflammables) which must be stowed on deck are considered as deck cargo (column 11).
3. Tonnage figures under total cargo, long tons (column 13), represents actual weight of matériel, and do not include weight of personnel. (Long-ton=2,240 lbs.)
4. Footnotes should contain information necessary to clarify or supplement the table such as list and description of matériel requiring special consideration, and amount of gasoline included under inflammables (columns 9 and 10).

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Length (overall): 491' 7½"
 Breadth (at water line): 69' 6"
 Draft (maximum): 28' 6"
 Displacement tons: 17,415.

Speed (knots): 16.5.
 Steaming radius: 8,499 miles.
 Bunker fuel: 378,000 gallons.

CARGO HOLD CHARACTERISTICS

Hold Sec	Deck	Hatch openings	Minimum clearance	Number and capacity of booms	Square feet	Cubic feet
#1	2d deck	20' 0" x 20' 6" ..	11' 5"	2 10-tons	410	4,680
	2d platform	20' 0" x 20' 6" ..	14' 7"		402	5,862
	Hold	19' 10" x 20' 3" ..	17' 0" fwd		916	15,572
			15' 9" aft			
#2	2d deck-fwd	24' 0" x 14' 2" ..	11' 5"	2 10-tons	338	3,853
	2d plat-fwd	24' 0" x 14' 2" ..	13' 8"		250	3,400
	3d plat-fwd (tr. am.)	10' 0" x 12' 6" 1 ..	6' 1"		1607	9,642
	Hold-fwd (tr. am.)	9' 6" x 11' 5" 1 ..	7' 5"		1,197	9,097
	2d plat-aft	10' 0" x 12' 6" ..	24' 0" 2		125	3,000
	Hold-aft-stbd	10' 0" x 12' 6" ..	14' 9"		833	11,528
#3	2d platform	24' 0" x 16' 6" ..	11' 9"	2 10-tons	396	4,672
	Hold	24' 0" x 16' 6" ..	14' 9"		4,323	64,380
#4	Main deck-port	5' 10" x 9' 0" 1 ..	8' 3"	2 5-tons	108	886
	Main deck-stbd	5' 10" x 9' 0" 1 ..	8' 3"		108	886
	2d plat-fwd (stbd)	5' 10" x 9' 0" ..	20' 0" 2		57	1,140
	2d plat-aft	5' 10" x 9' 0" ..	20' 0" 2		124	2,480
#5	2d deck-fwd	23' 11" x 13' 9" ..	11' 9"	2 30-tons	214	2,515
	2d plat-fwd	23' 11" x 13' 9" ..	5' 7"		1,660	8,435
	3d plat,fwd (gasoline)	7' 5" x 9' 10" 1 ..	9' 10"		1,248	12,210
	Hold-fwd-port (gas) stbd	7' 3" x 14' 11" ..	10' 8"		307	3,254
		7' 3" x 14' 11" ..	10' 8"		193	2,045
	2d deck-aft	22' 11" x 23' 1" ..	11' 11"		529	6,304
	3d plat-aft	22' 11" x 23' 1" ..	17' 3"		595	10,264

¹ Two hatches this size.

² Trunk overhead.

CO₂ and sprinklers servicing ammunition and gas compartments.

Guns: (Main battery)—two 5" .38
 (Antiaircraft)—eighteen 20-mms
 two 1.1

Boats: LCP(L)

LCPV

LCM(3)

Dispensary: Adequate.

Laundry: Officers only.

Fresh water: 80,000 gallons daily.

Vehicle slings: 4.

Landing nets: 28 (25 foot).

Cargo nets: 20.

Hydraulic Jacks: 2.

Date of survey: 5 Oct. 1943.

Total berths:

Combat loaded

Convoy loaded

Ship's Officers

CPO's

Crew

Troop Officers

NCO's

Troops

NOTE.—This data is correct as of date of survey. Before loading, an investigation should be made to determine whether or not subsequent changes have made.

Figure 17. Transport characteristics.

234. EMBARKATION GROUPS. a. The landing force is divided into embarkation groups based on major tactical units, such as regimental combat teams, and consisting of troops and matériel to be embarked upon the vessels of a transport division, landing ship unit, or other type unit.

b. Organization of embarkation groups and of divisions of non-combatant vessels is interdependent and is governed primarily by the following considerations:

(1) Organization must provide for accomplishment of various tasks required under the primary plan and alternate plans.

(2) Organization of each embarkation group should be such that the group will be capable of being detached on an independent mission involving combat on shore. Each group should carry an appropriate amount of supplies.

(3) Troops and materiel are distributed among embarkation groups so that detachment of any group does not deprive the remainder of the force of an unduly large percentage of any one arm, service, or type of matériel.

(4) Each embarkation group preferably is considered in terms of battalion landing teams, or the equivalent. A part of the tanks and other landing force units also may be included in each group or may be a special group or groups.

(5) The normal chain of command is interrupted as little as possible.

(6) Artillery and other auxiliary troops which normally operate on shore under their own or higher commanders usually are subdivided for embarkation and attached to battalion landing teams, combat teams, or divisions.

(7) Facilities for loading, stowing, and debarking heavy matériel may be determining factors in selection of vessels upon which certain units will be embarked.

(8) Organization of embarkation groups should permit economical loading without sacrificing any features of combat loading.

(9) The number of vessels in each division should permit effective control. Three to five ships in each division are preferred.

(10) It may be desirable to embark reserve units and reserve supplies upon separate ships in order that they may be kept out of the landing area until needed. Separate ship divisions may be organized.

(11) Each embarkation group should use effectively the troop and cargo capacity of its ship division. It usually is possible to meet this requirement without sacrificing tactical considerations, for there exists, after the preliminary assignment of battalion landing teams to embarkation groups, a remainder of unassigned troops and supplies.

These can be allocated as necessary to utilize all space available in each group. Some vessels have compartments which may be utilized for either troops or cargo.

(12) A part of army or corps special troops may be organized into a separate embarkation group. These troops may be shipped on follow-up convoys employing either ship-to-shore or shore-to-shore movement to the landing area.

c. The organization of embarkation groups and transport divisions is worked out jointly by representatives of the landing and naval force commanders.

d. Embarkation groups are designated by numbers followed by the names of the major troop organizations, such as Embarkation Group No. 1 (1st Infantry, reinforced, or RCT-1). The appropriate army commander in the group is responsible for seeing that troops and matériel are embarked in accordance with the approved plan. He embarks on the flagship of the transport division or other noncombatant ship division.

e. The same form (figure 16) used in the preparation of the landing force personnel and tonnage table may be used for showing detailed organization of embarkation groups and ship divisions, together with personnel and cargo requirements of each embarkation group.

235. ASSIGNMENT OF TRANSPORTS OR OTHER VESSELS.

a. Troops and matériel are assigned to individual ships in accordance with the following principles:

(1) Embarkation must permit combat debarkation and operations on shore in accordance with tactical plans.

(2) Integrity of tactical units, such as battalions of infantry and batteries of artillery, should be maintained.

(3) So far as possible, each ship should carry a proportionate part of necessary arms and services and proper reserve supplies in order to avoid the possibility of losing all of one unit or type of supply in the loss of one ship. The battalion landing team embarked on an assault transport meets this requirement.

(4) The crew of a vehicle or crew-served weapon should be embarked in the same vessel as its vehicle. Prime movers should not be separated from their loads.

(5) Facilities of each ship for handling and stowing heavy matériel assigned must be adequate.

b. When troops and matériel have been assigned to each vessel, this information is included in embarkation orders of the landing force or lower units.

236. MOVEMENT TO PORT OF EMBARKATION. a. Concentration of the army landing force is arranged by War Department, theater commander, or other authority at a time which permits necessary reorganization, re-equipment, and training for the amphibious operation. Movement from the concentration area to the port of embarkation is in general the same as other troop movements.

b. In the vicinity of each port of embarkation, a staging area is established under the control of the port commander. Here troops are received, equipped, inspected, and cared for while awaiting embarkation.

c. Complete movement orders should be issued when practicable, to avoid misunderstanding and to facilitate coordination with the many agencies involved. They usually will include:

(1) A tabulation of units, with the shipment number and letter assigned to each, and the strength at which each unit is to move.

(2) Instructions as to the clothing and equipment prescribed for each individual and each unit.

(3) Instructions covering movement to the port or staging area. These will indicate generally that the movement will be made when directed by the port after an announced readiness date.

(4) Lists of supplies to accompany the force. These normally will be limited to those actually carried with units to the concentration or staging area.

(5) Other instructions as necessary, such as markings, mailing address, baggage, disposal of equipment left behind, reports, and advance detachments.

d. The inclusion in the basic movement order of specific assignment of units to ships usually is impracticable. When units are under the control of the agency executing the embarkation, or in operations largely or entirely shore-to-shore in movement, the movement order may be combined with the embarkation order.

237. EMBARKATION ORDERS. Embarkation orders usually are of three kinds.

a. **Ship group orders.** Issued by the task force or port commander, assigning units and detachments to specific ships.

b. **Embarkation orders proper.** Normally issued by the port, specifying dates, times, routes, and methods of movement to shipside for both personnel and impedimenta. Force commander may issue these instructions in a movement largely shore-to-shore.

c. **Passenger lists.** To be used to check individuals boarding ships when embarkation actually occurs.

Section IV. COMBAT UNIT LOADING

238. GENERAL. a. Loading of transports, cargo ships, landing ships, and landing craft for a landing attack is planned carefully in great detail to aid the tactical plan of operations, to insure adequate logistic support, and to meet naval requirements of safety and stability.

b. All troops, matériel, and supplies essential for seizure and initial organization of a beachhead are combat loaded.

c. The loading of ships for an amphibious operation is planned and supervised by specially trained officers, ordinarily selected from embarking units. These officers are most frequently called "transport quartermasters." On an assault transport or cargo ship, this transport quartermaster will be assisted by a ship transport quartermaster who is a member of the ship's company.

239. TYPES OF LOADING. a. **Combat unit loading** is the loading of an assault troop unit together with its essential combat equipment and initial combat supplies in a single ship and in a manner permitting immediate and rapid debarkation in a desired priority for landing attack. The unit lands with everything necessary for assault. This method of loading is applicable to all types of assault ships and landing craft.

b. **Organizational unit loading** is the loading of a troop unit together with its equipment and supplies on the same ship but without consideration to any priority of debarkation for a landing attack. This method of loading utilizes ship capacity more economically than combat unit loading. It permits debarkation of complete units available for employment as soon as troops and equipment have been assembled ashore. Like combat unit loading, this method permits diversion en route of complete units by ship loads. This method is generally applicable only to seagoing transports, cargo vessels, and landing ships.

c. **Convoy unit loading** is the loading of troop units with their equipment and supplies on ships of the same convoy, but not necessarily on the same ship. This method of loading may be utilized to fill in space in ships carrying combat unit loaded organizations when required by considerations of long sea distance, limited ship capacities, and limited ship availability. If so utilized, this method must not hinder debarkation of the combat unit loaded troops, equipment, and supplies. Units which are convoy unit loaded are available for tactical employment only when landed at established beachheads or ports, and after the lapse of time necessary to assemble them on land with their equipment and supplies. This method of loading is gen-

erally applicable only to seagoing transports, cargo vessels, and landing ships.

d. Commercial loading is the loading of troops and/or equipment and supplies on a ship for maximum utilization of cargo space, without regard to facility of debarkation for immediate tactical employment upon landing. This method of loading is applicable to movements from an established port to another established and well-secured port. Troops moved by this method are not available for tactical employment in a landing attack. This method is generally applicable only to transports and cargo vessels.

240. GENERAL PRINCIPLES OF TRANSPORT LOADING. a. Troops, equipment, and supplies are loaded to permit debarkation in the order required by tactical plans.

b. Organization equipment when shipped to a port of embarkation should bear an identifying code symbol designated by higher authority, indicating the unit to which each article belongs. The number represents a transport group bound for a specific destination. A letter is added for the particular unit. Additional letters are added to designate particular ships. For example, the number 1234-A-XA might represent the portion of the 1st Infantry which was to be loaded into ship XA of transport group 1234. Wheeled or tracked vehicles and artillery also are marked with hold and debarkation priority numbers.

c. Organic light weapons and equipment to be carried ashore by assault waves should be stowed in troop compartments or adjacent thereto where they are available for servicing en route and for immediate debarkation with troops.

d. Matériel and supplies should be stowed as follows:

(1) Highest priority under the hatches and in space immediately accessible to them; lower priority, outward from the hatches.

(2) By layers with first priority on top.

(3) In groups separated by vertical partitions radiating from the hatch.

(4) In one or more of the above methods.

(5) Stowage should begin in the wings and be completed near the hatches, and the order of loading shown in the stowage diagram should so provide.

e. (1) Vehicles are waterproofed for landing by trained personnel prior to loading, and are embarked complete with combat load, gasoline tank ordinarily 75 to 90% full, reserve of fuel and lubricants, and emergency rations for drivers. Drivers are embarked on the same vessels as their assigned vehicles.

(2) To prevent shifting at sea, vehicles normally are loaded with axles across ship and are properly chocked or secured to stanchions or ring bolts. It usually is impracticable to stow vehicles over or under other material.

241. NAVAL CONSIDERATIONS. **a. Requirements.** Transports and cargo ships are loaded to comply with naval requirements of capacity, stability, and safety of the vessels, and with consideration to the time required to unload. Landing ships and landing craft also are loaded to secure certain beaching characteristics. Feasibility of army loading plans from a naval viewpoint (Appendix II) must be assured during planning by approval in each case by the parallel naval commander concerned.

b. Capacity. A vessel has definite limitations as to personnel and cargo capacity. Capacity of transports and cargo ships is limited by capacity of booms, size of hatch openings, and overhead clearance in holds, in addition to the actual size of loading compartments. Capacity of landing ships and craft is limited by size of loading compartment, ramp opening, by elevator capacity or safety requirements under various sea conditions, and landing capabilities.

c. Stability. The weight of cargo carried by a vessel must be distributed properly longitudinally, laterally, and vertically to insure proper trim and navigational stability. An improperly loaded vessel may be difficult to navigate or have a dangerous roll in a heavy sea.

d. Safety. Certain types of cargo, such as inflammables and pyrotechnics, require stowage in a magazine, special compartment, or other suitable location aboard ship. All cargo must be stowed to prevent shifting and subsequent damage. Proper lashing and blocking of vehicles and other heavy equipment and proper loading of bulk cargo to eliminate shifting are essential. Army loading should conform to safety requirements unless specific naval authority for modifications is obtained.

e. Time to unload. The time required to unload a transport or cargo vessel is dependent upon quantity of cargo carried, facilities available to unload the ship and to transport and unload cargo ashore, conditions of visibility and weather, distance from shore, enemy action, and other considerations. Rapid unloading with subsequent early departure from the transport area is highly desirable. If all considerations permit early resupply of the landing force, assault transports and cargo vessels of the initial convoy may be loaded to far less than capacity in order to secure prompt unloading.

f. Landing capabilities. The ability of landing ships and craft to debark personnel, equipment, and supplies onto the beaches is governed

largely by offshore weather, hydrographic conditions, and draft of the vessels. Landing ships, the larger type landing craft, even in some cases the smaller landing craft, may be unable to debark personnel or equipment directly onto landing beaches because of offshore bars, reefs, or other obstacles. Lightly loaded or small craft may be able to cross a bar or reef because of their reduced draft, as may amphibian vehicles. Blasting of channels or erection of naval pontoons may be necessary for the larger vessels. Loading plans for vessels are based on their ability to debark matériel carried, and on the time and facilities that may be required to enable them to commence debarkation.

242. STANDARD LOADING PRACTICES. The following standard procedures are established for combat loading:

a. High explosives must not be stowed in compartments adjacent to gasoline. Exception to this condition is made when high-explosive ammunition constitutes part of the combat load of a vehicle or when it is considered necessary for initial support of the beachhead. If it is necessary to stow high-priority ammunition in the same compartment with vehicles, a layer of non-combustible material must separate ammunition from vehicles.

b. Small-arms ammunition may be stowed in any compartment aboard ship, subject to the following restrictions:

(1) Small-arms ammunition must not be stowed in a compartment adjacent to a gasoline stowage compartment.

(2) Small-arms ammunition stowed in a compartment with vehicles must have a layer of non-combustible material separating ammunition from vehicles.

c. All pyrotechnics must be stowed in a specially constructed pyrotechnic locker on or above the main deck.

d. Gasoline must be stowed in compartments designated by the Navy for gasoline stowage or in deep tanks serviced by carbon dioxide and water-sprinkler fire-fighting apparatus and equipped with fire-detection apparatus. Vehicles should have tanks filled with gasoline to the allowed percentage of capacity prior to loading and carry additional 5-gallon cans of gasoline.

e. All loading plans must be submitted to the commanding officer of the ship and are subject to his approval for conditions affecting the safety of the ship.

243. LOADING PLANS FOR TRANSPORTS AND LANDING SHIPS. **a.** Preparation of loading plans must be based on command decisions and directives prescribing the tactical and logistical plan

of landing and operations ashore. Loading plans will be required for each ship employed in the operation.

b. Loading plans are prepared by the transport quartermaster under the direction of the commanding officer of troops or the ship or ships allocated to the unit in coordination with the embarkation authority. Transport quartermasters from higher staffs supervise the overall loading of ships to insure economical utilization of cargo space. See FM 55-5.

c. Plans required before loading of an assault transport or cargo ship can begin are:

(1) Consolidated unit personnel and tonnage table covering all units to be embarked in the ship.

(2) Vehicle debarkation priority table for each unit.

(3) Supply loading plan for the embarkation group.

(4) Stowage plan for the ship.

(5) Profile loading plan for the ship.

(6) Loading summary for the ship.

(7) Billeting or troop loading plan.

See Appendix II for examples of these tables.

d. Plans for loading landing ships and craft are less detailed and may consist largely of plan drawings of decks showing location of vehicles and supplies, and including unit personnel assigned each ship. The same general principles of loading obtain as for the transports.

e. A transport quartermaster must have accurate plan characteristics of the ship he is to load prior to planning the loading, all data being checked by his personal inspection of the ship. The capacities and characteristics of assault transports and cargo vessels vary even among vessels originally the same, because of frequent alterations.

244. BILLETING OF TROOPS. a. Troops should be billeted aboard ships to facilitate debarkation in the order desired for the landing attack with due regard, so far as practicable, to maintenance of intact units. This is accomplished by assigning berthing space by both teams in reverse order of debarkation as shown on the boat assignment table. In the billeting of troops aboard ship, consideration must be given to characteristics of the ship, location of assigned debarkation stations and routes thereto, traffic regulations governing movement aboard ship, and dissemination of orders by unit commanders aboard ship. The details are more simple with landing ships used to carry assault troops, but the considerations are essentially identical.

b. The billeting plan is prepared by an assistant transport quartermaster or other staff officer of the commander of troops aboard ship.

245. MODIFICATION OF PLANS. Loading, stowage, and billeting plans are modified to show all changes made during loading.

246. LOADING OF LANDING SHIP, TANK (LST). a. Loading of the LST by means of the ramp in the bow of the ship normally is done directly from shore or a suitable pier. The ramp leads onto the tank deck.

b. A shore loading point must have proper hydrographic features, suitable bearing surface for vehicles and matériel, and necessary access routes. This ship can be loaded at sea over the upper deck from a transport or cargo ship, but because it has only one cargo hatch between upper and tank decks, the process is extremely slow. Interior ramps, installed on some of the later LST models, facilitate this operation.

c. The tank deck offers a wide range of loading arrangements. (Appendix I.)

d. The upper deck can carry vehicles or equipment which are moved to or from the tank deck either by an elevator in the forward part of the ship or by a deck ramp connecting the two decks, depending upon the model of ship.

e. Loading plans are relatively simple, consisting of plans of decks showing location of items of equipment or cargo. Each transport quartermaster, using scale drawings of decks and scaled templates of vehicles and matériel to be loaded, prepares loading plans for each ship. Personnel lists are required as for all vessels.

f. These ships may be used to transport troops, matériel, or supplies, or any combination of these. Troop facilities for long voyages are limited.

g. Hydrographic conditions off the landing beach may prevent debarkation of matériel or supplies directly from a fully loaded ship to the beach. Therefore, in loading, particularly with units or equipment needed early in the landing attack, careful consideration must be given to the landing capabilities of the ship on the contemplated beaches or to the presence of suitable naval pontoon gear for unloading.

247. LOADING OF LANDING SHIP, MEDIUM (LSM). This ship ordinarily will be loaded from a beach in a manner similar to the loading of the LCT (5). It differs from that landing craft largely in its increased size and improved endurance and seaworthiness.

248. LOADING OF LANDING CRAFT. a. Assault landing craft utilized in a ship-to-shore movement for the attack are loaded from transports, cargo ships, and landing ships in the transport area immediately prior to the assault. Light equipment is lowered in coal bags by hand lines over the side. Vehicles, heavy equipment, and supplies are lower by ships' booms, except for landing ships intended to debark their loads on the beach, pier, or pontoon gear. Landing craft intended for a shore-to-shore movement ordinarily are loaded directly from a beach.

b. Rough seas increase the difficulty and the time necessary for loading into landing craft.

c. For capacities of various types of landing craft, see Appendix I. These capacities should not be exceeded under normal sea conditions and necessarily may be reduced under conditions of heavy seas. Governing factors in loading are those of weight and dimensions. The combined weight of troops and matériel loaded must not exceed the allowable load for safety, stability, and proper navigation. Dimensions of vehicles and other equipment must be referred to the length and width of the loading compartment and to the size of the bow ramp opening to determine ability to load and to debark from particular landing craft. In determining ability to load vehicles and other heavy equipment in craft under conditions of rough seas, sufficient clearance between items to be loaded must be allowed to permit loading without damage to items already embarked.

d. Experience in loading combinations of vehicles, troops, and equipment is invaluable to preparing loading plans for landing craft. Landing craft employed to unload ships after the assault waves have landed are loaded according to principles discussed above.

e. Whenever possible, heavy matériel and equipment will be transported by suitable landing ships to avoid transshipment at sea.

249. LOADING AMPHIBIAN VEHICLES. Amphibian vehicles are loaded with the same consideration of weight, dimensions of load, and safety and stability requirements as are observed in the loading of landing craft. Loadings must conform strictly to established maximums in order to secure performance for which designed.

250. USE OF PALLETS. a. Under some conditions certain types of cargo, such as ammunition, rations, or loose stores, may be handled more readily in loading and unloading if prepackaged in suitable quantities and types on pallets. Pallets are wooden platforms of various sizes, suitably constructed for assault handling, with sled runners to facilitate movement over beaches. (Figs. 18 and 19.) Size of pallets

is determined by handling and stowage capabilities of ships and landing craft, and availability of special means for handling them on the beach. A normal size is approximately 4 x 6 feet, with a maximum capacity of approximately one ton.

b. For considerations of special requirements for unloading of pallets, see Section V following.

c. If ordered by the landing force commander or by higher authority, requisite quantities of supplies are loaded on pallets by initial supply depots or ports of embarkation and so loaded on ships.

d. Pallet-loaded supplies can be handled readily on loading docks and by standard ship booms in unloading into landing craft. Such packages cannot be stowed on ships as effectively as bulk supplies and therefore may reduce materially the amount of supply in some categories that can be transported in assault ships.

e. Pallets require special handling gear aboard ship to move them from the wings of the hold onto the square of the hatch. It is standard practice not to palletize all cargo since their handling over an unorganized beach in the early stages of the landing is difficult. At least 50% of the supplies normally will be palletized.

f. Removal of pallets from landing craft and their transfer to shore supply points require the availability and use of some special equipment. Usually pallets are pulled from landing craft by shore party beach vehicles, e. g., bulldozers or other tracked motive power. Pallets are lifted into trucks or other vehicles by means of special A-frames mounted on bulldozers or amphibian trucks or by special mobile cranes. Pallets may be lifted directly from landing boats and loaded into vehicles by the crane.

Section V. UNLOADING AND DEBARKATION

251. RESPONSIBILITIES. **a.** Naval responsibilities in general are to provide equipment and facilities for unloading in the prescribed priorities the troops, supplies, and equipment from ships to boats or docks, to operate these facilities, to provide and operate necessary craft, and to assist army unloading details.

b. Army responsibilities in general are to load slings and cargo nets aboard transports and cargo ships (task of ship platoons of shore units or other army unloading details), to unload cargo nets and slings in boats, amphibian trucks, other craft, or on docks (Navy operates ships' winches), to provide and operate amphibian vehicles, to provide, operate, and land vehicles used to unload landing ships and craft, and to unload supplies at beaches and supply point sites. Supervision of

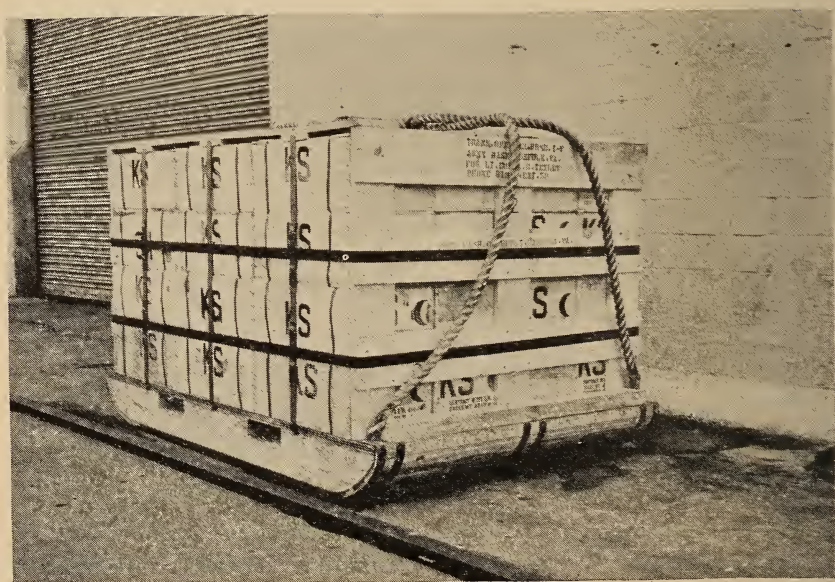


Figure 18 a. Empty pallet—double runner. b. Loaded pallet—solid runner.

priorities in unloading aboard transports, cargo vessels, or landing ships is exercised by the transport quartermaster.

