MCWP 3-31

SHIP-TO-OBJECTIVE MANEUVER (STOM)

U.S. Marine Corps

Coordinating Draft

Foreword

PURPOSE

Marine Corps Warfighting Publication (MCWP) 3-31, *Ship To Objective Maneuver* (STOM), is a unique publication that transitions current amphibious doctrine into the future. With the recent publication of the Marine Corps' capstone concept, *Expeditionary Maneuver Warfare*, there exists a need for definitive doctrine related to the tactics, techniques, and procedures (TTP) of STOM.

SCOPE

STOM is the rapid employment of a Marine Air Ground Task Force (MAGTF) by air and surface means from amphibious shipping or a sea-base to objectives in the littorals and beyond. This affords vastly increased force protection, operational mobility, and tactical flexibility, in addition to the opportunity to achieve speed and surprise not possible in past expeditionary operations. No existing publications provide reference information on STOM. MCWP 3-31 is intended as a field reference for MAGTF commanders and their staffs in planning and executing STOM operations. The publication can generally be adapted to all types of MAGTF operations, depending on the tactical situation. It is for use in training, study, and research/development of emerging equipment to facilitate expeditionary warfare.

SUPERSESSION

None.

CERTIFICATION

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

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Chapter 1. Introduction

EXPEDITIONARY MANEUVER WARFARE

Expeditionary maneuver warfare (EMW) is the Marine Corps capstone concept. It prepares the Marine Corps as a "total force in readiness" to meet the challenges and opportunities of a rapidly changing world. EMW focuses our core competencies, evolving capabilities, and innovative concepts to ensure that the Marine Corps provides the joint force commander with forces optimized for forward presence, engagement, crisis response, and warfighting. EMW serves as the basis for influencing the Joint Concept Development and Experimentation Process and the Marine Corps Expeditionary Force Development System (EFDS). It further refines the broad "axis of advance" identified in *Marine Corps Strategy 21* for future capability enhancements. In doing so, EMW focuses on—

- Joint/multinational enabling. Marine forces are ready to serve as the lead elements of a joint force, act as joint enablers and/or serve as joint task force or functional component commanders (joint force land component commander [JFLCC], joint force maritime component commander [JFMCC] or joint force air component commander [JFACC]).
- Strategic agility (rapidly and fluidly transitioning from pre-crisis state to full operational capability in a distant theater [requires uniformly ready forces, sustainable and easily reorganized for multiple missions or functions]). They must be agile, lethal, swift in deployment, and always prepared to move directly to the scene of an emergency or conflict.
- Operational reach (projecting and sustaining relevant and effective power across the depth of the battlespace).
- Tactical flexibility (operating with tempo and speed and bringing multi-role flexibility [air, land, and sea] to the joint team).
- Support and sustainment (providing focused logistics to enable power projection independent of host-nation support and against distant objectives across the breadth and depth of a theater of operations).

These capabilities enhance the joint force's ability to reassure and encourage our friends and allies while we deter, mitigate or resolve crises through speed, stealth, and precision. EMW focuses our warfighting concepts toward realizing the Marine Corps Strategy 21 vision of future Marine forces with enhanced expeditionary power projection capabilities. It links Marine Corps concepts and vision for integration with emerging joint concepts. As our capstone concept, EMW will guide the process of change to ensure that Marine forces remain ready, relevant, and fully capable of supporting future joint operations.

OPERATIONAL MANEUVER FROM THE SEA

Operational Maneuver From the Sea (OMFTS) applies across the range of military operations, from major theater war to smaller-scale contingencies. OMFTS applies maneuver warfare to expeditionary power projection in naval operations as part of a joint or multinational campaign. OMFTS allows the force to exploit the sea as maneuver space while applying combat power ashore to achieve the operational objectives. It reflects the Marine Corps' EMW concept in the context of amphibious operations from a sea base, as it enables the force to—

- Shatter the enemy's cohesion.

- Pose menacing dilemmas.
- Apply disruptive firepower.
- Establish superior tempo.
- Focus efforts to maximize effect.
- Exploit opportunity.
- Strike unexpectedly.

The force focuses on an operational objective, using the sea as maneuver space to generate overwhelming tempo and momentum against enemy critical vulnerabilities. OMFTS provides increased operational flexibility through enhanced capabilities for sea-based logistics, fires, and command and control (C2). Sea-basing facilitates maneuver warfare by eliminating the requirement for an operational pause as the landing force (LF) builds combat power ashore and by freeing the MAGTF from the constraints of a traditional beachhead. OMFTS is based on six principles.

Focus on the Operational Objective

The operation must be viewed as a continuous event from the port of embarkation to the operational objective ashore. Everything the force does must be focused on achieving the objective of the operation and accomplishing of the mission. Intermediate objectives or establishing lodgments ashore assume less importance in OMFTS as the force is centered on decisive maneuver to seize the force objective.

Use the Sea as Maneuver Space

Naval forces use the sea to their advantage, using the sea as an avenue of approach and as a barrier to the threat's movement. This allows the force to strike unexpectedly anywhere in the littorals and to use deception to mislead the enemy as to actual point of attack.

Generate Overwhelming Tempo and Momentum

The objective of maneuver warfare is to create a tempo greater than that of the enemy. The tempo generated through maneuver from the sea provides the commander freedom of action while limiting the enemy's freedom of action.

Pit Friendly Strength Against Enemy Weakness

The commander identifies and attacks critical vulnerabilities where the enemy is weak, rather than attacking his center of gravity when it is strong.

Emphasize Intelligence, Deception, and Flexibility

Deception enhances force protection while reconnaissance and intelligence are essential in identifying fleeting opportunities.

Integrate all Organic, Joint, and Combined Assets

To realize the maximum effectiveness, the commander must ensure the coordinated use of all available forces and capabilities.

When operating as part of a naval expeditionary force, Marine Expeditionary Forces (MEFs) will normally focus on conducting operations using OMFTS. The Marine commander, in concert with his

Navy counterpart and higher-level direction, will orchestrate the employment of amphibious forces (AFs), maritime prepositioning forces (MPFs), and Marine forces operating from land bases to shape events and create favorable conditions for future combat actions. The amphibious forces will normally execute tactical-level maneuver from the sea to achieve decisive action in battle. For the action to be decisive, the battle must lead to the achievement of the operational objectives.

MILITARY OPERATIONS OTHER THAN WAR

In contrast to large-scale sustained combat operations, military operations other than war (MOOTW) focuses on deterring war, resolving conflict, promoting peace, and supporting civil authorities in response to domestic crises. The Marine Corps has a long history of successful participation in MOOTW, from restoring order and nation building in Haiti and Nicaragua from 1900 to the 1930s, to guarding the United States mail in the 1920s. Capturing lessons learned from years of experience in such operations, the Marine Corps published a *Small Wars Manual* in 1940. This seminal reference publication continues to be relevant to Marines today as they face complex and sensitive situations in a variety of operations.

The national security strategy calls for engagement with other nations and a rapid response to political crises and natural disasters to help shape the security environment throughout the world. While this engagement or response may take the form of financial or political assistance, the use of United States military forces is always an option for the Secretary of Defense. Combatant commanders often rely on responsive, forward-deployed MAGTFs, such as the marine Expeditionary Unit (Special Operations Capable) [MEU(SOC)], to promote and protect national interests within their area of responsibility. These capable forces, task-organized to meet a variety of contingencies, are usually the first forces to reach the scene and are often the precursor to larger Marine and joint forces.

The Marine Corps' approach to MOOTW builds on joint doctrine to better address the expeditionary nature of these types of military operations. It links Marine Corps capabilities with the collective, coordinated use of both traditional and nontraditional elements of national power into a cohesive foreign policy tool, and focuses on the ability to be expeditionary through forward-deployed naval forces. The Marine Corps' role is to provide the means for an immediate response while serving as the foundation for follow-on forces or resources. Forward-deployed Marine air-ground task forces (MAGTFs), with their inherent range of capabilities, are well-positioned to conduct the wide range of missions and coordination with coalition, nongovernmental organizations (NGOs), and other agencies essential to success in a MOOTW environment. Through information operations (IO), including information sharing and maintaining a wide range of contacts with our allies, Marines promote trust and confidence and increase the security of our allies and coalition partners. Regional engagement enhances force protection and provides an understanding of the role and preparedness of the MAGTF to respond to crises.

MOOTW may involve elements of both combat and noncombat operations in peacetime, conflict, and war. Those smaller-scale contingencies involving combat—such as peace enforcement in Haiti in 1995, Operation Urgent Fury in Grenada (1983), Operation El Dorado Canyon in Libya (1986), and Operation Just Cause in Panama (1989)—may have many of the same characteristics as war, including offensive and defensive combat operations and employment of the full combat power of the MAGTF. Noncombat operations do not involve the use or threat of force and can help keep the tensions between nations below the threshold of armed conflict or war. In MOOTW, political and cultural considerations permeate planning and execution of operations at all levels of command. As in war, the goal of MOOTW is to achieve national objectives as quickly as possible.

MAGTFs conducting MOOTW are often in a support role to other governmental agencies and the United Nations. However, in certain types of MOOTW, the military may have the lead, as in small wars like Operation Urgent Fury and Operation Just Cause. MOOTW usually involve coordination with non-Department of Defense (DOD) agencies and NGOs. Although normally conducted outside of the United States, MOOTW may be conducted within the United States in support of civil authorities, as demonstrated when Marines assisted civil authorities in restoring order in Los Angeles following the 1992 riots.

SUSTAINED OPERATIONS ASHORE

The Marine Corps also has the capability to operate independent of the sea to support sustained land operations ashore with the Army or coalition partners. The Marine Corps conducts sustained operations ashore to provide the joint force commander four options when fighting a land operation: enabling force, decisive force, exploitation forces, and sustaining force.

Enabling Force

The enabling force sets the stage for follow-on operations by other joint force components. The amphibious landing and subsequent operations ashore against the Japanese on Guadalcanal in 1942 set the stage for the arrival of Army forces to complete the seizure of the island in 1943. These enabling actions are not limited to the opening phases of the campaign, such as establishing a lodgment, but may be conducted to divert attention from the main effort. An example of this would be the role of I MEF in Operation Desert Storm (1991) in fixing the Iraqi forces in Kuwait while allowing Central Command's main effort, U.S. Army VII Corps, to maneuver to envelop the enemy.

Decisive Force

The decisive force exploits its advanced C2 system to identify gaps necessary to conduct decisive operations and reduce enemy centers of gravity (COGs). Decisive actions run the gamut from destruction of enemy military units to interdiction of critical lines of communications (LOCs) to the evacuation of American and developing country nationals from untenable urban areas. An example of such a decisive action is the landing at Inchon in 1950 that severed the North Korean lines of communications and forced their withdrawal from South Korea.

Exploitation Force

The exploitation force takes advantage of opportunities created by the activity of other joint force components. The joint force commander may exploit these opportunities through rapid and focused sea-based operations by the MAGTF that capitalize on the results of ongoing engagements to achieve decisive results. The 24th MEU served in this role during operations to seize Grenada and safeguard American citizens in 1983. While Army forces fixed the Cuban and Grenadian forces at one end of the island, the Marines landed at will and maneuvered freely around the island, accomplishing the joint force commander's objectives.

Sustaining Force

The sustaining force maintains a presence ashore over an extended period of time to support continued operations by the joint force commander (JFC) within the joint area of operations (AO). This option also provides logistical sustainment to joint and coalition forces until theater level sustainment is established. I MEF fulfilled this role in the early days of Operation Desert Shield (1990) in Saudi Arabia and

Operation Restore Hope (1992–93) in Somalia by providing sustainment to joint and Army forces until arrangements for theater support were complete.

SHIP-TO-OBJECTIVE MANEUVER

STOM is the tactical implementation of OMFTS by the MAGTF to achieve the JFC's operational objectives. It is the application of maneuver warfare to amphibious operations at the tactical level of war. STOM treats the sea as maneuver space, using the sea as both a protective barrier and an unrestricted avenue of approach. While the aim of ship-to-shore movement was to secure a beachhead, STOM thrusts Marine Corps forces ashore at multiple points to concentrate at the decisive place and time in sufficient strength to enable success. This creates multiple dilemmas too numerous for the enemy commander to respond, disrupts his cohesiveness, and diminishes his will or capacity to resist. This concept focuses the force on the operational objective, providing increased flexibility to strike the enemy's critical vulnerabilities. Sea-basing of some of the fire support and much of the logistics support reduces the footprint of forces ashore while maintaining the tempo of operations. Emerging C2 capabilities will allow commanders to control the maneuver of their units the moment they cross the line of departure at sea, to include changing the axis of advance or points where they cross the beach during the assault.

Chapter 2. Ship-To-Objective Maneuver

CONCEPT

In STOM, rather than an amphibious assault to establish a force on a hostile or potentially hostile shore, an *amphibious attack* may occur. An amphibious attack may be defined as an attack launched from the sea by amphibious forces directly against an enemy operational or tactical center of gravity or critical vulnerability.

The amphibious assault through the objective embodies the essence of maneuver warfare. It projects a modern combined-arms force by air and surface means toward inland objectives. The assault now takes advantage of modern mobility systems and integrated command, control, communications, computers, and intelligence (C4I) systems to maneuver combat forces in their tactical array from the moment they depart the ships. This eliminates the need for time-consuming and momentum-destroying pauses and reorganizations typical of earlier amphibious operations. Maneuver from the sea describes the seamless maneuver of combat units from the sea inland to seize and secure objectives.

In the past, we were forced to seize a lodgment ashore that was large enough to offload craft and shipping, assemble forces, and establish a logistical base to build sufficient combat power to advance inland. (See Figure 2-1.) The goal of future amphibious doctrine is to replace the technology-restricted ship-to-shore movement of first- and second-generation amphibious warfare with true amphibious maneuver.

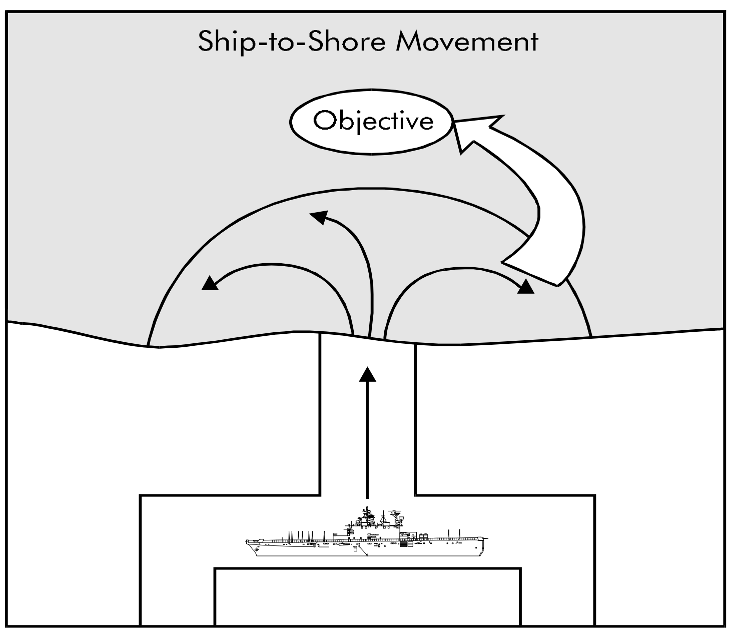


Figure 2-1. Legacy Amphibious Doctrine

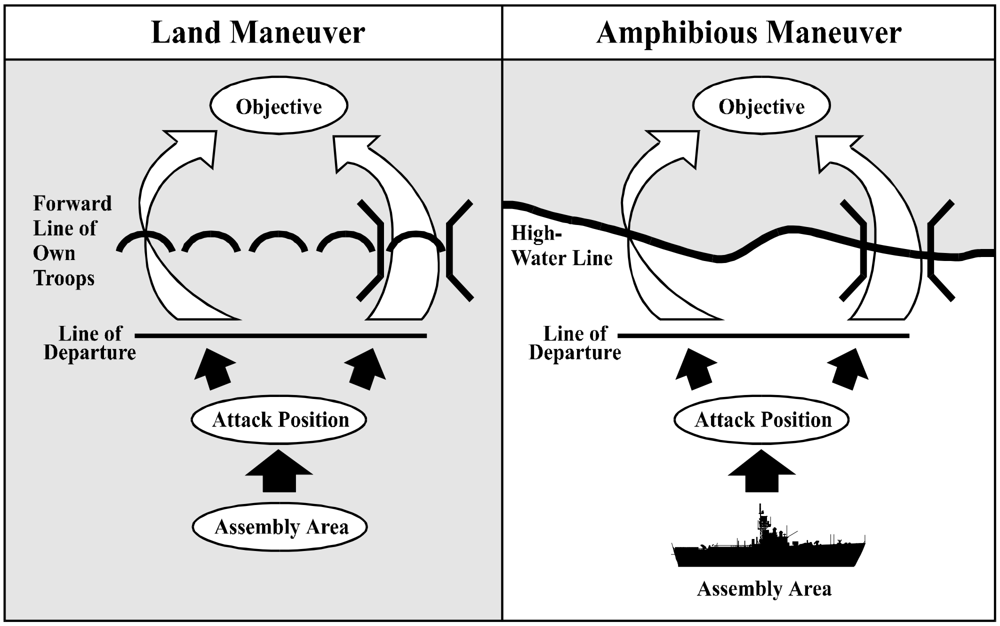


Figure 2-2. STOM

When assault landings are executed, bold and innovative concepts of employment and exploitation of advanced technology will permit unceasing maneuver through and across the air, land, and water of the littoral battlespace. The tactics of modern combined-arms maneuver from over the horizon (OTH) assembly areas will be applied directly to inland objectives. (See Figure 2-2.)

The amphibious assault is not aimed at seizing a beach, but rather at thrusting combat units ashore in their fighting formations at a decisive place and time and in sufficient strength to achieve their missions. The amphibious assault will avoid the laborious buildup of a force beachhead as a base for further operations. AFs with LFs attacking through some combination of littoral penetration areas (LPAs), littoral penetration zones (LPZs), littoral penetration sites (LPSs), and littoral penetration points (LPPs) will directly engage enemy units only as necessary to achieve the freedom of action to accomplish more significant objectives.

During the assault phase of the operation, tactical commanders will maneuver to take advantage of opportunities as they develop, rather than execute a rigid plan of shuttling to and from the beach. Responding to their own observation of the battlespace and assisted by cues from intelligence and higher commands, unit commanders will direct their surface and vertical assaults into landing zones (LZs) and along axes of advance that are most likely to produce decisive advantages. The execution of amphibious operations will not come from a single fixed procedure, but will vary depending on the mission, threat, friendly capability, and characteristics of the AO.

By exploiting the expanded battlespace and using highly mobile tactics, landing force commanders will use varied routes and axes while moving between ships and objectives. The enemy will no longer know the landing sites and objectives merely by spotting the amphibious ships. The ships may even act as part of the deception while LFs are penetrating a littoral region miles away.

Future equipment and methods provide the opportunity to achieve tactical as well as operational surprise; this introduces a new benchmark because tactical surprise was rarely possible in earlier generations of amphibious warfare. The speed and flexibility of our maneuver will rob the enemy of warning and reaction time. Our operations will begin from OTH and will project power deeper inland than in the past.

By requiring the enemy to defend in multiple places over a wide area, his ability to mass his forces against our attack is limited, rendering those forces not located in the vicinity of our objective ineffective as they do not have mobility to respond in a timely manner. Those that can respond, such as a strong mobile reserve, are simultaneously attacked with aviation and long range fires. If the enemy chooses to withhold a strong mobile reserve, we will attack it with aviation and long-range fires. His thinly spread defenses will allow us greater freedom of maneuver at sea and ashore. Our battlespace preparation and shaping operations will confuse and deceive the enemy, locate and attack his forces, and further limit his ability to react. We will take advantage of the night and our ability to control the electromagnetic spectrum.

During the maneuver of assault units by air and surface means, the LF must provide support, sustainment, and reinforcement as required. These efforts must continue through accomplishment of the mission and either the termination of the operation or campaign or the reembarkation of the landing force. This support effort demands detailed planning and coordination among the landing force and supporting naval forces. The amphibious task force (ATF) and battle forces will continue to provide postassault support to the LF.

The unrelenting maneuver toward the objective and the focus of amphibious operations on seabased command, logistics, and a significant proportion of fires will demand special attention from commanders to avoid a culminating moment before the collapse of enemy resistance. The ability of the task force commanders on the ground to continue their maneuvers will depend on the physical and material condition of their forces and the availability of supporting arms sufficient for the anticipated operations. The interruption of crucial support and the culmination of the LF’s combat power short of the objectives can give the enemy a welcome respite and an opportunity to redress the balance and counter the blows received.

New coordination measures will be used to orient maneuver forces in the expanded battlespace of maneuver from the sea. Identification of LPAs, LPZs, LPSs, and LPPs, depicted in Figure 2-3, becomes necessary to facilitate coordination of the envisioned wider range of maneuver.

Littoral Penetration Area

The LPA is a geographic area, designated by the commander delegated overall responsibility for the operation in conjunction with the supported/supporting commanders through which naval expeditionary forces conduct littoral penetration operations. This area must be of sufficient size to permit unrestricted conduct of sea, air, and land operations. Normally, one LPA will be associated with each possible objective area and included within the joint operations area (JOA).

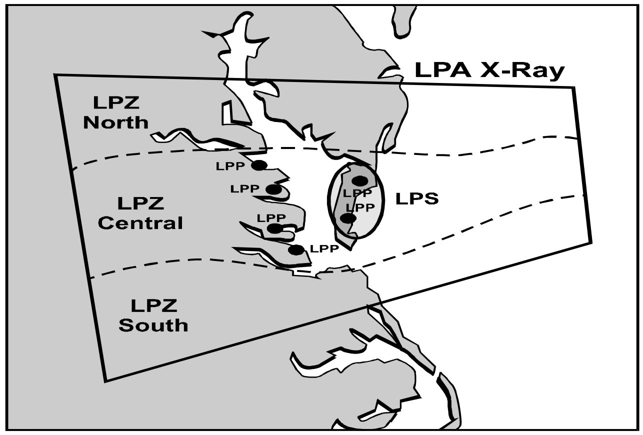


Figure 2-3. STOM Coordination Measures

Littoral Penetration Zone

LPAs can be subdivided into smaller geographical zones to enhance C2 or facilitate coordination of maneuver and fires. Each LPZ can contain several alternative axes for use by vertical or surface assault forces. For planning purposes, the size of the LPZ should be sufficient to support the maneuver of a sub-element of the maneuver forces. Typically, the size of the LPZ should be sufficient to support the maneuver of a regimental landing team (RLT).

Littoral Penetration Site

The LPS is a continuous area of littoral within the LPZ, through which LFs penetrate by surface means. An LPS will encompass the necessary sea space for maneuver (to include the surf zone) and the land space to the beach exits to support the transition to land maneuver. For planning purposes, the LPS should be of sufficient size to support a battalion landing team (BLT). An LPS will contain all the penetration point options for a single maneuver unit.

Littoral Penetration Point.

An LPP is located where the actual transition from waterborne to landborne movement occurs. For planning purposes, an LPP will be designed to support a mounted infantry company team or detachment. An LPP need only be large enough to support the passage of a single craft or assault amphibian, but it may be used by a maneuver element passing in column. When the terrain and situation allow, the maneuver element may cross the LPP in its tactical formation.

Assembly Area

The assembly area covers the amphibious ships and a designated portion of the surrounding sea space where amphibious vehicles and landing craft form into units prior to movement toward the line of departure (LOD).

Attack Position

The attack position covers the sea space immediately seaward of the LOD, where amphibious vehicles and landing craft may loiter prior to H-hour, if necessary.

Line of Departure

In ground operations, the LOD is located beyond the visible horizon at sea.

H-Hour

H-hour is the specific hour on D-day when a particular operation commences. In STOM, the lead elements of the LF cross the LOD at H-hour.

Lane

A lane is a corridor designated through the seaspace, whose width will vary depending on the size of the force and the situation, along which surface forces advance during the seaward portion of STOM.

Release Point

A release point is that point along the LOD at which a track begins.

Decision Point

A decision point is that point at the intersection of two or more tracks.

PRINCIPLES

Focuses on the Operational Objective

STOM creates increased flexibility for amphibious force commanders to strike at enemy COGs. No longer tied to phased operations and cumbersome development of suitable beachhead options, the LF is free to concentrate on rendering the enemy ineffective.

Treats the Sea as Maneuver Space

For the force that controls it, the sea provides unparalleled mobility. Turning the enemy's vulnerable flank, the LF thrusts combat units by air and surface means deep into his defensive array. Such maneuvers unhinge the enemy position to make his dispositions increasingly vulnerable and, finally, untenable.

Creates Overwhelming Tempo and Momentum

Air and surface units maneuver from ships to inland positions and apply decisive force faster than the enemy can effectively react. The LF maintains the initiative and operates at a relentless pace that allows us to dictate the tactics and weapons to be used. An important element is operational surprise, which delays enemy recognition and disrupts his response through a combination of secrecy, deception, ambiguity, electronic warfare (EW), lethal attack, and tactical successes. Complementary actions that fix, confuse or neutralize the enemy support the rapid and uninterrupted thrust of combat power at decisive points ashore. Maneuver of forces and fires must be closely integrated, swift, and violent. The enemy must continually face dilemmas and a tempo of operations that deny him control of the battle. In this way, we retain the initiative and keep the enemy off balance and reactive.

Applies Strength Against Weakness

STOM projects combat power through gaps *located* or *created* in the adversary's defenses. These gaps are not necessarily geographical; they may be exploitable weaknesses, such as a limited capability in night fighting, poor C2, lack of endurance or low morale. Although the LF will attempt to bypass the enemy's defensive strength, it may be necessary to neutralize or destroy critical positions in the defensive array to cause a more rapid disintegration of the enemy force.

Emphasizes Intelligence, Deception, and Flexibility

STOM emphasizes intelligence, deception, and flexibility to drive planning, option selection, and execution of maneuver. To fully exploit the benefits of intelligence, we need timely collection and analysis, rapid dissemination of usable shared information, and tactical flexibility. OMFTS exploits preassault operations to deceive the enemy, determine his dispositions, attack his critical vulnerabilities, and initiate action to gain battlespace dominance. We execute these operations *specifically to find or create exploitable gaps.* The inherent flexibility of STOM will allow the LF to capitalize on identifying these gaps.

Integrates All Elements in Accomplishing the Mission

Whether operating in a joint or multinational environment, the amphibious force (AF) will employ STOM to maximize the effectiveness of the force.

AMPHIBIOUS DOCTRINE AND STOM

Amphibious Operation Phases

While planning occurs throughout the entire operation, it is normally dominant prior to embarkation. Successive phases bear the title of the dominant activity that takes place within the phase.

When amphibious forces are forward deployed, or when subsequent tasks are assigned, the sequence of phases may differ. **Generally, forward-deployed amphibious forces use the sequence "embarkation," "planning," "rehearsal" (to include potential reconfiguration of embarked forces), "movement to the operational area," and "action."** However, significant planning is conducted prior to embarkation to anticipate the most likely missions and to load assigned shipping accordingly. The same sequence is useful for subsequent tasks or follow-on amphibious missions.

The five phases of an amphibious operation are always required, but the sequence in which they occur may be changed as circumstances dictate. For more information on phases, see JP 3-02, *Insert Title.*

Supporting, Advance Force, and Pre-assault Operations

Prior to the execution of the decisive action phase of an amphibious operation, amphibious force commanders may seek to shape their battlespace through three complementary operations. Although these operations are usually referred to in the context of an amphibious assault or raid, they may be used to shape the battlespace for a noncombatant evacuation operation (NEO) or humanitarian operation. All three are applicable for a STOM operation. The exact manner in which these operations are conducted will depend on the type of amphibious operation. **The force and the time period in which these operations are conducted typically define the operation.** These shaping operations usually occur sequentially, but may in some instances occur simultaneously. These operations are, in order of occurrence: supporting amphibious, advance force, and pre-assault.

Supporting Amphibious Operations

Supporting amphibious operations are conducted by forces other than the amphibious force in support of the amphibious operation. They are ordered by a higher authority, normally based on a request from the amphibious force commanders, and may set the conditions for the advance force to move into the operational area.

Advance Force Operations

Advance force operations are conducted in the operational area by a task-organized element of the amphibious force, prior to the arrival of the amphibious force in the operational area.

Pre-assault Operations

Pre-assault operations are conducted by the amphibious force upon its arrival in the operational area and prior to the time of the assault or decisive action, normally delineated by H- and L-hour. See JP 3-02 for more information.

Amphibious Operations Types

Amphibious Assault

An amphibious assault is the establishment of an LF on a hostile or potentially hostile shore.

Amphibious Withdrawal

Amphibious withdrawal is the extraction of forces by sea in ships or craft from a hostile or potentially hostile shore.

Amphibious Demonstration

An amphibious demonstration is a show of force conducted to deceive with the expectation of deluding the enemy into a course of action (COA) unfavorable to it.

Amphibious Raid

An amphibious raid is a swift incursion into—or a temporary occupation of—an objective, followed by a planned withdrawal.

Other Amphibious Operations

The capabilities of AFs may be especially suited to conduct other types of operations, such as NEOs and foreign humanitarian assistance. For more information see JP 3-02.

TACTICAL CONSIDERATIONS

LFs will attack through LPPs that best support accomplishment of the operational mission. Often, the best option will not be the shortest route, but will be the route that takes advantage of gaps in enemy defenses. Some situations will require the creation of a gap by the destruction of enemy forces.

Whenever possible, LFs will seize vital areas by defeating enemy forces in open terrain outside of these areas. Often, the initial penetration points will fall outside of the area that we intend to control. These points may bring initial tactical advantage but will not be occupied for any significant period of time.

LFs will use maneuver to place enemy forces in a dilemma. If our maneuver causes the enemy to mass, we can attack him with accurate and high-volume fires.

LFs will penetrate by air and surface means with self-contained, combined-arms units that will continue inland, without significant tactical pause, toward assigned objectives. There will be no waiting ashore at beaches or LZs for the arrival of subsequent waves. Such tactics would sacrifice tempo to the enemy and risk exposure to his fires and maneuver. The inland maneuver of the advanced amphibious assault vehicle (AAAV)-mounted infantry and combat engineers will provide security for the landing craft air cushion (LCAC) arrival and offloading of the remaining elements of the task forces.

LF maneuver will begin at the LOD at sea. The shift of control of the assault from commander, ATF (CATF), to commander, landing force (CLF), will normally occur at the LOD. Maneuver unit commanders will conduct and direct maneuver between the LOD and the assigned objectives.

From the moment they cross the LOD at sea, these separate maneuver unit commanders will possess tactical flexibility equal to that expected in ground combat.

During the initial stages of the assault, C2, logistics, and fire support must be capable of accompanying the maneuvering units of the LF, remaining seabased, or some combination of the two. A force beachhead to support these functions may not be established. The aim is to eliminate or reduce fixed and vulnerable activities and LOCs ashore.

Assault elements will depart their ships knowing the plan being used and will proceed from these assembly areas at high speed, through their attack positions and across the line of departure.

Movement parallel to the shore may occur at any point between leaving the ships and crossing the high-water mark.

As in combat ashore, the unit commanders normally order their units into appropriate tactical formations at any point after reaching the attack position. As they cross the LOD, they may give other tactical directions at decision points (DPs) along the direction of movement. Senior and subordinate commanders and support agencies must share a common operational picture of the battlespace and have the ability to adjust plans and rapidly transition to a branch plan and sequel based on the changing threat situation and the results of reconnaissance efforts.

LF options are planned and executed so that commanders can respond to up-to-date information and cross the beach at the most advantageous points. These points would normally be chosen on the basis of vulnerability, but sometimes operational considerations may require a deliberate assault against a defended position.

Task force commanders of the surface and vertical assaults will direct the movements, formations, and tactical order of movement of their mounted units.

In future amphibious operations, the distinction between advance force operations and the assault will fade. However, in the near term, amphibious operations will normally execute of shaping, advance force and pre-assault operations. Amphibious operations have always relied on successful preparation of the battlespace. A dedicated advance force that preceded the main body of the AF conducted preassault operations, such as deception, mine clearing, fire support, and destruction of obstacles in the objective area. Although such tasks remain critical to the success of operations, in the future it may no longer be desirable to establish a separate advance force to perform them. Reconciling the contradictory requirements of battlespace preparation and surprise requires a change in our concept of advance force operations. The benefits of surprise are so important that, with the exception of deception, functions that cannot be executed by covert means must be performed “in stride” by the assault units. Thus, future operations will emphasize clandestine and covert efforts to determine enemy strengths and weaknesses by locating and identifying mines, obstacles, fire support units, critical command and control nodes, and key enemy forces. Breaching, preparatory fires, and obstacle clearing—traditionally preassault tasks—will become integral parts of the assault phase of the amphibious landing.

As the phasing of the assault changes, so does the organization of the LF. The distribution of the LF in a special ship-to-shore movement organization, divided among the five traditional movement categories of scheduled waves—on-call waves, prepositioned emergency supplies, remaining landing force supplies, and nonscheduled units—disappears in future amphibious operations. By task-organizing landing units into combined-arms teams, requirements for on-call waves are reduced. Subsequent sorties of landing craft and vertical/short takeoff and landing (V/STOL) aircraft are planned with the intent of delivering follow-on and supporting units directly to the objective. Seabasing ships, rather than landing craft, will serve as the floating dumps.

TYPICAL EXECUTION OF LANDING OPERATIONS: A HYPOTHETICAL EXAMPLE

Maneuver from ship to objective begins with reconnaissance to reveal surfaces and gaps in the enemy defensive array. Detailed planning is conducted to exploit the gaps. Commanders conduct battlefield shaping, deception, and special operations as required.

The LF establishes no force beachhead; therefore, the objectives and schemes of maneuver depend on the overall objective of the amphibious operation. A concept of operations is developed that specifies LPPs, vertical assault ingress and egress routes, ground axes of advance, and other coordination measures as required. The surface and vertical assault forces are task- organized based on estimates of the mission, enemy, terrain and weather, troops and support available-time available(METT-T).

Maneuver of the surface and vertical assault forces. (See Figures 2-4 and 2-5.)

The surface assault task forces, organized in combined-arms teams or task forces, will depart the ship. After leaving their attack positions and crossing the LOD, maneuver forces attack along axes of advance or conduct tactical movement within assigned lanes. As the shoreline appears, the lead AAAVs carrying infantry and engineers move into tactical formations corresponding to their land tactical array. Surf zone/beach zone mine countermeasures systems clear lanes through mine and obstacle belts required to support the scheme of maneuver. The AAAVs go off plane and approach the beach hull down at a temporary slow speed. Fire support agencies respond to call for fire as the lead AAAVs pass through the cleared lanes. Touching down on the beach, they resume rapid movement on tracks, spreading out into formations suited to the terrain and enemy situation, continuing on assigned axes inland. Close behind are the accompanying landing craft air cushion (LCAC) groups, landing the tanks, light armored vehicles (LAVs), and other vehicles of the various battalion task forces of the surface assault. These units fall into the battalion formations as directed by their commanders and continue maneuvering along their respective axes of advance toward assigned objectives.

Farther inland, the vertical assault task forces (MV-22s carrying infantry, engineers, and tactical vehicles, with weapon and command vehicles slung beneath some aircraft) touch down in their LZs. Remaining heavy vehicles and weapons follow in CH-53E helicopters.

The task forces seize assigned objectives. If required, the ground assault task forces link up with the vertical assault units or flank enemy units that are attempting to counter the landing. Some of the assault support aircraft turn back to the amphibious ships to load the vertical assault reserve or to load ammunition and a few spares for the maneuver units. The LCACs deliver fire support units, additional combat vehicle units, or combat train detachments on their turnaround. Casualty evacuation (CASVAC, close air support (CAS), and insertions of maintenance contact teams and new reconnaissance teams occupy the remaining assault support aircraft of the vertical assault force.

Onboard the amphibious ships, the commanders first monitor the positions of the aircraft and landing vehicles and craft then pick up the movements of unit command posts (CPs). Situation reports and fire support requests are monitored.

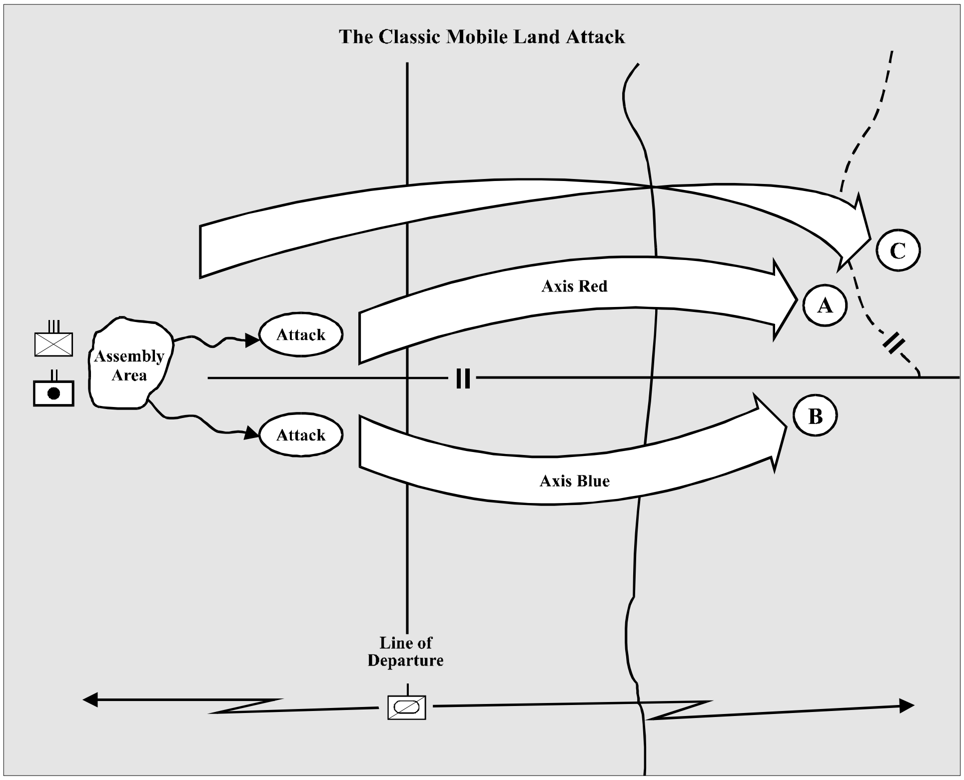
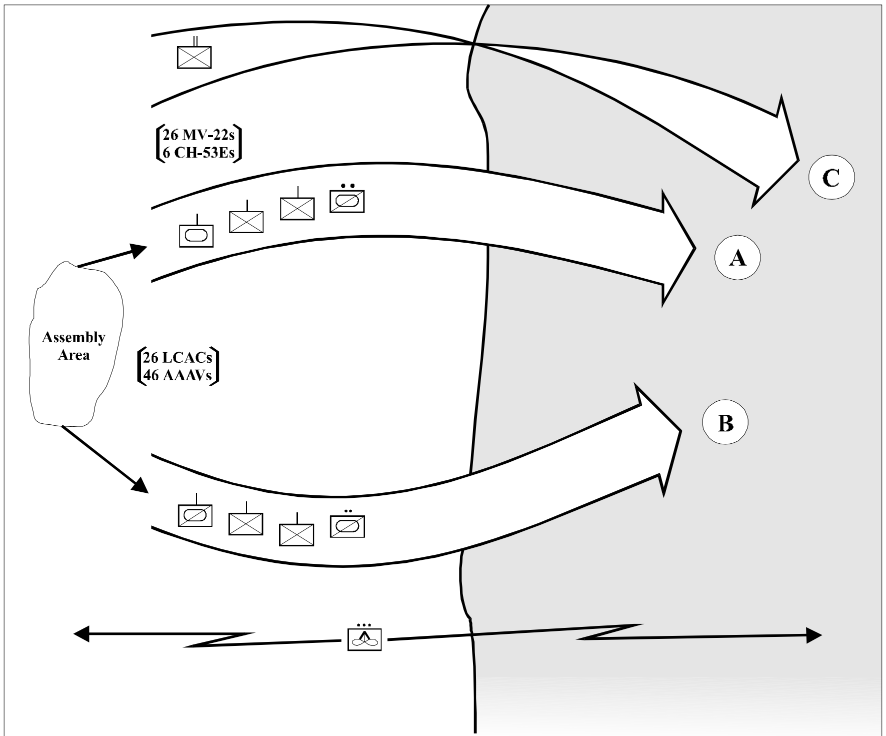


Figure 2-4. Mobile Land Maneuver

The rapidly cleared spaces on the amphibious ships become additional warehouses, breakouts, and staging areas for seabased logistics and combat service support (CSS). Intelligence reports go to the units ashore, and commanders order priorities of fire, resupply, and aviation support as the situation develops and the various objectives fall under friendly control. Airborne relays keep the communications suite functioning, and the position locating devices connect through the continuous relays of aircraft, helicopters, and LCACs flowing to and from the units ashore. Aviation and surface fires from the accompanying task forces maintain air and fire superiority throughout the operation.

With the amphibious assault of the LPZ accomplished and initial objectives under control, the LF turns to other tasks as required by the overall mission.



Surface Assault: (2 Battalion Task Forces)	4 Infantry Companies 1 Tank Company 1 LAR Company	14 Tanks 24 LAVs 1 AVLB 40 HMMWVs	Units/Equipment Landed in Single Cycle
Vertical Assault: (1 Battalion Task Force)	3 Infantry Companies (+)	12 HMMWVs	

Legend
LAR = Light Armored Reconnaissance
LAV = Light Armored Vehicle
AVLB = Armored Vehicle-Launched Bridge

Figure 2-5. STOM Amphibious Assault

Chapter 3. Organization and Command Relationships

INTRODUCTION

Amphibious forces will normally conduct operations as part of a larger joint force under a single commander, the joint force commander (JFC). The JFC may be a combatant commander or the commander of a joint task force (JTF) established by the appropriate authority. This chapter provides guidance concerning the organization and command relationships used during the planning and execution of STOM operations. The purpose of unity of command is to ensure unity of effort under one responsible commander for every objective. Unity of effort in joint forces is enhanced through the application of the flexible range of command relationships identified in Joint Pub 0-2, *Unified Action Armed Forces (UNAAF)*. Unity of effort—coordination through cooperation and common interests—is an essential complement to unity of command.

AMPHIBIOUS FORCE ORGANIZATION

Composition

The AF is a task-organized force that consists of an ATF and LF. An ATF is defined as a Navy task organization formed to conduct amphibious operations. An LF is defined as a Marine Corps or Army task organization formed to conduct amphibious operations. STOM falls within the scope of amphibious operations and the terms "commander, amphibious task force " (CATF) and "commander, landing force" (CLF) will apply throughout this publication just as they do in JP 3-02, *Joint Doctrine for Amphibious Operations*. CATF and CLF are used to clarify doctrinal duties and responsibilities but do not connote titles or command relationships within the AF.

Unity of Command

The JFC may establish unity of command over amphibious forces by retaining operational control (OPCON) over the Service or functional component commands executing the amphibious operation, or by delegating OPCON or tactical control (TACON) of the AF to another appropriate commander. The command relationship exercised by the gaining commander over transferred forces must be specified.

Advance Force

In the past, a dedicated advance force, arriving into the AO prior to the AF, executed tasks such as mine and obstacle clearing and intelligence collection. While these tasks remain critical to the success of any amphibious operation, the operational radius of LCACs, AAAVs, and MV-22s from OTH may eliminate the need to form an advance force that is separate from the main body of the AF. In situations where advance force operations are planned, an advance force commander is designated. The selection of the advance force commander depends on METT-T. The advance force commander prepares detailed plans for advance force operations based on the mission and guidance from CATF and CLF. The advance force will be task-organized to accomplish the assigned mission.

Supporting Forces

The AF commander should have, at a minimum, a supported-commander relationship with forces that may be tasked to accomplish missions that support the STOM mission, in general.

- Other Navy forces, such as carrier battle groups (CVBGs), maritime prepositioning ships (MPS) squadrons, maritime patrol air forces, mine countermine (MCM) warfare ships, or other units may be tasked to support the ATF.
- Marine or Army forces, not assigned to the LF, may be temporarily under the OPCON of the CLF or directed to support the LF as needed during the operations.
- Air Force, Coast Guard, special operations forces (SOF), or other elements may also be assigned to the AF or tasked to support it.

Advance and supporting forces will continue to locate and identify minefields, obstacles, fire support units, critical command and control nodes, and gather other critical information prior to the LF going ashore. However, **the increased need for operational surprise may require that some of these important battlespace-shaping tasks be executed "in stride" during the assault if not able to be performed covertly during earlier phases of the operation**. In any case, the primary focus of advance force and supporting operations will be to determine the suitability of each LPZ, LPS, and LPP and to ensure our ability to use these avenues of approach.

COMMAND RELATIONSHIPS

The command relationships established among the CATF, CLF, and other designated commanders of the AF is an important decision. The type of relationship chosen by the establishing authority for the force should be based on mission, nature and duration of the operation, force capabilities, C2 capabilities, battlespace assigned, and recommendations from subordinate commanders. Typically a support relationship is established between the commanders based on the complementary nature and capabilities of the ATF and LF.

Support is a command authority. A support relationship is established between subordinate commanders by a superior commander when one organization should aid, protect, complement or sustain another force. As stated in Joint Pub 0-2, "Unless limited by the establishing directive, the commander of the supported force will have the authority to exercise general direction of the supporting effort."