252. GENERAL CONSIDERATIONS. a. Rapid unloading is essential.

b. Unloading of transports and cargo ships conforms to priorities of unloading established by prepared debarkation plans.

c. The effect of hydrographic, weather, and surf conditions, and enemy air and sea action on unloading of ships and beaching of landing



Figure 19. Pallet being lowered into hold.

craft of all types are matters of naval concern which may materially affect capabilities for debarkation of army troops and matériel. Naval organization, operation, and control of landing craft must be considered as they affect rate and control of debarkation.

d. Except for small amounts landed with troops, supplies from transports and cargo ships are landed by second and succeeding trips of landing boats of the transport group and other landing vessels. In shore-to-shore movement, supplies not loaded on craft available for the first lift remain in the embarkation areas or at available ports and bases to be loaded on subsequent crossings of the landing craft. Care-

ful planning is required to insure most efficient use of boats and to establish proper priority in movement of supplies to the beach. Transports and transport quartermasters must be prepared to modify debarkation priority schedules (within limitations imposed by stowage of cargo according to original priorities) if conditions ashore or at sea so require at any time during the unloading period.

e. Unloading of supplies and equipment subsequent to unloading of initial assault waves is coordinated by commanders of naval transport divisions, army transport quartermasters, and shore party commanders on the several landing beaches, pursuant to established plans for movement control. The great volume of follow-up traffic should be anticipated and careful plans for flexible but sure control formulated.

f. As soon as possible, transports move to positions closer to the beaches in order to expedite unloading.

g. If possible, initial reserve supplies should be landed on the same beaches as the troops for whom the supplies are intended.

h. Beach reserve and landing force reserve supplies are landed at designated beaches and at designated debarkation points for particular classes of supply in accordance with the plan of the shore battalion (for the regimental beachhead) or shore group commanders (for the division beachhead) for the debarkation of supplies and their subsequent movement into regimental division, or landing force supply points.

i. Initial and beach reserve supplies are dispatched ashore in balanced units of fire and days of supply unless the situation demands otherwise.

253. DEBARKATION PLANS. a. Debarkation plans include plans necessary to debark troops, vehicles, and equipment from ships in proper order, formations, and time for the landing attack, and to unload and dispatch additional equipment, vehicles, and supplies ashore in the priority established for support of the attack. Plans for cargo debarkation only are considered in this section.

b. Plans for debarkation of equipment and supplies from a ship are dependent upon the manner of embarkation, which in turn is based on priorities of unloading established before embarkation by the commander of troops aboard the particular ship concerned, or by higher authority. Since cargo was stowed originally to permit debarkation in the desired priority, only minor modifications may be made in the priority of unloading. These modifications in priorities are possible by selection of cargo from different holds of a ship and by selection within a particular hold, if practicable. Modifications in

the unloading priority of landing ships are limited, owing to their construction and limited cargo-handling facilities.

c. Plans must consider possible effect of adverse weather conditions and enemy action on rate of debarkation.

d. The vehicle debarkation schedule (Appendix II), the supply loading plan (Appendix II), and other orders give prescribed priorities of landing equipment and supplies from transports and cargo vessels.

e. Instructions may be amplified aboard a particular transport or cargo ship by arranging a debarkation schedule showing priorities for debarkation of equipment and supplies for each hold of the ship. These added schedules facilitate control by the transport quartermaster of the ship and aid unloading personnel at each hold.

254. UNLOADING HEAVY EQUIPMENT FROM TRANSPORTS. When heavy equipment is lowered from a ship to a landing craft, only the crew of the landing craft and army personnel necessary to guide the equipment into the craft and remove loading slings should be in the craft. Heavy equipment can be damaged during loading by attempting to load too many items in a restricted boat space under conditions of rough seas and limited visibility.

255. UNLOADING ANIMALS. **a.** The most satisfactory method of debarking animals from a transport is by sling or stall in which animals are lowered from the transport onto a pier, or into a landing craft, and then debarked directly onto the beach.

b. Transportation of animals in landing ships, tank, will eliminate lifting and lowering by sling and the use of smaller craft. Stall and cleaning facilities must be provided for care and protection of animals. They can be debarked either directly onto beaches, piers or naval pontoons, or can swim the distance to shore if conditions necessitate.

c. If animals are to swim, a boat should be stationed at the point where the animals are put into the water to head them promptly to shore. Weaker animals may have to be towed. Men should be available on the beach to assemble the animals. (FM 25-5.)

256. DEBARKATION FROM LANDING SHIPS AND CRAFT (figs. 20 and 21). **a.** Vehicles on a landing ship, or craft, which may unload over the ramp through water should be waterproofed. Normally, all vehicles in the assault will be prepared for wading, and all others until they can be landed without risk of immersion.

b. Unloading vehicles from any landing ship or craft permitting ramp unloading requires well-organized planning and training. Drowning of a vehicle in front of the ramp will stop all unloading

until the vehicle can be removed or the ship retracted and rebeached. One suitable vehicle may be unloaded first to act as a recovery vehicle on the beach.

c. The carrying of loose cargo in considerable tonnage should be avoided whenever possible. Supplies are best carried stowed on trucks to secure maximum mobility in unloading. The unloading of loose supplies is facilitated by driving vehicles aboard for loading, by using



Figure 20. Unloading LST at Bougainville.

overhead hoisting gear which can be installed within the ship, and by carrying pallet loads. Planned arrangement of bulk supplies can make possible the loading of several trucks simultaneously.

d. Unloading over a naval pontoon causeway or similar construction will be necessary where depths of water are excessive for wading of waterproofed vehicles. Unloading directly to these pontoons or to a pier will be normal for follow-up ships.

e. Barges may be formed of two or more naval pontoons, self-propelled or towed, which can carry a load in a shore-to-shore movement and function subsequently in the normal use as a pier for landing ships.



Figure 21. Unloading LST over naval pontoon causeway in Italy.

SECTION VI. ORGANIZATION OF BEACHES

257. GENERAL. (Fig. 22) a. Beach organization includes all measures taken by the shore group to facilitate movement, supply, and evacuation across beaches and in the beach area for logistical support of a landing force.

b. For organization of the shore group and its components, see paragraphs 21-24, inclusive.

c. Beaches upon which battalion landing team vehicles and supplies are to be landed are organized and operated by the shore party attached or in support as promptly as possible after initial assault waves are ashore. As soon as practicable, control of organized battalion landing team beaches is assumed by higher echelons. A particular battalion landing team beach may be developed for further use, or abandoned and the shore party personnel consolidated on fewer beaches. Beaches not previously organized, which have been made available by operations ashore, may be organized and operated under landing force control.

d. Logistical operations in organized beach areas will be necessary for continued support of inland combat operations until a suitable port is available and in operation.

e. It is a principle of operation that the shore party commander, through his assistant, the beachmaster, controls the rate of arrival of supplies at a landing beach. All matters pertaining to the operation of the beach installations must go through the shore party commander.

258. FUNCTIONS OF THE SHORE PARTY COMPONENTS. a. Beach organization and operation is an army responsibility executed jointly by military and naval components. Duties of the joint party, for which it is suitably organized, include:

(1) Marking of hazards to navigation in the vicinity of the beach and determining most suitable landing points for landing craft and landing ships.

(2) Effecting emergency boat repairs.

(3) Evacuating casualties.

(4) Controlling boat traffic in the vicinity of the beach.

(5) Maintaining ship-to-shore communication.

(6) Marking landing beaches. For details of markers see FTP 211, U. S. N.

(7) Establishing and marking debarkation points on landing beaches.

(8) Unloading matériel of the landing force.

(9) Removing mines and beach obstructions to permit safe passage of vehicles and supplies and movement of troops.

(10) Receiving, guarding, employing, and evacuating prisoners of war to ships in accordance with landing force instructions.

(11) Establishing communication with adjacent shore units and forces ashore as required.



Figure 22. A beach on the coast of France.

(12) Constructing landing facilities where required. Naval pontoon gear is installed by naval personnel who subsequently may join the beach party.

(13) Maintaining liaison with the senior troop commander within the zone served by the particular shore unit.

(14) Maintaining order and directing traffic on and in the vicinity of the beach.

(15) Providing bivouac, parking, and storage areas on and in the vicinity of the beach for various elements using that beach.

(16) Facilitating movement off the beach of unit personnel and equipment and insuring movement of supplies into beach supply points.

(17) Selecting beach supply point sites in accordance with requirements of the unit supported and limitations of hydrography, terrain, and facilities available.

(18) Organizing, improving and operating beach supply points for reception, storage, and issue of supplies when the shore party includes special service elements for this purpose.

(19) Maintaining a record showing organizations, matériel, and supplies, by appropriate categories, which have been landed.

(20) Disseminating proper orders or notification in advance to ships, shore units, and attached service units involving any changes in logistical plans.

(21) Constructing and maintaining beach roadways and exit routes.

(22) Providing for decontamination of gassed areas on the beach.

(23) Maintaining a situation map for information of landing units.

(24) Operating a dewaterproofing service.

(25) Operating emergency motor maintenance service to assist vehicles damaged in landing.

(26) Providing local security (not defense) for beach areas.

b. The naval beach party (naval platoon) is charged with the purely naval functions, normally those numbered (1) to (5). Army and naval elements, however, assist each other as the need arises on any or all of the above tasks.

259. SHORE PARTY OPERATIONS SECTIONS. a. To carry out its varied missions, a battalion landing team shore party is organized into operating sections to perform its missions.

(1) Army sections perform the following missions:

(a) Command (entire shore party).

(b) Liaison.

(c) Beach security.

(d) Pioneer construction.

(e) Unloading on beach (army service platoon).

(f) Unloading ship (army ship platoon).

(2) Navy sections perform missions as follows:

(a) Command (beach party only).

(b) Boat repair.

(c) Hydrographic.

(d) Evacuation (naval medical section).

(3) Communication missions are performed jointly.

b. Except for the ship platoon, which works in the ship until the completion of unloading, the beach organization into sections is extremely flexible. Shore party engineer personnel must be prepared

to work with any of the operating sections and in the course of an operation may work with all. The same flexibility must exist in the naval component of the shore party.

260. ORGANIZATION OF REGIMENTAL AND DIVISION BEACHES. Regimental and division beach areas are organized by development, consolidation, or abandonment of certain battalion landing team beach areas or by developing new beach areas. Normally, certain beaches previously organized by assault battalions are designated for certain classes of supply, enlarged supply point sites further inland are organized, and control of logistic elements is regained by higher echelon. Special service elements of shore battalion groups and the division shore group normally held in reserve during the battalion landing team phase may be brought in to operate shore supply points and reinforce shore units for the organization of regimental or division phases.

261. LOCATION OF SHORE SUPPLY POINTS. a. The following factors influence the location of shore supply points:

(1) Hydrographic features which limit points at which loaded landing craft can beach, or which require employment of special equipment to bridge water distances between grounded boats and shore.

(2) Terrain features which affect movement, dispersion, and concealment of supplies.

(3) Effect of preliminary air and naval bombardment.

(4) The rate at which supplies are received, methods of unloading to be employed, and availability of equipment and personnel required to handle and move supplies inland to supply points.

(5) Progress of the attack.

b. Shore supply points are located in accessible sites, if possible near main supply routes from beaches to combat elements and within convenient hauling distance from landing beaches. Locations selected should not be such as to create concentrated targets for air attacks or lead to congestion of traffic.

c. The above considerations may limit establishment of unit shore supply points to suitable locations in the following general areas:

(1) Battalion landing team: within 300 yards of the shore line.

(2) Regimental combat team: usually within from 300 to 1800 yards of the shore line.

(3) Division or landing force: usually within from 1 to 10 miles of the shore line.

262. MOVEMENT OF SUPPLIES AND EQUIPMENT. a. Factors affecting the movement of supplies and equipment from ships to shore supply points are:

- (1) Enemy activity.
- (2) Terrain, including slope of the beach, shelter of the beach from weather conditions affecting the landing of boats, character of the surface of the beach for movement of vehicles, number and nature of exits from the beach, available road net inland, and suitable cover and area for supply points within reasonable distance.
- (3) Hydrographic conditions offshore affecting the landing of boats and landing ships.
- (4) Weather conditions affecting the landing of boats.
- (5) Amount of boats, vehicles, sleds, other equipment, and personnel for movement of supplies.
- (6) Method of transporting supplies ashore (landing ships, landing craft, amphibian vehicles, barges, or lighters).
- (7) Whether supplies are bulk or pallet-loaded.
- (8) Use of mechanical aids on the beach.
- (9) Distribution of shore units and their state of training.

b. Supplies should not be allowed to accumulate on the beaches. They should be moved to small, concealed, widely dispersed points on hard standing near access routes, wherever conditions permit.

c. Particular unit supply points into which supplies are moved vary with the phase of the landing attack, progress of tactical units, and instructions of senior shore unit commanders.

d. Supplies moved into battalion landing team shore supply points consist of high priority supplies required to sustain the battalion in action until supply responsibility is assumed by a senior unit. These supplies are stacked in small dumps or piles, each containing one class or one item of supply. When regimental combat team supply points are organized, the expanding of the battalion supply points is discontinued and they are exhausted by issue.

e. Supplies moved into regimental combat team shore points may consist of all classes. These points differ from battalion supply points in that supplies are moved into segregated sites each containing one or more designated classes of supply. Supplies are moved into regimental supply points until ordered into division or landing force points. When division supply points are organized, small remnants of regimental supplies may be added to them if practicable. Otherwise, regiments continue to draw from regimental points until supplies are exhausted or until otherwise directed.

f. Supplies moved into division or landing force shore supply points consist of all classes.

263. BEACH COMMUNICATION. See Chapter 10.

264. BEACH MEDICAL EVACUATION. See Section VII, Chapter 5.

265. DEFENSE OF THE BEACH AREA. Shore units are responsible only for local security of the beach area and for defense of that area within the limitations of their organic weapons. Additional units required for defense of the beach area are initially under the control of the tactical commander of the unit landing on the beach. As the attack advances inland, units for defense of beach areas are detached from division control and are attached to the shore group or other appropriate command.

266. REMOVAL OF UNDERWATER AND BEACH OBSTACLES. a. Shore units are responsible for removal of underwater or beach obstacles remaining after passage of assault elements, which restrict the use of the beach for boats, vehicles, and logistic support. Naval demolition units which accompanies or preceded initial assault elements through underwater obstacles will continue demolitions operations under supervision of the shore party commander.

b. Mined beaches should be expected and plans and training pointed to their passage and neutralization. The shore company responsibility is for the clearing of beach lanes for the safe passage of personnel, vehicles, tanks, and matériel.

267. PLANNING. a. Planning for beach organization is based on all available maps, charts, aerial photographs, reconnaissance data, and other information. Hydrographic and terrain features will influence greatly the methods and special equipment used for unloading and moving supplies and equipment, attachment of service units to subordinate elements of the shore group, and priority of tasks required to effect each organization.

b. Tentative plans, subject to confirmation by reconnaissance ashore, are made for the location of supply points, beach exits, beach roadways, debarkation points, and other beach installations.

c. Plans are made for progressive control of organized landing beach areas by successive echelons with subsequent abandonment or development and operation under regimental, division, or task force direction. Plans may include organization of beaches not utilized for the landing attack, but which become available through operations ashore subsequent to the initial assault. All the above plans must be flexible, since the time at which they are placed in effect and the practicability of their execution will be subject to reconnaissance data,

obtained during or after the landing attack, and the development of the tactical situation ashore.

d. Plans should provide that shore group elements attached to reserve combat elements (for purposes of dispersion afloat and flexibility in employment of those reserve elements) revert to the control of the next higher shore unit commander if the reserve is directed to land on a beach that already has been organized.

268. BEACH ORGANIZATION PLAN FOR BATTALION LANDING TEAM BEACH. a. Plans for organization of a battalion landing team beach (fig. 23) include:

(1) Mission and general plan of the shore party commander for organization and local security of the beach area and assignment of tasks to subordinate elements.

(2) Time of landing of various elements of the shore party as given on the boat assignment table of the battalion landing team. (Appendix II.)

(3) Provision for early reconnaissance of the beach area, including hydrographic and mine reconnaissance.

(4) Location and improvement required for beach exits, beach roadways, and debarkation points.

(5) Installation of beach markers for indicating beach limits and debarkation points, both day and night. (For details of markers see FTP 211, U. S. Navy.)

(6) Location of beach supply points with instructions as to their improvement, camouflage, dispersion, and routes to them.

(7) Method of unloading, moving, and issuing supplies; supply records to be maintained.

(8) Method of reception, storage, and issue of water, including operation of portable distillation equipment if necessary.

(9) Defense of the beach area.

(10) Location and special instructions for beach evacuation stations.

(11) Location of prisoner of war enclosures; instructions for guarding, employing, and evacuating prisoners of war.

(12) Measures for beach area military police and traffic control.

(13) Measures for removal of underwater and beach obstacles, and decontamination of gassed areas which interfere with logistic operations in the beach area.

(14) Provisions for boat, vehicle, and equipment salvage and repair.

(15) Communication ship-to-shore, inland to troop commander, to adjacent landing beaches, and within the beach area.

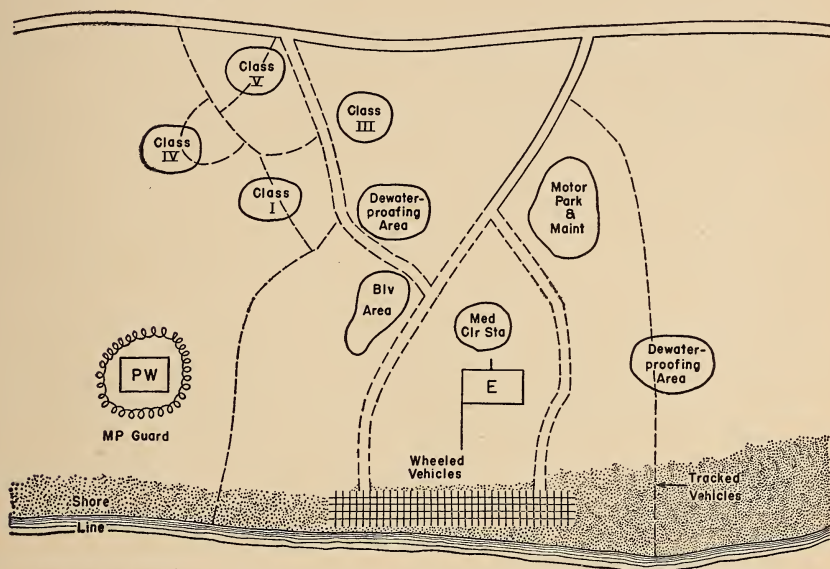
(16) Location of bivouac areas, parking, and de-waterproofing areas for motor vehicles.

(17) Provision for reliefs of working details to maintain continuous beach operation.

(18) Plans for employment of any special equipment or attached service elements, such as naval pontoon gear and quartermaster service units.

(19) Location of command posts.

b. Coordination with S-4 of the battalion landing team regarding location of supply points is essential. Movement of incoming supplies to regimental or division supply points further inland is begun upon order of higher authority.



Note: Not to scale

Figure 23. Typical battalion beach area.

269. BEACH ORGANIZATION PLANS FOR REGIMENTAL, DIVISION, AND TASK FORCE BEACHES. a. Plans for organization and operation of these beaches include:

(1) Designation of beaches to receive particular classes of supply, including debarkation points for each class. Abandonment of certain beaches. Development of beaches not previously organized.

(2) Designation of regimental, division, or task force beach evacuation stations.

(3) Location, improvement, and operation of regimental, division, or task force shore supply points.

(4) Plan for local security of beach areas, and defense of beach areas when division shore groups are detached from division control.

(5) The time that the regimental, division, or task force plan becomes effective.

(6) Reinforcement of shore parties with service elements of the shore group.

(7) Employment of shore parties with reserve elements which land on organized beaches.

(8) Employment of amphibian vehicle units, naval pontoon causeways, and other special units or equipment.

(9) Location of command post.

(10) Appropriate items from plan for organization of a battalion beach area.

b. Plans for location and operation of supply points, traffic circulation, evacuation, and handling of prisoners of war must be coordinated between combat and logistic elements in all echelons.

c. Commanding officers of naval transports, cargo ships, control vessels, and other ships and craft engaged in unloading supplies and equipment must be informed through channels of the beach organization plan. Failure to coordinate with these agencies may result in uneconomical employment of landing craft in support of the logistical plan.

d. It is necessary that supplies be landed and moved in an orderly manner to prevent congestion of supplies on the beach, causing loss and spoilage. Supplies or vehicles should not beach before the shore party is prepared to receive them. In some situations, supply boats and craft may be held off shore in a controlled pool to prevent their indiscriminate arrival at the beach before they can be handled by the shore party. This control is necessary for operations in a heavy surf where boats will broach if not unloaded promptly and in atoll operations. (Section II, Chapter 9.)

e. Transit areas may be established in which to receive personnel and vehicles from the beaches. Arrival is recorded, parent unit is notified, and guides or necessary transportation to unit are furnished.

f. Transfer areas to permit coordinated exchange of loads from DUKWs to trucks which transport the supplies inland may be desirable.

270. DURATION OF BEACH ORGANIZATION. Organized beaches will continue to be operated for supply and evacuation until a suitable port is available and in operation.

Section VII. MEDICAL SERVICE

271. RESPONSIBILITY. **a.** Army is responsible for the medical service of its own forces prior to embarkation, during embarkation,

ashore in landing areas (assisted by naval beach evacuation stations during initial phase), and inland in support of the operation.

b. Navy is responsible for the medical service of the landing force while afloat, for evacuation of casualties from landing beaches, and hospitalization afloat. In the initial phase, naval beach evacuation personnel assist in the medical care for beach casualties.

c. Both military and naval medical installations function in beach areas during the initial phase.

d. For further discussion, see FM 8-10 and 8-45.

272. PRINCIPLES OF EVACUATION AND MEDICAL SUPPLY.

a. Evacuation. (1) Based on joint medical estimate, a medical plan is prepared by landing and naval force commanders covering embarkation, movement overseas, and the landing phase. Similar plans are prepared by subordinate commanders.

(2) Until adequate army medical facilities are established ashore, the naval medical section of the shore party is responsible for beach-to-seaward evacuation of casualties and assists in first-aid care of personnel casualties on the beach.

(3) Afloat (transports and landing craft), naval medical personnel provide for reception, treatment, and hospitalization of all casualties during the period noted in paragraph 271b. In addition, Navy provides hospitalization for all casualties evacuated to transports or naval hospital ships, as well as hospitalization aboard any other type of ship used for reception of patients, except Army hospital ships.

(4) Army medical units perform normal functions as prescribed for land warfare, modified in early stages of a landing by substitution of naval beach and ship medical facilities for the usual medical facilities established by division and army. Army medical units, when feasible, assist naval medical personnel in the duties outlined in paragraphs 271 *a* and *b*.

(5) Evacuation of wounded casualties begins as soon as assault troops are landed. Wounded in landing craft are returned to ships; the dead are placed on the beach. In principle, only casualties of protracted convalescence expectancy are retained ashore.

(6) Transports may not remain in the transport area to permit continued utilization of their medical facilities. LST may become very useful for transporting casualties to base ports where permanent medical facilities already are established ashore. If so used, these ships must have either naval or military medical personnel attached to their complements.

(7) Elements of the division medical battalion, reinforced, are attached temporarily to battalion landing teams and regimental com-

bat teams. Control of temporarily attached divisional medical units successively reverts to the senior commander ashore until it reverts back to division.

b. Medical supply. (1) Organization equipment must be combat unit loaded.

(2) Hospital ships may be used legally to transport medical supplies and personnel.

(3) Medical equipment must accompany the unit ashore.

(4) Critical items of medical supplies must be deck loaded and made available immediately to medical troops ashore.

(5) Medical supply points must be established early.

(6) Every medical soldier should carry additional individual medical supplies to meet operational requirements. For this purpose the vest type haversack or empty containers such as the fiber, 60-mm mortar, 6-rounds, M51 may be used. By attaching a web strap, the container can be carried, and by taping at the junction of halves it can be made waterproof.

(7) Critical items of battalion and regimental medical equipment and supplies must be augmented by hand-carrying such additional items as blankets, litters, splints, plasma, and dressings.

273. BATTALION LANDING TEAM PHASE. a. Facilities.

Naval medical section of the shore party; battalion aid station; detachment collecting company from division medical battalion; aid men from shore company.

b. Operation. (1) The naval medical section of the shore party lands early, sets up the beach evacuation station, cares for beach casualties, and evacuates to ships in accordance with the joint medical plan.

(2) The battalion aid station lands with the battalion and performs normal functions, cares for initial beach casualties, and follows in support of the battalion.

(3) The detachment of the collecting company lands as soon as practicable, assists in collecting beach casualties and evacuates them to the beach evacuation station. It then evacuates casualties from the battalion aid station to the beach evacuation station.

(4) Company aid men of the shore company assist in the care of all beach casualties and in their evacuation to beach evacuation stations.

274. REGIMENTAL COMBAT TEAM PHASE. a. Facilities.

Naval beach evacuation stations; battalion aid stations; regimental aid station; collecting company; clearing company platoon; aid station

of shore battalion with company aid men; and a detachment of one officer and twelve enlisted men from the Medical Depot Company. (Note: One additional clearing platoon from a separate medical clearing company should be attached to a division to provide a clearing platoon for each regiment.)

b. Operation. (1) Naval beach evacuation stations may be consolidated in accordance with the plan for consolidation of beaches.