In all cases, the commanders are coequal in planning matters to ensure that both ATF and LF considerations are adequately factored into decisions made during the planning phase of the operations. During planning, CATF and CLF will agree to the functions and phases for which one or the other will take responsibility as the supported commander. These arrangements are then confirmed by the establishing authority. The role of supported commander will normally shift between CATF and CLF for various phases of the amphibious operation as defined and agreed upon during the planning phase and specified by the establishing authority. The primary consideration for transition of the supported commander role is the level of mission responsibility during that phase of the amphibious operation. If not already designated as such, the CLF usually becomes the supported commander once the LF begins to execute STOM operations.

Until termination of the amphibious operation, the CLF may continue to exercise command, including supporting arms coordination and logistic operations, from onboard the amphibious ships (seabasing). In such a case, the CATF will provide the necessary support until the mission is complete or the LF establishes appropriate C2 facilities ashore. In the latter case, the LF may remain under the command of the establishing authority or be transferred to another joint, Service or functional component commander. In some cases, the CLF may be tasked to establish a JTF or JTF (Forward) headquarters for a follow-on mission.

LANDING FORCE ORGANIZATION

The landing force consists of ground combat units and any of its associated support units assigned to the CLF to conduct amphibious operations. The most senior Marine Corps or Army operational commander assigned to the AF will normally command the LF. Special consideration should be given to the command relationships established within the LF because of the requirement to reorganize the force during different phases of the operation. One of the key factors in organizing the STOM force will be the number of debarkation points (well decks and flight decks) and the resources available to transport the LF through the LPZ and on to the LPPs. In any case, the LF will be organized at various times in one of two functional forms, combat and embarkation.

Organization for Combat

The LF task organization for accomplishment of missions ashore is based on the STOM concept of operations (CONOPS) and reflects the commander's need to rapidly project combat power at the objective (s). The STOM force will normally be organized for combat upon reaching the LOD.

Organization for Embarkation

This temporary, administrative task-organization of the LF is established to simplify planning and embarkation execution and normally reflects the STOM force posture while in the assembly area. Prior to the action phase of the operation, a short-term modification of this organization may be necessary to expedite the transition of the force from assembly area to the LOD.

AMPHIBIOUS CONTROL GROUP

To ensure control, unity of effort, and rapid decisionmaking during the amphibious assault, CATF and CLF form an amphibious control group (ACG). An ACG is a seabased C2 organization that directs the maneuver of LFs (surface and air) and integrates and coordinates the LF maneuver with the actions of supporting forces. The ACG is organized as depicted in Figure 2-3.

Composition of the ACG

The ACG is composed primarily of the landing force operations center (LFOC) and of an assembly of CATF's tactical action and command system personnel. Other Service elements provide augmentation for integration of the assault effort. ACG battlewatch is comprised of the ATF and LF personnel who are necessary to coordinate, control, and direct movements and actions of all units involved in the STOM operation.

Functions of the ACG

The ACG's main purpose is to provide the battlespace awareness that is required by CATF and CLF to make rapid estimates and decisions regarding the conduct of an OTH amphibious assault. Generally, the ACG will be concerned with monitoring the tactical situation, directing movement from the seabase to objectives, coordinating supporting arms and MCM efforts, changing the sequence of landing for follow-on units during subsequent cycles of surface/airborne craft and employment of the reserve.

Supporting Arms Coordination Center and Tactical Air Command Center

The supporting arms coordination center (SACC) and tactical air command center (TACC) will continue to execute C2 functions for the AF, but will be staffed by more LF personnel than normally used during traditional amphibious operations. Also, the SACC and TACC will work closely, if not collocated with, the ACG to ensure that the STOM force coordinates and deconflicts fire support and airspace within the LPA and objective areas.

COMMAND POSTS

The CLF must have the ability to exercise C2 of the STOM force from afloat and will normally remain embarked throughout the operation. Likewise, most C2 structure for aviation and CSS elements of the LF will remain afloat.

By remaining afloat, the CLF can take full advantage of the C2 support capabilities offered by ATF platforms. Seabasing C2 infrastructure reduces the number of vulnerable nodes ashore and improves the freedom of maneuver of the force as a whole. Most importantly, a greater percentage of the surface and air assets can be used to lift critical combat and combat support capabilities during the amphibious attack. Before the CLF can exercise command from ATF shipping, the **LF C2 structure must be integrated into the overall naval C2 systems and architecture**.

Should the LF staff be required to disembark, the intention remains the same—create the smallest possible "footprint" ashore. Once ashore, the CLF retains full control of operations, with the possible exception of certain airspace coordination that might be better executed by the TACC afloat. Whenever possible, the LF aviation and CSS will continue to support the LF from seabased locations regardless of the location of the CLF.

Chapter 4. Planning

INTRODUCTION

The nature of amphibious operations requires an intricate planning process that stems from the complex detail needed to fully coordinate the landing of required troops, equipment, and supplies into the operational area for mission accomplishment. STOM is amphibious warfare and will require the same detailed level of planning. This chapter describes the planning process for the STOM operations and addresses certain considerations that the AF commanders will have to take into account during the development of the operations plan (OPLAN).

PLANNING TENETS

Top-Down Planning

The complexity of STOM requires AF commanders to drive the planning process. Most primary decisions made during the planning process are mutual. Through these primary decisions, the CATF and CLF begin to translate their guidance and intent into a design for action by subordinates.

Unity of Effort

AF commanders must view the battlespace as an indivisible entity, because operations or events in one area may have profound and unintended effects on others. Unity of effort allows the commanders to focus the AF on mission accomplishment.

Integrated Planning

The LF and ATF staffs must develop parallel, concurrent planning schedules based on the coordinated planning directive issued by the AF commanders. This planning directive specifies the plan of action and milestones to complete each major step in the process, including deadlines for the development of OPLANs, operation orders (OPORDs), and other appropriate documents. Usually, this integrated planning occurs across functional areas (maneuver, supporting arms and fires, intelligence, C2, etc.). The key to this integrated planning is the assignment of appropriate personnel to represent each functional area.

AMPHIBIOUS PLANNING PROCESS

The amphibious planning process organizes the detailed, intricate procedures into six manageable, logical steps. This planning process compliments the Joint Operation Planning and Execution System (JOPES) model as well as the Marine Corps Planning Process. Interactions among various planning steps provide for a concurrent, coordinated effort. As previously mentioned, the CATF and CLF are coequals during the planning phase of the operation.

Mission Analysis

During this first step in planning, the commanders review and analyze orders, guidance, and other information in the order initiating the amphibious operation. The CLF will provide planning guidance to his subordinate commanders and staff based on the developed AF mission statement.

Course of Action Development

A COA is a broadly stated, potential solution to an assigned mission. Each COA is examined to ensure that it is suitable, feasible, acceptable, distinguishable, and complete with respect to the current and anticipated situation, the mission, and the commander's intent. During step two of the process, the commanders and staffs will develop COAs to accomplish the AF mission(s). Within the time allowed, these COAs will include established force requirements, logistics requirements and support feasibility, identified resource shortfalls, and produce a CONOPS based on the commander's estimate.

Course of Action War Game

COA wargaming allows the staff and subordinate commanders to gain a common understanding of friendly and possible enemy COAs. This wargaming involves a detailed assessment of each COA as it pertains to the enemy and the battlespace. Each LF COA is wargamed against selected threat COAs. Because of the inherent difficulties associated with STOM, the CLF may consistently wargame against the enemy COA most dangerous to the mission.

Course of Action Comparison and Decision

During this fourth step of the planning process, the CLF evaluates all friendly COAs against established criteria, then against each other, and selects the COA that will best accomplish the mission. The CLF may also choose to refine his mission statement and have the LF staff explore the possibility of a modified COA. The selected COA guides the preparation of the LF CONOPS and the beginning of the OPORD.

Orders Development

This step in the planning process communicates the commander's intent, guidance, and decisions in a clear, useful form that is understood by those executing the mission. Various portions of the OPORD have been prepared during previous steps in the process. The order contains only critical or new information, not routine matters normally found in standing operating procedures (SOPs).

Transition

The purpose for this step in the process is to enhance the situational awareness of those who will execute the order, maintain the intent of the COA, promote unity of effort among the subordinate commands of the LF, and generate tempo. Confirmation briefs, sometimes called "brief backs," are given by subordinate commanders to ensure complete understanding of the intent, specific task and purpose, and the relationship between their unit's missions and other units in the operation. Transition ends when subordinate commanders and staffs are ready to execute the order and possible branches and sequels.

BASIC DECISIONS

STOM operations will begin to take shape as the CATF and CLF begin to agree on the ten primary decisions made during the amphibious planning process. In some cases, the establishing authority may have made a few of these decisions as outlined in the initiating directive. In making these decisions, CATF and CLF will consult with one another and with subordinate and supporting commanders as necessary. Although the decisions are listed in the general sequence in which they are made, certain decisions may be made concurrently, and others will be deferred until required information is developed. **In the case of mutual decisions, both commanders must concur or the decision is referred to the establishing authority for resolution.**

Determine Amphibious Force Mission(s)

The CLF may have a separate but supporting mission assigned by the AF commander or may develop a coordinated mission statement with the CATF through a mutual decision. In either case, the CLF will use the assigned mission as the start point for the STOM OPLAN.

Select Amphibious Force Objectives

Amphibious force objectives are physical objectives—either terrain, infrastructure (e.g., ports or airfields) or forces—that must be seized, secured or destroyed in order to accomplish the mission. AF objectives are designated in alphabetic order and their selection is a mutual decision.

Determine Courses of Action for Development

Normally, the LF planners will provide LF COAs for the ATF planners to build supporting COAs. At a minimum, COAs include a general LPA, scheme of maneuver, designation of the main effort, and task-organization. The selection of amphibious COAs is a mutual decision and these COAs will be wargamed and compared based on criteria established by the commanders during steps three and four of the planning process.

Select Course of Action

Upon selection of the AF COA, the CONOPs is prepared. The CONOPS gives an overall picture of the amphibious operation, including the movement to the AO and the scheme of maneuver for accomplishing the AF objectives. Both commanders prepare mutually supporting COAs based on the agreed upon COA for the amphibious operation.

Select Littoral Penetration Areas

An LPA is that part of the operational area within which STOM operations are conducted. It includes the transport areas, fires support areas, assembly area, attack positions, LPZs/LPPs, airspace, and the land included in the advance to and around the LF objectives. Based on the LF mission and the STOM CONOPS, the CATF delineates potential LPAs (normally expressed in terms of sea area and airspace requirements) and forwards them to the CLF for consideration. The commanders agree on an LPA that best facilitates the accomplishment of the LF mission while still meeting the needs of the ATF.

Select Littoral Penetration Zones, Sites, and Points

An LPZ is a smaller area within the LPA that is used as a tactical control measure, generally in coordination of maneuver and fires. Each LPZ will accommodate several axes of advance for use by surface or airborne assault units. An LPS is a continuous area of coastline within an LPZ across which troops, equipment, and supplies can be inserted by surface or airborne means. The LPS will contain all of the penetration points available to a single maneuver unit. An LPP is the actual location along the coastline where the STOM force goes "feet dry." An LPP may be used by a single maneuver element, portions of an element or a series of maneuver elements. The CLF selects the LPZs, LPSs and LPPs, that best support the LF's attack on the objective(s), but only if they can be supported by the ATF.

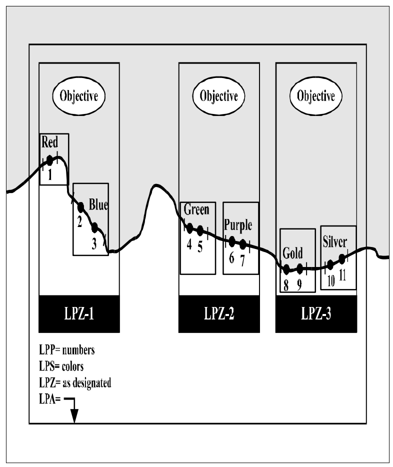


Figure 4-1. Littoral Penetration Area

Determine Sea Echelon Plan

The sea echelon plan is the distribution plan for amphibious shipping in the LPA to minimize losses due to attacks and to reduce the area swept for mines. During past amphibious operations, the CATF's sea echelon plan was not of extreme importance to the CLF as long as it supported the proper debarkation of the LF. During STOM operations, the CLF must ensure that the sea echelon plan also supports the overall scheme of maneuver regarding C2 afloat, seabasing of logistics, and general relationships with the selected LPZs, LPSs, and LPPs.

Select Landing Force Objectives

LF objectives are normally physical objectives that must be seized, destroyed or held by the LF in order to accomplish the AF mission. LF objectives are normally designated by a number (e.g., LF Objective 2). The tactical ranges of the available transport craft (surface and airborne) will be a critical consideration when selecting LF objectives during STOM operations. Once secured, those LF objectives will then have to be supported by a logistics/supply line that reverts back to ATF shipping. CLF selects the LF objectives but normally asks for estimates of supportability from the CATF and other appropriate supporting commanders.

Select Landing Zones and Drop Zones

An LZ is a specified zone used for the landing of aircraft while a drop zone (DZ) is a specific area upon which airborne troops, equipment or supplies are air dropped. Fixed-wing LZs and DZs are designated when airborne or air-transported forces are employed. The CLF selects LZs and DZs.

Select Date and Hour of Attack

The date and hour of the STOM attack are selected by mutual decision unless they are specified in the order initiating the amphibious operation. The principal LF considerations in the selection of D-day (date of attack) include: availability and readiness of forces, seasonal conditions of weather, tide, current, and duration of daylight. When selecting H-hour (time of the attack), the commanders must consider known enemy routine, need for tactical surprise, requirements for conducting certain operations during darkness and times of the day for favorable wind, tides and visibility.

Table 4-2. Basic Decision Responsibilities Matrix

BASIC DECISIONS	May Be Contained in Initiating Directive	Decision Responsibility
Determine AF Mission(s)	Yes	Mutual
Select AF Objective(s)	Yes	Mutual
Determine COAs for Development	Yes	Mutual
Select AF COA	No	Mutual
Select LPAs	No	Mutual
Select LPZs, LPSs and LPPs	No	Mutual
Determine Sea Echelon Plan	No	CATF
Select LF Objectives	No	CLF
Select LZs and DZs	No	CLF
Select D-day and H-hour	Yes	Mutual

OTHER DECISIONS

Supporting Operations

Forces not assigned to the AF conduct supporting operations. These operations can either set the conditions for the arrival of the AF or support the force after H-hour. Some of the potential tasks to be accomplished by supporting forces are intelligence collection, mine countermeasures, gaining/maintaining air and maritime superiority, and special operations as needed. Supporting operations are ordered by a higher authority and normally based on a request from the AF commanders.

Subsidiary Attacks

A subsidiary attack is normally conducted by elements of the AF, usually executed outside of the designated LPA to support the main effort. If executed before the main attack, the effect on the main effort must be considered in terms of possible loss of surprise. Subsidiary attacks must be planned and executed by commanders with the same precision as the main attack so the CLF must weigh the benefits of possibly dividing his force. Forces employed in subsidiary attacks that precede the main effort may be re-embarked and employed as a tactical reserve. Some potential missions for a subsidiary attack include the following:

- Securing areas for use as fire support bases in support of the attack on the objective(s).
- Seizing airfields or vertical and short takeoff and landing aircraft-capable sites.
- Diverting enemy attention and forces from the main effort or fixing enemy forces in place.

Advance Force and Preassault Operations

As mentioned in Chapter 3, operations that shape the battlespace prior to the STOM operation can contribute greatly to the amphibious operation as a whole. However, the decision to employ an advance force or execute preassault operations must be weighed against the advantages of operational or tactical surprise. Advance force operations are conducted in the AO by a task-organized element of the AF prior to the arrival of the AF's main body. Preassault operations are conducted by the AF upon arrival into the AO and prior to D-day/H-hour.

- Preparation or reconnaissance/surveillance of the LPA could be conducted by supporting operations without the need for an organized advance force (e.g., special operations or allied forces already in the AO).
- The decision to employ an advance force must be made early in the planning phase with particular emphasis on command relationships between the advance force commander, LF units (including aviation), and all of the AF commanders.
- The advance force commander must have a staff that is capable of planning and conducting operations in the LPA until the arrival of the AF. This includes the ability to interact with any forces that might be conducting supporting operations.

EMBARKATION PLANNING

General

The purpose of embarkation planning is to embark the LF in such a way as to accommodate the CONOPs ashore. In short, the embarkation plan should facilitate the STOM force's rapid assembly and movement to the LOD while providing for a flexible, responsive logistics and resupply plan. See Chapter 10 for a discussion of cargo stowage considerations for the conduct of seabased logistics and CSS support operations.

Principles

The embarkation plan for each operation will provide for loading arrangements and an organizational structure that are specifically tailored to support the operation. The following four principles must be observed in embarkation planning regardless of the specific mission of the AF:

- First, embarkation plans must support the STOM CONOPS. Personnel, equipment, and supplies must be loaded in such a manner that they can be unloaded at the time and in the sequence required to support the operation.
- Second, plans must provide for the highest possible degree of unit self-sufficiency. Troops should not be separated from their combat equipment and supplies and should be embarked with sufficient quantities to sustain combat operations during the initial period at the objective(s).
- Third, plans must provide for rapid unloading in the AO. At the individual ship level, a balanced distribution of equipment and supplies throughout the ship will ensure an even, near-simultaneous unloading of all holds.
- Fourth, embarkation plans must provide for dispersion of critical units and supplies among several ships. The CLF must ensure that the loss of one ship of the ATF will not critically degrade the combat capability of the LF and prevent mission accomplishment.

Seabased Logistics

During STOM operations, logistics support for the LF will most likely be provided from ATF shipping, with minimal buildup of CSS ashore. Seabasing will influence the embarkation planning in such areas as the need for permanent workspaces for the LF staffs and maintenance operations and accessible holds for certain classes of supplies that might normally be stowed for administrative offload. See Chapter 10 for more discussion on seabased logistics and CSS operations.

Embarkation before planning

In some cases, the mission of the LF may not be known at the time of embarkation so the staff will have to use a notional mission and STOM scheme of maneuver as the basis for the embarkation plan. In these cases, every attempt should be made to preserve the "peacetime" organization of the combat forces and match it to the available shipping, landing craft, amphibious vehicles, and aircraft. This "peacetime" combat organization is normally a valid start point for the planning once the mission is received.

Embark Location of the Staffs

The AF commanders and their staffs normally embark on the same ship. This practice prevents the CLF from having all subordinate commanders and staffs (e.g., aviation, ground and CSS) on the same ATF platform. In such cases, commanders of the major elements of the LF may choose to embark a few appropriate personnel alongside the CLF staff or make arrangements for frequent conferencing, in person or via electronic means.

Maritime Prepositioning Force Considerations

The assignment of an MPF to the AF will require additional planning for airlift, assembly of advance parties, and the offload in general. If the MPF moves as part of the assault follow-on echelon (AFOE), the most urgent requirement will be the movement of offload preparation parties (OPPs) to the ships joining the ATF. If the MPF is going to augment the assault echelon of the AF, the LF staff will need to conduct detailed planning for the force closure of the MAGTF and required equipment and supplies that will augment the STOM force. Aircraft of the MPF MAGTF will reinforce the embarked aviation combat element (ACE) as deck space permits, unless the capacity to use other platforms or land-based locations is available.

ALTERNATE PLANS

Should subsequent events invalidate an assumption on which a plan is based, the decision to execute the plan and the plan itself must be reviewed. Alternate plans provide for possible changes and offer the CLF the ability to rapidly shift from one COA to another. The CLF will weigh the advantages of developing alternate plan(s) against the time and resources available during step five of the planning process. Some characteristics of alternate plans are:

- The general task organization of the STOM force should reflect that of the primary plan.
- The alternate plan should only address those facets of the primary plan that have changed.
- Alternate plans are normally based on wargamed COAs that were not selected, but remain feasible and could become the best option given subsequent events after the transition phase of the planning process.

Chapter 5. Ship-To-Objective Maneuver: Surface

INTRODUCTION

Maneuver begins when the LF crosses the LOD. Using the sea as maneuver space, units advance using a network of tracks, changing speed, formation, and track at the discretion of their respective commanders. As is the case with operations ashore, unit commanders will be guided by their actions previously issued coordinating instructions, as well as by additional orders issued by higher headquarters during the course of the operation. Tactical commanders coordinate the maneuver of LF units to ensure that integrated combined arms teams cross LPPs in formations that maximize mutual support. Prior to commencement of operations, Naval forces conduct countermine/counterobstacle reconnaissance throughout the LPA. This information is displayed in the form of the common tactical picture, which displays all obstacles to surface maneuver.

The LF will focus planning on mission objectives and the scheme of maneuver ashore. The major differences from traditional amphibious operations and STOM are seabasing and the need to account for greater flexibility in execution.

The seaward portion of the battlespace is organized by establishing tactical control measures such as assembly areas, attack positions, LOD, lanes, release points, checkpoints, and LPPs.

The basic unit for maneuver ashore is the reinforced infantry company. Each company is assigned a primary route and one or more alternate routes, each consisting of a release point and a sequence of lanes. These lanes are modeled after the aviation model and are connected by DPs. These DPs facilitate navigation using navigation aids. The width of the lanes is METT-T dependant. The purpose of using lanes is to enable LF units to avoid known obstacles or suspected obstacles/danger areas. Lanes are established based on intelligence preparation of the battlespace (IPB).

Within the assembly area, LF units load personnel and equipment on board amphibious vehicles and landing craft launch vehicles and craft, form into tactical units for landing, and proceed toward the LOD. While these evolutions are performed at the direction of the CLF, the CATF will plan and execute the detailed maneuver of amphibious ships necessary to ensure efficient sequencing, safety of vessels and craft, and integration with the maneuvering necessary for launch and recovery of assault support aircraft.

Units will depart the Assembly Area in task-organized formations that may include amphibious vehicles, landing craft, or both. For example, an infantry company mounted in AAAVs with an attached tank platoon moves as a single unit of AAAVs and LCACs, under the control and direction of the infantry company commander. The company commander controls the speed and formation with the goal of crossing the LOD at H-hour. Normally, all AAAV movement between the assembly area and the LOD will be in transition mode.

Normally, LF units will proceed directly to assigned release points, located along the LOD. As LF units approach the LOD, they will pass through their respective attack positions, but will pause to "occupy" those positions only if absolutely necessary to complete final preparations for the assault, or to coordinate the timing of crossing the LOD. At H-hour, commanders will order their units to cross the LOD.

When units leave their respective release points, they travel along designated lanes. Normally, each infantry company will be assigned a primary and an alternate route, all leading to one or more LPPs. All elements of a company will normally maneuver together, remaining in the same lane. Company commanders establish the speed and tactical formation for their units, coordinating the maneuver of vehicles or craft with dissimilar speeds to ensure that their companies arrive at their respective LPPs formed as combined arms teams. If the situation dictates use of alternate routes, company commanders may order their units to change course at checkpoints, diverting to new lanes.

The combined arms teams include combat trains that will be resupplied from the seabase, thereby eliminating the need for a beach support area. Any assault from OTH will experience significant delays between cycles of LCACs as a result of transit, loading, and refueling. Thus, maintaining unit integrity in each lift cycle is recommended.

The surface assault may employ multiple penetrations by maneuver elements. High-speed amphibious mobility will enable the LF to reinforce success by redirecting efforts toward gaps in the defense. Given the range and speed of the AAAV and LCAC, the LF can begin penetration outside the area that it intends to control and then attack back into the vital area after turning the enemy defenses. Subsequent surface waves may not penetrate at the same points as the initial waves. As enemy defenses are turned and impediments destroyed, subsequent maneuver teams will penetrate at the points that are most advantageous to their mission rather than simply following in trace of previous teams.

Combat operations by the LF inland will follow the provisions of doctrine for ground combat operations (MCWP 3-1 series).

Chapter 6 of this manual establishes similar guidelines for the vertical assault elements of the AF. Together, these chapters focus on the requirements for employing a MAGTF in an amphibious assault.

RESPONSIBILITIES

CATF and CLF share responsibility for preparation of the surface and vertical assault plans. The plan that they develop becomes the landing plan. This plan provides the framework for how the AF will accomplish its mission. The ATF and LF staffs coordinate closely to develop this plan.

Within the AF, every tactical commander participates in decisions that are made and that are later reduced to writing in the form of a plan. When planning for the initial assault, commanders make decisions that involve considerable detail and affect the ultimate outcome of mission execution. Within the limitations set by the higher commander, such as numbers and types of combat and mobility systems and amount of maneuver space allocated, subordinate GCE commanders prescribe how, and in what formations and sequence, their troops and equipment will be landed.

PLANNING CONSIDERATIONS

The landing plan not only provides the desired landing sequence, but also establishes support for continuing operations ashore. In short, a comprehensive plan must provide for landing combat units; provide for their support and continuous sustainment; and conserve limited assault lift systems, their crews, and support echelons. Careful planning will minimize unscheduled pauses caused by lack of mobility, fuel, and ammunition.

Other factors to be considered by operational planners are the relative dispersal of assault shipping and the fixed distances between assembly areas and the LPPs. The antiship missile threat, mines, and other weapons threats will dictate the degree to which the shipping may close with the coastline and will thereby establish the cycle times for assault craft and aircraft. See Appendix B for detailed planning information for the AAAV and LCAC.

THE MARITIME PREPOSITIONING FORCE IN AMPHIBIOUS OPERATIONS

MPFs provide a proven means of rapidly deploying and sustaining a range of highly capable forces in austere AOs. While MPFs have no forced-entry capability, their close coordination with naval forces will permit the rapid entry and assembly of forces, equipment, and supplies. The MPF can furnish the LF with reinforcement of threatened allies, participate in amphibious operations, provide an intervention force in primitive regions, and furnish adequate seabased logistics for in-country MAGTF elements.

The MPF conducts its operations in the littorals but cannot conduct an amphibious operation. The MPF itself cannot reassemble onboard its ships rapidly and requires external assistance to do so. The civilian-manned ships of the MPF have no combat systems or damage-control features. Built to commercial shipping standards, they cannot be placed in extremely risky situations. The MPF does have communications connectivity with the ATF and the LF.

The MPF participates in the assault phase of an amphibious operation by augmenting the assault echelon of the AF with the MPS and by embarking troops aboard the ships to man, offload, and operate selected equipment and weapons systems that are capable of participating in the STOM of the LF. Aircraft of the Ayrin echelon (FIE) augment the LF as land bases and space in the AF permit. The MPF completes its offloading and assembly after the assault phase and operates seabased logistics as required.

The MPF reinforces a successful amphibious operation as either a follow-on force or part of the AFOE of the AF. In-stream offloading from an OTH transport area is facilitated by LCACs and assault support aviation of the AF. Seabasing supports the MPF and LF as required.

When augmenting an amphibious assault, the troops participating in the assault must meet the ship in transit, and equipment must be equipped, fueled, and armed before offloading. The offloading of combat-ready troops and equipment must be accomplished from OTH day or night in conditions up to sea state 3. Offloading will be by air and surface means and will use V/STOL aircraft, LCACs, AAAVs, and, when the situation permits, organic lighterage. OTH unloading will require rapid refueling and limited servicing facilities for LCACs and expanded aviation support facilities for helicopters and MV-22s. The use of an LCAC-capable dry well or alongside platform would permit a reduction of top hamper and a corresponding expansion of flight-deck spots for CH-53 and MV-22 aircraft. The MPS squadron will continue to carry causeways and warping tugs for independent unloading in stream. When reinforcing friendly forces, available ports and airfields will be exploited and offloading will take place from OTH, near shore, and pierside or by a combination of all available means as the situation dictates.

MOVEMENT CATEGORIES

STOM requires the landing of combined arms units that are immediately capable of movement and maneuver. No buildup of combat power or assembly of units at the beach is envisioned or desired. Therefore, the former organization of unit sets for ship-to-shore movement and the organization of troops, equipment, and supplies into categories for ship-to-shore movement no longer apply. The use of "waves" to describe sequenced groups of landing craft is replaced by the simple use of unit designations and assigned craft. The need for floating dumps, free boats, emergency supplies, and remaining supplies is obviated by seabasing. The ships themselves are the floating dumps. Commanders land with their units or remain seabased. All that needs to be incorporated into the landing plan is the number of landing craft or aircraft required for initial and subsequent cycles to carry designated units. Unit commanders plan and execute the loading of vehicles and troops. Because of the times involved in cycling from the transport area to the beach or landing zone, follow-on units will be transported as integral units, to the maximum extent feasible, just as was required for the initial task forces.

The ground task forces or units for the initial landing cycle are assigned a number of AAAVs and designated LCACs that are preloaded with the required equipment. The LCAC group commander supporting a ground task force will depart assigned shipping with the LCACs and rendezvous with the supported task force in the transport area or attack positions, as required. The typical battalion-sized task force will sortie in AAAVs from its assigned shipping in the transport or assembly area and proceed directly to its attack position, continuing without pause on its assigned axis of advance to its LPP. The LCAC group, in direct support of the task force, conforms to the maneuver of the AAAV-mounted task force to land close behind or beside the AAAV mounted force. The LCAC group's higher speed will not permit it to operate in close proximity to the AAAV-mounted portion of the task force; hence, the task force commander will permit considerable latitude in its movements on the axis of advance or direction of attack. A delayed movement out of the attack position by the LCAC group may be required for landing in the proper sequence in the LPP. Task forces embarked on a single type of landing craft, either all AAAVs or all LCACs, may maneuver without these constraints.

LCACs returning from the LPZ under the LCAC group commander are then vectored by CATF's Navy control group to the next assignment carrying, for instance, an artillery unit, a combat trains detachment or a tank unit. Such a task might require splitting the initial LCAC group into smaller sections or augmenting the group to accommodate a larger unit. Such decisions are reached and communicated by CATF's Navy control group to the LCAC group and craft commanders. The electronic interface of total asset visibility (TAV) logistic systems with unit embarkation needs will produce an electronic "chalking" of unit equipment into LCAC loads, much as occurs with airlift operations. Hence, the Navy control group will have instant data regarding unit equipment on each well-deck ship assigned to each unit of the LF. CLF's priority of lift ashore can be executed for each unit by detailing LCAC groups to vector certain numbers of craft to each ship, where ship's company and LF troops execute the programmed loads according to established protocols or special load plans.

ORGANIZATION OF THE LF

Navy and LF elements that execute STOM will be organized into task forces or teams onboard their ships; this is also the organization they will use in combat ashore (see Figure 5-1). These task forces or teams are organized according to the dictates of METT-T. A typical task force would consist of an infantry battalion and combat engineers mounted in AAAVs and tank and LAR units carried in the LCAC group. (The LCAC group would be assigned by CATF in direct support of the task force). The unit leaders in each task force command their units from their assigned AAAVs or LCACs. Commanders of units embarked in LCACs will collocate with the LCAC group or section leaders during the afloat phase of the maneuver. Although maneuver by larger units provides maximum combat power, maneuver units may be of any size, such as a reinforced infantry company or LAR platoon.

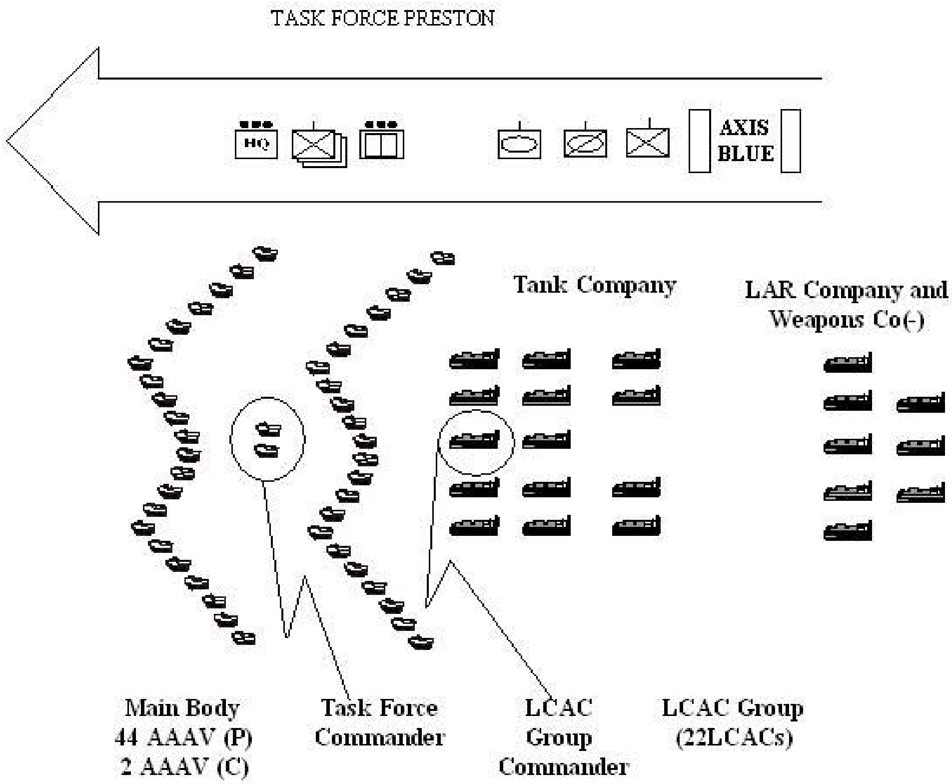


Figure 5-1. BLT Task Force in Surface Assault

ORGANIZATION OF THE BATTLESPACE

The battlespace in which the AF will operate is defined as the LPA. An LPA is a geographic area for purposes of C2 through which naval expeditionary forces conduct littoral penetration operations. This area must be of sufficient size for conducting sea, air, and land operations. CATF will normally assume responsibility for control of the air, surface, and subsurface of the LPA that is selected for the operation. An LPA may be divided into smaller geographical areas to enhance C2 or facilitate coordination of maneuver and fires. These smaller areas are LPZs. Each LPZ will then contain LPSs, which are continuous areas of littoral within the LPZ, through which LFs penetrate by surface or vertical means. An LPS will encompass the necessary sea space for maneuver, to include the SZ (SZ), and land space to the beach exits to support the transition to land maneuver. For planning purposes, the LPS should be of sufficient size to support a BLT. An LPS will contain all the penetration point options for a single maneuver unit. The LPP is where the actual transition from waterborne to landborne movement occurs. For planning purposes, an LPP will be designed to support a mounted infantry company or detachment.

LPZs will be organized by using tactical control measures that reflect LF unit tactical assignments, maneuver space, and any restrictions imposed by CATF and CLF. This organization of the battlespace will be depicted identically in the Navy surface movement control diagram and LF operations overlay (see Figure 4-2). Specific transport areas will be dually designated as assembly areas for launching vertical assault and surface assault maneuver elements. The LPZ may contain specified control points and routes to be used by maneuver elements to move across the surface battlespace. Usually, these are permissive and consist of attack positions; axes of advance; or directions of attack, boundaries, and phase lines. Just as in tactical maneuver ashore, attack positions are not occupied for long durations, but serve as zones in which the task forces form their tactical formations for the landward maneuver. Axes of advance indicate the general movement of a task force in which the commander has latitude to deviate to either side of the axes as needed. A direction of attack is more restrictive, and deviations from the specified route must be requested from the establishing commander. These would generally guide units through cleared minefields, navigational hazards or other danger zones. Boundaries and phase lines are used to separate task forces and mark progress. The LOD, typically drawn on the landward edge of the attack position, is usually crossed at H-hour.

The Navy control group assists with traffic control in the transport and assembly areas as the task forces and LCAC groups are launched from assault shipping.

MOVEMENT AND CONTROL

Movement

Movement will begin upon approval by CATF and CLF. As previously described, the LF will be organized into task forces or teams. These units are mounted in AAAVs and LCACs and are launched from assault shipping, which also serves as the assembly area. Upon clearing the assembly area, the AAAVs transition to high speed and proceed in formation to their designated attack positions. The assigned LCAC group, which carries remaining task force units, assembles in the assembly area and moves to the attack position to linkup with the task force. Local traffic control for surface maneuver is provided by launching ships and the Navy control group. When required, specific procedures will be established to facilitate linkup of LCACs from different assault transports under their LCAC group commander. Once linked, the LCAC group commander will normally report to the commander of the assigned task force or team for the assault. Task forces embarked solely on LCACs or AAAVs use similar procedures as described above, except that the requirement for a linkup in the attack position is no longer required.

While the task forces are passing through their attack positions, the latest operational and intelligence information is received. The landing craft and vehicles cross the LOD; at this time, CLF will normally become the supported commander and CATF will assume a supporting role. As the movement progresses and more information flows in from intelligence and assault elements to the C2 organizations, CLF may decide to execute the original landing plan or implement an alternate plan. Coordination between CATF and CLF and their respective staffs is necessary to ensure that the LF scheme of maneuver is supported and to prevent friendly casualties.

If the original scheme of maneuver changes, the ACG will alert all control agencies to the new plan, especially as it affects the use of returning LCACs and vertical assault groups, positioning of fire support ships, and other ships as necessary. Only an alternate plan established in the CATF and CLF OPORDs may realistically be adopted in stride during STOM.

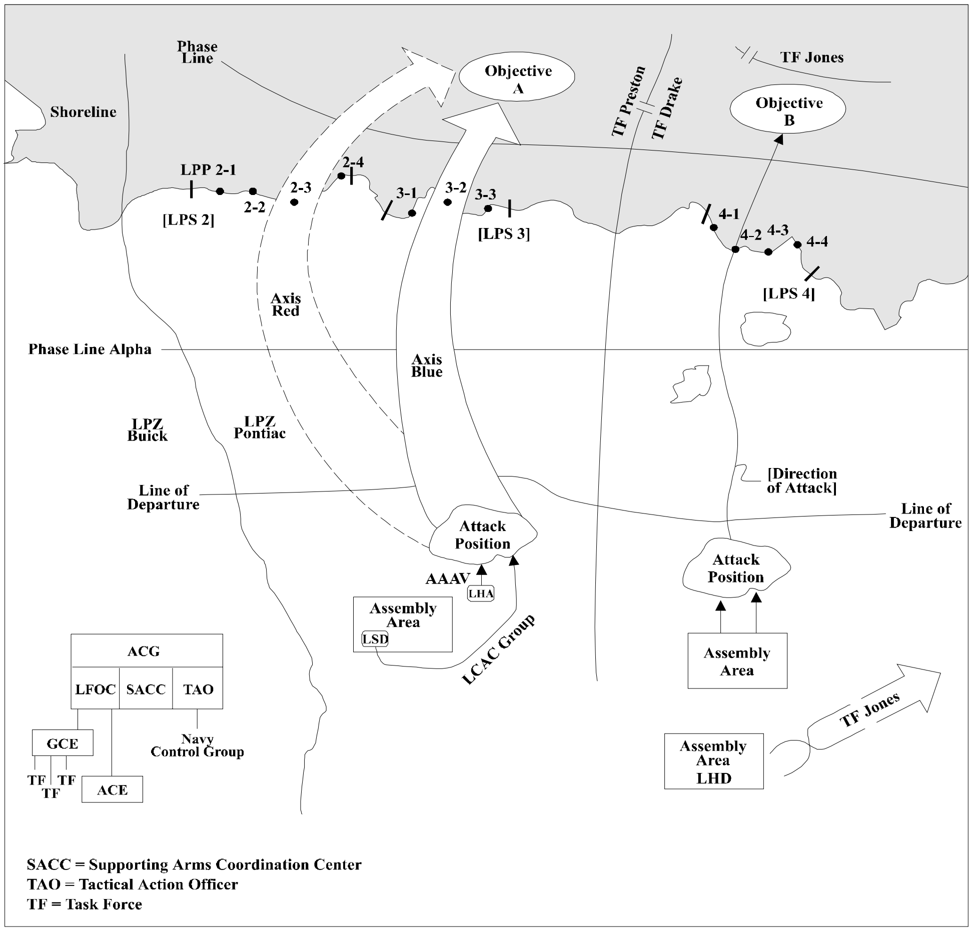


Figure 5-2. Control Measures and Agencies

Control

Like all forms of maneuver warfare, STOM calls for decentralized control. Instead of the rigid adherence to preplanned waves and schedules found in traditional amphibious operations, STOM is characterized by fluid maneuver, in which LF unit commanders make decisions on their own initiative, based upon their understanding of both their seniors' intent and the overall tactical picture.

The degree of decentralization that can be achieved is a function of doctrine, training, leader development, and equipment. The degree to which decentralization is practiced in any given situation is a function of command. Decentralized control is dependant on the ability to share information throughout the LF and for unit commanders at various levels to process that information in the context of their own current situation. This processing of information transforms raw data into information enabling leaders to execute mission orders in accordance with commander's intent.

Control of the ship-to-shore movement involves the designation of the LPZ, as described earlier, and employment of various tactical control measures. The common operational picture available to all commanders will reduce the need for detailed reporting of position and status by units of the LF. If electronic position reporting fails due to technical problems, then traditional reporting methods will be used. The surface movement control diagram will depict all relevant tactical control measures and all known obstacles, both at sea and ashore. By using electronic position locating and reporting means, the task forces will move under local control across the LPZ water and terrain to close with the objectives, maneuvering as required by their respective commanders. CLF and subordinate commanders will coordinate the action primarily by changing missions, control measures, fire support coordination, and logistic priorities. The decision to employ the LF reserve remains one of the most important decisions for the CLF.

During the waterborne period of the maneuver, LF commanders may take advantage of the superior navigation suite of the LCAC by temporarily assigning the LCAC group commander to the formation lead to provide radar coverage and to alert the AAAV echelon to water hazards uncovered during the maneuver. Commanders may also receive guidance from the Navy control group for their formations.

Proper adherence to the tactical control measures and formation discipline will enable commanders to maneuver with minimal direction from and dependence on higher echelons of command. The conduct of the maneuver rests with the commander on the edge of the battle, assisted by the information flow and facilitated by the coordination efforts of the higher headquarters.

CLF or CATF, depending on the responsibility, may specify any of three types of control for ship-to-shore movement: independent, advisory or positive. The type of control selected depends on proper mission analysis. Landing craft navigation and communications capabilities will also have a major impact on the type of control selected.

Independent Control

The task force commander may exercise independent control for a variety of reasons, particularly if assigned an axis of advance or zone of action. Similarly, if there is just one unit assigned to an LPP and minimal waterborne traffic, then independent control may be preferred. When amphibious operations are conducted under emission control (EMCON) conditions because of threat EW capability or a lack of communications capability, then independent control will be required. To accomplish independent control, unit commanders prebrief assault craft (LCAC and AAAV) crews on the plan and, once launched, exercise direct control of the various formations on their predetermined courses and routes. Assault craft equipped with situational awareness displays are capable of independent movement, but deconfliction procedures and formations must be strictly followed to prevent collisions, particularly during periods of limited visibility. It is essential that landing waves pass over the LOD as accurately as possible and at the time specified in the mission timeline.

Advisory Control

Under advisory control measures, assault craft are provided with a launch position and a vector to their first control point. The ACG tracks the progress of the LF and periodically provides the task force commander with a current position and “time early” or “time late” based on the mission timeline. The task force commander modifies course and speed in response to the ACG’s input.

Positive Control

Under positive control measures, the ACG controls all movement of the task force. Landing position and navigation information are continually updated via an external control source, which may be electronic, voice communication, or data link. Positive control measures may be required for very large-scale amphibious operations or when there is congested waterborne traffic in the LPA. Positive control is the least desired form of control.

Generally, independent maneuver will be supported by available C2 systems. Global positioning system (GPS) coordinates of vehicles, craft, and units are entered into the C2 system, thereby affording commanders at any level the requisite degree of information. Thus, the battalion or company task force commanders may be left to their own cognizance, given this level of situational awareness.

EXECUTION OF SHIP-TO-OBJECTIVE MANEUVER (SURFACE)

Assault ships will attempt to operate in that part of the assembly area closest to the attack positions of the embarked units. LF units, organized into teams or task forces, will launch from their respective assault transport ships. Upon completing the launch sequence, units will move from their assembly areas through their attack positions and cross the LOD in accordance with the desired H-hour, coordinating as necessary with LCAC group(s) in direct support. Transition of AAAVs and LCACs to high speed will begin immediately upon launching the entire formation of each craft or vehicle from the assembly area.

CLF and CATF monitor the LF units' maneuver across the LPA/LPZ. Commanders will control their formations and proceed to specified LPPs. If no minefields or obstacles are to be breached, the AAAVs will lead ashore, maneuvering through and beyond the intended cushion landing zones (CLZs) for the LCAC group. LCACs will land and discharge their vehicles as rapidly as onboard hardware configurations allow, then return to the assembly area under the command of the LCAC group commander.

Before crossing the LPP, units will assume appropriate tactical formations. If the LPP is suitable, multiple AAAVs may cross the beach simultaneously, leaving it clear and covered for trailing LCACs. However, if a narrow lane must be used to cross through the LPP, the task force commander may form unit columns and pass through the lane by unit bounds. In an optimal situation, LCACs and AAAVs would land in close proximity, with the AAAV-mounted units providing LPP and CLZ clearance and coverage for LCAC landing and unloading. No distances or intervals can be specified, but the arrival of LCACs as soon as possible after the AAAVs have touched down, and their simultaneous unloading on the beach, will minimize delays in getting their embarked units into action. The failure to clear large areas of the LPP of mines, obstacles, and enemy fire will result in significant delays in LCAC touchdown and offloading. The advance of the infantry and engineers may continue without pause, but the units embarked in LCACs will not be available to the commanders for a variable time interval, depending on current LCAC hardware, space for unloading, and enemy action.