(2) The aid station of the shore battalion is utilized to augment beach evacuation stations and care for beach casualties. The surgeon of the shore battalion may become the evacuation officer for the main regimental beach.

(3) The regimental aid station performs its normal land functions.

(4) The remainder of the collecting company is landed as soon as practicable after regimental personnel, and evacuates casualties from collecting points to beach evacuation stations. Until the clearing platoon is in operation, the collecting company may evacuate casualties direct from battalion aid stations.

(5) The clearing platoon performs normal clearing functions, segregates casualties, and is evacuated of casualties by the collecting company.

(6) The detachment of the medical depot company collects medical supplies scattered in various places on the beaches. It establishes an initial medical supply point to meet the emergency needs of the troops until reinforced by the medical depot company.

275. DIVISION PHASE. a. Facilities. Nine naval beach evacuation stations (may have been consolidated); nine battalion aid stations; three regimental aid stations; three collecting companies; one clearing company reinforced with one clearing platoon; three battalion aid stations of shore battalions; one aid station of shore group; and one platoon of the medical depot company (less detachments).

b. Operation. (1) Remaining elements of the division medical battalion land as soon as practicable after assault regiments. Beach evacuation stations (as consolidated) remain intact.

(2) The surgeon of the shore group becomes the evacuation officer for the division.

(3) The clearing platoon attached to each regimental combat team reverts to division control and provides normal clearing functions in close support of the division.

(4) Collecting companies, in addition to normal duties, evacuate casualties from clearing stations to beach evacuation stations.

(5) Medical depot platoon (less advanced detachments) to reinforce advanced detachments and establish medical supply points for the division.

276. FORCE PHASE. a. Facilities. Ambulance companies; one or more evacuation hospitals; and one or more medical depot companies (less detachments).

b. Operation. By the time the force (initial and first follow-up convoy) is ashore, attacking troops may have seized harbors. If so, naval beach evacuation stations may depart with the initial convoy, and subsequent evacuation to ships may be accomplished by transporting casualties direct to ships tied up at docks. A clearing platoon remains in operation on or near the beach until evacuation hospitals are set up and ready to clear casualties from this station. Ambulance companies and evacuation hospitals are landed as soon as practicable after arrival of the first follow-up convoy. The division medical service then operates normally. Evacuation hospitals are set up in favorable locations in proximity to available harbors. Ambulance companies evacuate casualties from division clearing stations to evacuation hospitals, and from evacuation hospitals direct to ships, or to beach evacuation stations if harbors are not available. The force surgeon regulates the flow of casualties to ships from evacuation hospitals. Medical supply depots are established by the depot companies for the force.

277. TRANSPORTATION. In the initial stages of a landing attack, trucks, $\frac{1}{4}$ -ton, outfitted with knocked-down frames for litters, are very suitable. They conserve shipping space and can negotiate difficult terrain. They provide approximately the same capacity as the number of ambulances occupying the same cargo space. Ambulances may arrive in follow-up convoys. The $2\frac{1}{2}$ -ton amphibian truck is especially suited for the transportation of casualties from shore to ship.

Section VIII. BURIAL OF THE DEAD

278. GENERAL. Because of the inability to put a sufficient number of service troops in the initial waves, it is essential that plans be made well in advance as to the burial of the dead, both friendly and enemy, and that the resulting instructions be understood thoroughly by all echelons.

Section IX. MILITARY POLICE

279. GENERAL. Military police functions in beach areas are performed by organic troops of shore parties or by military police units

attached to the division shore group. Conditions may require that military police be reinforced by troops from other units or their duties be allocated to other troops.

280. PRISONERS OF WAR. a. The probable number of prisoners of war to be cared for is estimated and included in plans for the operations.

b. Prisoners are evacuated from front lines under escort of walking wounded or other available personnel via control points designated by headquarters of units to collecting points. They are retained at collecting points until evacuated to designated ships or prisoner-of-war enclosures.

c. Collecting points and prisoner-of-war enclosures are located initially in the vicinity of the beach, tentatively selected prior to landing and finally determined after reconnaissance ashore. These locations are selected by commanders of shore units so as not to interfere with other activities. New collecting points are established inland as required by the progress of the attack. (FM 30-15.)

281. STRAGGLERS. Collecting points for stragglers are established initially in the vicinity of the beach. Stragglers are returned to their organizations as soon as practical.

282. CIVILIAN POPULATION. It may be necessary to arrange for control or evacuation of civilians or natives. Plans may have to include provision for their shelter, rationing, and transportation. In the case of control of natives consideration should be given to maximum use of local native police or other administrative units already established by the government administering the area.

283. TRAFFIC. a. Precaution is necessary to avoid congestion and to maintain control of traffic on beaches and inland. Stragglers, prisoners, and wounded should be kept clear of the beach.

b. Units and administrative agencies should provide necessary signs for traffic control. Signs are set up at the beach and along routes of advance inland. Military police erect signs not otherwise provided.

Section X. WATERPROOFING

284. GENERAL. a. Vehicles, guns, tanks, and signal equipment employed in a landing attack must be waterproofed.

b. Successful waterproofing protects vital operating parts, failure of which would prevent operation of the equipment.

c. Waterproofing may be done by the units, by special ordnance personnel, or by other specially trained troops at ports of embarkation. All personnel who are concerned with matériel operation and maintenance must be familiar with waterproofing materials and procedure.

d. Waterproofing materials should be available aboard ships for replacement of materials removed enroute for repairs or maintenance.

e. For technical details of waterproofing kits and methods, see Ordnance Technical Manual 9-2853.

285. DE-WATERPROOFING. a. After a vehicle or tank has landed, waterproofing material should be removed as soon as practicable, preferably in a de-waterproofing area supervised by trained ordnance personnel or other specially equipped section of the shore party. Lubricants should be checked for dilution. De-waterproofing must be executed if vehicles are to operate subsequently in a satisfactory and efficient manner.

b. After salt water immersion vehicles must receive prompt and continuous first and second echelon maintenance. All vehicles should receive a 6000-mile inspection at the earliest practicable time. Units should establish and maintain rigid vehicle inspection.

ROLE OF ARMS

Section I. INFANTRY

286. MISSION. Infantry executes the assault landing from the sea and subsequently performs normal land missions. It achieves rapid breaching of beach obstacles, destroys defense forces and installations, consolidates beachhead positions, and exploits its successes. The striking power of the landing force varies directly with the preparation for amphibious combat of the included infantry.

287. ORGANIZATION. a. Organization for assault will require change in smaller units to fit available craft, and increase in or addition of special weapons and demolition equipment.

b. Control initially is decentralized to battalion and smaller unit commanders, and is resumed by higher headquarters as soon as communications are established.

Section II. FIELD ARTILLERY

288. GENERAL. The type of artillery to be used should be selected with regard to the facility with which it can be landed, put into action, and displaced when ashore.

289. EMPLOYMENT. a. Organic light artillery is landed early to execute its normal mission. Reconnaissance parties in early assault waves are necessary for verification of tentatively selected routes and positions. It is desirable to have liaison observer airplanes available soon after landing. These planes may be landed with organizational equipment or flown in from LST.

b. Several types of artillery can be fired from certain types of landing craft while en route to the beach.

c. Medium artillery carried in suitable landing ships can be brought in when shore facilities exist for its movement.

d. When the beach is narrow and heavily wooded areas extend well toward the water line, it may be necessary for the artillery initially to use mortars in order to secure high trajectory fires at short ranges.

290. CONTROL. When it is necessary to land individual batteries separately, every step should be taken to insure their being placed under artillery battalion control as early as possible.

Section III. MECHANIZED UNITS

291. AMPHIBIAN TANKS. a. The primary mission of the amphibian tank is to provide fire support during the approach to the beach and during the landing of assault troops.

b. Amphibian tanks are transported to the landing area in large craft, and move to the beach under their own power.

c. One company of amphibian tanks normally supports a battalion landing team. A small number of such tanks may move within the first wave to provide close fire support, with the remainder of the company supporting subsequent waves. Amphibian tanks operate ashore only until relieved by land tank units or by the fires of supporting artillery. This relief should be effected as soon as practicable.

d. In principle, the Navy exercises command of amphibian tanks while afloat as participants in an amphibian operation; the landing force assumes command upon arrival at the beach.

292. LAND TANKS. a. Land tanks are transported to the landing area in assault transports and landing ships. They may be landed in LSTs or transferred to smaller craft for the approach to the beach. All tanks should be waterproofed for amphibious operations.

b. Tanks equipped with gyrostabilizers are capable of giving fire support from landing craft during the approach to the beach.

c. Tanks equipped with flame throwers are of great value in certain areas.

d. The position of tanks within the assault forces depends upon the mission, the terrain, the landing craft available, and the nature of the enemy defenses and beach obstacles. In any case, tanks must either closely follow or be followed closely by infantry.

(1) When terrain is suitable for tank operations and the beaches are not heavily defended by antitank weapons and antitank obstacles, tanks may be in the leading waves.

(2) When terrain for tank operations is poor or restricted, or when the beach is heavily defended by antitank weapons and obstacles, tanks

are used in later waves. Paths must be cleared through obstacles before tanks land.

e. After they reach the beaches, tanks are employed as in other land operations. They may be given a secondary mission of engaging seaborne targets particularly during the period when the beachhead is shallow.

293. TANK DESTROYER UNITS. **a.** Subparagraphs *a* and *b* of the preceding paragraph are applicable also to tank destroyers.

b. Whether self-propelled tank destroyers land with leading assault units or later is determined generally by the estimated possibility of enemy mechanized counterattack and the necessity for using high velocity assault guns against hostile defenses. Towed tank destroyers cannot be landed until the beaches are prepared for wheeled traffic.

294. MECHANIZED RECONNAISSANCE UNITS. **a.** Mechanized reconnaissance units are employed on reconnaissance missions during amphibious operations. They may be employed on detached missions, generally to the flanks, or used as a source for reconnaissance patrols.

b. When used on missions to the flanks, they may be landed in rear of assault waves after the beachhead has been established, or they may be landed on separate beaches.

c. Generally, mechanized reconnaissance units will land initially with few, if any, vehicles, and will operate dismounted. After the beachhead has been expanded, their vehicles may be brought in and their operations conducted with mechanized equipment.

Section IV. ANTIAIRCRAFT ARTILLERY

295. GENERAL. **a.** Each phase of an amphibious operation requires adequate antiaircraft protection. Antiaircraft artillery automatic weapons, gun, searchlight, and barrage balloon (VLA) units normally are attached to the landing forces. Barrage balloon and automatic weapon units may be attached to the naval force to augment naval antiaircraft defense aboard ships and landing craft. Other antiaircraft artillery units may be attached to the air force for the protection of air installations ashore.

b. The amount and type of antiaircraft artillery provided are determined by the degree of friendly air superiority, the amount of shipping space available, and difficulties of getting equipment ashore.

c. The Navy furnishes antiaircraft protection of ships and landing craft of the assault convoy.

d. A major plan for air defense during the entire operation, thoroughly coordinated between the ground, naval, and air forces, must be a part of the initial planning.

296. MISSIONS. a. Primary missions of antiaircraft artillery units attached to the landing force may include:

(1) Protection of assault landing waves, subsequent boat operations in the beach area, and the assault forces as they proceed inland, against minimum and low altitude attack.

(2) Protection of beach installations, airfields, and port facilities against all types of air attack.

b. Secondary missions may include:

(1) Assisting in antimechanized defense of the beach.

(2) Assisting the Navy in protecting shore operations against sea-borne attack by light naval forces.

(3) Acting as reinforcing field artillery.

c. Antiaircraft artillery normally is sited to assist, if possible, in antimechanized or antiboat defense. The engagement of secondary mission targets is undertaken only when such engagement will not interfere with the primary mission, or when the unit is relieved of its primary mission for such purpose by the landing force commander.

297. COMMAND. a. Command of antiaircraft artillery normally will have to be decentralized during the initial assault phase. Units designated to participate in the landing assault, either in initial waves or in subsequent early landings, are attached to battalion landing teams. As soon as practicable, such units revert to higher antiaircraft artillery command echelons, in order that an integrated antiaircraft defense may be provided as early as possible. The time or circumstances of such detachment and consolidation should be given clearly in the plan.

b. Automatic weapons and barrage balloon units, which are deck-loaded for the voyage only, are controlled by the Navy during the voyage. Upon reaching the landing area, such units revert to the landing force.

298. EMBARKATION. Automatic weapons and barrage balloons used to augment the naval antiaircraft defense during the voyage are deck-loaded. Consideration must be given to the ship space available for the equipment and operating crews, the special gear necessary for flying balloons from shipboard, and the supply of ammunition, spare balloons, and hydrogen.

299. LANDING PHASE. a. Automatic weapons batteries and barrage balloons (VLA) are needed first to cover the critical assault period and the initial beach organization. Self-propelled automatic weapons are particularly suited for the initial portion of the landing phase. Automatic weapons batteries attached to battalion landing teams usually land with the assault waves or follow them closely. Consideration should be given to landing a portion of the battalion antiaircraft artillery intelligence service section with each automatic weapons battery. Platoons of barrage balloon batteries normally land with the shore parties. 90-mm guns should be landed early enough on the first day to be established and ready to fire prior to darkness, unless night fighters can be operated from close shore bases.

b. Division reserves may include automatic weapons battalions intended to accompany the assault force inland, additional elements of the VLA barrage balloon battalion, and gun battalions intended to protect continuing beach operations and installations, as well as anti-aircraft artillery groups to coordinate the antiaircraft defense of the operation.

c. Additional antiaircraft artillery units of all types are landed as available and needed to augment, consolidate, and coordinate the defense of the entire beachhead.

300. SHORE OPERATIONS. a. Initial establishment and integration of antiaircraft defense proceeds as for normal operations under the senior antiaircraft artillery officer in each battalion landing team.

b. Units intended for beach protection should not be extended inland with assault elements or otherwise dissipated by assault unit commanders, except upon approval of the landing force commander. As soon as practicable, or whenever prescribed by higher authority, units intended for continued beach defense will be released from the assault division and attached to higher antiaircraft command echelons landed to take over the antiaircraft defense of the beach. Such release must be coordinated carefully with the landing of the additional antiaircraft artillery units to accompany the assault division inland.

c. Units accompanying the assault division inland are employed in their normal role in support of the division.

d. Units landed during the consolidation phase are used in normal land roles in the antiaircraft defense of the beachhead with particular emphasis on airfields, ports, major supply points ashore, and concentrations of reinforcements.

301. AIR-ANTIAIRCRAFT ARTILLERY COORDINATION. Coordination of the antiaircraft artillery with the use of aviation is

particularly critical during the initial landings and the establishment of the beachhead when a considerable portion of the air power may be devoted to air-ground operations. Coordination is effected by the joint force commander, who issues appropriate standing operating procedure.

Section V. CHEMICAL WARFARE SERVICE

302. GENERAL. a. Use by defender. (1) Amphibious operations are particularly vulnerable to chemicals. Troops must be well trained in defensive measures.

(2) Chemicals may be used against landing forces by all normal methods, the most practicable of which are airplane spray or bombardment and land mines.

b. Use by attacker. Offensive chemical operations may include concentrations by naval gunfire, aircraft, or weapons of embarked army chemical units, and smoke by naval equipment on ships or smaller craft. The weapons of army chemical units may be used to deliver high-explosive fire from landing craft or on shore. The flame-thrower is an important assault weapon.

303. CONTROL OF CHEMICAL OPERATIONS. Control of chemical agents in an amphibious operation is a command responsibility of the joint force commander.

304. PROTECTION. a. Individual. If employment of chemicals by the defending forces is a capability, proper protection measures must be taken by landing forces. Protective measures include:

(1) Individual chemical training.

(2) Constant availability of individual gas equipment and protective clothing for both military and naval elements.

(3) Decontaminating equipment and materials on ship and on shore.

(4) Preliminary planning to provide protective matériel when and where needed.

(5) Maneuver to avoid contaminated areas.

b. Collective. Measures must be taken for group or collective protection, to include reconnaissance, planning the scheme of maneuver to avoid chemicals, general organization for protection, special protection of men and matériel in boats, and decontamination of beaches and routes inland. (FM 21-40.)

305. DECONTAMINATION. a. During any phase of a landing assault, local and individual decontamination will be performed by combat personnel in the area immediately following a chemical attack.

Equipment and matériels for this purpose should be landed early if chemical attack is possible.

b. Beach decontamination will be accomplished by elements of the shore party. Chemical decontamination units may be attached for this purpose.

306. MANEUVER TO AVOID CHEMICALS. Every effort should be made to avoid areas known or suspected to be contaminated or which are likely to be subjected to gas attack. Open beaches and high, open, wind-blown terrain are safest. Protected beaches, wooded areas, ravines, hollows, and defiles are most favorable for effective use of chemicals by the defender.

307. GENERAL ORGANIZATION. Standing orders covering procedure for protection against chemical attacks are issued. Materials for decontamination are kept available for use in all ships and boats and instructions for their use are disseminated to all concerned. Provision is made for treatment of gas casualties.

308. EMPLOYMENT OF SMOKE. **a.** Smoke may deny observation to the enemy in two ways:

- (1) By screening friendly movements.
- (2) By masking enemy observation facilities.

Smoke also reduces effectiveness of the defending fire and may aid a demonstration or feint.

b. The effect obtained from smoke depends primarily on the type and degree of control exercised over its use. The tactical plan for employment of smoke during an operation is determined jointly by commanders of all components who must take into consideration the scheme of maneuver, type of opposition to be expected, and capabilities and limitations of forces available. Smoke may obscure targets and navigational aids and cause both direct and indirect naval gunfire to lift and air bombardment to cease. Flank screens may be laid under favorable conditions to afford valuable protection with a minimum of interference. In considering the desirability of laying a screen, benefits expected must be compared with benefits to be obtained from armament or weapons it may render ineffective.

309. AMPHIBIOUS SMOKE AGENCIES. **a.** Means available to a task force commander to produce suitable smoke screens are:

- (1) Airplane spray.
- (2) Airplane bombs.
- (3) Smoke generators mounted in landing craft.
- (4) Smoke rockets from boat or ship projectors.

- (5) Smoke floats.
- (6) Funnel smoke from destroyers or transports.
- (7) Smoke projectiles from naval guns.
- (8) Chemical mortars mounted in landing craft.

b. Some of this equipment is installed permanently on certain types of ships and usually is readily available.

310. PLANS FOR USE OF SMOKE. a. Plans for use of smoke should consider the available permanent means for smoke generation in the ships of the joint force, and the amount of space which can be allotted on ships for any additional chemical personnel and equipment. Alternate plans should be prepared in detail for various wind conditions.

b. As the final decision to use smoke must be made on the spot, the plan should require the fewest operators and least amount of space, and detract least from the equipment and personnel available for assault missions.

311. CHEMICAL WEAPONS AS ARTILLERY SUPPORT. a. Chemical mortars may be included in the assault landing waves to provide additional high-explosive support fires ashore.

b. These weapons may be fired from landing craft enroute to shore when properly emplaced. Such use should be contemplated only when there are sufficient landing craft to permit installation of the weapons without reduction of boat space for assault troops.

312. OPERATIONS ASHORE. a. When enemy airfields and ports have been captured, smoke generator companies may assist in defense against air attack.

b. Chemical weapons units ashore will be used according to normal land warfare principles.

Section VI. ENGINEERS

313. DUTIES. a. **General.** The mission, duties, and operations of engineer units are discussed in FM 5-6; administrative duties are outlined in FM 100-10.

b. **Division engineer units.** (1) Division engineer combat units in an amphibious operation may assist assault infantry to penetrate inland through beach defenses or natural obstacles. They may be added to naval demolition units to assist in destroying underwater obstacles.

(2) During the advance inland, division engineers are employed in their normal role in support of the division. Their zone of re-

sponsibility after the initial assault normally will be inland from beach area establishments of shore group units.

c. Shore engineers. Specially trained and equipped combat battalions or engineer shore units perform necessary engineer duties for the logistic development of beach areas. Their zone of responsibility normally is restricted to established beach areas including shore supply points. For employment and duties of shore engineer units see Section VI, Chapter 5.

d. Other engineer units. Model-making units may be employed prior to embarkation for the purpose of building scale terrain models of landing areas. Additional engineer units may be required for special missions such as port construction and repair, bridge construction, airfield construction or rehabilitation, road construction, mapping, or repair of civilian utilities. These units are not usually with the assault elements of a landing force. Certain of these units may be transported in ships of the assault convoy. The airfield construction and rehabilitation units must be landed as soon as possible to provide air strips to increase the usefulness of the joint air forces.

314. PLANS. **a.** For beach organization plans of shore engineers, see Section VI, Chapter 5.

b. Prior to embarkation, the landing force engineer assembles available engineer information relative to the area in which the landing attack will take place. This information includes data on beaches, beach and underwater obstacles, defensive installations, landing facilities, road net, bridges, water supply, terrain, local engineer resources, possible landing fields, maps, and other items of engineer information. Aerial photographs should be obtained to supplement and correct data otherwise obtained. Full use is made of all intelligence in estimating work required and local resources likely to be available, for upon this estimate depend requirements for engineer troops, equipment, and supplies and their order of loading on ships.

c. Engineer plans of the joint attack force and subordinate elements consist of:

(1) An estimate of necessary engineer tasks as far ahead as can be foreseen, and the priority in which their execution is required.

(2) A determination of number and type of additional engineer units required to accomplish tasks for which organic engineer units are not suitably equipped or sufficient in number.

(3) A determination of additional equipment and supplies required to accomplish tasks.

(4) A detailed allocation of organic and attached engineer units, equipment, and supplies, either to specific tasks or to subordinate units to whom planning and execution of such tasks is delegated.

(5) A determination of the priority of landing engineer units, equipment, and supplies retained under control of the task force or other element concerned.

315. RECONNAISSANCE. a. Engineer information secured from preliminary intelligence must be checked and completed on the ground as early as possible after landing. Each echelon of engineers should be preceded by a reconnaissance party.

b. Road and bridge reconnaissances, required early, should be performed by subordinate units who report data obtained to division and higher echelon engineers.

316. MAPS. a. Topographic maps and map substitutes, as accurate and complete as existing data will permit, are made available to commanders and staffs engaged in planning prior to embarkation. It usually is necessary to utilize and reproduce existing foreign maps or to compile new maps. Sources of information utilized are hydrographic charts, sailing directions, existing maps, aerial photographs, sketches, and intelligence reports. Three-dimensional terrain models, built to scale from maps and photographs and other data by engineer or other model-making units, should be provided for planning and for use aboard each assault vessel upon which army units are embarked.

b. For reasons of secrecy, map distribution prior to embarkation is restricted, the bulk of the maps being placed aboard ships in sealed packages for distribution after sailing.

c. Topographic maps should include sufficient sea area so that positions of firing ships and shore targets can be plotted thereon. They should conform, if practicable, to uniform standard scales prescribed for the army, and should provide coverage of the entire area of contemplated operations.

d. Hydrographic charts seldom are suitable for fire-control and operations maps because of the small scale and inadequate data relative to land areas. It is desirable to have new large-scale hydrographic charts of the landing area published and issued to units concerned. Prior to publication, topographic data should be added, particularly the location of important landmarks which could be used as aiming and orientation points. When such procedure is not practicable, existing hydrographic charts on each ship should be completed to show essential topographic features on the coast and in

the interior. Joint plans should provide for obtaining additional information by air and surface reconnaissance.

e. Panoramic sketches and photographs made by submarines and surface craft are valuable, and are reproduced and issued with land features identified.

f. While compilation, reproduction, and distribution of maps and overlays are engineer functions, air photography and preparation and reproduction of small quantities of prints are functions of the air force. The quantity reproduction of air photographs is an engineer task.

g. Additional maps, overprints, and overlays are provided for use as annexes to plans and orders so that they may be prepared in concise and understandable form.

h. Intensive individual training in the use of foreign maps and charts of the area of operations is essential.

NAVAL GUNFIRE SUPPORT

Section I. GENERAL

317. NECESSITY FOR NAVAL GUNFIRE SUPPORT. a. In a landing attack, ground must be gained before field artillery can be emplaced to support the assaulting infantry. Two principal means of fire support are air operations and naval gunfire. Aviation will not be sufficient in quantity to meet all support requirements. Naval gunfire, including that from special support craft, is the major source of effective fire support. Need for naval gunfire does not cease when the light artillery is firing, as medium artillery usually is not available until later.

b. Naval gunfire may be employed to augment normal artillery support during continued operations ashore if hydrographic conditions, terrain, and enemy sea and air actions permit.

c. See Section II, Chapter 9 for aspects of operations against atolls or other small islands.

318. ADVANTAGES AND DISADVANTAGES. a. Naval gunfire has certain inherent advantages. Batteries are always in position and ready to fire owing to their fixed installation within the ships. Their ammunition is all readily available up to the limit of the amount carried aboard. They have a more rapid rate of fire than field artillery of comparable caliber. When hydrographic conditions permit, enfilade fire may be delivered.

b. Disadvantages also exist. The effectiveness of naval gunfire is limited by the quantity and types of ammunition carried aboard ship, by suitable sea areas for support ships, by effective range inland, by its relatively flat trajectory, and by the necessity for observation, either from air, ground, or ship. The latter places limitations on use of gunfire in close support during darkness or conditions of poor visibility.

319. GENERAL CHARACTERISTICS AND EMPLOYMENT.

a. Naval guns have high velocity and flat trajectory. Objectives selected for naval gunfire should be large, well defined, and farther ahead of the infantry for safety reasons than is usually the case with field artillery. The supply of ammunition available for all types of naval guns may prevent firing of barrages and firing on minor or suspected targets. Naval gunfire support is usually by short concentrations fired according to a prearranged schedule. Provisions are made for firing on targets of opportunity. Map firing is employed only as a last resort, but a liberal use is made of maps in the designation of naval artillery objectives in the plan of fire support.

b. If naval anti-aircraft guns are not required against enemy air operations, they may be used advantageously against shore objectives.

c. Gunfire support begins with preparation and continues through successive stages of the landing operations. During the time troops are disembarking from ships into assault boat groups and until leading boats reach the beach, fire is placed on known hostile artillery positions, organized strong points, machine-gun nests, defiles on routes over which enemy reserves must pass, and on objectives the neutralization of which will weaken the enemy's defense. Just before troops reach the beach, fire is lifted to targets farther inland. Close support just prior to reaching the shore is provided by special support craft, fire of boat guns, and aviation.

320. PLANNING. Detailed joint planning by landing and naval force commanders is required for effective employment and control of naval gunfire support. This planning should include required liaison and signal communication facilities between troop units ashore and supporting naval ships.

Section II. CHARACTERISTICS AND CAPABILITIES

321. FACTORS INVOLVED. The suitability of naval gunfire for the support of shore operations is influenced by:

- a.** Methods of observation.
- b.** Methods of fire.
- c.** Muzzle velocity and trajectory.
- d.** Pattern size.
- e.** Effective range inland.
- f.** Type of projectiles and fuses.
- g.** Ammunition supply.
- h.** Mobility.

322. OBSERVATION. Fire delivered by naval guns requires observation for adjustment (ranging) from ship, air, or ground. (Section V, Chapter 7.)

323. METHODS OF FIRE. **a. Direct fire.** On targets visible from the ship, naval guns can deliver a rapid, accurate volume of fire. This characteristic is exploited in planning prearranged supporting fires on and in the vicinity of landing beaches prior to the landing, and in selecting logical target areas visible from seaward for call fires. In-shore supporting vessels, protected by counter battery fire from off-shore groups, move in close to the shore to destroy enemy beach weapons delivering direct fire on assault troops. Direct fire is most effective when delivered at close ranges permitting grazing fire.

b. Indirect fire. (1) Given trained ground or air observers, ships with necessary modern fire control equipment and adequate training can deliver effective indirect fire on targets.

(2) Unobserved fires are technically possible provided the position of the ship can be fixed accurately and that either registration on some point in the target area is accomplished or a weather correction (ballistic) is calculated. However, continuous accurate fixing of position may be determined only by anchoring, which usually is too hazardous to be done.

(3) It may be possible, particularly when attacking small islands or peninsulas, to select firing positions for supporting ships which will obviate to a great extent the necessity for indirect fire.

(4) Missions which necessitate particularly difficult indirect fire should be executed by aircraft.

324. MUZZLE VELOCITY AND TRAJECTORY. **a. High-velocity, flat-trajectory fire** is effective and demoralizing on a forward slope. The disadvantage of the flat trajectory of naval guns against a reverse slope may be overcome by:

(1) Having ships stand off at greater ranges.

(2) Using reduced charges in major caliber guns.

(3) Employing high-angle fire.

(4) Selecting a location from which naval weapons may bring fire to bear from a flank or rear firing position.

b. Certain batteries have angles of fall which compare favorably with field artillery.

325. PATTERN SIZE. Naval gunfire has a relatively large pattern. Consequently, it is not as well suited as field artillery for close support of infantry. The deflection pattern is approximately ten percent of the range pattern.

326. EFFECTIVE RANGE. Effective range inland, even when reduced by the necessity of firing from offshore positions, compares favorably with comparable calibers of field artillery.

327. TYPES OF PROJECTILES AND FUZES. Neither armor-piercing nor common projectiles, having smaller bursting charges than high-explosive shell of the same caliber employed by field artillery, are well suited for general use in support of a landing. Flat-nose, antiaircraft, and bombardment projectiles, designed for use in shore bombardment, should be made available for the bulk of fires supporting a landing attack. They can use either detonating or time fuzes.

328. AMMUNITION SUPPLY. a. The relatively small magazine capacity of combatant ships and the necessity for keeping combatant vessels prepared to repel naval or air attack affect the supply of ammunition for support of a landing. Plans for naval gunfire support may:

(1) Limit the ammunition for support of the landing to a fixed percentage of the total amount carried aboard a ship.

(2) Provide for ships of the screening force to replace those of the fire support group whose support ammunition has been expended.

(3) Utilize to the fullest extent second-line combatant ships, suitable Coast Guard vessels, converted merchantmen, and rocket gun boats such as the LCS(L), to provide gunfire support.

b. Ammunition expenditure for shore bombardment usually will be prescribed by the naval force commander.

329. MOBILITY. The mobility of ships permits flexibility in employment of naval gunfire. Advantages of this mobility are:

a. Inshore supporting vessels can move in with landing boats and engage beach defenses at short range.

b. Fire of several ships can be concentrated successively in support of landings at different beaches.

c. A wide choice in selection of firing positions for execution of particular fire missions is possible.

d. When hydrographic conditions permit, effective range inland can be increased and enfilade fire delivered by taking position along the flanks of the advance of the landing force.

e. Protection from enemy submarines, aircraft, and shore artillery is afforded.

330. NEUTRALIZATION CAPABILITIES OF NAVAL GUNFIRE. Neutralization capabilities of naval gunfire are discussed in FTP 167, U. S. Navy.

Section III. REQUIREMENTS IN GUNS AND AMMUNITION

331. BASIC CONSIDERATIONS. a. Based on details of enemy defense and the schemes of maneuver ashore, support must provide:

(1) Sufficient gunfire capabilities to neutralize probable targets on the front and flanks of landing beaches selected.

(2) Sufficient gunfire capabilities to neutralize known and suspected enemy batteries.

(3) Sufficient ships with modern indirect fire control installations to furnish effective gunfire support for each assault battalion landing team.

b. Destruction of a major portion of enemy personnel, weapons, and field works by naval gunfire is possible only with large expenditures of ammunition.

332. ASSIGNMENT OF SUPPORTING SHIPS. a. An illustrative assignment of fire support ships to an assault regimental combat team is:

(1) One squadron of destroyers (8 or 9 ships).

(2) Two cruisers.

(3) One battleship.

b. Under unfavorable hydrographic conditions there may not be sufficient sea room for all the supporting ships listed above.

Section IV. SUPPORT TECHNIQUE

333. TASK ORGANIZATION. Ships assigned the task of furnishing gunfire support for a landing attack are organized into fire support groups. The number of fire support groups organized depends upon number and types of firing ships, scheme of maneuver of the landing force, number and types of fire missions, and hydrography and terrain of the landing area. Fire support groups may be organized for support of assault infantry battalions, regiments, and divisions.

334. FIRE SUPPORT AREAS. a. Fire support areas are sea areas within the landing areas designated for necessary movement and operation of combatant vessels assigned missions of naval gunfire support for units of the landing force.

b. Fire support areas preferably are located to permit firing ships to carry out assigned missions with direct fire.

c. Advantage is taken of flanking fires, particularly in delivering supporting fires on beaches and on positions sited on reverse slopes or otherwise defiladed.

335. GENERAL METHODS OF EMPLOYMENT. Two general methods are employed by naval forces in affording fire support to two or more landing forces landing simultaneously. One is to keep all firing units centralized; the other is to decentralize support groups to subordinate army units. When two infantry divisions land simultaneously, but the naval units have been divided into two naval forces, it may be desirable to:

a. Have fire support groups of each naval force support its respective division landing force.

b. Divide the supporting ships into three groups, one group being assigned to each division and the third to support the operation as a whole.

c. Make a division by calibers, larger caliber main batteries of large ships being assigned to general support while smaller caliber secondary batteries are assigned to support subordinate units.

336. EXECUTION OF GUNFIRE SUPPORT. Naval gunfire in support of a landing attack may be considered in three phases. Phase I begins with arrival of troop ships in the transport area and continues until about H minus one hour. Battleships and cruisers are employed during this phase. Phase II begins with movement of cruisers and destroyers to inshore supporting positions at about H minus one hour, continuing until about H plus thirty minutes. Battleships, cruisers, and destroyers are employed during this phase. Phase III begins about H plus thirty minutes when shore fire control parties with assault landing teams are ashore and ready to adjust close supporting fire. Battleships, cruisers, and destroyers are used during this phase, which continues until naval gunfire is terminated on order of the naval force commander.

Section V. CONTROL AND COORDINATION

337. GENERAL. a. Naval gunfire in support of a landing attack is controlled by ships' spotters, aircraft spotters, radar fire control equipment, and shore fire control parties.

b. Fire control prior to landing usually is exercised by one or more of the first three means. After initial assault waves have landed, shore fire control parties also are employed.

338. COORDINATION OF CLOSE SUPPORT FIRE WITH MOVEMENT OF LANDING CRAFT. a. Ships open close-supporting fire when landing boats are in a position prescribed by the joint force commander rather than on a time schedule. About fifteen minutes prior to arrival of boats in this position, a control vessel or

observing plane signals the commanders of the naval force and fire support groups the exact time boats should reach the prescribed position.

b. Firing ships observe or are informed when leading boats cross the line of departure. The movement of boats is observed and fire maintained on the beach as long as practicable.

339. SHORE FIRE CONTROL PARTIES. a. Specially trained joint shore fire control parties are essential for control of close naval gunfire support of battalion landing teams. These parties normally are organized and trained as a part of the joint assault signal company attached to an assault infantry division. (Chapter 10.)

b. One shore fire control party normally is attached to each landing team.

c. A shore fire control party usually is composed of one army field artillery officer, one naval officer, and an army communication detail.

d. The naval officer, specifically detailed and trained, functions as liaison officer at the command post of the supported battalion. He acts as a technical adviser to the landing team commander on employment of gunfire, and relays desirable targets to the army spotter, whom he relieves in case of necessity.

e. The field artillery officer is specially trained in adjustment of naval gunfire. By radio, he designates targets to the firing ship and adjusts fire. He adjusts on targets requested by the naval liaison officer and on targets of opportunity.

340. AIR FIRE CONTROL PARTIES. Any one or all of the following aerial means may be used for adjusting naval gunfire, depending on their availability:

a. Naval spotting planes.

b. Field artillery planes.

c. Tactical reconnaissance aircraft.

341. COORDINATION OF NAVAL SUPPORTING FIRE WITH LANDING FORCE ARTILLERY. a. Field artillery takes over the missions of fire support groups as rapidly as possible. The missions normally taken over first are those in close support, as this type of fire is most difficult for naval guns. As medium or heavy artillery probably will not be ashore or sufficient, naval guns may continue deep supporting fires, counter-battery, and interdiction.

b. Naval fire support groups are advised of the expected rate of advance of the infantry. This predicted rate of advance, corrected by reports from artillery liaison officers, permits fire support ships

to advance their deep supporting fires a proper distance ahead of the close fires of field artillery.

342. COORDINATION WITH AIRCRAFT OPERATIONS. a.

Because of the extremely short time available in which to bring gun fire on enemy weapons which suddenly open fire as landing boats arrive within range, it is advisable to have aircraft available to neutralize such important targets. Aircraft should be prepared to attack batteries which are not neutralized by naval fire or by previous air attacks.

b. For aircraft to bomb and strafe the beach immediately prior to grounding of landing craft, either support groups must shift or cease fire or planes must fly at safe altitudes. If sufficient planes be available, it generally will be advisable to have support groups cease fire to permit air attack at low altitude.

c. Ordinarily, laying smoke close to a beach by aircraft will require that naval gunfire cease while planes are operating. Smoke bombs and floats may be dropped from safe altitudes in any situation.

d. For air missions, see Chapter 8.

SECTION VI. SUPPORT PLAN

343. GENERAL. a. Naval gunfire support and the scheme of maneuver of the landing force are interdependent.

b. The planning of naval gunfire support should be undertaken after basic joint discussions as to:

- (1) Landing beaches to be used.
- (2) Objectives.
- (3) Scheme of maneuver ashore.
- (4) Probable areas of greatest enemy resistance.
- (5) Types of gunfire support available.

c. Joint conference during planning phases are essential in determining type, amount, and assignment of naval gunfire for support of the landing force. Army landing force commanders present their requirements for support in terms of type, target, timing, and intensity. These factors are converted into requirements in terms of combatant ships and ammunition by naval force commanders. Detailed planning is continued to completion by joint commanders.

344. GUNFIRE SUPPORT PLAN. a. Based upon considerations outlined in the preceding paragraph, and the operations plan of the landing force, the plan for naval gunfire is completed and becomes an annex to the joint force operations order.

b. Information covered by the gunfire support plan includes:

- (1) Assignment of ships to fire support groups.
- (2) Designation of mission for, and units supported by, each fire support group.
- (3) Location of fire support areas.
- (4) Sectors of responsibility of each fire support group.
- (5) Designation of maps, charts, and grid systems to be used.
- (6) Radio call signs and communication frequencies to be used to control naval gunfire.
- (7) Pyrotechnic and smoke signals pertaining to naval gunfire.
- (8) Rates and schedules of fire to be used.
- (9) Allowable ammunition expenditure.
- (10) Pertinent information regarding personnel and matériel operation.
- (11) Target overlays, boat lane overlays, and fire-support communication diagrams.

345. COOPERATION BETWEEN ARMY AND NAVY. Conferences of personnel of the fire-support ship or ship in direct support of a unit, the unit commander, and the shore fire control party officers assigned to the unit are invaluable.

AIR OPERATIONS

Section I. GENERAL

346. COMMAND OF AIR POWER. In order to achieve the necessary coordination of the air effort and utilize to the utmost the flexibility of air power, all aviation included in a joint force will be under the command of a single air commander who will be charged with the conduct of operations of all air units comprising the force.

347. LOCATION OF HEADQUARTERS. There is no set rule as to location of headquarters. The joint force commander may locate his headquarters during various phases of the operations on a friendly shore, aboard ship, and on the beachhead. The headquarters of the ground, naval, and air commanders must be, as far as possible, readily accessible to the headquarters of the joint force commander.

348. ADMINISTRATION AND SUPPLY. a. The air commander must coordinate the administration and supply activities of the units under his command.

b. The provisions of supply, repair, reclamation, construction, transportation, salvage, and other services required by air units, both land based and carrier based, will be provided in the joint planning preceding an amphibious operation. The agencies for performance of these services will be those normally set up in the Army and the Navy for this purpose.

349. TYPES OF AVIATION. For types of aviation normally used amphibious operations, see paragraph 36.

Section II. EMPLOYMENT

350. GENERAL. The gaining of air superiority is the first requirement for the success of any major amphibious operation. Complete destruction of the enemy air forces rarely is attained; therefore, air

defence must be maintained over the vessels and the beaches. Amphibious operations, especially in the initial stages, require rapid and economical establishment of beachheads. Adequate aviation therefore must be allotted to a joint force to provide for:

a. Counter air force operations.

b. Air defense of the area occupied by the amphibious force vessels and of the landing beach(es).

c. Joint air-ground operations.

Consideration must be given the fact that it may be necessary to accomplish the above requirements simultaneously.

351. BASIC DOCTRINE OF EMPLOYMENT. a. Since air contact generally precedes naval or ground force attack, success depends on winning air superiority first by the use of all necessary forces.

b. Air operations of both army and naval aviation are directed to the furtherance of the missions of the joint force by a single command agency. Such command with a joint staff guarantees coordinated planning and execution.

c. In order to maintain control of the air, it may be necessary to divert aircraft from other offensive missions for the purpose of destroying enemy air forces and air force installations. An effective air defense must be maintained throughout all phases of the operation.

d. Since flight control depends on neutralization of information of all air and ship movements, and since unity of command is the only means whereby coordination of forces may be obtained, all air units involved in an amphibious operation must be operated through a single control agency. All aircraft dispatched by agencies other than the amphibious force commander that operate through the area of the task force must be cleared in this control agency.

e. Distance involved may limit the effectiveness or the employment of land-based aircraft during certain phases of an amphibious operation. Carrier-based aircraft will not be affected by this limitation and may therefore have to bear the full burden of the air task in such a situation. In order to allow the full weight of the available air power to be brought against the enemy, one of the first missions of the task force must be the establishment of air bases on the hostile shore to which land based and carrier based aircraft can be flown and from which they can operate immediately. To accomplish this mission, high priority must be given to the early construction of airdromes and suitable defense installations for them.

352. AIR OPERATIONS. Air operations in an amphibious operation may be classified as air-offensive operations, air-defensive operations, joint air-ground operations, and troop-carrier operations. The following basic tasks must be performed by the air component of an amphibious force in the chronological order given:

a. Reconnaissance. This must be accomplished as a prerequisite to planning. Visual and photo reconnaissance are essential before, during, and after establishment of the beachheads. (Section II, Chapter 3.)

b. Preparation. (1) Preparatory operations must be carried out in the following priority:

(a) Destruction of the enemy air force within operating range of the proposed areas of landing.

(b) Isolation of the battle area.

(c) Isolation of the landing areas.

(d) Softening up defenses in the landing areas.

(2) The joint force commander must decide to what extent he is willing to sacrifice tactical surprise for the purpose of isolating or softening up the actual landing areas. His decision should in no way tend to reduce the air operations conducted for the purpose of isolating the battle area.

c. Naval force cover. The naval vessels throughout the embarkation, the voyage, the landing, and during the return to base must be protected against enemy air, submarine, or surface attacks.

d. Joint air-ground effort. During and after the landing, aircraft may have to be employed on missions to further the advance of the ground forces by attack in the battle area. This consideration is secondary to the gaining and maintaining of air supremacy over that area, but it is still an essential function of air power, the accomplishment of which may be a decisive factor in making the landing a success. Sufficient aircraft must be allotted an amphibious force to permit air missions against targets on the immediate front of the ground forces. Tactical reconnaissance aviation must be capable of adjusting fire for naval gunfire and field artillery.

Section III. OFFENSIVE OPERATIONS

353. GENERAL. Air-offensive operations are those in which the air commander concentrates his air effort to destroy critical targets, the destruction of which will contribute most to the success of the force as a whole.

354. MISSION. a. To gain the necessary degree of air superiority by destroying enemy aircraft in the air and on the ground and the

installations on which enemy aircraft are based. This is always a first priority mission.

b. To isolate the battle area, and the enemy's defenses by preventing the movement of hostile troops, ships, and supplies.

c. To further the joint efforts of the air, naval, and ground forces. Wherever the enemy's naval forces are a factor in the defense, they must be attacked and destroyed. The landing of ground forces normally will be preceded by a concentrated air attack upon the enemy's beach defenses. Air attacks cannot be expected to destroy such defenses completely, but the destruction attained, combined with the smoke, shock, confusion, and casualties produced, will facilitate the task of the ground forces. Full benefit of such action is obtained only by immediate exploitation of the advantage gained.

(1) Combat aircraft, employing guns and bombs, should be employed in the neutralization of beach defenses, antiboat guns, artillery, reserves, and antiaircraft installations. The time schedule for its operations is part of the overall amphibious landing time schedule and must be worked out in conjunction with the schedules of the landing forces, naval and landing boat gunfire, and airborne operations.

(2) Prior to emplacement of field artillery, aircraft must provide intense close support for advancing troops, inasmuch as naval gunfire may not be able to furnish sufficient support. Particular attention is paid to protection of the flanks and to isolation of the battlefield in preventing the movement of enemy reserves and supplies. When hostile aircraft are present, fighter aircraft continue the mission of clearing the air.

Section IV. DEFENSIVE OPERATIONS

355. GENERAL. a. Air defense is the direct defense against hostile air operations as distinguished from the indirect defense afforded by counter air force operations.

b. In amphibious operations, offensive air action normally will not wholly eliminate the requirement for air defense. Operations to prevent attack by enemy aircraft, submarines, or naval vessels, must be continuous and adequate.

356. MEANS EMPLOYED. Air defense is established by the coordinated employment of fighter aviation, aircraft warning service, and antiaircraft artillery (including barrage balloons). It is important that the antiaircraft artillery operations room be adjacent to, or closely cooperating with, the air control center.

Section V. JOINT AIR-GROUND OPERATIONS

357. GENERAL. Joint air-ground operations are those in which aircraft participate in a joint effort of the air and ground forces, in the battle area, to gain objectives on the immediate front of the ground forces.

358. METHOD OF EMPLOYMENT. a. Targets for joint air-ground effort may include: enemy concentrations of personnel, tanks, vehicles, emplaced defenses, wire, mine fields and communications. Missions should be planned in advance whenever possible. It generally is not profitable to employ aviation against targets that can be engaged by naval gunfire or artillery fire. To avoid attacking friendly forces, targets must be clearly defined and identified, and a precautionary bomb line prescribed and observed. The ground commander is responsible for the establishment of the bomb line.

b. Tactical air operations and ground operations in the joint force will be coordinated by means of timely planning conferences of pertinent commanders, and through the mutual exchange of liaison personnel. Adequate communications are vital to control. Plans must be prepared carefully to insure these communications.

Section VI. TROOP CARRIER OPERATIONS

359. GENERAL. For discussion of troop carrier operations, see FM 71-30 and 100-5 and Section XIV, Chapter 3.

Section VII. CONTROL AND COMMUNICATION

360. GENERAL. Since communication is a responsibility of command and is indispensable to the exercise of command, the communication set-up must be such as will permit the commander of the joint force to conduct the operations of his joint force through his three separate commanders, land, sea, and air, respectively, and will permit close liaison between them.

361. CONTROL. The functions of intelligence incident to aircraft warning and control of the friendly air activity will be exercised from a control center.

a. When these functions are exercised from a base located on a friendly shore, they will be performed by the tactical control group.

b. When these functions are exercised from a base afloat, they will be performed by personnel of the tactical control group from an air

control ship, which if possible, for technical reasons, should be separate from the joint headquarters ship.

(1) The air control ship is a special purpose vessel containing the installations necessary for the complete functioning of the tactical control center. In the selection of the air control ship, consideration must be given to the possible effect of the shock of firing on the operation of the necessary radar and radio equipment aboard.

(2) A control team from the control group must be prepared to move ashore and progressively assume the control functions as soon as the situation warrants. When this control team on shore is established and functioning, the control group aboard ship will cease operations, disembark, and establish the tactical control center ashore.

(3) As a precautionary measure, there should be an alternate air control ship with duplicate installations and personnel, ready at any moment to take over the mechanics of control.

362. COMMUNICATION. a. Communication must be adequate for effective accomplishment of the functions exercised by the tactical control group from the control center. This necessitates careful planning and close integration of the communications of all elements of the joint forces.

b. Provision must be made for continuity of control during the progressive movement of the tactical control group from friendly shore, to operation aboard ship, to final establishment on the occupied shore.

c. It is a command function to insure that adequate communication facilities are provided within the joint force.

d. For details of communication in amphibious operations, see JANP-100.

SPECIAL OPERATIONS

Section I. ASSAULT AGAINST HEAVILY DEFENDED SHORES

363. GENERAL. Assault against heavily defended shores implies assault, passage, and destruction of extensive beach fortifications by leading combat elements of the assault forces. Such fortified areas usually contain shore and inland defenses of all types, covered by direct fire from weapons in concrete pill boxes or open emplacements, and by supporting fires from coastal or field artillery located in successive strong points extending inland. Such areas exhibit all beach and underwater obstacles which the enemy can devise, install, and maintain.

364. PLAN OF DEFENSE. Assault plans require thorough appreciation of the probable general defensive plan of the enemy in the prospective assault area. Possible defending plans are:

a. Prevention of attacking forces from approaching the area by sea or from effecting a landing (fig. 24).

b. Heavy defense of the coast line with fixed and mobile land defenses to prevent attacking forces from establishing extended beachheads for continuation of inland assault.

c. Light defense of the coast line, with the mass of defense forces located strategically inland to engage and destroy attacking forces in strength after their landing and moving away from the beaches.

d. A combination involving heavy shore defenses at best landing areas supported by extensive mobile forces inland at strategic locations.

(1) Offshore defense is conducted mainly through constant air, sea, and undersea attack.

(2) Defense of the shore consists of a belt of fortifications and obstructions supported by reserves at strategic inland centers. Favorable landing places are heavily fortified and defended.

(3) Fixed and mobile artillery of all calibers are employed to engage vessels before and during the assault to destroy invading forces at the beaches.

(4) Local reserves reinforce fixed coastal defense positions.

(5) The defending air force participates in all stages of the defense from strategically located air fields.



Figure 24. Captured antitank gun on beach in France sited to prevent attacking force from landing.

365. SPECIAL PROBLEMS ENCOUNTERED. a. Amphibious assault on a heavily defended shore requires overwhelming fire support from sea and air, close assault artillery fires at beaches, and the additional demolitions personnel and equipment necessary to breach shore and underwater defenses.

b. After landing, units must be prepared to provide:

(1) Close fire support by flat-trajectory weapons on or near the beach for neutralization or destruction of enemy direct-fire weapons.

(2) Support fires to cover assault forces while clearing paths through beach obstacles and destroying the fortified defense system.

(3) Means for rapid transportation of explosive materials to the beach in quantities required to breach defensive systems.

(4) Organization of demolitions and fire support personnel on the beach for mutual assistance.

c. Problems presented vary materially with individual circumstances at each landing place. Expedients of all kinds may have to be used to supplement normal equipment and procedures.