Throughout the maneuver, maneuver commanders direct their forces in combat and direct or coordinate fire support and in-stride mine countermeasures, whether waterborne or ashore.

Touchdown of LCACs and AAAVs depends on the degree of combat in the LPS. AAAVs must go off plane, provide covering fire, touch down, and fight enemy defenses. LCACs must land in as tight and rapid an order as possible, offloading tanks and so on directly into battle if necessary. LCACs may be exposed to loss or damage in the initial assault, as are the equally vulnerable heavy-lift helicopters in the vertical envelopment. The actions of AAAVs, their infantry and engineers, and supporting arms must reduce the threat to acceptable levels.

An alternate approach to AAAV and LCAC touchdown is to assign separate LPPs and routes to the LCAC groups, letting each part of the task force land across a separate beach, thus affording safety margins to the mixing of the two craft. Although separate LCAC and AAAV routing remains a viable option that simplifies the seaward portion of the maneuver, using separated LPPs creates a requirement to effect a time-consuming linkup with dispersed task force units. The decision to assign the separate LPPs for AAAVs and LCACs is based on METT-T.

Chapter 6. Ship-To-Objective Maneuver: Vertical Assault

A vertical assault conducted during STOM is a landing of task-organized ground forces by MV-22, CH-53E and other assault support aircraft within an LPA for the purpose of seizing operational and tactical objectives. Vertical assault operations are deliberate and precisely planned.

As with the surface elements, vertical assault forces will use multiple axes and LPPs. The vertical assault offers the capability to insert ground task forces deep in the LPZ and exploit identified gaps in the enemy defensive array.

This chapter provides guidance for the execution of the vertical assault as it relates to STOM and builds on FMFM 6-21, *Tactical Fundamentals of Helicopterborne Operations*, which is to be revised and published as MCWP 3-11.7.

Responsibilities

The ground task force commander is the ground officer who has been designated commander of the vertical assault landing force and who is charged with executing and accomplishing the ground tactical plan. Depending on the size and scope of the MAGTF, the task force commander may also be the GCE commander. The task force commander coordinates with the air mission commander (AMC) to establish the vertical assault plan. During the execution phase, the task force commander may remain aboard ship, using the information and sensor sources available to maintain both battlespace situational awareness and command of the assault force from the sea. The task force commander may also remain with the assault forces, fighting the battle from a forward tactical CP.

The AMC coordinates aviation support in varying degrees of detail based on the tactical situation and the MAGTF’s mission and size. The AMC is charged with overall responsibility for planning, coordinating, and executing the ACE portion of the vertical assault. Depending on the size of the assault force, the AMC may be the ACE commander. The AMC will coordinate with the GCE commander or the task force commander to establish the tactical plan to accomplish the landing force objectives. During the execution phase of the mission, the AMC may maintain a position in the ACG, linked to the flight through the command, control, communications, computers, and intelligence (C4I) net, to maintain situational awareness of the battlespace and monitor the progress of the assault flight. The AMC will exercise command and control through digital and voice communications and will view the battlespace through the imagery links of all airborne systems. The AMC normally delegates the authority to change routing and LZs to the assault flight leader (AFL) and the task force commander. Ultimately, the AMC retains responsibility for successful accomplishment of the airborne movement phase of the vertical assault mission.

The AFL is the overall commander of the assault aircraft participating in a vertical assault mission. The AFL will coordinate with the task force commander or a subordinate task force commander to establish the tactical plan for accomplishing the task force objectives. For small-scale operations, the AFL may also be assigned as the AMC. Should this be the case, the AFL will assume all of the responsibilities of the AMC. However, the AFL will be positioned within the assault flight for the execution phase of the mission and will be linked to the ACG via the C4I nets.

The escort flight leader (EFL) is a fixed-wing or rotary-wing aviator who is assigned to be the overall commander of the escort aircraft. The EFL is charged with ensuring the protection of the assault flight during both the en route and objective area phases of the mission. The EFL will coordinate with the task force commander, the AFL, and the fire support coordinator (FSC) to establish the escort and fire support plan for accomplishing the mission.

In planning and executing a vertical assault mission, the AMC is supported by the AFL and the EFL. The AFL and the EFL are coequal in command relationships. Not every mission will require an EFL. For example, if an MV-22 flight is to independently insert a ground force on a long-range mission, with no anticipated interference by threat forces either en route to or at the objective and with no escorts required, the AFL may act as the AMC. However, if escort and assault aircraft are integrated on a mission, then an AMC should be assigned. If a potential threat to the assault flight exists, then escort aircraft and an EFL should be assigned.

PLANNING CONSIDERATIONS

As with any mission, the dynamics of METT-T will drive the planning for the vertical assault. The GCE force list and the scheme of maneuver will determine the number and types of assault support aircraft that are required. Shipboard capacity for aircraft (i.e., hangar capacity and the number of deck spots available) will set limits on the ability of the ACE to meet the requirement, and the realities of shipboard handling limitations will certainly dictate flight sequences in the mission. CLF determines priorities for aircraft allocation and the focus of effort. Navy and landing force planners must consider the availability of shore bases within supporting distance of the LPZ. Additional squadrons of MV-22 aircraft may be deployed to land bases in theater to augment and reinforce the ACE aircraft embarked on assault shipping.

More troops with more equipment can be placed on the ground in a shorter period of time from a greater distance than previously envisioned in amphibious warfare. Airspeed and endurance incompatibilities between fixed-wing jet, rotary-wing, and tilt-rotor aircraft complicate the use of an attached escort. Attack rotary-wing aircraft will most likely be used in a route reconnaissance and/or objective area support profile for the MV-22. Once the MV-22 is fitted with a chin-turret weapons station, it will become effectively self-escorting at low altitudes, releasing most attack aircraft for other missions and tasks. Once the attack rotary-wing aircraft arrive in the objective area, they can provide CAS or forward air controller (airborne) (FAC(A)) support. Fixed-wing jet aircraft can provide an attached or detached escort for MV-22s. A detached escort provides a greater degree of flexibility and permits those aircraft to respond to immediate CAS requests in support of its escort mission. If an antiair warfare (AAW) threat emerges, then MV-22 flights will require fixed-wing escorts.

The ability of the MV-22 to carry Marines, utility and weapons carriers, a light assault vehicle, and the lightweight howitzer will enable the assault ground force to land a combined-arms force at long ranges. As in the surface assault (see Chapter 4), the vertical assault under STOM conditions will require ground task forces to be introduced as complete units in a single lift to the extent feasible. Thus, infantry, engineers, antitank vehicles, and some artillery units are flown in with the initial MV-22 sorties followed by additional equipment and supplies, including unloaded LAVs and artillery prime movers, by using the CH-53E aircraft. Obviously, the load plans for the task force must be carefully considered to ensure that sufficient combat power and sustainment can be inserted into the objective area on the first assault flight. Post-L-hour requirements must be considered as carefully as the initial effort. Detailed resupply requirements must be identified and planned for to ensure that subsequent flights provide the combat sustainment required by the assaulting ground task forces to continue combat operations. In particular, the larger external loads require slower en route airspeeds (because of drag limitations). When operating at extremely long ranges, detailed plans for the movement and replenishment of an artillery unit must be coordinated.

The size of the MV-22 flight must be carefully considered. Moving whole ground task forces will require considerable pilot skill. Tactical demonstrations, to be effective, may also require large flights, particularly if the actual assault flights prove to be large. Multiple flights and LZs may alleviate some of these problems but must be located within mutual supporting distance of the ground task force units. These separate flights can use different routes to the objective area, thus preventing the enemy from divining the intentions of the vertical assault force. In such a case, precise timing and coordination are crucial to ensure that the ground forces arrive in the correct sequence, facilitating the execution of the planned ground maneuver out of the LZs. Rendezvous plans and airspace deconfliction must also be well coordinated.

After the initial MV-22 flights have landed and departed, the CH-53Es will normally follow. The CH-53E is slightly less capable with respect to airspeed and maneuver capabilities but has the advantage of carrying substantially heavier loads. Should METT-T dictate, the CH-53E may use the same routes as the MV-22. If the requirement exists for the simultaneous insertion of the infantry force and its heavy firepower, then the CH-53E flight may launch in advance of the MV-22 flight and conduct a rendezvous before the initial point (IP) to phase into the LZ. Escort considerations for the CH-53E are simpler than those for the MV-22. Rotary-wing escorts are capable of maintaining pace with the CH-53E, although their fueling and ordnance considerations differ substantially.

Both the MV-22 and the CH-53E are capable of in-flight refueling. This feature makes vertical envelopment feasible beyond the nominal 200-mile radius. Even if the escort aircraft are capable of in-flight refueling, they may need to refuel earlier and more often than the assault aircraft because of lower fuel endurance. However, unless large numbers of suitable tanker aircraft are available, including carrier aircraft using “buddy” stores and propeller-driven tanker aircraft, the most rapid refueling is accomplished onboard the assault ships. After H- and L-hours, aggressive movement of assault shipping closer to the shore—commensurate with the threat—will pay dividends for rearming and refueling. LPD-class ships prove especially useful here, although an NSF combatant might also be pressed into such service. One of the LHA-class or LHD-class ships should approach the shore as feasible, providing a “hotpad” alert with embarked attack aircraft. However, it should be noted that the aviation ships will be required to replenish at sea almost daily to maintain aviation fuel and ordnance reserves that are sufficient to support assaults at planned distances. In addition, CH-53E aircraft can provide tactical bulk fuel dispensing system (TBFDS) support to MV-22s, helicopters, and other V/STOL aircraft to extend their combat radii. These locations can be established on a short-term basis and relocated as necessary to reduce force protection requirements.

A significant improvement in situational awareness and a concurrent decrease in “processing time” can be realized by standardizing the information displayed to all participants. Ensuring that a platoon commander’s laptop computer, the monitors used by the CE, and the multifunction displays in the aircraft all present identical information in the same location and on the same “pages” of the screens will greatly reduce interpretation errors.

LZs

The selection of the LZs within the LPA must be completed in close coordination with the GCE. CLF has the ultimate authority to determine the LZs to be used. Use of imagery and topographical analysis will aid in the sound selection of these areas. Although the selection of LZs may be driven by the ability of the MV-22 to operate in that area, the size of the landing force and the GCE scheme of maneuver will be the major factors in the selection process. The AMC should ensure that landing force aviation meets the GCE requirements and also retains adequate capability for escort, suppression of enemy air defenses (SEAD), air reconnaissance, and other functions. The AFLs must determine proper aircraft formations and positioning within the assault flights to ensure the proper tactical sequence of the ground task forces in the LZ. The planning guide and both the MV-22 and CH-53E tactics manuals detail selection criteria for LZs. The minimum landing pad size for the MV-22 is 36 x 23 feet, assuming the ground is clear of obstructions and reasonably level for 56 x 62 feet and the immediate area surrounding the zone is clear of obstructions out to 79 x 105 feet.

ROUTING

Route selection requires coordination with the AF tactical air control group and landing force ACE and GCE planners. Preplanned checkpoints reflected in the special instructions facilitate adjusting ingress or egress routing. This “spiderweb” system of alternate routes of ingress and egress from the ships to the LZs permits alternate routing by vertical assault aircraft should the tactical situation require changing the prebriefed plan. These variable routes may become necessary, especially when enemy air defenses uncover. The proofing of multiple routes before the assault will be done by armed and unarmed UAVs. SEAD measures will apply until enemy resistance has ceased. Fires from NSF ships and aircraft will initially provide SEAD support, reinforced by the immediate actions of escort aircraft to protect the assault support flights.

Vertical assault planning begins in the objective area and works backward to the amphibious shipping. Once the LZ has been selected and actions in the objective area have been planned, the assault IP must be chosen. The IP is the last checkpoint along the route of flight that orients aircraft into the objective area. This point is used for timing, navigation, and orientation. The exact location where the MV-22 will transition from the in-flight fixed-wing mode to the vertical landing mode will depend on the flight leader’s on-the-scene judgment and cannot be predicted by mission planning. It is always desirable to suppress the known antiaircraft threat and cover the assault aircraft into and out of the landing and transition area with attack helicopters and fighters. The planning guide and the MV-22 tactics manual spell out the requirements for tactically sound IPs. The IP may also serve as the rendezvous point (RP) with the rotary-wing escorts or the CH-53E flights. Once the IP has been selected, the routing can be established. With dissimilar aircraft, such as the MV-22 and CH-53E, holding areas (HAs) and RPs will be used to cycle aircraft into the LZ. These HAs and RPs will be away from the objective area (IP to LZ). Airspace will be deconflicted by time, space, and altitude. Thus, aircraft will be used to their optimal performance. Aircraft routing should avoid detection by the enemy, bypass known threats, maximize the surprise effect on enemy forces, and establish aircraft deconfliction in the objective area.

Mission planners make use of the unique maneuver capabilities of the assault aircraft to the maximum extent possible. With this in mind, careful consideration must be given to the makeup of each flight. To capitalize on the speed, range, and maneuverability of the MV-22, the lead flights may not want to include CH-53E aircraft or any MV-22s with external loads. The slower and less maneuverable aircraft will be easier targets for pop-up threats and will, in all likelihood, require assistance from the escort aircraft. Terrain flight profiles may be the best method to circumvent the threat during the en route portion of the vertical assault. The selected routing should use the available terrain to mask the assault flight from detection. The high airspeed of the MV-22 provides the necessary low-level dash capability to avoid unforeseen surface threats such as small arms. The MV-22 also has the option of using high-altitude profiles on the en route legs to avoid low-level SAM and low- to mid-level antiaircraft artillery threat envelopes. A high-altitude profile requires a planned descent to a landing in the objective area, followed by a low-level egress or a climb from the objective area to the return-route altitude.

During the assault, Navy control agencies retain responsibility for managing certain airspace within the LPA. The Navy has two control zones and three controlling agencies.

Tower control directs the movement of aircraft within the immediate airspace surrounding individual ships.

Approach/departure control directs movement of aircraft between ships and the airspace within the LPA not specifically designated for CLF control. The TACC (Afloat) has overall control responsibilities. The Helicopter Direction Center (HDC) has the approach and departure responsibilities for the airspace between ships.

CATF will normally assume control of seaward airspace within the LPA. If CLF assumes responsibility for landward airspace within the LPA, then a predetermined changeover line must be established.

INLAND ACTIONS OF THE VERTICAL ASSAULT

Reconnaissance and continued observation of primary and alternate LZs are conducted during pre-assault operations and continue as required during the assault phase.

Flight leaders for subsequent vertical assaults will use updated reports for feedback to select optimal routes and profiles. Although separate routes for each cycle of the vertical assault are desired, the demands on SEAD, escort, and other resources must be considered as well. If escort aircraft also perform CAS missions in support of the escorted force, they will be degraded in the escort role. However, a successful assault and SEAD effort will reduce later escort requirements considerably.

Aggressive tactical maneuvers out of the LZs by the ground task forces may produce additional assault support requirements. The task forces landing by vertical assault will use light infantry tactics supported by LAVs, artillery, and multipurpose anti-armor systems to attack out of the LZs against all kinds of targets, depending on the operational center of gravity. Further lifts of task forces or their elements, reconnaissance (foot and light armored), or artillery support may be expected on short notice; logistic/CSS support for the vertical assault task force will also normally be transported by air. The decision of CLF to employ the reserve will probably demand a maximum effort in all categories of aviation. Artillery lifted into LZs to support surface or vertical assault task forces will require displacement as the task forces leave the LZs uncovered and advance (see figure 6-1).

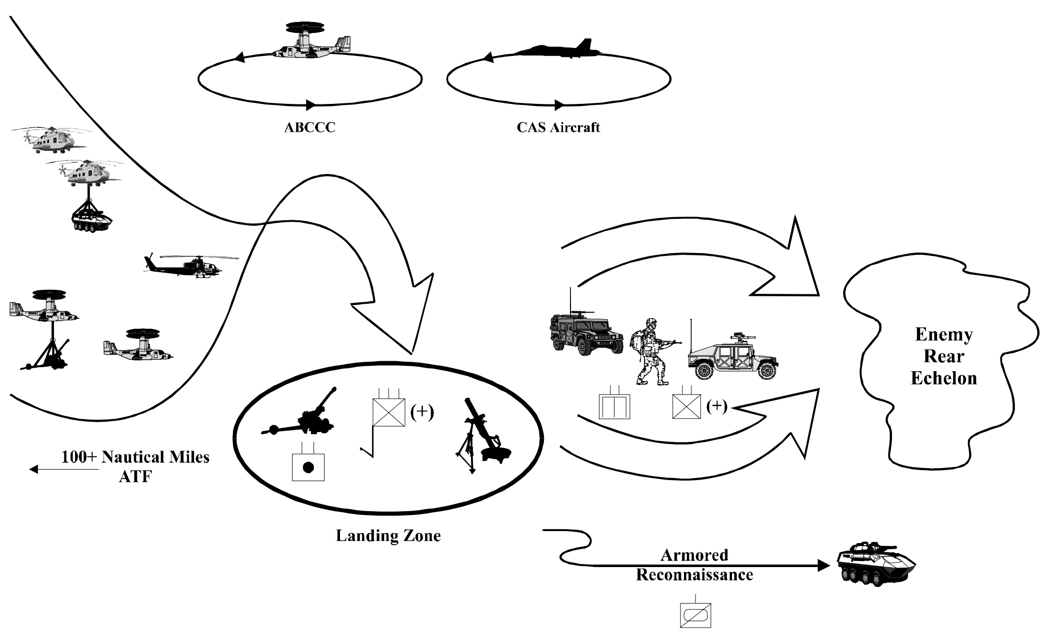


Figure 6-1. Vertical Assault Actions Inland

The GCE commander may desire to use repeated vertical bounding tactics by the ground task forces during the assault and after; both CLF and the GCE commander must balance competing requirements to use available airlift for maneuver and for other requirements, such as logistic/CSS support of the task forces available. Such tactics may require that aviation units report in direct support to the task force commander. Such operations increase the need to operate inland to maintain the desired offensive momentum while reducing the response time. Direct-support aviation units can operate from forward arming and refueling points (FARPs) on a temporary basis; this reduces response times and simplifies coordination. Although the landing force aviation will remain seabased, it can operate detachments temporarily from the FARP in support of critical GCE operations.

AIR CONTROL

The tactical air control group and its various centers will provide for terminal control in the transport area. After aircraft depart the transport area and cross the line of departure, CLF will assume responsibility for conducting the vertical assault. The automated direct air support center (DASC) of the landing force command and control system provides situational awareness for assault flights moving into and out of the objective area. Decisions by CLF, normally embarked on the sea base but possibly airborne, or the ground task force commanders to vary the assault maneuver or to divert to alternate LZs will be communicated by the system to all concerned agencies, including fire support and air control of both CLF and CATF, with the latter providing connectivity to higher and supporting organizations of the joint forces in the LPZ. Movement will occur along planned routes. Standard control points will be used for all routing. All information will be passed digitally (primary means), with voice communication as a backup.

The AMC may confer with the flight leaders and the task force commander to adjust routing, timing, and alternate plans as the tactical situation develops. As maneuver decisions are changed, the DASC will make adjustments for other supporting arms to ensure that proper airspace deconfliction is maintained.

Our aircraft feature powerful mission computers that are capable of storing, retrieving, and presenting more information to the pilots than ever before. Moving map displays drastically reduce the cockpit workload, freeing the pilots from near-constant attention to navigation. Threat envelopes, routes (both primary and alternate), safe areas, control measures, and timing information will be instantly available without manual calculation. Pop-up threats can be avoided or prosecuted by the onboard capabilities. Preformatted messages for external fire support, spot/situation reports, and other uses can be transmitted digitally while the flight is continuing the primary mission. Laser range finders coupled with GPS navigation capabilities will allow the aircraft to pinpoint the enemy locations in concert with their descriptions. Synthetic aperture radar images can be generated from safe standoff positions and transmitted to the ships; positions of objects are accurate to within five feet. All such information enters into the common operational picture of the command and control system. Changes to any portion of the mission are transmitted to vertical assault units in a similar manner.

The operation of an airborne command and control center (ABCCC) from one of the command-configured MV-22 aircraft could produce large dividends in connectivity and decisionmaking within the landing force, and especially within aviation units. Landing force, GCE, and ACE officers operating from the ABCCC would be ideally placed to coordinate surface and vertical assault maneuvers of the task forces; clarify the common tactical picture to CLF and CATF on the flagship; and perform numerous airspace management, fire support, and logistic support functions. The provision of one or more ABCCCs (in relay or, if operations are widely spread, in parallel) will be a priority consideration for the landing force (see figure 6-2).

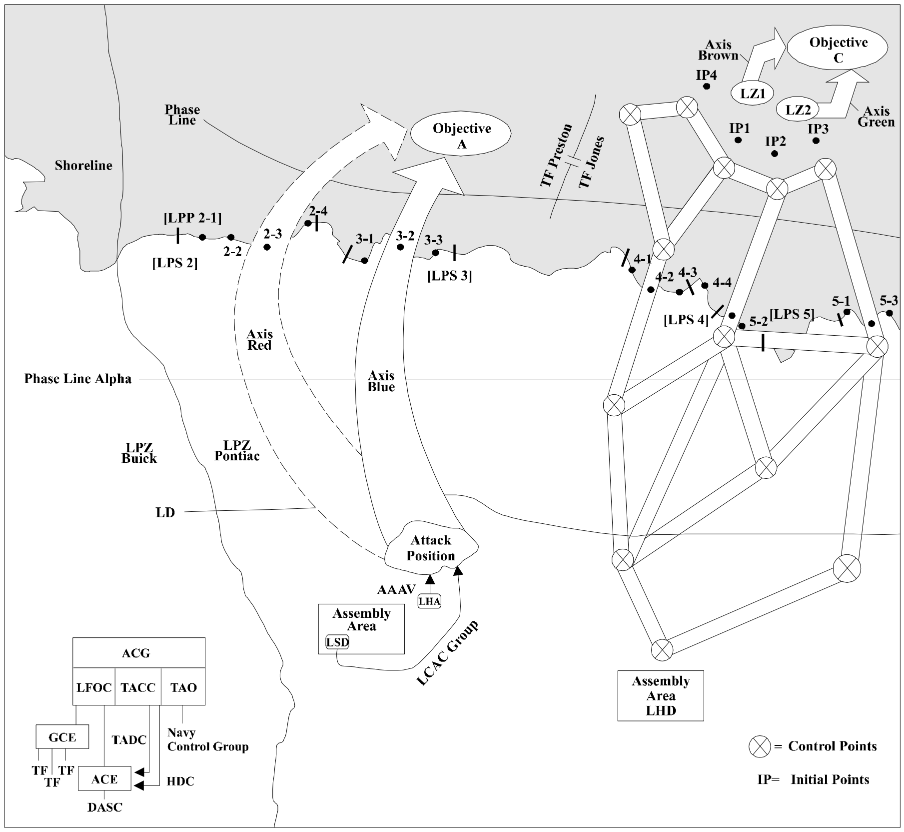


Figure 6-2. Control Measures in STOM (Vertical Assault)

SHIPBOARD OPERATIONS

The number of available amphibious decks will determine the size of the assault flight and the number and type of escort/attack aircraft available to support the vertical assault. Placing the assault and attack aircraft on separate decks (when possible) more readily facilitates the cycling of different aircraft flights aboard ship for refueling, reloading, and rearming.