366. ORGANIZATION FOR ASSAULT. a. Organization of forces for invasion of heavily defended shores is generally the same as for any other assault landing, but specially adapted to the task to be accomplished. Unusually heavy naval gunfire and air bombardment must be provided; extensive obstacle removal parties on both water and land must be organized, equipped, and trained; and assault elements must be specially trained for participation.

b. Strong air forces of all types are required to seize and maintain air superiority, to provide essential preliminary bombardment, continued isolation of the battlefield, and attacks on the immediate front of the ground forces, and to lay necessary smoke screens. (Chapter 8.)

c. Tanks or other armored vehicles mounting flat-trajectory artillery weapons should accompany leading assault waves to support the attack on the beach by fire from the water, by clearing paths through obstacles with special equipment, and by maneuver inland to destroy enemy reserves.

d. Airborne troops are particularly useful in assault of important coastal areas from the rear, and in conduct of normal operations inland in support of the amphibious assault on the beaches.

e. Special amphibiously trained units are useful in support of the beach assault by making surprise landings at difficult beaches followed by attack of important shore installations from flanks or rear. Such operations must be closely coordinated with the main assault. (Section III, Chapter 9.)

f. Use should be made of organic field artillery in the assault to provide fire support for initial landing waves. Self-propelled or armored weapons and organic artillery may be fired from various landing craft.

g. Standard support craft (Appendix I), or those specially constructed and armed, should be used in quantity to provide close support for leading assault waves against general or defined shore targets.

h. Maximum naval gunfire from weapons of all calibers is required to neutralize shore fortifications before and during initial assault phases. Destruction can be expected only after prolonged and extensive preparation. (Chapter 7.)

i. For employment of smoke and chemicals, see Section V, Chapter 6.

j. Both military and naval personnel, specially trained as joint demolition teams, must be provided in ample numbers to locate and breach or destroy all types of obstacles which may be encountered in the landing.

367. PASSAGE OF OBSTACLES. a. General. (1) Existence of underwater or beach obstacles can be anticipated in all suitable landing areas occupied by an enemy for even a short time. The quantity and variety of such obstacles will vary with the suitability of landing beaches and the duration of enemy occupation.

(2) Assault and destruction of fortified weapons emplacements and other shore defense installations after passage of beach obstructions is accomplished in accordance with principles for attack on fortified positions (FM 31-50), modified as necessary to give appropriate consideration to limitations in landing capabilities, forces available, maneuver area, and available special equipment ashore to accomplish the assault.

b. Responsibility. The Navy is responsible for the breaching and necessary removal of all obstacles seaward of the normal ground point of landing craft at the time and place of landing. The Army is responsible for all obstacles inshore of that grounding point. In execution, each service must be prepared to render complete mutual assistance to the other.

368. TYPES OF OBSTACLES. a. Obstacles in front of or on landing beaches may be natural or emplaced. They may be organized to make maximum use of natural obstructions to canalize movement of assault forces into channels afloat or ashore which are covered by defensive fire.

b. Natural obstacles include:

- (1) Sandbars, shoals, and mud flats.
- (2) Coral or rocky reefs.
- (3) Underwater rocks.
- (4) Usual terrain obstructions.

c. Emplaced obstacles may be of varied types and quantities, including:

- (1) Naval mine fields, floating or anchored.
- (2) Harbor booms and nets.
- (3) Horned sculley and tetrahedrons, concrete and steel.
- (4) Barricades, steel, concrete, or timber.
- (5) Land and underwater mines.
- (6) Barbed wire.
- (7) Tank obstacles such as 'dragon's teeth, walls, and ditches.

369. DEMOLITION AGENCIES. a. Special naval demolition units are trained and provided for each joint attack force assigned to the landing assault. Their mission is to plan and execute necessary breaching of underwater obstacles which prevent landing craft from reaching selected beaches. They may be augmented by some military personnel.

b. Infantry, amphibious scouts, and combat and shore engineer units in the assault forces should be specially trained to breach and remove obstacles on land and to assist in underwater demolitions if necessary.

c. Military and naval demolitions personnel concerned with the assault movement should train and operate as a team.

370. INTELLIGENCE. a. Complete data concerning nature, type, location, depth, and extent of underwater and beach obstacles in the selected landing area are desired early in the planning period.

b. Data should be confirmed continually prior to the assault. Many portable obstacles, such as mines, barbed wire, and even prefabricated concrete and steel underwater obstacles, may be placed quickly by the enemy. Changes in disposition, type, or number of obstacles may require changes in method of assault, plan of neutralization, or time at which assault elements can be passed through the obstacles. (Section II, Chapter 3.)

c. Aerial photographs will disclose location, extent, and general nature of some types of beach and underwater obstacles; however, mine fields and many types of underwater obstacles will not be so disclosed accurately. Close reconnaissance at lowest tide by trained amphibious patrols should provide the most accurate data. (Section IV, Chapter 9.)

371. PLANNING. a. A demolition plan for neutralization of obstacles should be based on intelligence secured from all sources.

b. Plans should include provision for:

- (1) Employment of additional or alternate demolition means.
- (2) Reserves of personnel and equipment for all contingencies.
- (3) Adequate training of selected military and naval personnel in underwater and beach demolitions and clearance of mine fields.
- (4) Adequate training of assault troops in passage of expected beach obstacles and mine fields.
- (5) Marking gaps through obstacles.
- (6) Ample supplies and equipment for demolition or obstacle removal purposes, loaded in vessels with personnel who are to use them.

372. TACTICS OF DEMOLITIONS. a. See FM 5-25.

b. Obstacles opposing direct attack on a landing beach generally are neutralized by one or a combination of methods.

(1) Sweeping of naval mines and breaching of underwater obstacles prior to the assault. Such operations should be conducted under cover of darkness, smoke, or fog, and maximum naval gunfire or air bombardment to reduce enemy protective fires.

(2) Detection and destruction of water and land obstacles from land in advance of main assault forces after capture of the landing beach by flank attack of light forces landed at other beaches.

(3) Removal of obstacles by shore engineer units for logistic operations after the beach area has been absorbed into the beachhead developed by main landing forces landing at other beaches.

c. In the frontal attack ahead of assault forces, naval gunfire and air bombardment are used ordinarily prior to and during demolitions. Demolition parties or scouts precede assault waves in sufficient time to clear necessary paths. These parties sound and mark channels. Army demolition personnel in leading waves clear paths through beach obstacles. Boat assignment plans for leading waves should include type and quantity of personnel and materials to accomplish necessary beach demolitions.

d. Destruction of shore obstacles after a beach is captured without assault may be accomplished by demolitions personnel from units which captured the area. Only essential lanes through the obstacles are breached. Demolition teams from shore parties of incoming assault forces complete clearance of the area to prepare the beach for logistic operations.

e. Duties and responsibilities of shore group elements in clearance of assault or other beaches from underwater and beach obstructions are covered in Chapters 4 and 5.

373. GENERAL METHODS OF REDUCTION. a. Reduction or passage of underwater and beach obstacles may include any of the following methods:

- (1) Naval minesweeping.
- (2) Naval gunfire.
- (3) Air bombardment.
- (4) Rockets propelled from landing craft or tanks.
- (5) Personal and mechanical means within the assault force.

b. Mechanical means may include:

- (1) Wire netting for crossing wire obstacles.
- (2) Ramps.
- (3) Grapnels.

- (4) Tank-mounted apparatus to explode, crush, or bridge obstacles.
 - (5) Special bulldozer blade for mines.
 - (6) Mine detectors.
 - (7) Special explosive devices for use against water obstacles.
- c. Personal means by demolition personnel include :
- (1) Floating charges.
 - (2) Hand-placed charges.
 - (3) Bangalore torpedoes.

Section II. SMALL ISLAND OR ATOLL OPERATIONS

374. CHARACTERISTICS OF A LANDING ON AN ATOLL OR SMALL ISLAND. An amphibious operation directed to the seizure of a small island or an atoll has certain characteristics that place it in the category of a special operation.

a. **Tactical considerations.** (1) A landing on an atoll may be made from either the sea side or lagoon side. Larger islands are almost always on the windward side of the atoll, and heavy surf often prevents landings in strength except from the lagoon side. Lagoon landing beaches are usually far distant from entrances to the lagoon.

(2) Tremendous naval gunfire and air bombardment can be concentrated on a very small area, achieving a degree of destruction not possible ordinarily. Underground installations below 3 to 5 feet are impracticable. Defenders have little natural cover.

(3) The small size of the islets of the atoll imposes on the defenders the disadvantages of small garrisons for which reinforcement is impracticable, shallow defenses at the edge of the shore line along practically the entire perimeter, and lack of freedom of maneuver for counterattack. For similar reasons the attackers must make direct assaults on narrow fronts, are unable to maneuver freely to outflank the enemy, and are restricted in the effective employment of artillery. Shore fire control and air liaison parties may not be able to operate ashore.

(4) It often is possible to land field artillery on an adjacent island not held by the enemy, from which it can give practically normal fire support for the assault.

(5) Initial island objectives may be seized to facilitate the attack on the main objective by securing fire support areas and channels through reefs for boat lanes to the main objectives.

(6) Wide reefs and narrow channels facilitate use by the defenders of mines, wire, and boat and personnel barricades.

(7) Wide fringing reefs, generally rough and strewn with nigger-heads and boulders, and wide range of tides, permit beaching of land-

ing boats for only short periods during high tides. Amphibian tractors (LVT) are used for assault waves, and until landing craft can be used.

(8) Early withdrawal and reembarkation of the initial landing force can be expected.

b. Logistic considerations. (1) In the assault phase, the amount of supply landed is held to actual requirements because of lack of dispersal areas and slowness in unloading. The latter results from the passage of amphibian vehicles over reefs and the movement of boat traffic through narrow boat lanes.

(2) Supply points usually are established in close proximity to the landing beach and remain there throughout the operation. Reliance must be placed on amphibian trucks (DUKW) for movement.

(3) The flow of supply to the beach must be controlled rigidly by the shore party commander to insure timely replenishment of specific items. Regulation is effected by the use of a floating pool of landing boats and amphibian tractors or trucks lying off a control boat. Each craft or vehicle exhibits a distinctive flag to indicate the nature of its load. A representative of the combat team or landing team supply section is stationed in the control boat with a list showing the type of ammunition or other supplies in each boat so that he may insure prompt dispatch of the desired item to the beach. When directed by the shore party commander, the beachmaster calls in the desired class of supply.

(4) If supplies must be landed in amphibian vehicles during the early phase of a landing, they will consist chiefly of loose cargo rather than pallets.

(5) Natural sources for fresh water may be lacking.

(6) Atoll warfare calls for a specific type of combat loading which will permit maximum flexibility in debarkation priorities to meet emergencies, owing to the difficulties of building up balanced supply levels on the beach. This need is met by very light loading, and balanced supply in each hold, so far as permitted by naval safety regulations.

Section III. RAIDER OPERATIONS

375. GENERAL. **a.** Amphibious operations may include landings of especially trained and transported raider forces, lightly armed and equipped, on shores not suitable for usual landing forces because of natural underwater barriers, difficult shore terrain, or adverse sea conditions.

b. Infantry rifle troops are well suited to operate as raiders. With basic organization and equipment, they may be trained sufficiently

in a few weeks to accomplish missions of average difficulty. Cavalry reconnaissance troops of infantry divisions, or other similar units, also may be adapted quickly to this type of operation.

c. Raider forces are assigned missions within their capabilities to accomplish within the time available before scheduled withdrawal.

376. LANDING CAPABILITIES. a. Raider troops are trained to land at places where usual methods are impracticable, by use of rubber or other light boats or by swimming.

b. The special training and equipment of raider troops gives them additional capabilities of swift movement and surprise in landings from destroyers, LCI (L), submarines, flying boats, or other craft.

c. Raiders should be trained to operate individually and in small groups so that wider deployment in landing and greater mobility ashore are possible than for a normal landing force.

d. In very cold weather, raider troops with special watertight rubber clothing and protective devices may land when other troops cannot. To reduce loss from drowning, troops landing from rubber or other small boats must carry only minimum equipment—weapons, ammunition, water, and rations.

377. LIMITATIONS. a. Raider operations are characterized by lack of sustained fighting power due to difficulties of supply and transportation.

b. Operations are limited largely to night landings because of the vulnerability of rubber landing craft.

c. Strong offshore winds or currents delay or prevent landings.

378. OPERATIONS IN MAIN LANDING. a. Raiders may land prior to a main landing to attack the enemy flanks and rear simultaneously with the frontal assault. A night landing by raiders may precede a day landing by the main attack. When surprise is likely, raiders may land simultaneously with the main landing and move into position for coordinated attack on the flanks of the enemy opposing the advance. A flank landing may be able to capture the beach prior to the main landing.

b. When obstructions off the main landing beach indicate that a heavy percentage of landing boats may fail to reach the beach, raider troops may be used to land ahead of the main landing. After seizure of a limited beachhead, passage through the obstacles may be found or prepared.

c. Raider troops may land between separated battalions to avoid undesirable gaps.

379. RAIDERS IN SECONDARY LANDINGS. a. Mobility permits raiders to execute inland missions of interrupting communications, interfering with movement of enemy reserves, diverting enemy forces from the main attack, seizing airfields, or other tasks impracticable for troops in the main landing.

b. Landings should be scheduled so as to permit raider troops to execute their missions effectively in support of the main landing.

c. Considerable latitude occasionally may be allowed the commander as to time and place of landing, especially on shores distant from the main landing.

d. Shore fire control and air liaison parties may be landed with raiders in unexpected places to conduct naval gunfire or control air bombardment.

380. INDEPENDENT OPERATIONS. Raider battalions may constitute the entire attack, possibly with air and naval gunfire support, against islands surrounded by shallow water and reefs.

Section IV. AMPHIBIOUS SCOUTING AND PATROLLING

381. GENERAL. a. Two types of reconnaissance parties are used in amphibious operations. Amphibious patrols are used days or weeks ahead of the operation. They are transported by submarine, parachute, flying boat, or other means, and operate on missions similar to those performed by patrols in land warfare. Amphibious scouts precede leading assault waves by not more than a few hours. Their missions are last-minute reconnaissance and marking of the beaches.

b. The factor of surprise in the landing attack usually requires that scouts and patrols land before the main landing only if their training is such that they can perform their missions without undue risk in loss of secrecy. For training of amphibious scouts and patrols, see Section VII, Chapter 11. Patrols should be landed only if permitted or required by the task force plan. For discussion of planning for their use, see Section XIII, Chapter 3.

c. Scouts and patrols may be transported in either ships or smaller craft depending on the distance involved. PT boats have been used with marked success for this operation.

382. EQUIPMENT FOR SCOUTS AND PATROLS. a. Various types of rubber boats may be used for landing. Equipment and armament depend upon the weather, hydrographic conditions and the mission.

b. Radio equipment should conform to the communication plan.

383. PRIOR INTELLIGENCE. Scouts and patrols should be given sufficiently complete intelligence to enable them to accomplish their mission with secrecy. Such intelligence includes particular emphasis on enemy methods of patrolling the coast in places where it is difficult to land. They should be furnished the best maps and photographs, concerning which they are to obtain further information. They should be given aids for landing in the proper place, particularly oblique photographs of the shore line, and descriptions of landmarks. They should have information on winds, tides, currents, water depths, rocks, surf, temperature, and visibility, all of which affect swimming and use of boats.

384. SECRECY. It is of utmost importance that patrols be given only that amount of information of the general plan that is necessary for the accomplishment of their mission. If detailed information is given, their disappearance or failure to return leaves the commander in an uncertain position as to whether his plans have been compromised or not.

385. SHIP RESPONSIBILITIES. a. Except for submarines, the ship in which a patrol is embarked should furnish a boat officer and crew to transfer the patrol to a point near shore from which the patrol will proceed by rubber boat. A boat with low silhouette and silent engine, and with proper compass fathometer and other navigating equipment, should be provided.

b. The parent ship should remain as far as practicable from the point of landing of the patrol, even though the patrol must thereby be carried some distance by boat.

c. Shortly prior to debarking, the patrol will obtain from the commanding officer of the ship data concerning:

(1) The point at which the debarkation of the patrol from the ship is to occur.

(2) Meteorological predictions, especially as they affect strength and direction of current in the landing area.

(3) Changes in previous information of enemy or friendly forces.

(4) Synchronization of watches with task force time.

d. Commanding officers of ships will land patrols as required by the approved plan of an army commander, unless impracticable or impossible without jeopardy to security of the ship or boats.

386. MOVEMENT TO SHORE. a. When surf is present, the patrol may find it practicable to move parallel to the shore outside the line of breakers. The boat should avoid being silhouetted between the

moon and possible observers. It should avoid particularly approaching the shore where suspected enemy observers are high above the water.

b. Unless heavy equipment, such as radios, is to be landed, a patrol approaching shore should sink its rubber boat and swim in if the boat is not to be used again. Otherwise, one or two scouts should precede the boat by swimming, land, take concealment, and signal in the remainder of the patrol.

387. LANDING. a. Patrols should land over rocks or driftwood to avoid leaving tracks on beaches.

b. While approaching the shore, patrols should keep low in the water. They leave the water and cross the shore line as prescribed in FM 21-75 for crossing open spaces.

c. If the rubber boat is to be used again, it should be brought ashore, carried inland, deflated, and concealed. Patrols should move away from the shore line promptly. If given sufficient time, they should move well inland, carrying necessary equipment, and take concealment prior to daylight.

388. OPERATIONS ON SHORE. Patrols should rest and observe during daylight hours, or, if necessary to operate by daylight, move in the most secretive manner practicable, keeping well away from the shore line. Conduct ashore is covered in FM 21-75.

389. MESSENGERS. a. A messenger may be sent by the patrol to a concealed position on the shore line from which he sends visual signals to a boat offshore. He may swim out to a boat and be picked up. A pair of messengers may paddle out to a boat by rubber boat or kayak.

b. When loss of secrecy can be risked, a boat may come to shore to pick up a messenger. The place at which the boat picks up the messenger or receives the message should be away from the main landing beach, well defined, and not under enemy surveillance.

c. It is advisable to have suitable radio equipment in the boat to receive messages from the patrol and to expedite transmission when permissible.

390. AIRCRAFT ASSISTANCE TO COMMUNICATIONS. a. Aircraft may fly according to a prearranged schedule over the general vicinity of the patrol to receive visual or radio messages.

b. Special panel symbols may be laid out at prearranged times and photographed by aircraft.

391. MULTIPLE PATROLS. a. In order to maintain secrecy, amphibious patrols are usually small. However, to simplify boat arrangements, to provide excellent leadership in crossing the shore line, and to assist in communications, relatively large patrols may land and separate. Such arrangement is particularly applicable if heavy radio equipment is carried. Under such circumstances, the radio may be taken to a well concealed spot to which messengers can bring information for transmission. When permissible, such as after H-hour or discovery of ships in the transport area, portable radios may send information to this larger radio for relay.

b. Patrols often may be debarked at several release points by one boat.

392. PRISONERS. Considerations of secrecy and the difficulty of moving prisoners often prohibit amphibious patrols from taking them. However, the taking of friendly civilians or natives may be of great value by permitting detailed questioning at a later period.

393. BEACH MARKING. Amphibious scouts may be employed to mark landing beaches. For details of marking, see FTP 211, U. S. Navy.

394. ADMINISTRATIVE SECRECY. Particularly in the case of patrols which operate several weeks or months in advance of an operation, care must be exercised to insure that members of the patrol disclose to personnel of ships transporting them only the minimum amount of information necessary to enable the ship to perform its task.

Section V. WITHDRAWAL AND REEMBARKATION

395. PLANS. a. Withdrawal of troops engaged in landing operations may be required by strategical consideration or by reason of unsuccessful tactical operations.

b. Decision to withdraw having been approved by the authority having responsibility for the expedition as a whole, necessary plans are drawn by the commander of the landing forces in consultation with the commander of the naval and air forces.

c. Means available to the Navy for reembarkation will determine the stages of the withdrawal.

d. When the situation permits, the plan usually provides for evacuation in the following sequence: animals, supplies, artillery, matériel, and troops. However, it may be necessary to establish different priorities for evacuation. In this event provision will be made for de-

struction of the artillery equipment, supplies, and animals which cannot be evacuated.

396. SECRECY. The importance of secrecy cannot be overemphasized. Every precaution must be taken to conceal movements of forces and other activities indicative of withdrawal. Ruses must be carefully planned and executed in order not to arouse the curiosity or suspicion of the hostile force.

397. AIR SUPERIORITY. Local air superiority is essential during reembarkation. Every effort must be made to retain such temporary air superiority until forces have been reembarked.

398. WEATHER CONDITIONS. Through its ærological service, the Navy will furnish weather predictions. Utmost effort will be made by the Navy to take advantage of favorable weather conditions for reembarkation.

399. NAVAL SUPPORT. a. Operations of naval forces during a withdrawal of military forces are similar to those during a landing operation, phases occurring in reverse order.

b. In addition to providing shipping to reembark military forces, the Navy will be prepared to furnish gunfire and air support during the withdrawal, and provide for signal communication between ship and shore until the last unit is evacuated.

SIGNAL COMMUNICATION

400. GENERAL. a. Joint signal communication comprises all those means required to link land, sea, and air elements of an attacking force prior to and during the actual assault upon a hostile shore. For detailed treatment, see Joint Army and Navy Publication 100 (JANP-100, Joint Amphibious Communication.)

b. Basic communication for command and control should provide for:

(1) Adequate control of transports and landing ships and craft to insure flexibility.

(2) Comprehensive control of all support units, to include ships, aircraft, and landing craft.

(3) Control of ships and craft following the assault, to insure that reserve troops and matériel land as desired.

(4) A flexible and adequate organization to permit uninterrupted transfer of command from ship or craft to shore.

(5) A specially equipped headquarters ship (amphibian flagship) capable of coordinating all components of the joint attack force.

c. Difficulties inherent in amphibious operations are due to:

(1) Joint nature of the operation.

(2) Necessity for great dependence upon radio.

(3) Reduction of wheeled transportation available with the assault unit.

d. The necessity for flawless cooperation by air, ground, and naval components cannot be overemphasized.

e. In planning employment of communication facilities, the signal officer should consider that once the expedition has sailed there can be very little change in plans or execution. Alternate plans of action must be known sufficiently in advance to permit disposal of communication personnel in the convoy in such a way that they can accomplish effectively their mission in execution of alternate plans.

f. In joint operations, one liaison officer should be a landing force signal officer. His duties should include:

(1) Supply and operation of necessary military codes and ciphers.

(2) Supply of copies of standing operating procedures and signal operation instructions of participating military units to interested naval communication officers.

(3) Advising naval and air commanders in matters pertaining to landing force communication.

g. It is imperative that air-ground communication be emphasized from the early stages of training with the joint air force.

h. Training of radio operators of shore fire control parties to work with combatant ships must be stressed. They should receive as much training as possible during firing practice.

i. Thorough training of radio personnel in preventive maintenance, waterproofing, operation, and selection of transmitting sites is of great importance.

j. Ample training of the communication detachments within the shore parties is essential.

k. Commanders should be warned that there will be an absolute minimum of communication between ships while afloat. Normally, the only method of communications available will be the limited use of visual systems during daylight and of destroyers or ships' boats for delivery of urgent messages.

l. Radio silence will be lifted as prescribed in operations orders.

m. Pyrotechnic signals, if used, are restricted to meanings of great importance, such as signals for a successful or unsuccessful landing or to raise naval gunfire. Their employment is risky, as the enemy may use similar signals.

401. JOINT ASSAULT SIGNAL COMPANY. a. To provide additional signal communications required there is provided for each amphibious assault division a special Joint Assault Signal Company. Its sections include:

(1) Shore and Beach Party Communication Section which furnishes joint communication teams for establishing, maintaining, and operating communications on the beach, inland, seaward, and laterally, for the shore unit to which it is attached. One such team usually is attached to each shore party with a battalion landing team. A tenth team accompanies the shore group headquarters.

(2) Shore Fire Control Section, which furnishes shore fire control parties to control naval gunfire for each battalion landing team.

(3) Air Liaison Section, which furnishes air liaison parties to assist in the employment of air offensive operations.

b. Joint assault signal companies may be assigned to permanent naval amphibious forces for training and maintenance.

402. SIGNAL TRAINING. a. Approximately four weeks should be allowed for special training of communication personnel, assuming that they already are fully trained in their normal specialties and in basic amphibious requirements.

b. Amphibious training should include the following subjects:

(1) Installation, operation, and maintenance of the amphibious signal communication system, employing attached signal units, using an absolute minimum of transportation. Equipment usually must be carried by individuals, broken down into one man loads.

(2) Waterproofing: preparation of waterproof bags, use of waterproofing kits and preserving materials, and proper stowage in boats.

(3) Use of semaphore flags.

(4) Reading of blinker light by communication personnel.

(5) Training in panel, drop and pick-up methods of communication with aircraft.

(6) Beach camouflage and other protective measures.

(7) Cleaning of equipment that has been exposed to salt water and sand.

(8) Operation of portable radio sets in boats.

(9) Use of shore group communication section not normally required in land operations.

(10) Radio communication with aircraft.

(11) Wirelaying in water from a small boat.

(12) Boat formation signals.

c. Before the landing force embarks initially, the entire signal personnel of the joint services should be assembled to practice reduced-distance nets of the planned communication system. Command post exercises and full rehearsal for the operation with all troops and vessels involved should follow.

403. LOADING AND SUPPLY. a. Signal officers must take positive action to insure that loading and debarkation plans give proper priority to signal equipment. A suggested priority is:

(1) Equipment necessary immediately upon landing.

(2) Equipment for early expansion of the communication system.

(3) Essential administrative facilities for the unit.

(4) Advance base equipment.

(5) Reserve supplies and remainder of organization equipment.

b. Since use of vehicles will be curtailed initially, communication officers should foresee as many aids to successful operation as possible.

c. Much extra signal equipment is required for amphibious operations. In addition, rope for loading, cleaning and preserving materials for protection from salt water, and signal waterproofing kits are necessary.

d. Essential signal vehicles should be given a suitable landing priority. Some signal equipment and supplies may be loaded on the vehicles.

e. Boat loading plans should provide for distributing signal equipment and personnel so as to minimize losses and insure communication with all commands.

f. Small items of equipment with high operational priority, of fragile construction, or of training value en route may be stowed in troop space with the personnel. Signal personnel may be detailed to assist transport quartermasters in loading signal equipment.

g. The signal unit normally will be embarked on the same ship as the headquarters it serves. Otherwise, the signal officer should select the signal specialists to go aboard the headquarters ship. These specialists install initial communication ashore, being joined later by the remainder of the unit when it lands. Small signal detachments from each headquarters should be attached to subordinate units prior to embarkation to expedite installation of communication systems upon landing.