Three refueling options are available for consideration: in-flight refueling, FARPs, and shipboard refueling. The first two will maximize the payload available to the aircraft, minimize turnaround times, and result in faster deck cycling. The drawback to these plans is the requirement to dedicate aircraft that might be better used in other mission areas. To reduce the time spent on the flight deck to load subsequent waves of the assault force, the assault flight may conduct aerial refueling while outbound from the amphibious ships. The flights may expeditiously land, load, and depart, thereby freeing up the flight deck for other aircraft. Aerial refueling of strike aircraft will free more deck space for assault support aircraft.

Land-based MV-22 (or CH-53E) squadrons operating as landing force aviation will present unique requirements, especially if weather and distance factors become extreme. Generally, the shore-based assault support aircraft will run flights to the assault shipping then to the LZs and will then return to the shore base for reforming and re-briefing.

ELECTRONIC WARFARE

The EW effort of the ATF will peak during the initial assault. Much effort will be made to deny the enemy any opportunity to detect or fire on the vertical assault flights. Jamming or destroying enemy radar capabilities and C2 nodes that survived the AF pre-assault operations will enhance the security of the vertical assault maneuver. The designation of airborne EW missions in support of the vertical assault will receive priority treatment.

TACTICAL RECOVERY OF AIRCRAFT AND PERSONNEL

TRAP facilitates the expeditious return of personnel or aircraft without further loss of friendly forces. TRAP missions are divided into two categories: immediate recovery or delayed recovery. Multiple TRAP package options are loaded into the mission computers of all TRAP-capable and escort aircraft. When a requirement for a TRAP mission is realized, any of the TRAP-capable aircraft in the ACE can be launched or diverted by the combat element (CE) (or a flight leader in the event of lost communications). The preloaded TRAP options in the aircraft mission computers can be accessed, the appropriate one can be selected, and the mission can be conducted in rapid order.

Immediate Recovery

Immediate recovery uses airborne, pre-designated orbit or diverted sorties from other mission assignments to respond and affect a successful recovery before enemy forces respond. The MV-22, CH-53E, and UH-1N(4BN) are all TRAP-capable aircraft. The airspeed advantage offered by the MV-22 makes it the preferred platform when a quick response is required. If an aircraft goes down on the ingress to the objective area, the crew and troops of the downed aircraft may be required to wait for recovery until the assault flight completes its initial landing. If an aircraft goes down on the egress from the objective area, pickup of the downed crew can be immediate.

Delayed Recovery

In many situations, a delayed recovery may be required because of higher mission priorities or threat. Recovery and escort aircrews are directed to plan, brief, and execute the assigned mission while isolated personnel move to a viable recovery area or selected area for evasion. Most missions incorporate ground units that locate and identify the downed aircrew and passengers. In addition, these ground troops may provide security for aircraft recovery.

VERTICAL ASSAULT TACTICAL CONSIDERATIONS

Organizing for a vertical assault combat consists of integrating a ground task force with vertical assault support aircraft for a specific mission.

Development of the Vertical Assault Task Force

- The availability of aviation support is normally the major factor in determining task force composition.
- The task force must provide a mission-specific balance of mobility, combat power, and sustainability. It must have sufficient combat power to seize initial objectives, protect LZs, and retain sustainability to support a rapid tempo and follow-on missions.

- The required combat power must be delivered to the objective as soon as possible, consistent with aircraft and flight deck capabilities, to provide surprise and shock effect.
- To arrive intact at the LZ, the task force must be protected en route through route security, LZ preparation, and isolation.
- Tactical integrity demands that squads and weapons teams be loaded intact on assigned assault support aircraft. Combat support and CSS units must be landed as tactical units to ensure close coordination and continuous, dedicated support throughout the operation.

Missions and Tasks

- Infantry units form the nucleus of the vertical envelopment task force. However, ground mobility is limited unless vehicles are provided. Range and effectiveness of communications, reconnaissance, crew-served weapons, and antitank units will suffer limitations unless vehicles are provided.
- Combat engineer units perform tactical functions on or near the objectives; provide mobility, countermobility, and field fortification construction support; and provide essential improvements to the LZs for continued operations.
- Artillery batteries and battalions can follow the infantry into LZs and provide direct support for continuing operations. They must be prepared to move quickly and frequently between LZs and to fire suppression missions against enemy air defense and other units firing on the LZs.
- Reconnaissance (foot and light armored) units may accompany or precede the infantry into the LZ, providing scouting and security for LZ operations and supporting actions against the initial objectives and beyond.
- Air defense units provide man-portable and mounted point defense missile support to the airhead and other locations in the objective area.
- The landing of the vertical assault force is conducted in the time and sequence of the ground tactical plan.
- The availability, location, and size of the potential LZs and alternate LZs are overriding factors.
- The task force lands in its most vulnerable moment; hence, unit integrity, execution of the plan as briefed, effective supporting fires, and inherent flexibility remain key conditions contributing to success.
- Resupply and medical evacuation must be available on short notice.
- If LZ options permit, the ones that best support the mission are selected. Choices involve landing on or near the objective or landing away from it and maneuvering over the ground. Combat power, enemy strength and dispositions, surprise, and time available will become prime considerations. Single LZs permit the concentration of power in one location, facilitate command and control, provide better security, and economize on support. Multiple LZs avoid grouping of lucrative targets for the enemy, permit rapid dispersal of ground units, force the enemy to react in multiple directions, and reduce congestion on the ground and in the air.

Air maneuver of the vertical assault force will be determined by the task force commander and the air mission commander (AMC) together. It must support the landing plan and take advantage of weather, terrain, and known enemy dispositions. Fire support will be integrated into maneuver planning. Multiple flight routes, release points, and start points retain the maximum flexibility for aerial maneuver.

- The flight route and other control points are published by CATF and CLF to all subordinate units. Formations, staggering of flights, and flight profiles are decentralized to the maximum extent to take advantage of the situational awareness of the AFL and task force commander.
- Supporting arms during the aerial maneuver serve to suppress known or suspected enemy positions along the flight routes and LZs.
- Success will result from a precise execution of the vertical assault portion of the landing craft, assault vehicle, and aircraft employment plan. All times in vertical assault are determined by L-hour. If delays are encountered as a result of weather or aircraft delays, the commander (usually CLF) announces a new L-hour.
- Refueling is planned so that a flight completes refueling before it becomes critically low on fuel. In large vertical envelopment operations, this means that some flights must refuel from the ship or forward arming and refueling point (FARP) an hour before necessary. Other flights may continue to operate while some are refueling. A smooth and continuous rotation of aircraft in and out of these sites is the responsibility of the AMC.

Loading the task force for a vertical envelopment is a critical step in the execution of the vertical envelopment portion of the landing craft, assault vehicle, and aircraft employment plan.

- When planning loads for vertical envelopment, the unit breaks down into chalks for a given flight. Squad and team integrity are maintained in aircraft loads, and platoon integrity is maintained in the same flight. The commander's goal is to load with maximum unit integrity at every level. Crews are loaded with weapons (with possible exceptions for heavy loads such as artillery and LAVs). Ammunition is carried with all but the largest weapons systems. Supplies are accompanied by personnel to unload the aircraft. Leaders and crew-served weapons are spread loaded among aircraft within the flight to the extent possible.
- The chalkings are informal and last-minute; they correspond to aircraft flight and unit line number (ULN) assignments of the landing craft, assault vehicle, and aircraft employment plan.
- Aircraft load plans of the unit contain "bump plans" that indicate which loads or chalks are to be left behind in the event that too few aircraft land, meteorological conditions reduce lift capacities, or mechanical problems interfere with the plan. This measure ensures that the most essential personnel and equipment arrive at the LZ on schedule. Bump plans pertain to chalks within a single aircraft and among unit chalks assigned to a given flight.
- Lifts, flights, and loads comprise the aircraft groupings in vertical envelopment operations. A lift is comprised of the aircraft assigned to a given task force as designated in the landing craft, assault vehicle, and aircraft employment plan. A flight is comprised of two or more aircraft, under a single leader, flying the same route into the same LZ. A load or chalk is the assignment for a single aircraft mission within each flight to carry and deliver as required. In lift 1, there may be 4 flights, and flights 1 - 3 may have loads 9 - 12.

Aircraft lifts and flights follow the commands of their leaders (usually the AFL) while en route according to the tactical situations encountered. Landing in the LZ, however, usually depends on the desire of the task force or subordinate ground commander of the unit being transported, with concurrence of the AFL.

Heavy Left (or Right)

A heavy left (or right) formation requires a relatively long, wide LZ and provides firepower to the front and flank (see figure 6-3).

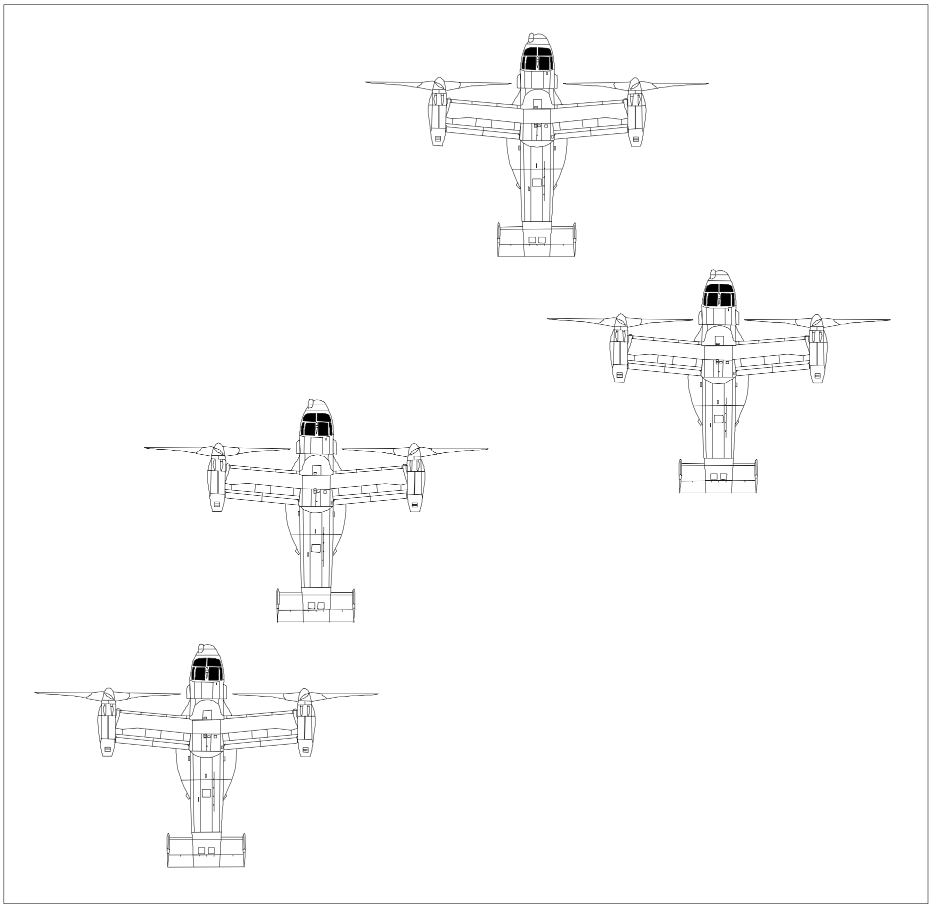


Figure 6-3. Heavy Left

Diamond

A diamond formation allows rapid deployment to all-around defense, requires a relatively small LZ, and restricts maximum fire to the flank (see figure 6-4).

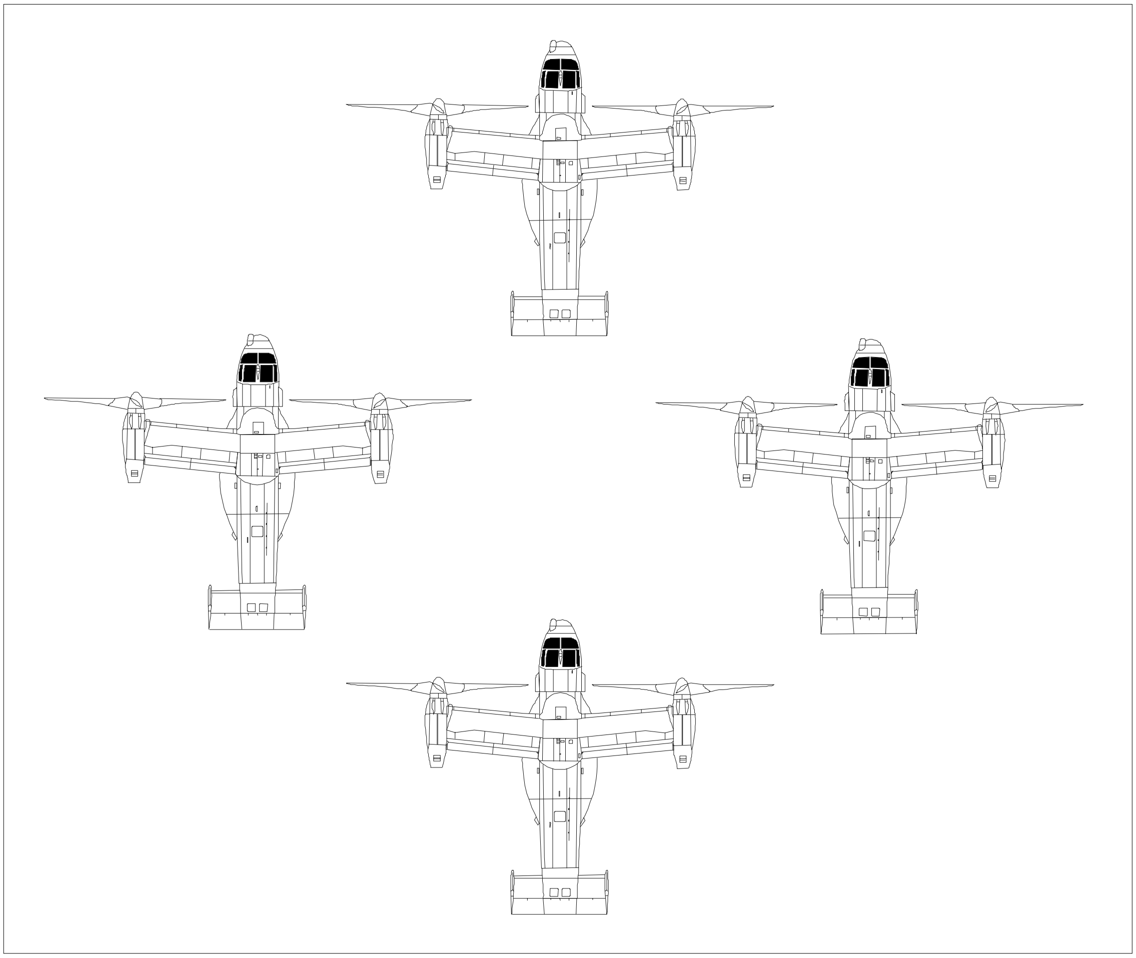


Figure 6-4. Diamond

Vee

A vee formation requires a relatively small LZ, allows rapid deployment, and restricts maximum firepower to the front (see figure 6-5).

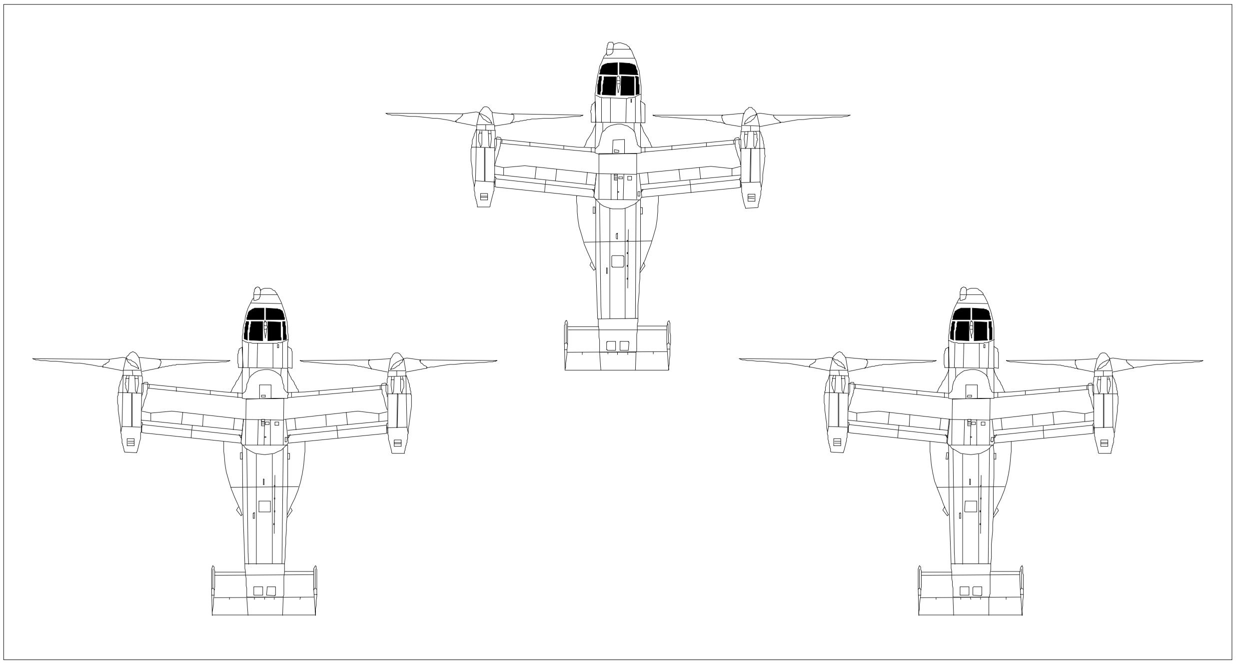


Figure 6-5. Vee

Echelon Left (or Right)

An echelon left (or right) formation requires a relatively long, wide LZ, allows rapid deployment to the flank, and restricts maximum fire to the flank (see figure 6-6).

Column

A column formation requires a relatively small LZ, allows rapid deployment to the flank, and provides maximum firepower to the flank (see figure 6-7).

Staggered Column

A staggered column requires a long, wide LZ. It allows for rapid deployment all around, but fire is somewhat restricted. (See Figure 6-8.)

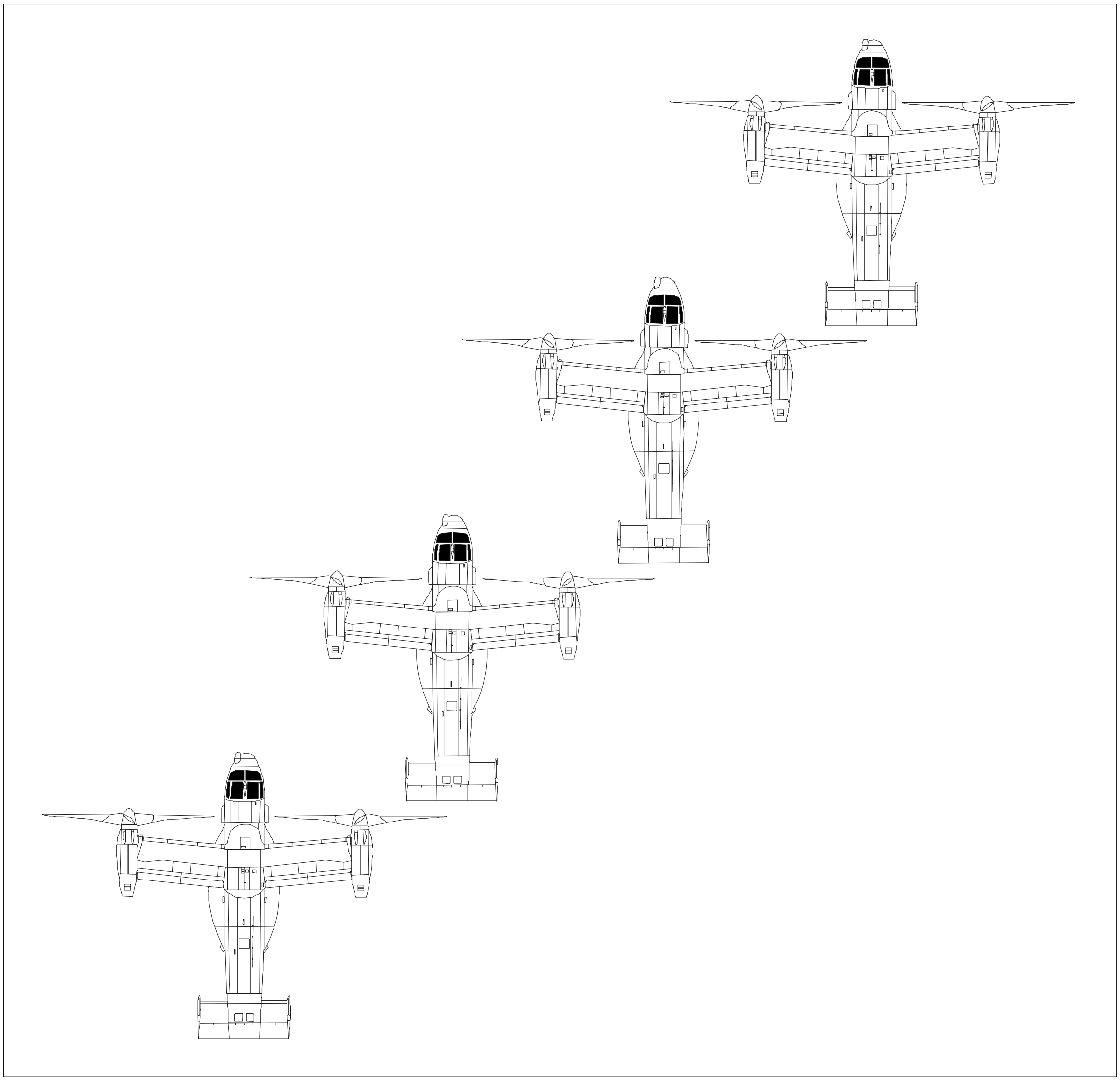


Figure 6-6. Echelon Left

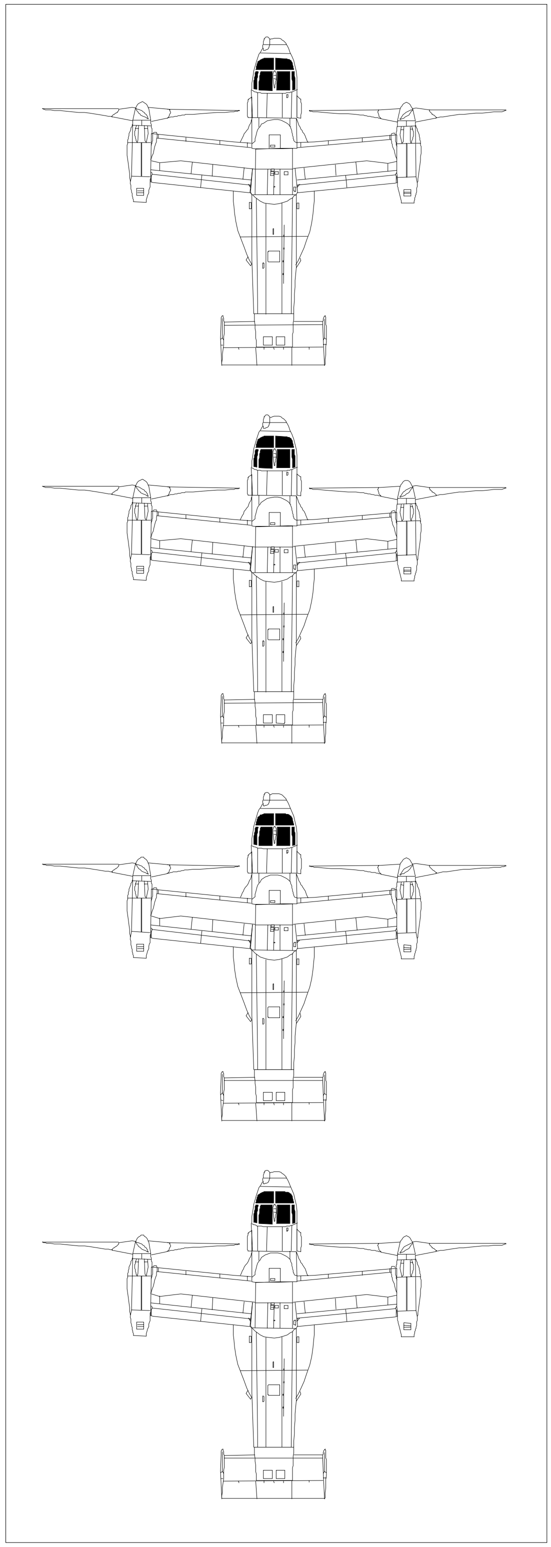


Figure 6-7. Column.