404. SIGNAL PLANS. a. Joint signal plans are necessary in order that communication facilities of each component of the joint force may be integrated and coordinated. They must provide for thorough understanding by all appropriate personnel of the complete communication system to be set up and the joint responsibilities therefor.

b. Landing force signal preparations for a joint operation should include the following:

(1) Procurement of any additional personnel required for special installations.

(2) Preparation of standing operating procedure and signal operation instructions in accord with naval and air requirements and the tactical situation.

(3) Preparation of a signal plan for each alternate tactical plan, and arrangement for disposition of personnel and equipment on ships so that any of the plans may be executed.

(4) Plans for headquarters communication.

(5) Plans for signal security.

(6) Plans for allocation of frequencies, channels, and codes and ciphers not covered in signal operation instructions.

(7) Instructions to subordinate communication officers concerning the proposed signal system and responsibilities.

(8) Distribution of plans, orders, and information to army units and interested units of other services before sailing.

(9) Plans for radio intelligence measures.

(10) Plans for communication during the journey.

(11) Use of joint and special cryptographic aids.

c. Signal operation instructions for a landing operation are similar in principle to those outlined in FM 24-5. In general, the difference results from the location of higher command headquarters aboard a ship in early phases of the assault, the necessity for maintaining joint communication during all phases, and the relatively short duration of the assault operation.

d. Signal orders are written by all units down to and including the battalion landing team. Basic orders are prepared well in advance of embarkation and distributed to all echelons for study.

405. STANDING OPERATING PROCEDURE. Standing operating procedure for amphibious communication is prepared as a supplement to that for normal operations to cover the additional requirements. It will be based on the standing operating procedure of the task force to which the unit is attached.

406. AT SEA. a. The landing force signal officer and the commanding officer of the joint assault signal company should be embarked on the headquarters ship and effect requisite coordination with naval communication control.

b. Training, although with limited facilities, should continue.

407. NAVAL COMMUNICATION. a. No radio equipment may be operated at sea without approval of the naval force commander. Radio silence prohibits all transmission of whatever nature, including tuning. This prohibition extends to all electrical apparatus with radiating characteristics.

b. Daytime communication between ships of the force convoy usually is handled by visual means.

c. The size and construction of headquarters ships (AGC) permit simultaneous operation of all radio equipment normally employed by higher echelon command posts. Special army signal detachments are permanently aboard headquarters ships.

d. During the landing operation, supply and control vessels and shore fire control parties use either their permanently installed equipment or portable equipment for communication within the landing force. Communication within boat groups is normally by visual means during daylight, but radio will be available.

408. AIR COMMUNICATION. a. Efficient communication with aircraft is vital. Radio and visual communication personnel of the air liaison parties should be trained thoroughly. (Chapter 11.)

b. Provision should be made for communication suitable for the following air functions:

(1) Aircraft are in communication with their parent bases (or carrier), the control center (either afloat or ashore), and advanced visual control teams. When naval aircraft are used, a naval air liaison officer accompanies each landing team ashore.

(2) Guide reconnaissance aircraft, in addition to carrying out usual reconnaissance missions, may guide initial boat waves to landing beaches during daylight landing, necessitating communication by radio and visual means with the boat wave commanders.

(3) Artillery spotting aircraft, either military or naval, and tactical reconnaissance aircraft, observe army artillery fire. They communicate directly with combat teams.

(4) Naval gunfire observation aircraft observe for gunfire support in conjunction with the shore fire control party. They are based on the firing ship and communicate directly with it.

(5) Combat air patrols and antisubmarine patrols, either military or naval, communicate directly with their parent carriers or bases, as well as operating on a common patrol frequency.

(6) Command aircraft may be assigned for use of commanding generals of task forces or landing forces. They may work directly in ground command nets or in separate nets direct to command posts.

409. BEACH COMMUNICATION. a. Shore party communication personnel are provided by the joint assault signal company.

b. The shore party communication team provides radio communication to units ashore, radio and wire to adjacent beaches, and radio, visual, and boat messenger service seaward.

410. NAVAL GUNFIRE CONTROL. a. The shore fire control party with each assault battalion landing team employs direct radio communication with the assigned firing ship.

b. The fire support ship will use its own permanently installed radio equipment for communication with the shore fire control party. It will use a separate frequency for the observation aircraft.

411. BOAT NAVIGATION. Military personnel should know the specified guiding signals and the communication means by which boat commanders may orient themselves.

412. RAIDS. a. Communication for a raiding party normally consists entirely of radio and visual means.

b. Radio silence must be maintained strictly during approach to a hostile shore. After the landing, there need be no restriction until the raiding force has reembarked, when silence again is imposed.

TRAINING

Section I. GENERAL

413. GENERAL. a. Amphibious operations demand extensive special training, both on sea and land, for all units and echelons in a task force. Assault landings should be undertaken with troops which complete intensive amphibious preparation just prior to embarkation. Divisions with amphibious assault experience should receive adequate refresher training to prepare them anew for invasion combat.

b. Emphasis must be placed upon the concept that amphibious training afloat and combat training ashore together constitute a whole. Ground forces should acquire ability in an unfamiliar means of transportation, deployment, and attack while conducting objective preparation for their ultimate role ashore.

c. A training area selected for a task force should include as many conditions closely similar to those of the actual landing area as can be provided.

d. The training period for troops should include provision for a complete rehearsal just prior to embarkation for the operation, in a selected area, and with all ground, naval, and air participants. The rehearsal should include complete unloading of supplies, vehicles, and equipment in order to test thoroughly the shore organization and methods of control.

e. Troops should have, use, and know how to maintain, all special amphibious equipment, both military and naval, which they will use in the operation.

f. Physical and mental conditioning of the troops for the demands of amphibious assault should be stressed constantly.

414. TRAINING OBJECTIVES. a. The joint mission for amphibious training is to prepare individuals, groups, units, and large forces in their respective and collective functions for the conduct of coordinated assault landing operations (figs. 25 and 26).

b. The training objective for ground forces is attainment of maximum combat efficiency in amphibious assault, sea training and ground training together forming a unified preparation for the breach of a defended shore line.

415. TRAINING RESPONSIBILITIES. a. The Navy is responsible for providing the necessary facilities for and conducting all amphibious training of Army units designated for amphibious operations. This responsibility includes all phases of nautical training inci-



Figure 25. Troops in amphibious training maneuver in Australia.

dent to the preparation of a unit for participation in a seaborne expedition.

b. Army assists in the planning and conduct of training as required in effecting this preparation for sea operations. In addition, Army has the responsibility of conducting concurrent objective training of its units—ground and air—to assure readiness to execute its contemplated assault missions.

c. For scope and nature of joint training, see FTP 155, Joint Action of the Army and Navy.

416. SCOPE OF TRAINING. a. Ground. Amphibious training for ground units includes:

- (1) Individual technique.
- (2) Instruction of necessary specialists.
- (3) Planning for staffs.
- (4) Logistic operations.
- (5) Unit tactics and technique with assigned ships and craft.
- (6) Combined landing exercises with other services.



Figure 26. Infantry in practice landing in North Africa.

- (7) Objective ground training for assault.
- (8) Rehearsal.

b. Naval. Training of naval personnel for amphibious operations includes:

- (1) Landing boat operations.
- (2) Instruction of necessary specialists.
- (3) Assault transport operations.
- (4) Landing ship and craft operations.
- (5) Naval gunfire support operations.
- (6) Combined landing exercises with other services.

(7) Logistic operations.

(8) Rehearsal.

c. Air. Special training of joint air forces is required to cover special characteristics and requirements of amphibious operations, particularly for operation and control of aircraft attack missions on the immediate front of landing forces.

417. PLAN FOR TRAINING. **a.** Amphibious training normally is given infantry divisions, suitably reinforced for amphibious operation. Training usually includes:

(1) General orientation and indoctrination of senior troop unit commanders and principal staff officers.

(2) Schools for various types of specialists required for joint operations.

(3) Basic individual and group instruction on land.

(4) Unit instruction in landing technique with appropriate types of small landing craft. Advanced training may be given special assault units.

(5) Individual and collective training of shore parties.

(6) Instruction with transports and landing ships and craft.

(7) Landing exercises, to include regimental combat teams. Division rehearsal may be conducted away from the center for amphibious training.

(8) Intensive practice in ground assault.

b. Amphibious training for divisions of other types is modified as necessary. With armored divisions, emphasis is placed largely upon acquirement of facility in loading and unloading, using suitable landing ships and craft.

418. ORGANIZATION FOR TRAINING. **a.** Amphibious training of army units is conducted at appropriate naval centers for amphibious training. The training agency includes a joint headquarters charged with preparation of training plans, determination of appropriate doctrines and technique, coordination of joint facilities, and general supervision of all phases of training.

b. Navy operates appropriate shore bases to provide all necessary amphibious training facilities for army, marine, and naval forces selected for joint operations. These facilities include such schools as are considered necessary. Army troops at such bases are under naval control during amphibious training.

c. Schools for amphibious training may include:

(1) Indoctrination school.—Indoctrination courses for commanders and staffs, including battalion and separate companies. Division,

combat team, and landing team officers are familiarized with all phases of joint operations.

(2) Transport quartermaster school.—Technical instruction in combat loading of ships and craft for unit transport quartermasters.

(3) Signal communication school.—Indoctrination and technical amphibious instruction for communication personnel of all elements, with particular emphasis on the joint assault signal company functions.

(4) Naval gunfire support school.—Technical instruction in spotting and control of naval gunfire for naval gunnery and field artillery officers of the shore fire control parties, and tactical reconnaissance pilots.

(5) Amphibious patrol school.—Tactical training of selected personnel for patrolling and scouting in amphibious operations. Special army units are trained occasionally for raider missions.

(6) Shore groups school.—Individual, unit, and group training for joint logistic elements of the force.

(7) Amphibious demolition school.—Technical training in neutralization of underwater and beach obstacles for naval and military units.

(8) Air liaison school.—Technical instruction of personnel in those duties incident to the exchange of information and requests for air missions for the combined air-ground effort.

(9) Waterproofing school.—Technical instruction in the waterproofing of vehicles and material.

(10) Amphibian vehicle school.—Technical training in operation and maintenance of amphibian trucks or tractors.

419. UNIT TRAINING. a. Much basic amphibious instruction can be secured on land by use of adequate training aids, such as scale mockups of landing ships and craft. Tactical exercises simulating amphibious attacks are of recognized training value.

b. At naval bases, training in landing craft is given to accustom personnel to the sea and to practice the landing technique appropriate for the particular unit.

c. Training with ships and large landing craft is given to all units.

d. In principle, units should be trained with the types of ships and craft intended for an operation.

e. Normally unit training is conducted by preliminary instruction of selected cadres, followed by their instruction of the units, under training center supervision.

f. Unit concurrent ground training, continuous and objective, should include practice in tactics and technique of amphibious assault, exercising all weapons and means available.

Engineer bns (shore) as de- tailed by Div. CO from Div. troops.	Indoctrina- tion and schools.	Special shore party tng.	With RCT to which attached.		
			Indoctrination and basic.	Preparation of equip- ment for embarkation.	Elements afloat with RCT to which attached. Remainder of time at disposal of unit commander.
AA battalions.	Indoctrination and schools.				
Tank battalions.	Indoctrination and schools.		Indoctrination and basic.	Preparation of equip- ment for embarkation.	Elements afloat with RCT to which attached. Remainder of time at disposal of unit commander.
Divisional HQ.	Indoctrination and schools.		Afloat training with RCT's.		
Beach bn school.	Special beach party tng.	Special shore party tng.	Participate in shore party training and landing exercises.		

Figure 27. Schedule for training of a reinforced infantry division for an amphibious operation.
(Text key: Par. 421.)

420. TRAINING GROUPS. a. Army units are given amphibious training appropriate to their prospective combat employment.

b. Participating ground and service force units normally are attached for command and administration to the division receiving amphibious training.

c. Training groups usually consist of normal regimental combat teams, or equivalent units, with appropriate combat and logistic attachments.

d. Participating air force units train jointly with landing force elements under directives of the joint force commander.

421. TIME SCHEDULE FOR TRAINING. a. The time required to train units of a landing force depends largely upon the organization for training, status of unit training, availability of suitable training areas, and availability of ships and landing craft. Frequently, operational requirements will demand more rapid preparation than is ideal.

b. Preliminary indoctrination and specialist schools ordinarily require about one month. Time for unit basic, small boat, and advanced training will vary with the size of the training group. If training is by one regimental combat team at a time, approximately two months will be used for the division for full training for an operation including assault transports and cargo ships. The over-all time involved for amphibious training would thus approximate three months. Facilities to train more combat teams simultaneously, increased numbers of ships and landing craft, training only for shore-to-shore movement, or previous amphibious experience will reduce this time materially.

c. For an illustrative schedule for the training of a reinforced infantry division, with sufficient ships and craft for one regimental combat team at a time, see Figure 27.

Section II. BASIC AMPHIBIOUS TRAINING

422. INDIVIDUAL TRAINING. a. All units, regardless of type or prospective combat employment, designated to participate in amphibious operations should complete a basic amphibious training program aimed at preparation of the individual for subsequent unit exercises.

b. Basic amphibious training for all individuals may include:

- (1) Use of debarkation nets.
- (2) Adjustment and care of equipment.

(3) Embarkation of personnel and light equipment into landing craft.

(4) Debarkation from landing craft.

(5) Operation of vehicles and tanks with landing ships and craft.

(6) Driving in water and sand.

(7) Passage of beach obstacles, including use of demolitions.

(8) Swimming and use of life jackets and life rafts.

(9) Naval customs and life aboard ship.

c. Basic individual ground training should cover those techniques considered essential to the assault mission. It may include:

(1) Refresher course in use of all organic weapons.

(2) Detection and removal of enemy mines.

(3) Operation of special assault weapons.

(4) Operation of special amphibious equipment.

(5) Preparation and use of explosive charges.

d. Special amphibious equipment should be issued early in the basic training phase to give maximum opportunity for practice.

423. UNIT TRAINING. a. Basic amphibious training for units may include:

(1) Organized individual training.

(2) Organization of boat teams for embarkation and debarkation.

(3) Operation of boat teams.

(4) Landing tactics and technique for combat units.

(5) Preparation of essential data and plans for conduct of landing operations, such as:

(a) Boat assignment tables.

(b) Landing diagrams.

(c) Unit personnel and tonnage tables.

(d) Loading plans for units appropriate to large landing ships and craft.

(6) Beach organization for special service units.

(7) Operation of special organizational equipment.

(8) Waterproofing of vehicles and equipment.

(9) Transport regulations.

(10) Abandon ship and other drills afloat.

b. Basic ground training for units is directed objectively to preparation for the assigned landing mission. It may include:

(1) Selected boat-team assault courses.

(2) Crossing and marking of mined and obstructed areas.

(3) Combat firing for separate and combined arms of the landing team, including exercises in assault of a defended shore line.

(4) Dry-land amphibious exercises, to include the entire reinforced division.

c. Whenever practicable, all assault training should be executed with live ammunition and demolitions.

Section III. LANDING CRAFT TRAINING

424. SCOPE. a. The phase of amphibious training covering operations in landing craft on open water, usually without transports, is designated to give troops experience and confidence while landing under varying surf and beach conditions and employing basic individual and unit techniques.

b. If a unit is to execute a shore-to-shore movement to the landing area, all its training should be of this type, concentrating on the various kinds of assigned landing ships and craft.

425. OPERATIONS. a. Units are embarked as boat teams with full individual and amphibious equipment. Some experience in embarkation and debarkation is given in all types of craft available, with emphasis on the type to be used by the units.

b. Boat divisions and boat groups land in tactical formations, by day and night, under various sea conditions. Units debark and maneuver ashore as in a landing assault.

c. Combat and other vehicles are driven through water and sand, embarked, and debarked.

d. Necessary waterproofing is performed.

426. TEAM TRAINING. All elements of the training units which eventually will be together in battalion landing teams should accomplish their small-boat training as a team. This association will facilitate early integration of combat and logistic elements.

Section IV. ADVANCED TRAINING

427. SCOPE. Realistic landing exercises from all assigned types of ships and craft constitute the final training phase. General exercises usually are held for battalion landing teams and regimental combat teams, with the division landing force executing its exercise in the rehearsal for the operation.

428. OPERATIONS. a. Planning for training exercises should be conducted as for an actual operation with complete tactical and logistical plans prepared in conference with appropriate naval commanders of training ships.

b. Combat loading should be accomplished on all ships and landing craft, with normal port-of-embarkation operation, including loading of full loads of vehicles and dummy supplies.

c. Individual training and command conferences should be on ship-board after embarkation. Military and naval landing plans are coordinated.

d. Ships cruise to landing areas. Troops accustom themselves to life at sea. Landing exercises of successively increasing difficulty are performed on selected beaches. Vehicles and supply are unloaded and landed. Loading at the rail and alongside for assault waves on troopships is practiced. Shore group units establish and operate shore installations and improve beaches for logistic operations. Tactical operations are accomplished ashore under various landing conditions. Night operations are stressed. Patrols, scouts, and special raiding units may operate. All communications are exercised. Obstacles are breached. Smoke is used when desired. Every effort is made to secure realism.

e. Complete and rapid unloading of transports and landing ships is stressed in order to practice the shore parties in their functions, and to accustom all elements, military and naval, to handling the great quantities of supplies and equipment.

f. Naval gunfire, air bombardment, and support firing of all types are included whenever practicable.

Section V. SHORE GROUP TRAINING

429. GENERAL. Training of shore group units must produce unified shore parties capable of performing logistic functions on the landing beaches in support of the combat forces. A high degree of efficiency throughout all exercises should be demanded of any shore party intended for operational use.

430. TRAINING. **a. Individual.** Individual training should be the same as for all other type units.

b. Unit. Unit training should stress technique to meet amphibious requirements, including much practice in independent operation by shore parties assigned to battalion landing teams.

c. Group. (1) Exercises for the entire shore group are desirable to coordinate individual performances of the several shore parties in support of assault battalions, and for training as whole groups in continued support of the assault divisions and follow-up units which land over the beaches and for which the shore group is responsible.

(2) Training should stress the reconnaissance, clearance, improve-

ment, marking, and control of beaches; organization for handling of supply; establishment and operation of supply points; assistance of personnel, matériel, and supplies across beaches; and rapid unloading and firm control of craft.

431. SPECIAL EQUIPMENT (Fig. 28.). Shore group units require considerable special equipment, including special machinery, trucks, beach roadway matting, demolition materials, communications equipment, mine detectors, and decontamination equipment.



Figure 28. Shore party personnel laying beach roadway matting.

Section VI. SUPPORTING UNIT TRAINING

432. GENERAL. Supporting units receive appropriate unit training to prepare them for amphibious participation. Units equipped with heavy weapons or vehicles should be trained with landing ships and craft of appropriate types.

433. OPERATIONS. a. Amphibious training for supporting units consists of basic training for personnel, followed by practice in loading and unloading over beaches in various sea and light conditions.

b. Unit training includes care, maintenance, and waterproofing of equipment for amphibious conditions.

c. Stress is placed upon the technique of combat loading, stowing vehicles aboard, debarking by various methods, and driving through sand and water.

d. Supporting units participate in all landing exercises.

Section VII. INTELLIGENCE TRAINING

434. BASIC TRAINING. Training of division G-2 sections, regimental intelligence and reconnaissance platoons, battalion intelligence sections, and division cavalry reconnaissance troops should include appropriate portions of the following:

a. Preliminary air reconnaissance, both visual and photographic, at high and low tides.

b. Use of amphibious patrols and amphibious scouts. (See Section IV, Chapter 9.)

c. Use of shore engineer personnel with amphibious patrols for technical beach reconnaissance, including search for information as to the nature of the beaches, mines, obstacles, bearing surface, beach gradient, width of beaches, matting required, supply point sites, and road nets.

d. Use of smoke. (See Section V, Chapter 6.)

e. Establishment of command post aboard ship; continuous information, communications. (See Section VII, Chapter 8.)

f. Plan for interrogation and disposal of prisoners of war. (See FM 30-15.)

435. TRAINING OF RECONNAISSANCE AGENCIES. Intelligence and reconnaissance platoons and cavalry reconnaissance troops should receive training for amphibious reconnaissance missions, including the following:

a. Amphibious patrols in advance of operations, to include night landings, daylight reconnaissance, and retractions. (See Sections IV and V, Chapter 9.)

b. Standard and improvised waterproofing of equipment, with particular attention to radios.

c. Sketching of combat area, coast lines, and beaches, including silhouettes. (See FM 21-35.)

d. Inflation, use, and deflation, of rubber boats; operation in surf.

e. Comparison of charts, maps, and air photographs.

f. Marking beaches for landing exercises. (See FTP 211, US Navy.)

- g. Use of shore silhouettes for night landings.
- h. Navigation, to include:
 - (1) Interpretation and use of hydrographic charts.
 - (2) Conventional buoys.
 - (3) Effects of wind on course.
 - (4) Types of beaches.
 - (5) Use of compass and leading marks to reach certain beach positions.
 - (6) Simple terrestrial and naval navigation and direction finding.
 - (7) Taking soundings.
 - (8) Marking channels.

436. TRAINING OF BATTALION INTELLIGENCE SECTIONS.

Battalion intelligence sections also should receive training in:

- a. Employment in amphibious operations.
- b. Intelligence equipment and means of communication within the battalion landing team.
- c. Means and methods to be employed immediately upon landing to develop and expand intelligence plans and estimates covering enlargement of the beachhead.
- d. Use of two men with each assault company as intelligence liaison with battalion headquarters.
- e. Moving to and from beach in darkness, estimating distances, transmitting intelligence and complete messages by voice radio.

Section VIII. SPECIAL UNIT TRAINING

437. GENERAL. Special units, such as rangers, special service forces, raiders, or other similar combat elements, may require amphibious training for special operations.

438. OPERATIONS. a. In general, training of such units conforms to the standard training with such modifications as may be necessary.

b. Additional training in large landing craft, destroyer transports (APD), or submarines may be desirable for certain operations.

Appendix I. EMPLOYMENT, TYPES, AND CHARACTERISTICS OF LANDING SHIPS AND CRAFT

Several types of ships and craft have been developed for particular uses in connection with amphibious operations. The landing craft may be further classified as personnel landing craft, vehicle and tank landing craft, and amphibian vehicles.

1. a. The standard type of personnel landing craft is the LCVP, landing craft, vehicle and personnel, which has largely replaced the LCPR, landing craft, personnel, ramp, and the LCV, landing craft, vehicle. The LCPR still is used as a salvage boat and as a personnel boat in high speed transports (APD). The LCVP has the advantage, compared with LCPR, of being able to land light vehicles. The larger portion of an assault battalion landing team normally is landed by LCVP.

b. The LCI (L), landing craft, infantry (large), provides a means for landing reserve units rapidly, and in formations to facilitate control after landing. Its disadvantages are:

- (1) Landing areas must be selected carefully.
- (2) It forms a vulnerable and remunerative target.
- (3) It is incapable of landing vehicles.

2. The principal types of vehicle and tank landing craft in use are the LCM (3) (6), landing craft, mechanized (Marks 3 and 6), and the LCT (5) (6), landing craft, tank (Marks 5 and 6).

a. The LCM (3) has the landing capabilities of the LCVP and is superior to it in seaworthiness and cargo capacity. Its disadvantage is the difficulty in assembling sufficient LCM (3) in the boat group. The LCM (6) has a 6-foot additional section welded amidship which gives it increased carrying capacity.

b. The LCT (5) (6) is useful for lightering tanks and other heavy equipment from ship to shore or for short range shore-to-shore movements. LCT may be used to provide direct gunfire support for the landing by embarking assault guns which can fire on selected targets en route to shore.

3. The principal types of amphibian vehicles in use are the LVT, landing vehicle, tracked, and the 2½-ton, 6 x 6 amphibian truck (DUKW).

a. The principal advantage of the LVT is its ability to traverse coral or other reefs and swampy terrain. Their principal disadvantages are very slow speed and lack of seaworthiness in a rough sea. Because of these facts, the amphibian tractors normally are used as personnel carriers only for the passage from the line of departure or its vicinity to the beach, and only when the LCVP is not capable of being employed in the assault.

b. The DUKW is used for a variety of purposes in an amphibious operation, including:

(1) As a carrier for the 105-mm howitzer.

(2) For unloading supplies from landing ships and assault transports and moving them directly into supply points.

(3) For unloading cargo ships.

(4) As a temporary prime mover.

(5) For occasional employment in later assault waves.

4. Representative landing ships are the LST, landing ship, tank, the LSD, landing ship, dock, and the LSM, landing ship, medium.