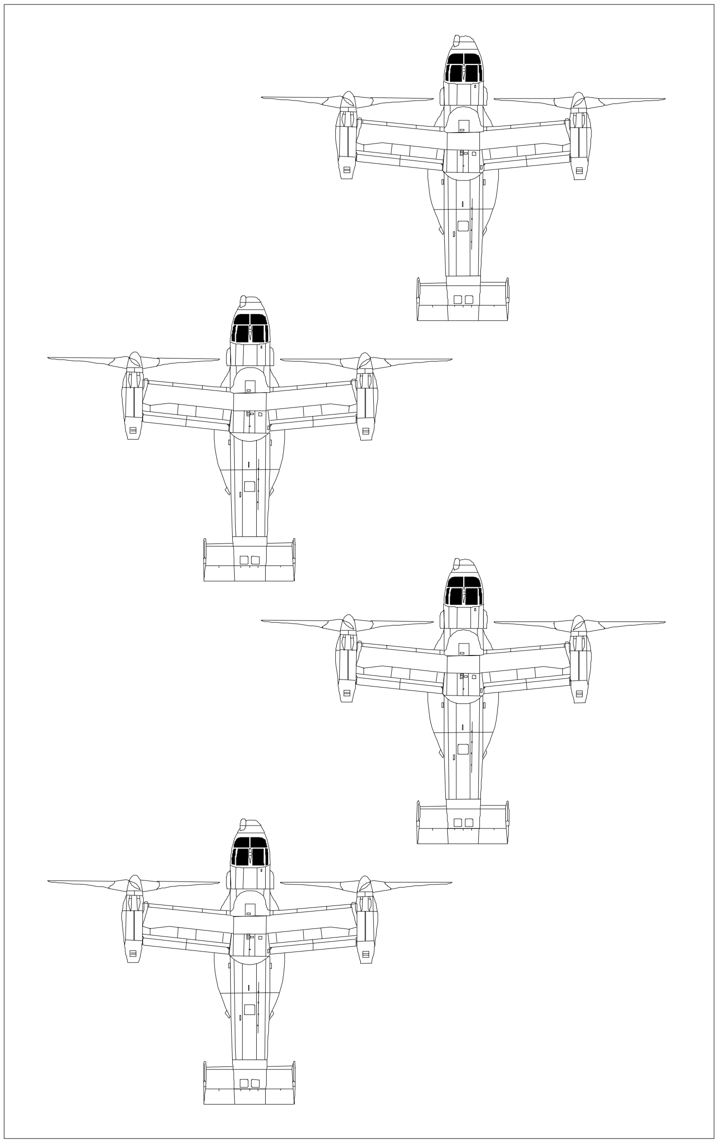


Figure 6-8. Staggered Column

Chapter 7. Command, Control, Communications and Computers

Amphibious operations require a flexible C2 system capable of supporting rapid decisions and execution to maintain a high tempo of operations. Command, control, communications and computers (C4) systems and equipment support effective C2. These systems must be robust, flexible, and as expeditionary as the AF. The AF must have the ability to plan for, provide C2 for, and support all functional areas (fires, aviation, intelligence, and CSS, etc.) afloat and ashore. Initially, C4 systems that support the LF are seabased, but as CPs and control agencies transition ashore, a ground-based system will be required for the CLF to control all aspects of the operation.

This chapter emphasizes the C2 requirements of amphibious operations and seabased C4 support of the LF. However, the LF must retain the capability to transition selected C2 facilities ashore. In addition to supporting amphibious operations, the MAGTF C4 system must be capable of supporting sustained operations ashore and MOOTW. The system should be flexible enough to provide support to the MAGTF while afloat, while ashore, and during transition from one to the other. It should also provide connectivity and C2 interoperability with all components of a JTF. One MAGTF C4 system should support the C2 requirements of all expeditionary operations conducted by the MAGTF.

RESPONSIBILITIES

CATF and CLF are responsible for C4 systems support planning, with the designated commander consolidating the requirements. These responsibilities are best described as mutual.

CLF develops a communications information system plan for the STOM force for inclusion into the CATF's coordinated plan for employment of AF communications during the operation. This plan must ensure seamless interoperability between CATF and CLF C4 systems during all phases of the amphibious operations. This plan includes:

- General coverage of the communications situations, including assumptions, guiding principles, and the concept of operational communications employment.
- Announcement of the communications mission.
- Delegation of the communications tasks and responsibilities to major elements of the force.
- Detailed instructions for organization, installation, operation, coordination, and maintenance of the communications system.
- Assignment and employment of call signs, frequencies, cryptographic aids, and authentication systems.
- Instructions on countermeasures, operations security, military deception, and communications security.
- Interoperability of computer systems, to include hardware and software.
- Logistic support for communications and electronics.

CLF establishes computer and network requirements of the STOM force while embarked so that the CATF can acquire and assign necessary shipboard C4 facilities and services to the LF. Normally, the use of shipboard facilities allow LF elements to have a complete allowance of communications equipment for the movement ashore.

CLF develops an LF EW plan based on the CATF's appropriate operations security (OPSEC) and military deception guidance and coordinated EW plan for the force.

CLF develops and promulgates the plan for communications connectivity with other ground forces ashore while the CATF does the same for communications connectivity with other maritime forces.

THE COMMUNICATIONS PLAN

The communications plan for the STOM force is normally issued as an annex to the OPLAN and must be compatible with the overall communications plan of the AF. The actual drafting of the communications plan is the staff responsibility of the assistant chief of staff (AC/S), G-6. Throughout the plan preparation, the AC/S, G-6 must coordinate with each staff section of the LF as well as his equivalent staff officers at parallel and subordinate commands. The AC/S, G-6 counterpart on the ATF staff is the communications officer, or commonly referred to as the N-6. The AC/S, G-6 and N-6 conduct concurrent and parallel planning while addressing the following specific items:

- Allocation of shipboard radio, computer and network equipment for LF use.
- Assignment of call signs, normally done by the CATF to facilitate handling of LF traffic over naval circuits during the movement phase.
- Identification of cryptographic and authentication systems that must be used by both ATF and LF units.
- Development of communication security (COMSEC) procedures.
- Evaluation of assigned radio frequencies to prevent mutual interference and ensure adequacy of support for the LF OPLAN.
- Use of LF personnel to support the ships' communications personnel during the movement to the objective and during the initial stages of the action phase.

PLANNING CONSIDERATIONS

Each major command of the LF must have compatible and interoperable communications that will support the tactics and techniques employed by that force. Circuits provided must assure effective exercise of command and coordination of supporting fires.

The plan must support each phase of the amphibious operation. Although communications support during the movement phase are normally provided by US Navy systems, the LF communications plan must support the planning, embarkation, rehearsal, and action phases. **The communications plan must permit rapid integration of the LF circuits without undue interference with other elements of the AF.**

Changes in the organization of the LF, command relationships, and location of forces require maximum flexibility in the plan. Multiple purpose circuits should be used where practical in order to assist in the reduction of required bandwidth and mutual interference—especially in the landing area that can become congested.

The necessity for dispersion of the forces, combined with the rapid movement of the LF during the action phase, may overextend what are considered "normal" ranges for the LF's communications assets. The CLF should consider alternate means to extend these communications paths, such as satellite communications, airborne relay/retrans stations, and increased use of high frequency (HF), when developing the plan.

The physical environment of the amphibious operation requires an almost complete dependence on radio during the initial portion of the action phase. The employment of radio is complicated by its relative fragility, vulnerability to saltwater and enemy interference, and imposition of necessary security measures. The LF communications plan must be developed with a full understanding of radio communications limitations.

LANDING FORCE C4 SYSTEM'S SUPPORT BY PHASE

Planning Phase

C4 systems, connectivity between the CLF, CATF, and AF commander staffs must be established immediately at commencement of the planning phase. Units of the LF must ensure preservation of OPSEC despite distances separating the various planning headquarters. The worldwide Defense Message System, supplemented by SECRET Internet Protocol Router Network (SIPRNET) electronic mail, the Defense Red Switched Network (DRSN), and use of secure end user terminals on the Defense Switched Network (DSN) provide the major communications means during this phase.

Embarkation Phase

Before embarkation, planners must provide for adequate C4 systems support between the AF and any external agencies involved in transportation. **The CLF is normally responsible for planning and providing LF C4 systems at the piers and/or beaches within the embarkation areas, to include coordinating the use of established facilities (military or civilian).** A significant portion of the LF's organic communications equipment will be packed and ready for embarkation so the CLF should make arrangements with the area's local commander to provide communications support. Specifically, the plan should:

- Establish ship-to-shore circuits for the control of loading (closely coordinated with the CATF).
- Establish convoy control for serials moving from point of origin to seaport of embarkation (SPOE).
- Establish communications between the port of embarkation (POE) and embarkation area, including the contracted use of commercial assets if feasible.
- Establish communications between control points within the embarkation area.
- Establish communications center and/or switching center operations within the embarkation area.

Rehearsal Phase

The rehearsal phase of the STOM operation gives the CLF the opportunity to test the LF communications plan. Under ideal conditions, the rehearsal will involve all elements of the force and attempt to fully test the C4 systems involved without violating COMSEC procedures. By having a full-scale rehearsal, the CLF can further refine his C4 requirements and vulnerabilities, thus allowing for appropriate adjustments to the OPLAN before execution. Specific considerations during the rehearsal phase include:

- Maximum use of secure voice equipment and minimum use of power on electronic emitters for COMSEC reasons.
- Use of call signs and frequencies for rehearsal use only.
- Plan to repair or replace communications equipment damaged during the rehearsal.

- Plan for, allocate, and embark expendable items (such as wire and batteries) for use during the rehearsal.
- Allocate enough time to conduct an objective critique of the communications plan after the rehearsal and to modify portions of the plan as necessary.

Movement Phase

As discussed earlier, the CATF provides functionally operational spaces built on a Navy C2 infrastructure to the LF. During the movement phase, however, the CATF normally restricts the use of equipment, particularly transmitters and emitters, to prevent disclosure of the force's locations, movements, and intentions. The LF plan must address how the commander will communicate with LF units embarked on different ships, and possibly even separate movement groups, during these periods of radio silence. Some potential alternate means are helicopter messenger, visual signals, or line-of-sight radio if permitted by the EMCON condition. Other LF C4 considerations during movement include:

- Ensure that embarkation information is accurate and reflects the communications guard situation for all elements of the LF.
- Ensure that communications officers with the ATF have an accurate list of appropriate LF units (i.e., next senior and immediate subordinate) and their assigned shipping location.
- Ensure that all ATF communications officers have an accurate listing of LF personnel who have message release authority.
- Ensure that all ATF communications officers have an accurate listing of LF communications personnel embarked in their respective ships, as well as their clearance and access information.
- Establish LF communications centers, or equivalents, on all ships when major LF units are embarked.
- Augment ATF communications facilities with LF personnel and equipment when appropriate.

Action Phase

During the action phase, both the ATF and LF rely primarily on radio communications as the means for exercising C2. Accordingly, radio silence is usually lifted by the CATF prior to H-hour in order to test all circuits before the STOM movement begins. During the initial portion of this phase, when the major LF headquarters are still afloat, LF circuits are provided by facilities specifically installed in amphibious shipping for use by LF personnel. LF communications must be complementary and generally parallel to those established by the ATF. These parallel systems usually terminate at each significant control center aboard the amphibious ships; i.e., SACC, TACC, helicopter direction center (HDC), and tactical-logistical group (TACLOG). The LF communications plan must address the many operational aspects of the action phase.

Surface Movement

Communications for control and coordination of landing ships, landing craft, and other waterborne vehicles moving from the transport area to landing areas are provided primarily by the CATF through a Navy control group. However, LF radio nets must be integrated into the group's plan so that LF commanders can properly monitor and control the movements of the LF, especially when the STOM movement includes LF organic AAVs.

Helicopterborne Movement

Communication nets for the control and coordination of the assault support helicopters are established and maintained by the CATF through his TACC and HDC. LF personnel will augment the HDC and integrate LF communications into the overall aviation C2 systems. Helicopterborne movement normally generates additional, long-range communications requirements for the LF because of the inherent distances associated with helicopter operations.

Supporting Arms Coordination

Whether supervised by the ATF's supporting arms coordinator (SAC) or the LF's force fires coordinator (FFC), the SACC coordinates and controls all organic and nonorganic fires in support of the AF until the LF establishes adequate control and communications facilities ashore. The LF communications must include nets that integrate all agencies that interface with the SACC. These include, but are not limited to, the naval surface fire support (NSFS), the air support section, the target information center (TIC), the force fires coordination center (FFCC)/ fire support coordination center (FSCC)/fire support element (FSE) of the LF, fire support observers, tactical air control parties (TACPs), forward air controller (airborne) (FAC(A)) and tactical air coordinator (airborne) (TAC(A)), and artillery fire direction centers (FDCs).

Combat Service Support

Selected units and agencies of the LF are required to assist the CATF in controlling and coordination logistics during the action phase. LF communications must provide a means for the control of CASVAC, prisoner-of-war collection, foot and vehicular traffic ashore, as well as the means to control the movement of supplies and equipment. Landing support units are required to establish communications within the CSS area. This communications network must include the Navy beach parties, TACLOG, supported LF units, helicopter support teams (HSTs) and transport aircraft (if applicable), SACC, direct air support center (DASC) (once established ashore), and other key agencies within the ATF and LF.

TRANSITION OF LANDING FORCE COMMAND POSTS ASHORE

The CP movement from ship to shore must be accomplished in a manner that provides for communications continuity during the entire action phase. LF units are almost entirely dependent on netted radios during the early stages before they can gradually transition to wire, wire-multichannel radio, computer network systems (SIPRNET), messengers or other means. The conduct of this transition governs the development of the LF C4 system and is crucial to the seamless transition of effective C2 from the agencies afloat to those established ashore.

A CP movement from ship to shore is normally made in two or more echelons, depending on the type and size of the headquarters. In any case, each echelon requires a near equal communications capability and must be planned out, in detail, by the CLF and his staff.

Furthermore, the commander, staff and supporting personnel that make up a particular CP may be embarked on separate ships. In that case, radio communications must be established between the two or more groups of the CP as soon as practical.

When an advance party (or reconnaissance party) is sent ashore before the major echelons of a CP, direct radio communications are required between the advance party and the CP afloat. The type and quantity of communications equipment and personnel assigned to the advance party must be weighed against the need for those assets back at the CP during the action phase.

When in transit from ship to shore, the CLF and appropriate staff members will require communications with LF units already ashore (including the CP advance party if employed), LF units also in transit, LF units remaining on shipping, and appropriate ATF agencies afloat.

The communications facilities normally available to the CLF (e.g., C2 configured helicopter or AAV) will usually not be able to satisfy the total communications requirement. Therefore, the communications facilities should be allocated to only the most essential circuits.

CAPABILITIES

Naval C4 systems are key to the ability of CATF and CLF to plan and execute STOM. They provide the support structure for commanders and their staffs to rapidly collect, process, analyze, and exchange information. Naval C4 systems should make available the information needed, when and wherever it is needed in the littoral battlespace.

The Global C2 System (GCCS) will support situational awareness through a common operational picture, COA development, readiness assessment, crisis and deliberate planning, and OPLAN development, as well as force deployment and employment. Under GCCS, Service-unique C2 systems are evolving into a single integrated C2 system. Implementation of a single system will ensure interoperability, increase efficiency, and reduce costs by using a common set of software applications and services. This integration is taking place rapidly through the migration of Service C2 systems to the Defense Information Infrastructure (DII) common operating environment (COE).

The Navy-Marine Corps team is accomplishing this migration through the Global C2 System-Maritime (GCCS-M). Selected MAGTF tactical information systems, such as the Tactical Combat Operations System and the Intelligence Analysis System, are undergoing migration to the DII COE. This chapter assumes that migration to the DII COE will be successfully completed and that all Navy and Marine Corps tactical data systems will be capable of exchanging data and interoperating with minimal planning and configuring. It also recognizes that equipment is only part of the C2 system; the other key elements are our doctrine and our organization as well as the training and education of our Marines.

COMMAND AND CONTROL

Responsibilities

Amphibious command relationships should evolve to become more flexible and responsive and to take into account the joint nature of nearly all operations conducted by the Armed Forces of the United States. A supported-supporting commander relationship, as defined in Joint Pub 0-2, between CATF and CLF is a logical approach. A common superior, usually the JFMCC, would make the supported-supporting designations on the basis of the mission to be accomplished. The supported commander would normally have the authority to exercise general direction of the supporting effort, and the supporting commander would determine the means to be used in providing the support. This approach offers the flexibility to choose the appropriate commander to be in overall charge of each phase of an amphibious operation on the basis of the mission and the situation.

The key to successful execution of amphibious operations is for the commander responsible for the main effort be given the appropriate authority for conducting the operation. Because the LF is the force responsible for executing STOM, CLF would likely be designated the supported commander in this phase of the amphibious operation. Furthermore, CLF should be provided with the requisite support to shape the littoral battlespace before initiating the assault. The LF should be provided with shipboard C4 support in the form of working spaces, terminals, local area network access, and access to external communications during all phases of the operation.

CLF will ensure the proper planning, coordination, and synchronization of the amphibious operations. The primary focus will be on conducting battlespace-shaping operations, with emphasis on preparing the LPA for assault. As necessary, CLF will request and coordinate support in shaping the battlespace from other elements of the JTF and/or the naval expeditionary force. The GCE's primary mission is to conduct STOM as the main effort of the MAGTF. The GCE commander will have primary responsibility for detailed planning and execution of the assault and the conduct of subsequent operations ashore, supported directly by the ACE and CSSE commanders.

The ACE commander should support the LF's main effort—the execution by the GCE of STOM to accomplish the assigned mission. Before the initiation of operations, the ACE may represent the main effort of the LF in the execution of battlespace-shaping operations. The ACE commander will plan and conduct air operations and control aircraft from C2 facilities aboard ships and aircraft. The ACE commander should also be prepared to transfer all or some part of this C2 capability ashore. The location of the ACE commander and the relationship of the ACE commander to the commander of naval expeditionary force aviation and/or the JFACC should be such that the ACE commander can best coordinate all aviation support of the LF, whether seabased or shore-based, naval or joint.

Like the ACE commander, the key responsibility of the CSSE commander is to support the GCE commander's assault maneuver and subsequent operations ashore. CSS is particularly challenging because the CSSE should provide that support while operating from a sea base that will be well offshore when the operation begins. If any, will be limited logistic support facilities and supply dumps ashore. The C2 implications are significant. The CSSE commander should develop and execute a logistic support plan using shipboard facilities. This plan should include the ability to locate equipment, supplies, and services aboard ship and to transfer these resources ashore when and where needed. Seabased logistic support requires continuous knowledge of the logistic status of maneuver elements as well as coordination with Navy and ACE commanders to provide surface and air transportation for supplies and services.

Command and Control Environment

Operational Maneuver From the Sea and the supporting concept of *Ship-to-Objective Maneuver* represent the marriage of maneuver warfare and amphibious warfare. These concepts implement maneuver warfare principles and exploit technological advances to enhance the ability of naval forces to conduct amphibious operations in the 21st century. The primary focus is the projection of combat power ashore through amphibious assault and the supporting activities and operations necessary to shape the littoral battlespace for that assault. The rapid maneuver and wide dispersion of forces involved in the execution of these concepts stretch the limits of existing communications-information systems and make it difficult to maintain shared situational awareness and disseminate decisions. Underlying the envisioned power projection capability is the naval C4 system of the future, which takes full advantage of advances in information technology to satisfy the C2 requirement.

Command and Coordination Concept

To conduct amphibious operations, CLF must have the ability to exercise C2 from aboard ship. The CE normally will remain embarked throughout seabased operations. Likewise, the C2 structure of both the ACE and the CSSE will usually remain offshore. Although the GCE commander will likely establish a tactical CP either airborne or ashore, the GCE main CP will, at least initially, remain afloat.

By retaining C2 afloat, the LF will take advantage of the C2 support capabilities of Navy platforms while greatly reducing the requirement for C2 nodes and logistically intensive C4 systems ashore. Elimination of these vulnerable and immobile facilities translates into greatly improved freedom of maneuver and improves the overall survivability of the C2 system. Seabasing of C2 also frees valuable ship-to-shore lift space. To exercise C2 afloat, LF C2 operates as an integral part of an overall naval C2 architecture. In many areas—including fire support coordination, air C2, communications, intelligence, and EW—CATF's and CLF's staffs will be integrated. C2 nodes of all elements of the MAGTF should function effectively throughout the operation, and shipboard spaces should be designed and dedicated accordingly.