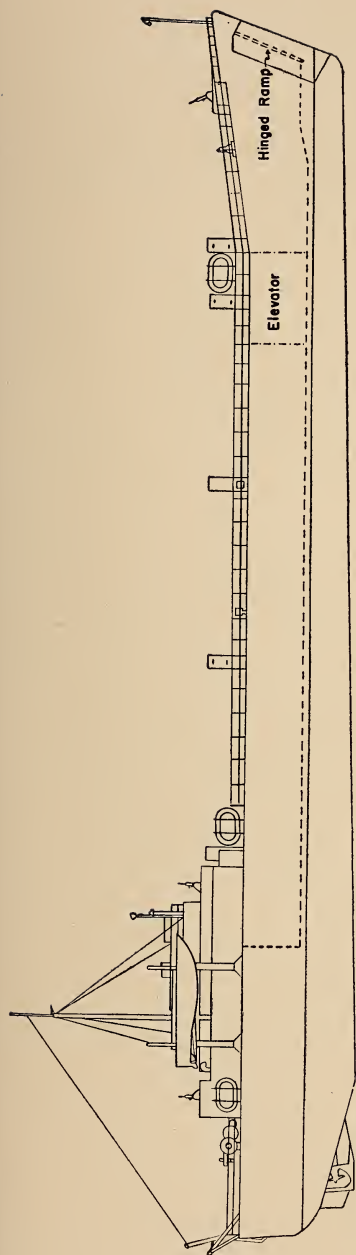
a. The wide range and large carrying capacity of the LST greatly aid all landing operations in which employed armored units or forces of any type may be held afloat, maneuvered, and landed quickly in large units at selected points. Combat troops may be disembarked at sea to landing craft or amphibian tractors for the ship-to-shore movement.

b. In addition to the employment indicated in figure 30, the LSD is capable of carrying LVT or DUKW on temporary decks. These vehicles may be unloaded by means of a crane or be launched by means of a ramp.

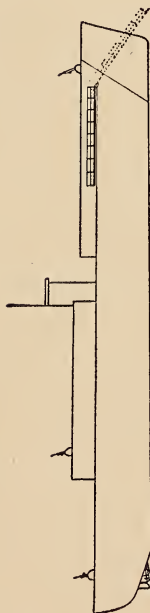
c. The LSM has the same cargo capacity as the LCT (5). It has the advantage of greater speed, of being ocean going, and of having berthing facilities sufficient for vehicle and weapon crews to accompany their equipment.

5. a. Figure 29 depicts graphically the relative sizes of representative landing ships and craft.

b. Figure 30 itemizes the principal operational characteristics of the more widely used landing ships and craft and amphibian vehicles. For further details, including vessels of the United Kingdom, see ONI-226, U. S. Navy.



LST — 328' long
---- Outline of tank compartment



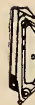
LCI (L) — 158' long



LCT (5) — 108' long



LCM (3) — 50' long



LVT (4) 26' 11\"/>



LCVP — 36' 4\"/>

Figure 29. Relative sizes of representative landing ships and craft.
(Test key: Appendix I, par. 5.)

Abbreviation	Name	Length Overall	Beam	Speed Loaded (Knots)	Endurance (Miles)	Load Capacity (Excluding Crew)	Operational Use—Remarks
LCR (S)	Landing craft rubber (small).	12' 5"	5' 11"	3½-4½ (6 hp mtr)		7 troops.	To land patrols and raiders secretly from APD, transports, or submarines. Collapsible rubber rafts powered by port-outboard motor or pad-dled. L C R (L) mounts one cal. .30 MG. 2-3 miles padding is maximum before fighting.
LCR (L)	Landing craft rubber (large).	16' 0"	8' 0"	3½-4½ (9½ hp mtr)		10 troops.	
LCP(R)	Landing craft personnel (ramp).	36' 8"	10' 10"	8	69-145 depending on engines with which equipped.	30-36 troops or 6700-8100 lbs. cargo, depending on fuel load.	This craft is being superseded in production by the LCVP except for use in APDs. It has common usage as a salvage boat.
LCVP	Landing craft vehicle, personnel.	36' 0"	10' 5"	9	102	36 troops or light vehicle or 8100 lbs. cargo.	An improved LCV with steering control and gunner's cockpit in hold. Can be lowered when loaded only from davits. Armed with two cal. .30 MG. Ramp and sides armed with ¼" STS.

LCI (L)	Landing craft, infantry (large)	158'5½"	23'3"	16	4000 @ 12 kts; 1500 @ 12 kts beaching draft.	6 Off. 182 EM or 75-tons cargo.	An ocean-going infantry carrier designed for direct unloading on the beach. Suitable for long voyage operations with small embarked elements or short range operations with capacity load. Disembarks troops over bow ramps, either two side or one center depending on model.
*LCM (3)	Landing craft, mechanized (Mark 3).	50'0"	14'1"	8	850 @ 6¼ kts, 140 @ max.	One 30-ton tank or 60 trs. or 60,000 lbs. cargo.	Designed to land one medium (30 ton) tank or motor vehicles direct on beach. Armed with two cal. .50 MG.

*LCM (6) is the LCM (3) with 6 feet added to the hull amidships. Other characteristics are similar to those of the LCM (3).

Figure 30. Types and characteristics of landing craft, landing ships, landing vehicles, and attack transports.

(Text Key: Appendix I, par. 5.)

Abbreviation	Name	Length Overall	Beam	Speed Loaded (Knots)	Endurance (Miles)	Load Capacity (Excluding Crew)	Operational Use—Remarks
LCT (5)	Landing craft, tank (Mark 5).	117'6"	32'0"	8	700 @ 7 kts.	Five 30-ton, four 40-ton, or three 50-ton tanks, or 9 trucks, or 150 tons cargo.	Ocean-going limited range lighter designed to land tanks or vehicles directly on beaches. Constructed in three sections, may be transported disassembled on decks of larger vessels. Designed to beach on a slope of 1/120. Armed with two 20mm guns. The LCT (5) has no accommodations for troops.
LCT (6)	Landing craft, tank (Mark 6).	120'4"	32'0"	8	700 @ 7 kts.	Four medium or three 50-ton tank or 150 tons cargo 8 troops.	The LCT (6) may serve as a floating bridge for unloading LST. Its hull is modified to permit stern loading.
LSM	Landing ship medium	203' 6"	34' 0"	13.3 @ 720 rpm	7000 @ 12 kts.	5 medium or 3 heavy tanks or 6 LVT or 9 DUKW, and 2 Off, 52 EM.	An ocean-going tank landing ship designed to operate with LCI (L). Its design is derived from a combination of the LST and LCT (6). Armed with six 20-mm mounts.

LSD	Landing ship dock.	457' 9"	72' 0"	17	8000 @ 15 kts.	3 LCT (5) (6) each with 5 medium tanks or 2 LCT (3) (4) each with 12 medium tanks or 14 LCM (3) each with 1 medium tank or 1500 long tons cargo or may carry LVT or DUKW and 22 Off 218 EM.	To transport loaded landing craft to a landing area, where the hold is flooded and the craft move out under their own power. Landing craft up to LCI (L) may be stowed in the well. Two 35-ton cranes service the craft. Capacity may be increased to 92 LVT or 108 DUKW by installing two temporary decks. Armed with 1-5"/38 cal. DP, 2-40-mm twin, 2-40-mm quad., 16-20-mm singles.
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Figure 30. Types and characteristics of landing craft, landing ships, landing vehicles, and attack transports—Continued.

(Text Key: Appendix I, par. 5.)

Abbreviation	Name	Length Overall	Beam	Speed Loaded (Knots)	Endurance (Miles)	Load Capacity (Excluding Crew)	Operational Use—Remarks
LST	Landing ship tank.	328' 0"	50' 0"	10' 8"	1200 @ 9 kts.	1900–2100 tons. Main deck load 350 tons, tank deck volume 92765 cubic feet. Berthing for approximately 160 troops. Tank deck will carry 10 heavy, 20 medium, or 39 light tanks.	An ocean-going ship designed to land water-proofed tanks or vehicles over a low ramp on a 1/50 beach slope. Where beaching conditions would cause debarkation in excessive depths of water, sectional pontoons are used or earth causeways are built. Elevation and hatch service main deck. An LCT (5) or (6) may be carried in sections or as a unit on main deck. Such use precludes other loadings for this deck. Equipped with from two to six landing craft (LCVP).
AGC	Amphibious force flagship (headquarters ship).			15–18		130 Off, 869 E.M.	These ships serve as control headquarters for amphibious operations. See Navy publication, P-02, for details.

APA	Assault transport.		15 or over	18000 or over.	60-150 Off, 1200 - 1800 EM, 10 days of fire, 30 days of supply, BLT weapons and 40-80 vehicles, 20-30 LCV, and 2 LCM (3).	To transport combat unit loaded troops. Size of hatch openings and capacity of booms usually prohibit loading any vehicle larger than a light tank or a 2½-ton truck. Usually armed with 4-3" AA guns and a number of large caliber machine guns.
APD	High speed transport (DE conversion).	306' 0"	37' 0"	5000 @ 15 kts. 2000 @ 23 kts.	4 LCV at davits, 162 troops, 6-¼ ton trucks, 21-ton trucks, 4500 cubic feet cargo.	To transport and land raiding or reinforce troops secretly. "Flush-deck" destroyers also are converted for use as APD to accommodate raiding parties and land them by small craft. Dimensions, and speed and capacity characteristics are similar to those of DE conversion.

Figure 30. Types and characteristics of landing craft, landing ships, landing vehicles, and attack transports—Continued.

(Text Key: Appendix I, par. 5.)

Abbreviation	Name	Length Overall	Beam	Speed Loaded (Knots)	Endurance (Miles)	Load Capacity (Excluding Crew)	Operational Use—Remarks
AKA	Assault cargo ship					5-14 Off, 50-EM, 5 days of fire, 15 days rations for RCT. 6-7 LCVP and 7-8 LCM (3).	Characteristics other than load capacity are roughly similar to those of APA.
LCC	Landing craft control.	56' 0"	13' 7"	13½ max.	500 @ 10 kts, 240 @ max.		Used as lead-in navigational craft for landing boats; to mark line of departure; for traffic control; for preliminary hydrographic surveys. Usually carried on decks of APA and AKA and lowered by booms. Armed with 3 twin cal. .50 MG on ring mounts. Bridge and gun cockpits armored.

LCS (S)	Landing craft, support (small).	36' 8"	10' 10"	10-12	115-135	3-4 Troops.	To render close supporting automatic and rocket fire to assault waves; may furnish base of fire to facilitate initial maneuver in beach area. Capable of beaching. Armed with cal. .50 and .30 MG and rocket projectors. Armored.
LVT	Landing vehicle tracked.	LVT1 21' 6", LVT2 26' 1", LVT3 24' 1½", LVT4 26' 1".	LVT1 9' 10", LVT2 10' 8", LVT3 10' 10", LVT4 10' 8".	LVT1 15 mph land, 4 kts water. LVT2-4 25 mph land, 5.4 kts water.	LVT1 75 land, 50 water, LVT2-4, 150 land, 75 water.	LVT1 4500 lb. or 20 men, LVT2-4 6500 lb. or 24 men, LVT3 8000 lb. or 24 men.	Personnel and cargocarrers designed for landing operations over coral reefs and other obstacles. Steel constructed watertight hull propelled on land and in water by cleated tracks. Transported on deck or in hold of LST and LSD. The LVT1 is obsolete; the LVT4 is same as LVT2 with a stern ramp.

Figure 30. *Types and characteristics of landing craft, landing ships, landing vehicles, and attack transports—Continued.*
(Text Key: Appendix I, par. 5.)

Abbreviation	Name	Length Overall	Beam	Speed Loaded (Knots)	Endurance (Miles)	Load Capacity (Excluding Crew)	Operational Use—Remarks
LVT (A)	Landing vehicle, tracked (armored).	26' 1"	10' 8"	25 mph land, and 5.2 kts water.	150 land, 75 water.	LVT (A) 1 1000 lb., LVT (A) 2 6500 lb., LVT (A) 3-4 2000 lb.	A lightly armored amphibious combat vehicle. Similar in characteristics to the LVT2. LVT (A) 1 and 2 armed with 37-mm M6 and coaxial cal. .30 MG plus two cal. .30 MG on ring mounts; LVT (A) 3 and 4 armed with 75-mm M8 howitzers in place of 37-mm M6, plus one cal. .50 MG. LVT (A) 3 will not be produced.
DUKW	2½-ton 6 x 6, amphibian truck.	31' 0"	8' 0"	50 mph land, and 5.5 kts water.	400 @ 35 mph on land.	25 troops and equipment or 12 loaded litters, or 5000 lb. cargo.	Amphibious army truck for ship - to - shore transport, capable of operating in a moderate sea and surf. Sometimes carried at a v i t s; generally transported on decks of ships.

Figure 30. Types and characteristics of landing craft, landing ships, landing vehicles, and attack transports—Continued.

(Text Key: Appendix I, par. 5.)

Appendix II. EXAMPLES OF FORMS

1. GENERAL. This appendix contains examples of transport loading and debarkation forms. Examples shown are based on usage under various assumed conditions. It is to be remembered that in every amphibious operation, existing conditions will dictate composition, boating, and employment of the required landing team and matériel.

2. CONSOLIDATED UNIT PERSONNEL AND TONNAGE TABLE. a. The consolidated unit personnel and tonnage table (fig. 31 (1)), is prepared by the battalion landing team or similar unit to be embarked, setting forth the personnel and tonnage to be loaded in the vessel by the landing team. Each company and separate detachment of the landing team submits its individual personnel and tonnage table on a similar form to the landing team for consolidation into form illustrated. A study of the form will indicate that cargo is classified in four categories, as follows:

(1) Equipment actually with the individual in his berthing or troop space.

(2) General cargo, including organizational initial combat equipment, special equipment, and emergency rations. It is highly unlikely that such impedimenta as mess equipment and trunk lockers will be carried in the ships of the initial convoy.

(3) Vehicles, including towed weapons. This organizational matériel is listed separately from that in (2).

(4) Property listed under combat replacements, which includes the combat replacement equipment and supplies that are supplied at the port of embarkation to the troops as a whole and consequently did not appear in unit personnel and tonnage tables of subordinate units. The individual tables prepared by subordinate units do not show any supplies in this space (lines 16-25).

b. On the reverse side of the consolidated table (fig. 31(2)), are listed all vehicles, including towed weapons, tracked vehicles and hand carts.

UNIT: BLT, 3d Bn, 167th Inf RCT

To be embarked on U. S. S. *Leedstown*

Troop officers, 65; Troop enlisted, 1,391; Total, 1,456

	Line No.		Square feet	Cubic feet	Weight (lbs.)
T R O O P	1 2 3	"A" barrack bags-----	X	4, 869	116, 480
		Office equipment-----	X	51	1, 114
		Organizational initial combat equipment-----	X	178	4, 420
	4	Total, lines 1-3-----	X	5, 098	122, 014
G E N E R A L	5 6 7 8 9	Organizational equipment-----	X		
		Rations: C, D, K-----	X		
		Mess equipment-----	X		
		Special equipment-----	X	4, 170	13, 192
		"B" barrack bags and trunk lockers-----	X		
	10	Total, lines 5-9-----	X	4, 170	13, 192
V E H I C L E S	11 12 13	Towed guns-----	1, 003	5, 142	31, 250
		Hand carts-----	200	436	1, 288
		Vehicles-----	4, 507	24, 090	288, 113
	14	Total, lines 11-13-----	5, 710	29, 668	320, 651
	15	Total weight of personnel (224 pounds per man)-----	X	X	326, 144
	16	Total, lines 4, 10, 14, 15-- Other supplies (to be filled in by ship transportation officer only).	5, 710	38, 936	782, 001

UNIT: BLT, 3d Bn, 167th Inf RCT—Continued

To be embarked on U. S. S. *Leedstown*—Continued

Troop officers, 65; Troop enlisted, 1,391; Total, 1,456					
R E P L A C E M E N T S	Line No.		Square feet	Cubic feet	Weight (lbs.)
	17	Ammunition—small arms-----	X	2, 398	167, 702
	18	Commissary sales supplies-----	X		
	19	Chemical-----	X		
	20	Engineer-----	X		
	21	Medical-----	X		
	22	Motor parts-----	X		
	23	Ordnance-----	X		
	24	Quartermaster (general supplies)-----	X		
	25	Rations: C, D, K-----	X	1, 551	50, 595
	26	Signal-----	X		
	27	Total, lines 17-26-----	X	3, 949	218, 297
	28	Ammunition—high explosives-----	X	8, 489	473, 764
	29	Pyrotechnics-----	X	35	1, 056
	30	Gasoline—Oil—Grease-----	X	2, 299	98, 714
	31	Water-----	X	1, 465	79, 110
	32	Grand total, lines 16, 27, 28, 29, 30, 31-----	5, 710	55, 173	1, 652, 942
	33	Total weight in long tons-----	X	X	738

Figure 31 (1). Consolidated unit personnel and tonnage table.

(Text key: Appendix II, par. 2.)

VEHICLES

(Include herein: Towed guns, tanks, half tracks, scout cars, hand carts, trailers, tractors, and motorcycles.)

Priority No.	Type	Length		Width		Height		Square feet	Cubic feet	Weight
		<i>Ft.</i>	<i>in.</i>	<i>Ft.</i>	<i>in.</i>	<i>Ft.</i>	<i>in.</i>			
1	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
2	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
3	Hand cart.....	5	9	3	2	1	9	16	26	92
4	Hand cart.....	5	9	3	2	1	9	16	26	92
5	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
6	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
7	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
8	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
9	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
10	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
11	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
12	Hand cart.....	5	10	3	4	1	9	12. 5	32	92
13	¼-ton truck.....	11	2	5	5	4	5	61	275	2, 760
14	¼-ton truck.....	11	1	5	5	4	5	61	275	2, 760
15	Bulldozer.....	15	2	9	10	8	7	150	1, 280	16, 180
16	Bulldozer.....	15	2	9	10	8	7	150	1, 280	16, 180
17	Sled.....	12	6	5	4	1	0	68	68	200
18	Sled.....	12	6	5	4	1	0	68	68	200
19	Sled.....	12	6	5	4	1	0	68	68	200
20	Sled.....	12	6	5	4	1	0	68	68	200
21	Sled.....	12	6	5	4	1	0	68	68	200
22	Sled.....	12	6	5	4	1	0	68	68	200
23	M-13 halftrack.....	21	6	7	2	7	8	155	1, 182	19, 800
24	M-13 halftrack.....	21	6	7	2	7	8	155	1, 182	19, 800
25	M-13 halftrack.....	21	6	7	2	7	8	155	1, 182	19, 800
26	Hand cart.....	70		39		20		18. 9	31. 6	92
27	Hand cart.....	70		39		20		18. 9	31. 6	92
28	¼-ton truck.....	11	2	5	3	4	6	61	276	3, 125
29	¼-ton truck.....	11	2	5	3	4	6	61	275. 6	2, 265
30	¼-ton trailer.....	8	11	4	10	3	10	43	164. 7	1, 050
31	¼-ton truck.....	11	2	5	3	4	6	61	275. 6	3, 125
32	¼-ton truck.....	11	2	5	3	4	6	58. 6	263. 7	2, 459
33	¼-ton trailer.....	8	11	4	10	3	8	43. 1	158	858
34	¼-ton truck.....	11	2	5	3	4	6	58. 6	263. 7	2, 459
35	¼-ton trailer.....	8	11	4	10	3	8	43. 1	158	858
36	¼-ton truck.....	11	2	5	3	4	6	58. 6	263. 7	2, 459
37	¼-ton trailer.....	8	11	4	10	3	8	43. 1	158	951
38	¼-ton truck.....	11	1	5	6	4	5	62	280	2, 630
39	1½-ton truck 6 x 6.....	17	11	6	11	5	7	124	692	9, 074
40	105-mm how M-3.....	12	10	5	9	4	2	74	308	2, 700
Totals**.....										

**Grand total of weight, cubic feet and square feet must agree with line No. 14.

Figure 31 (2). Reverse of Consolidated unit personnel and tonnage table.

(Text Key: Appendix II, par. 2.)

3. VEHICLE DEBARKATION PRIORITY TABLE (fig. 32).

This form, like the unit personnel and tonnage table, is submitted by each company and separate detachment of the landing team to the team commander for consolidation. The "Where Stowed" column is not filled in at the time of preparation of the consolidated form by the battalion landing team, but is completed by the transport quartermaster after the loading plan has been drawn. The organization number shown is a code designation and not the unit's ordinary designation.

Organization: BLT, 3d Bn, 167th Inf RCT

Embarked on U. S. S. *Leedstown*

Prior- ity No.	Description and use	Organization	Pkg. No. (IOI)	Army Serial No.	Driv- er	Where stowed ¹
1	Handcart—Am.....	1234-A	A12	7207	----	1 Hold, 2d Deck.
2	Handcart—Am.....	1234-A	A13	7208	----	1 Hold, 2d Deck.
3	Handcart—Am.....	1234-A	B10	7167	----	1 Hold, 2d Deck.
4	Handcart—Am.....	1234-A	B11	7168	----	1 Hold, 2d Deck.
5	Handcart—Am.....	1234-A	D10	7507	----	5 Hold, 2d Platform.
6	Handcart—Am.....	1234-A	D11	7394	----	5 Hold, 2d Platform.
7	Handcart—Am.....	1234-A	D12	7395	----	5 Hold, 2d Platform.
8	Handcart—Am.....	1234-A	D13	7347	----	5 Hold, 2d Platform.
9	Handcart—Am.....	1234-A	D14	7506	----	1 Hold, 2d Deck.
10	Handcart—Am.....	1234-A	D15	7389	----	5 Hold, 2d Deck.
11	Handcart—Am.....	1234-A	D16	7338	----	5 Hold, 2d Platform.
12	Handcart—Am.....	1234-A	D17	7348	----	5 Hold, 2d Platform.
13	¼-ton truck — Air, Liaison.	1234-K	IN1	-----	----	1 Hold, Half Deck.
14	¼-ton truck — Shore fire control party.	1234-G	A2	-----	----	2 Hold, 2d Platform (Forward).
15	Bulldozer—Clearing..	1234-M	SP2	-----	----	3 Hold, 2d Deck.
16	Bulldozer—Clearing..	1234-M	SP3	-----	----	3 Hold, 2d Deck.
17	Sled—Am cargo.....	1234-M	SP4	-----	----	3 Hold, 2d Deck.
18	Sled—Am cargo.....	1234-M	SP5	-----	----	3 Hold, 2d Deck.
19	Sled—Am cargo.....	1234-M	SP6	-----	----	3 Hold, 2d Deck.
20	Sled—Am cargo.....	1234-M	SP7	-----	----	3 Hold, 2d Deck.
21	Sled—Am cargo.....	1234-M	SP8	-----	----	3 Hold, 2d Deck.

¹ To be filled in by TQM.

Figure 32. Vehicle debarkation priority table.

(Text Key: Appendix II, par. 3)

4. STOWAGE PLAN (Fig. 33). A stowage plan is prepared for each hold or deck of landing ship to show the location of all equipment and supplies, the organizations to which they belong, and the priority number of each vehicle, including towed weapons. This plan comprises actual allocation of deck areas for stowage of vehicles and equipment. The forms used in making up the stowage plan are scale drawings of the deck space in each hold available for stowage of troops cargo. The drawings are to the scale of $\frac{1}{8}$ inch to 1 foot, and are made as accurately as possible to show all obstructions. The plan is completed by marking off specific areas on the drawings and indicating the cargo to be stowed therein. Templates of vehicles, drawn to the same scale as the stowage plan, are employed to determine vehicle stowage space, and facilitate determination of the actual capacities of the holds.

5. PROFILE LOADING PLAN (Fig. 34). The profile loading plan is a view of the ship with the itemized list of matériel stowed in the holds indicated in the proper hold spaces. This gives the commander of troops a clear picture of where his equipment is stowed and what problems probably will be encountered if an attempt is made to alter the unloading priority list.

6. LOADING SUMMARY (Fig. 35). a. The loading summary is a means of indicating the breakdown of the cargo into the various holds in which it is stowed. The form used for the loading summary is set up so that data on cargo space is easily compared with the data on matériel to be loaded. It is easy, therefore, to check the feasibility of the proposed loading plan.

b. A further use of the loading summary is to assist the captain of the ship to decide whether the weight of the cargo is so distributed in the various holds as to effect the stability of the ship.

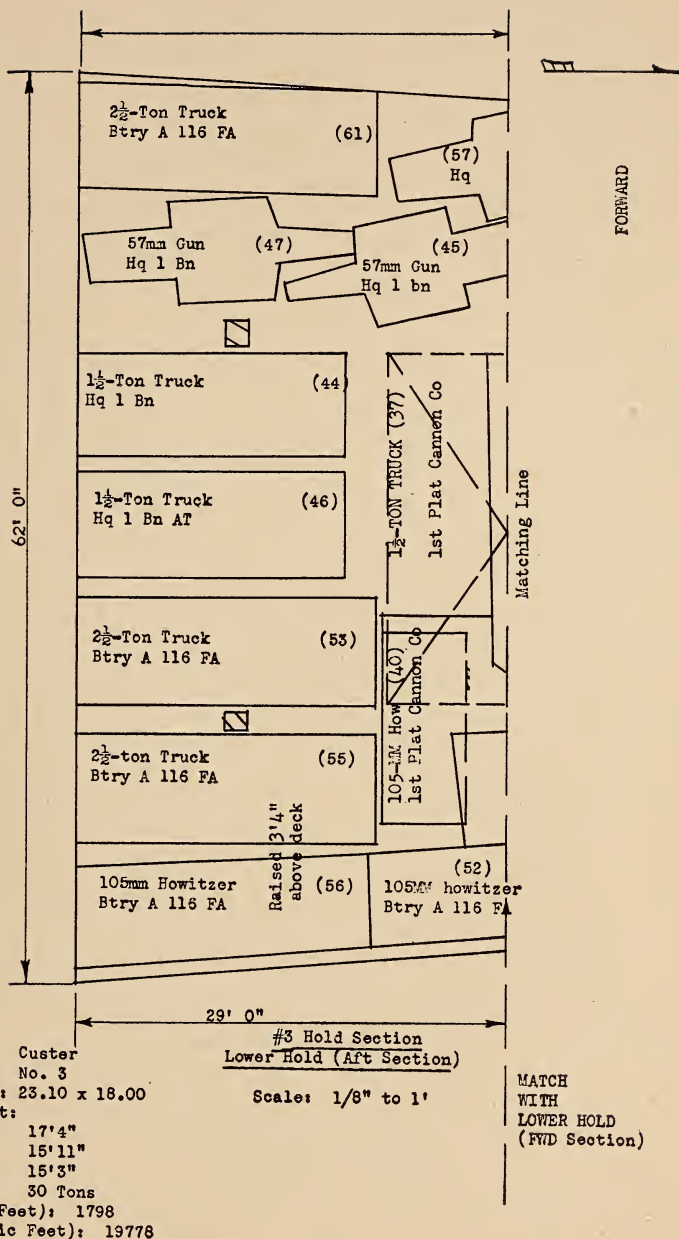


Figure 33. Stowage plan.
(Text Key: Appendix II, par. 4.)

U.S.S. CUSTER

#5		#4		#3		#2		#1							
Troop Berths 2 2½-T.Trucks 2 105mm How.	Troop Berths 1 1-T.Truck 1 40mm AA Gun	Troop Berths 1 1-T.Truck 1 40mm AA Gun	Troop Berths 2 Bulldozers	Troop Berths 1 ½-T.Truck 1 37mm Gun	Troop Berths 1 ½-T.Truck 1 37mm Gun	Troop Berths 1 ½-T.Truck 1 37mm Gun	Troop Berths 2 2½-T.Trucks	Troop Berths 2 Lt.Tanks	Troop Berths 4 Lt. Tanks 2 2½-T.Trucks 6 Pallets (SA) 4 Pallets(Wtr)	Troop Berths 300 Cases (S.A. Am)	Troop Berths 18 Pallets (H.E.) 12 Pallets (S.A.) 24 Pallets (Emer.Rtns) "B" & Emer. Rations	Troop Berths 28 Pallets(H.E.) 16 Pallets(S.A.) 14 Pallets (Rations)	Hold		
Troop Berths 1 1-T.Truck 1 40mm AA Gun	Troop Berths 2 Half-tracks	Troop Berths 2 1-Ton Trucks 2 40mm AA Guns 34 Pallets (80 Oct.Gas) 300 Drums (80 Oct.Gas)	Troop Berths 2 2½-Ton Trucks 20 Pallets (Gas) 14 Pallets (Eng) 6 Pallets (S.A.)	Troop Berths 2 2½-T.Trucks 20 Pallets (HE) 12 Pallets (SA)	Troop Berths 4 ½-Ton Trucks 10 Pallets (Rations)	Troop Berths 18 Pallets (H.E.) 12 Pallets (S.A.) 24 Pallets (Emer.Rtns) "B" & Emer. Rations	Troop Berths 28 Pallets(H.E.) 16 Pallets(S.A.) 14 Pallets (Rations)	Troop Berths 3 ½-T Trucks	Troop Berths 20 Pallets (HE) 12 Pallets (SA)	Troop Berths 2 2½-T.Trucks	Troop Berths 4 Lt. Tanks 2 2½-T.Trucks 6 Pallets (SA) 4 Pallets(Wtr)	Troop Berths 300 Cases (S.A. Am)	Troop Berths 18 Pallets (H.E.) 12 Pallets (S.A.) 24 Pallets (Emer.Rtns) "B" & Emer. Rations	Troop Berths 28 Pallets(H.E.) 16 Pallets(S.A.) 14 Pallets (Rations)	Hold
1st Platform															
3d Deck															
2d Deck															

Figure 34. Profile loading plan.
(Text Key: Appendix II, par. 5.)

(This form should show totals for each hold section. Make special notations on reverse side.)

Loading summary U. S. S. *Leedstown*

Data on cargo space			Data on matériel to be loaded			
Hold and platform numbers	Capacity		Organization	Type of matériel	Square feet	Cubic feet
	Square feet	Cubic feet				
No. 1 Hold, Section, 2d Deck.	148	1, 165	<i>Ft. in.</i> 11 3	"A" Co, 155th Inf "B" Co, 155th Inf "D" Co, 155th Inf All units	25 32 25	64 52 64
				"A" barrack bags Office equipment	4, 869 51	184 184 116, 480 1, 114
				Total	82	5, 100
Half-deck	147	980	6 8	Air Liaison Party Shore Party	61 61	275 276
				Total	122	551
2d Platform	950	7, 742	8 4	"D" Co, 155th Inf Hq Co 1st Bn 155th Inf Btry A, 116th F A Bn (Ex)	215. 4 172 4 122 62	1, 071. 8 632 551 280
				Total	572	2, 535
						22, 437

Figure 35. Loading Summary.

(Text Key: Appendix II, Par. 6.)

Loading summary U. S. S. *Leedstown*—Continued.

Data on cargo space				Data on matériel to be loaded			
Hold and platform numbers	Capacity		Height clear of girder	Organization	Type of matériel	Square feet	Cubic feet
	Square feet	Cubic feet					
Lower Hold-----	566	3, 113	5 9	1st Bn Med Det, 155th Inf. "A" Co, 155th Inf-----	2 ¼-ton trucks----- 2 ¼-ton trailers----- 1 ¼-ton truck----- 1 ¼-ton trailer-----	119 93. 2 61. 3 43	534 388 275. 6 157. 8
				Total-----	Total-----	317	1, 355
No. 2 Hold, Section, FWD, 2d Deck.	79	872	11 0	All Units-----	HE Am, Priority 1----- Rations—D----- Special Equipment----- Small Arms Am, Priority 1----- Organizational equipment-----	--- --- --- --- ---	75 31 138 195 178
				Total-----	Total-----	---	617
							2, 364 1, 395 2, 692 13, 658 4, 420
							12, 343
							24, 529

Figure 35. Loading Summary—Continued.

(Text Key : Appendix II, Par. 6.)

7. LANDING FORCE EMBARKATION AND TONNAGE TABLE (Fig. 36). This form shows the allocation of the embarkation groups to transport divisions. It is used in berthing all elements of the landing force on the ships of the transport group. In the example shown, only two battalion landing teams are indicated. Other transports are listed in the ship column. The data for the form is collected from the consolidated unit personnel and tonnage table for each vessel.

Organization of Embarkation Groups and Transport Divisions

Trans Div No.	Ship	Unit embarked	Troop capacity			Troop embarked			Cargo capacity, cubic feet	Cargo loaded	
			Off.	Enl.	Total	Off.	Enl.	Total		Cubic feet	Tons (short)
11	Windsor	BLT, 1st BN, 167th Inf, RCT	86	1, 395	1, 481	66	1, 380	1, 446	63, 368	55, 120	704
11	Leedstown	BLT, 3d BN, 167th Inf, RCT	91	1, 466	1, 557	65	1, 391	1, 456	72, 074	55, 173	738
11	Neville	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
11	Custer	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
11	Electra	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
15	Jefferson	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

NOTE.—Completed form would show all ships of the force grouped by transport divisions embarking the landing force.

Figure 36. Landing force embarkation and tonnage table.

(Text key: Appendix II, par. 7.)

8. **BOAT AVAILABILITY TABLE (Fig. 37).** The boat availability table tabulates for each ship in the transport group, by transport division, the numbers of landing craft of each type carried on each ship. The form is prepared by the transport division commander and issued as part of the joint attack force landing attack order.

Boat availability table—RCT 167th Inf.
UNIT

(Date)

Transports	Total number						Remarks
	LCP (L)	LCP (R)	LCV	LCS (S)	LCVP	LCM	
U. S. S. <i>Neville</i> -----	2	1	----	1	20	2	All LCPR to be used as salvage boats.
U. S. S. <i>Windsor</i> ----	2	1	----	1	24	2	All LCP (1) to be used as boats for boat group commanders or assistant boat group commanders. One LCV from each ship reserved for ship as life-saving boat. One LCVP from <i>Custer</i> reserved for RCT commander and party as free boat. Load and land as directed.
U. S. S. <i>Leedstown</i> ----	2	1	----	1	24	2	
U. S. S. <i>Custer</i> -----	2	1	----	2	23	2	
U. S. S. <i>Electra</i> -----	-----	-----	----	1	14	7	
U. S. S. -----	-----	-----	----	-----	-----	-----	
U. S. S. -----	-----	-----	----	-----	-----	-----	
U. S. S. -----	-----	-----	----	-----	-----	-----	
U. S. S. -----	-----	-----	----	-----	-----	-----	
U. S. S. -----	-----	-----	----	-----	-----	-----	
U. S. S. -----	-----	-----	----	-----	-----	-----	
Total-----	-----	-----	----	-----	-----	-----	

Figure 37. Boat availability table.
(Text Key: Appendix II, par. 8.)

9. MASTER BOAT EMPLOYMENT PLAN. (Fig. 38). a. The master boat employment plan is prepared to meet landing requirements of individual assault battalions. This form is prepared by the transport division commander, or by the transport group commander if all boats of the transport group are to be pooled, in conjunction with the combat team or higher commander.

b. Numbers and types of boats required for assault battalions are stated by battalion landing team commanders in their requests to the combat team commander for boats, after the battalion embarkation plans are completed.

c. Column 5, Time in assembly area, is necessary to assure boats being available when needed for loading.

d. Column 6, Period attached, is required to assure a properly scheduled return of boats to assigned vessels. Small landing craft ordinarily are returned to those vessels after the initial trip. Larger craft may be needed for additional shuttle trips to land heavy vehicles.

e. At least one landing boat must be withheld on each ship for ship purposes.

f. Alternate boat plans should be prepared to cover late changes in landing plans.

g. The possibility of sudden failure in boats and equipment on individual ships and the consequent effect on the debarkation plan should be considered.

Master boat employment plan for RCT. 167th Inf.

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Number of boats	Type	From—	To—	Time in assembly area	Period attached	Remarks
20	LCVP	U. S. S. <i>Neville</i>	U. S. S. <i>Neville</i>	H—	—	—
20	LCVP	U. S. S. <i>Leadstown</i>	U. S. S. <i>Neville</i>	H—160	One trip	Return to Leadstown after one trip.
2	LCM	U. S. S. <i>Neville</i>	U. S. S. <i>Neville</i>	H—	—	—
2	LCM	U. S. S. <i>Leadstown</i>	U. S. S. <i>Neville</i>	H—160	One trip	Return to Electra after one trip.
4	LCM	U. S. S. <i>Electra</i>	U. S. S. <i>Neville</i>	H—160	Two trips	Return to Electra after two trips.
24	LCVP	U. S. S. <i>Windsor</i>	U. S. S. <i>Windsor</i>	H—	—	—
16	LCVP	U. S. S. <i>Custer</i>	U. S. S. <i>Windsor</i>	H—160	One trip	Return to Custer after one trip.
2	LCM	U. S. S. <i>Windsor</i>	U. S. S. <i>Windsor</i>	H—	—	—
2	LCM	U. S. S. <i>Custer</i>	U. S. S. <i>Windsor</i>	H—160	Two Trips	Return to Custer after two trips.
		U. S. S.	U. S. S.	—	—	—
		U. S. S.	U. S. S.	—	—	—

Figure 38. Master boat employment plan.

(Text key: Appendix II, par. 9.)

10. BOAT ASSIGNMENT TABLE (Fig. 39). a. The boat assignment table is a most important element of a field order by which, with the landing diagram, a battalion commander imposes his tactical plans insofar as the formation for attack and initial scheme of maneuver are concerned. Great care should be exercised in its preparation since it represents the primary control which the commander can exercise after debarkation begins and before reorganization of the battalion beyond the beach.

BOAT ASSIGNMENT TABLE

Boat No.	Type	Debark. station	Time	Personnel and material	Boat spaces			
					Pers.	Arms	A.M.	Spec.
11	LCVP	Blue-5-----	H-70	Boat Division No. 1, Company A: 1st Plat, 3d R Sqd. 2d Plat: Plat Hq----- Plat Ldr----- Plat Guide----- Msgr----- 3d R Sq----- Engineer platoon: Oper. Unit-Dml Man. Equipment and ammunition: Dml Equip.	12	-----	-----	-----
(1)					1	-----	-----	-----
					1	-----	-----	-----
					2	-----	-----	-----
					12	-----	-----	-----
					1	-----	-----	-----
					-----	-----	-----	1
				Total-----	29	-----	-----	1
12	LCVP	Blue-5-----	H-80	Company A: 2d Plat: Plat Hq----- Plat Sgt----- 1st R Sqd----- 2d R Sqd----- Engineer platoon: Oper. Unit: Unit Foreman----- Carpenter----- Equipment and ammunition: Dml Equip.	-----	-----	-----	-----
(1)					1	-----	-----	-----
					12	-----	-----	-----
					12	-----	-----	-----
					-----	-----	-----	-----
					1	-----	-----	-----
					2	-----	-----	-----
					-----	-----	-----	2
				Total-----	28	-----	-----	2
13	LCVP	Blue-5-----	H-90	Company A: 1st Plat: Plat Hq----- Plat Ldr----- Plat Sgt----- Plat Guide----- Msgrs----- 1st R Sqd----- 2d R Sqd----- Engineer platoon: Oper. Unit: Cpтр.	-----	-----	-----	-----
					1	-----	-----	-----
					1	-----	-----	-----
					1	-----	-----	-----
					2	-----	-----	-----
					12	-----	-----	-----
					12	-----	-----	-----
					1	-----	-----	-----
				Total-----	30	-----	-----	-----

¹ Demolition team—8 riflemen, 1 engineer.

NOTES.—The above assignment of men to boat teams is solely an example of the technique of preparation of the form. Composition of boat teams will vary when the mission and the enemy situation are known.

Figure 39 (1). Boat assignment table (loading alongside).

(Text key: Appendix II, par. 10.)

Boat No.	Type	Debark station	Time	Personnel and matériel	Boat spaces			
					Pers.	Arms	A.M.	Spec.
14	LCVP (21)	No. 3 Davit (Starboard amidships).	H-63	Boat Division No. 2, Company B: 1st Plat, 3d R Sqd. 2d Plat: Plat Hq. Plat Ldr. Plat Guide. Msgrs. 3d R Sqd. Engineer platoon: Oper. Unit— Mech. Equipment and ammunition: Dml Equip.	12	-----	-----	-----
(1)				Total	29	-----	-----	1
15	LCVP (17)	No. 3 Davit (Starboard amidships).	H-67	Company B: 1st Plat: Plat Hq. Plat Ldr. Plat Sgt. Plat Guide. Msgrs. 1st R Sqd. 2d R Sqd. Engineer platoon: Oper. Unit— Elec.	1 1 1 1 2 12 12 1	-----	-----	-----
				Total	30	-----	-----	-----
16	LCVP (7)	No. 3 Davit (Starboard amidships).	H-70	Company B: 2d Plat: Plat Hq. Plat Sgt. 1st R Sqd. 2d R Sqd. Engineer Platoon: Oper. Unit: Asst Unit. Foreman. Mech. Rigger. Jackhammer man. Total	1 1 12 12 1 1 1 1 1 1 1 30	-----	-----	-----

¹ Demolition team—8 riflemen, 1 engineer.

Figure 39 (2). Boat assignment table (rail loading).

(Text key: Appendix II, par. 10.)

(1) Column 1, Boat Team No., and column 2, Type (of boat), correspond to the landing diagram.

(2) Column 3, Debarkation Station, indicates the point at which each boat will come alongside the transport to receive its indicated load or the davit from which each boat team is rail-loaded.

(3) Column 4, Time, gives the expected time of calling the boat alongside. This is expressed as H-minus, or as actual time if H-hour is announced.

(4) Column 5, Personnel and Matériel, should be given in sufficient detail to enable a complete check to be made as each boat is loaded.

(5) Columns 5, 6, 7, and 8 give the boat spaces occupied in each boat by personnel, arms, ammunition, and special equipment.

(6) A copy of the boat assignment table must be furnished the transport quartermaster as soon as practicable for incorporation of the information in his debarkation records.

(7) This table forms the basis for the debarkation schedule of the transport, which indicates by type of boat the time boats are required at each debarkation station or rail loading commences.

b. In the sample boat assignment table shown, loading of three boats of the first wave is indicated for both methods of loading.

11. LANDING DIAGRAM. (Fig. 40). a. In preparing a landing diagram, the following points should be considered:

(1) The number of each particular formation should be entered in the space provided. Several alternate diagrams may be prepared.

(2) Each wave is numbered consecutively from front to rear beginning with number 1.

(3) H-hour is shown on the diagram as a guide for wave commanders.

(4) The interval between waves is expressed in times after H-hour. Distance between boats and lateral interval between formation is given in yards.

(5) Within each wave, boat divisions and individual boats are numbered in agreement with the boat assignment table.

(6) Boat teams and boat wave commanders should be intimate with all pertinent details of the landing diagram.

b. (1) Figure 40 (1) shows a boat group landing a BLT in landing boats.

(2) The first and second waves were subdivided into boat divisions in order to provide closer control of these assault formations and simultaneous landing of all boats.

(3) Formations suggested in the example are not necessarily standard, varying with circumstances.

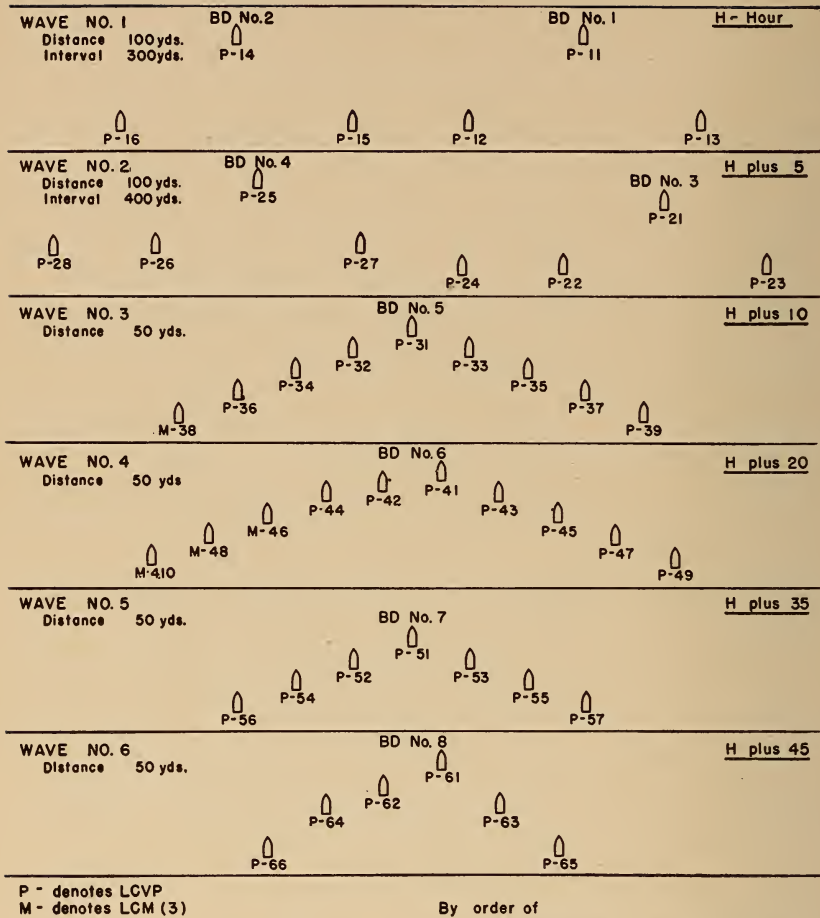


Figure 40 (1). Landing diagram for landing boats.
(Text key: Appendix II, par. 11.)

c. (1) Figure 40 (2) shows elements of a battalion landing team boated in LVTs.

(2) Troops usually are loaded on LVTs by one of the following methods:

(a) Men of the LVT boat teams and their LVTs are carried in a landing ship. At the proper time the boat teams load into the LVTs near the line of departure and the landing ship debarks the loaded LVTs in time to form waves and continue across the line of departure

in compliance with the landing diagram. This method is the best when practicable.

(b) The second method involves similar procedure except that the boat teams are not berthed in the landing ship, but transfer to the landing ship after arrival in the transport area. They then execute as in (a). This procedure may be advisable to obviate long voyages by LST.

(c) The LVTs to be landed may lie off in the vicinity of the line of departure and the transfer be made there of boat teams from landing craft to landing vehicles.

FORMATION NO 2

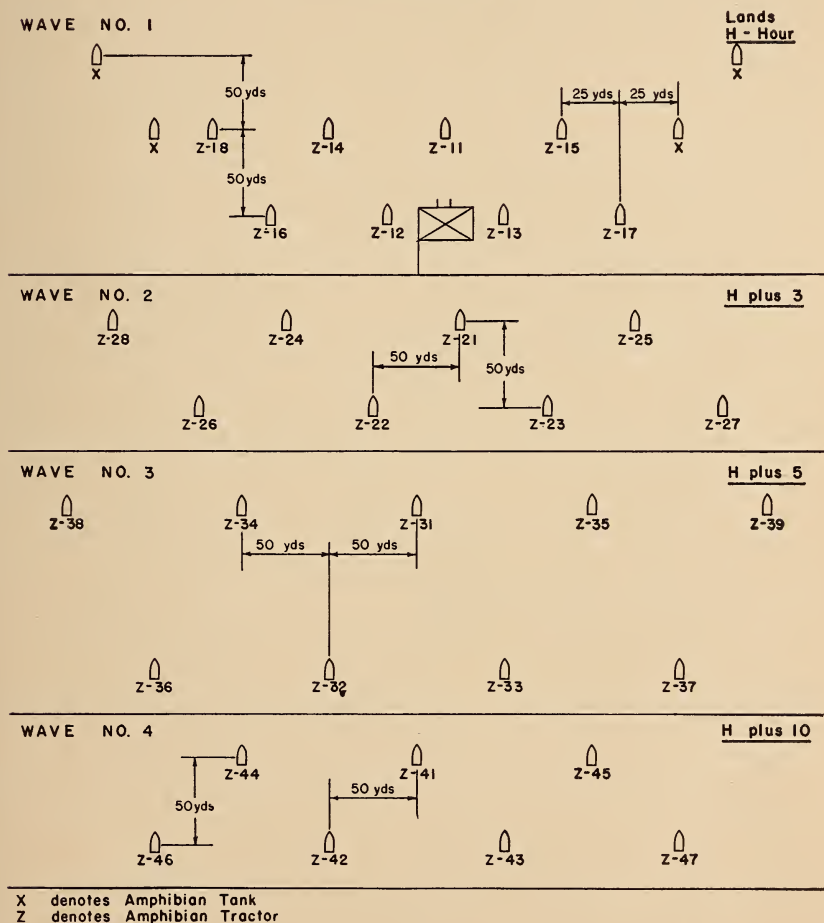


Figure 40 (2). Landing diagram for LVT. (Text key: Appendix II, par. 11.)

12. DEBARKATION SCHEDULE (Fig. 41). a. This schedule provides for the debarkation of boat teams included in figure 40.

b. In this illustration, debarkation was scheduled from one side of the ship only. Whether or not both sides of the ship will be used simultaneously will depend primarily on conditions of the seaway.

c. Note that:

- (1) All boats are to be loaded alongside.
- (2) Initial assault waves are loaded late to reduce their time afloat.

Annex 5 to F. O. 31, Blt 2 (2d Bn, 167th Inf), APA 9 U. S. S. Neville
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DEBARKATION SCHEDULE

Type boat	Boat team	Report debar- kation station at—*	Type boat	Boat team	Report debar- kation station at—*
STATION RED—1			STATION YELLOW—7		
P-----	31	H-70	P-----	14	H-70
P-----	32	H-80	P-----	15	H-80
P-----	37	H-90	P-----	16	H-90
P-----	51	H-100	P-----	25	H-100
P-----	53	H-110	P-----	26	H-110
P-----	55	H-120	P-----	27	H-120
P-----	57	H-130	P-----	28	H-130
STATION WHITE—3			STATION GREEN—9		
M-----	38	H-70	P-----	33	H-70
M-----	39	H-85	P-----	34	H-80
M-----	46	H-100	P-----	35	H-90
M-----	48	H-115	P-----	36	H-100
M-----	410	H-130	P-----	41	H-70
M-----	56	H-145	P-----	42	H-80
STATION BLUE—5			P-----	43	H-90
P-----	11	H-70	P-----	44	H-100
P-----	12	H-80	P-----	45	H-110
P-----	13	H-90	P-----	47	H-120
P-----	21	H-100	P-----	49	H-130
P-----	22	H-110			
P-----	23	H-120			
P-----	24	H-130			

NOTES.—* Actual time will be indicated when H-hour is known.

P denotes LCVP. M denotes LCM (3). If rail loading was practiced, rail-loaded boats would appear as follows:

STATION NO. 3 DAVIT

Ship No. of boat	Boat team	Position	Time
21	14	Starboard amidships-----	H-64
17	15	Starboard amidships-----	H-67
7	16	Starboard amidships-----	H-70

Figure 41. Debarkation schedule

(Text Key: Appendix II, par. 12.)

13. APPROACH SCHEDULE (fig. 42). The date given in the example of an approach schedule are based on an assumed time requirement of 45 minutes from the rendezvous area to the line of departure, and 10 minutes from the line of departure to shore. These times will vary with circumstances in practice.

APPROACH SCHEDULE

Wave	Leave rendezvous area ¹	Leave line of departure ¹	Land
1	H—55-----	H—10-----	H.
2	H—50-----	H—5-----	H plus 5.
3	H—45-----	H-----	H plus 10.
4	H—35-----	H plus 10-----	H plus 20.
5	H—20-----	H plus 25-----	H plus 35.
6	H—10-----	H plus 35-----	H plus 45.

Course from Rendezvous Area to Line of Departure 097° T. 094° Mag.

Course from Line of Departure to Beach 053° Mag.

Boat Group Commander—Lt. B., USN.

Asst Boat Group Commander—Lt. (jg) A., USN.

¹ Actual time will be indicated when H-hour is known.

Figure 42. Approach schedule.

(Text Key: Appendix II, par. 13)

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