MAGTF tactical data systems should be completely integrated with GCCS-M and communications integration of Marine Corps and Navy C4 systems should be seamlessly planned and executed. This naval C2 system will provide essential information services and communications connectivity for the MAGTF, including shipboard connectivity to MAGTF maneuver elements throughout the operation.

Communications Concept

To support STOM, communications connectivity to the seabased C2 system should be extended directly to the maneuver elements without dependence on a land-based communications backbone.

The current concept for communications support of amphibious operations depends on single-channel line-of-sight radios to provide communications connectivity during the initial phases of the amphibious assault. This is followed by the establishment of a switched backbone ashore using multichannel radios to provide high-capacity transmission paths at higher echelons. This approach is clearly inadequate to support STOM and OMFTS. The currently fielded, single-channel, line-of-sight radios lack both the range to span the distances involved and the capacity to satisfy the information exchange requirement. Furthermore, the establishment of a vulnerable, relatively immobile switched backbone ashore runs counter to the principles of OMFTS and loses the advantages inherent in seabased C2.

The naval C2 system should enable connectivity as well as provide access to the global joint communications grid. The seabase-maneuver force connectivity may be satellite-based, using DoD-owned Mobile User Objective System (MUOS) geostationary satellites and supplemented by airborne retransmission platforms (i.e., aircraft, unmanned aerial vehicle (UAV), and aerostat) to extend the range of line-of-sight radios and possibly commercial, low-orbiting satellite system such as Iridium. The responsibility to extend the sphere of connectivity will reside with CATF. However, the MAGTF must retain the organic capability to establish high-capacity, long-haul communications connectivity, independent of CATF, through the underlying global joint communications grid. Total reliance on shipbased assets for external communications connectivity would severely restrict the ability of the MAGTF to transition to sustained operations ashore. The naval C2 system should be capable of smoothly transitioning to support each phase of the amphibious operation.

PLANNING CONSIDERATIONS

Command Relationships, Task Organization, and Mission

The first considerations in planning for C2 support are the organization of the force and the C2 relationships between the components of that force. This manual focuses on an ATF and an LF operating as part of the maritime component of a JTF, with both CATF and the CLF under the direct OPCON of the JFMCC and with a support relationship existing between CATF and CLF. The mission and the CJTF's intent drive the planning for the amphibious operation and the resulting concept of operations.

The concept of operations in turn generates requirements for personnel, systems, and equipment to be dedicated to C2 support.

The mission statement describes, in concise terms, the location of the operation, the time at which it will occur, and the tasks to be accomplished. The mission includes the commander's intent—the desired result of the action. Careful review of the mission gives the C2 planner a general idea of what overall communications and information systems resources will be required to support the operation.

The LF task organization lists all tactical, administrative, and service groupings with the commanders of each. It depicts the LF organization for combat and indicates the command relationships of the forces assigned. Review of the task organization helps the G-6/N-6 determine the requirements for internal and external information flow to be supported by the communications network. Review of the task organization also enables the C2 officer to identify the C2 facilities and their associated requirements for information systems support.

Resources Available

The most important factors to consider in C2 planning are the adequacy of the available C2 support resources to satisfy the C2 requirements and whether the OPLAN is supportable from a C2 perspective. If there is a mismatch between requirements and resources, two COAs are available. Either the concept of operations should be modified to generate a lessened requirement for C2 support, or additional resources should be requested from higher headquarters. The supported commander will be responsible for establishing the overall concept of operations for the amphibious operation, and the supporting commander will be responsible for either providing the requisite support or notifying the supported commander that additional resources are needed. The supported commander should then decide whether to modify the concept of operations or request additional support.

Concept of Operations

The concept of operations will generally depict the scheme of maneuver, the employment of supporting fires, and the landing plan. Analysis of the concept of operations will establish the sequence of events, anticipated locations, and movements of units; locations of C2 nodes; and the distances that the communications network must span. This analysis of the concept of operations will be done for several different COAs, and the G-6/N-6 will prepare an estimate of supportability of each COA from a C2 support perspective. Once the commander decides on a COA, the G-6/N-6 will provide recommendations on the best employment of available means to support the selected COA. Additionally, the G-6/N-6 will identify any shortfalls in the capability to support the mission.

COMMUNICATIONS AND INFORMATION SYSTEMS PLAN

Command and Control

Concept of Operations

The C2 system will support a shared situational awareness by distributing a common picture of the battlespace. This common operating picture will be available to the LF, the AF, and the JTF. The C2 system will facilitate mission receipt and rapid development and dissemination of the commander's intent, COAs, OPLANs, and OPORDs, and the landing plan. The system will be scaleable so that it will provide responsive and effective decision support for operation planning and execution at all echelons of the LF, from CE to maneuver unit. The C2 system will be integrated with intelligence, surveillance, and reconnaissance systems, including links to national, theater, and tactical systems. This will permit the rapid identification of enemy vulnerabilities for exploitation and on which to base development of the scheme of maneuver. A global networking capability will offer tremendous opportunities for "electronic reachback." The concept of electronic reachback will reduce the size of deployed staffs through the use of specialists—military, government civilian or consultant—who never deploy.

Architecture

Currently, C2 systems are separate and distinct from fire control systems. Existing C2 systems operate with limited automated support using non-real-time data. On the other hand, fire control systems operate on near-real-time or real-time data and are highly automated. However, the distinction between C2 systems and fire control systems is blurring.

C2 systems are beginning to obtain data with which to update the operational picture from the tactical data links that support fire control systems. This trend will continue and, by 2014, the C2 system will include an integrated sensor-to-shooter network. The sensor-to-shooter network will link reconnaissance, surveillance, and target acquisition systems with fire control systems. It will provide real-time data exchange between the sensor, the fire control system, and the firing unit. It will link fire support coordination nodes—the JFACC, the SACC, and the FFCC—with fire control nodes. This linkage will permit the cooperative engagement of any target in the littoral battlespace by any firing unit of the LF, the AF or the JTF. The integration of the sensor-to-shooter network into the C2 system will result in an improved capability to cue and position sensors and firing units while providing real-time updates of the common operational picture.

Figure 7-1 is a graphical representation of the future C2 architecture described above. This diagram highlights information flow between sensors, C2, and shooters and depicts three building blocks: an information grid, a sensor grid, and an engagement grid. The information grid will provide the

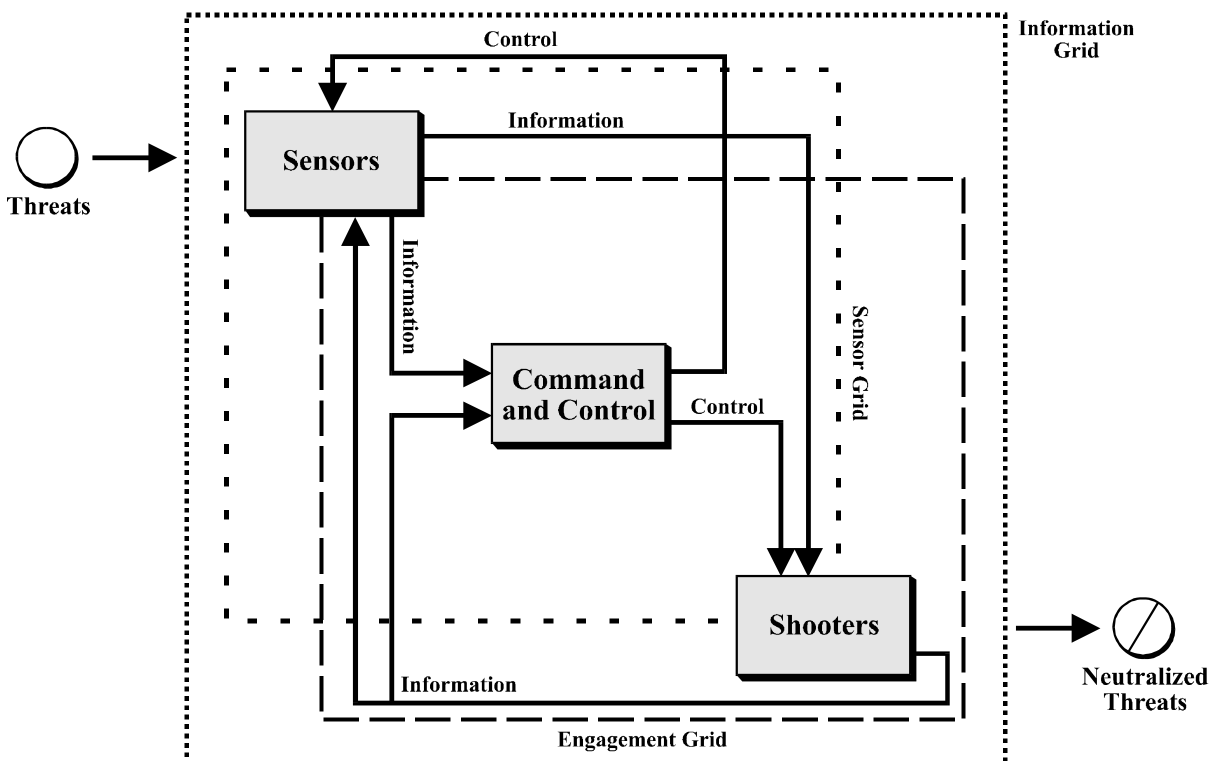


Figure7-1. C2 and the Sensor-to-Decider to Shooter Network

information processing capability and communications connectivity to generate battlespace awareness from the data collected from the sensor grid. Sensor grids will provide the data collection capabilities necessary for achieving situational awareness concerning both the friendly and enemy situations and the environment. These sensors will be on dedicated sensor platforms, on weapons platforms, and deployed by individual Marines. The sensor grid will include embedded sensors that track the supply and maintenance status of LF maneuver elements. The engagement grid will permit the MAGTF to shape the battlespace, generating maximum combat power from organic and supporting fires; to stay inside the enemy's decision cycle, reacting and exploiting opportunities through fire and maneuver; and to rapidly establish an overwhelming tempo and achieve decisive effects.

Facilities

Perhaps the greatest C2 challenge in amphibious operations is providing adequate facilities from which to exercise C2.

The LHA- and LHD-class ships have excellent capabilities, and the LPD-17 will be greatly improved over its predecessors. However, shipboard spaces that are configured to support C2 will remain at a premium, and the location of AF and LF C2 nodes should be carefully planned. To some extent, this will be resolved through improved communications connectivity and networking technologies. Personnel will not have to be located on the flagship to participate in the planning process. Face-to-face interaction between commanders, subordinates, and staffs located on different ships can take place through videoteleconferencing without the need to transport personnel to the flagship by helicopter. Figure 7-2 depicts a notional location of JTF, AF, and LF C2 facilities. Although the names of some of the facilities may change, their functions must still be performed.

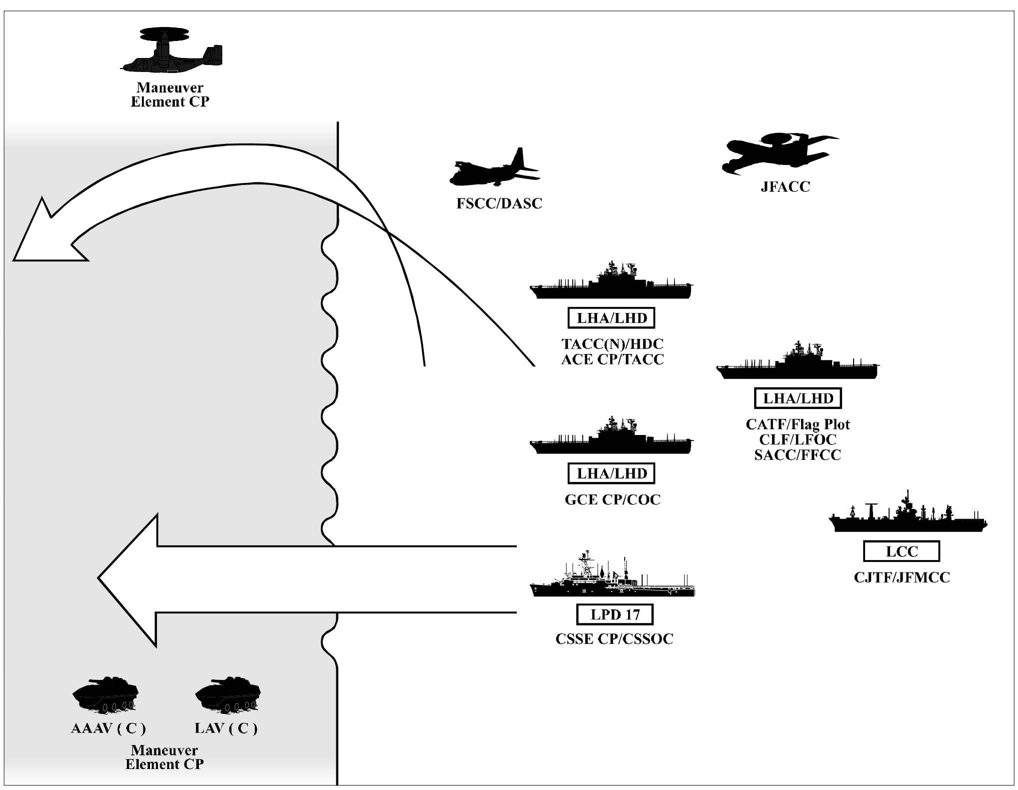


Figure 7-2. C2 Facilities

As previously discussed, the LF CE will normally remain seabased throughout the operation, as will C2 of both aviation, fires and logistics. However, the CPs of both the vertical and surface assault elements will accompany the assault, and the GCE commander will likely establish a mobile tactical CP early in the operation. Many of the fire and air support coordination elements of the LF will be airborne during different phases of an amphibious operation. C2 packages—including workstations, servers, displays, and communications suites—should be available to support these requirements. These packages should be available for both fixed-wing and rotary-wing aircraft and for wheeled and tracked vehicles.

Communications

Concept of Operations

Efficient use of the frequency spectrum to satisfy communications requirements while increasing radio equipment capability is paramount. Voice communications will remain an important factor that enables commanders, subordinates, and staffs to maintain personalized interaction throughout the extended battlespace. Moreover, at higher echelons, this personalized interaction will be enhanced by video teleconferencing. However, this interaction will not be accomplished as it is currently—by radio nets, primarily voice, dedicated to a single staff function.

A tactical data network that can handle voice, video or high-throughput data transmissions will provide the logical equivalent of the multiple voice radio networks currently required to support the LF. Radios will not be dedicated to the information exchange requirements of single staff sections or functional areas, but rather will provide shared communications paths for the transmission packetized data—a tactical packet-switching capability that does not depend on a circuit switched system. This capability will be combined with networking techniques that are already widely in use—such as e-mail, newsgroups, web sites, and electronic bulletin boards—to improve the flow of information. These techniques, combined with careful information management and information dissemination management planning, have the potential to reduce the load on the communications network, increase throughput, and provide more efficient and effective C2.

The advantages of data communications are many. Data is more easily processed, on-air transmission time is reduced, and information integrity is greatly increased. The greatest advantages lie in the reduced numbers of radios and radio frequencies required to support the information exchange requirements of the MAGTF C2 system. Much work remains to be done in this area, especially at the maneuver element level. Improvements are needed in the data transmission capabilities of our tactical radios in terms of both range and bandwidth. Just as importantly, our doctrine and training should emphasize the use of data transmission for a majority of our information needs. Our tactical communications requirement is for a C4 network that can easily handle voice, video or data as demanded by each echelon of command. Future C4 systems will be optimized to carry high-speed data throughout the network while maintaining the capability to handle voice traffic. Ultimately, data should be available at all echelons in whatever format is needed—voice, text, graphics, imagery or video—and exchanged over shared communications links.

As described above, by 2008 voice transmissions will be carried as packets of data along with packets carrying information in other formats. Information will be available in whatever format is needed anywhere in the battlespace. The same data communications network that supports voice and video communications throughout the LF will support the exchange of data in other formats—text, graphics, and imagery, as well as digitized sensor returns of all types. This includes the collection and dissemination of data to maintain the common operational picture; the dissemination of OPLANs and OPORDs; the collection and dissemination of intelligence, surveillance, and reconnaissance information;

and the dissemination of real-time sensor data to fire coordination and control elements supporting cooperative engagements of targets of all types. The information exchange capability provided by the data communications network will permit the linking of LF information systems into a single integrated network. This in turn provides the foundation—the information grid—for C2 of the LF.

Communications Between Ship and Maneuver Force

The communications architecture that supports amphibious operations may be viewed as a distributed joint communications grid overlaying the littoral battlespace as depicted in Figure 7-3. Elements of the LF may "plug in" to this grid at any location and in any phase of the amphibious operation. This communications grid will extend to the LF through joint maritime communications system (JMCOMS) and will provide connectivity between the JTF, the ATF, and the LF, as well as worldwide. This includes linking the shipboard C2 nodes of the LF with the commanders of LF maneuver elements in transit from ship to objective and during operations ashore. It also includes links between maneuver elements and

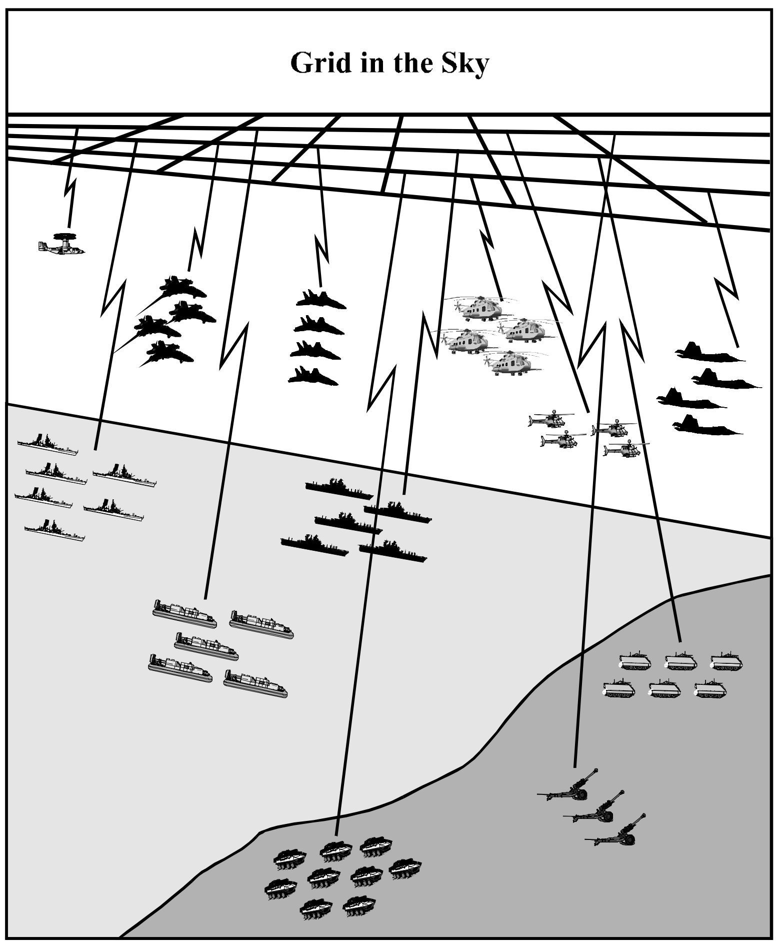


Figure 7-3. Communications Grid

seabased fire and air support. The radios used by the LF to connect to the grid will be data capable and multiband, will provide flexible bandwidth, and will have a low probability of detection and interception. For the most part, they will be line-of-sight radios with their range extended either through JMCOMS aerial retransmission platforms or low orbiting satellites. They will be interoperable with both shipboard communications and the radios used by the nonnaval components of the JTF.

Communications Between Elements of the Maneuver Force

The same radio terminals that plug into the joint communications grid will provide shorter range connectivity between elements of the maneuver force. These radios will provide, in effect, a wireless local area network that is capable of operating on the move and of supporting both voice and data transmission. As discussed above, they can link with higher echelons through retransmission platforms or satellites. The radio terminals will be capable of operation from fixed-wing and rotary-wing aircraft, landing craft, and AAAVs as well as in manpacked configurations.

Position Location Information

Accurate position location information (PLI) on friendly maneuver elements during both the ship-to-objective movement and maneuver ashore is critical for the successful execution of amphibious operations. Friendly PLI is the most important single component of the common operational picture. The effective C2 of both fires and maneuver hinges on continuous availability of friendly PLI. By 2008 the tactical radios used by the LF will have the capability to sense, derive, and report PLI through the communications grid, thereby facilitating the exchange of friendly PLI. The LF C2 system will disseminate this PLI throughout both the LF and the ATF.

Chapter 8.
Intelligence, Surveillance, and Reconnaissance

INTRODUCTION

Preparation of the battlespace has always been an important element of amphibious operations and remains so during STOM operations. The AF must continue to locate and identify minefields, obstacles, fire support units, critical command and control nodes, and gather other critical information prior to LF operations. The primary objective of intelligence, surveillance, and reconnaissance (ISR) missions will be to provide the CATF and CLF with timely, accurate and relevant intelligence about the threat and environment at the LPSs and LPPs. Armed with this intelligence and information, they will be able to adjust and modify the OPLAN from the moment the LF debarks from amphibious shipping through the successful completion of the AF mission. The operational ranges of the LCAC, AAAV, MV-22, and other systems will allow for the execution of ISR missions by main body forces, allowing the AF commanders to fully exploit the element of surprise.

ORGANIZATION AND RESPONSIBILITIES

Amphibious Force Intelligence Center

As the primary intelligence center for the force, the Amphibious Force Intelligence Center (AFIC) provides the CATF, CLF, and their subordinate commanders with the intelligence support necessary to conduct STOM operations. The AFIC incorporates intelligence personnel, capabilities, materials, and functions from ATF and LF to reduce duplication of effort and produce more comprehensive and timely intelligence. The N-2 and G-2/S-2 work in concert to ensure that the decisionmakers within the ACG have the necessary intelligence and information to execute fluid, high-tempo STOM operations. The AFIC performs the following functions:

- Assist the AF commanders in determining enemy capabilities, COGs, critical vulnerabilities, and possible COAs when attacked.
- Provide IPB products with reference to threat force, weather, terrain, and other factors throughout the LPA.
- Leverage the full range of national, theater, joint, and coalition ISR capabilities to support the AF mission.
- Coordinate and process requests from all elements of the AF and supporting units/activities.
- Prepare and update appropriate annexes to the OPORD, intelligence estimates, summaries, situation maps, and other special studies.
- Prepare an integrated collection plan for the AF after receiving input from ATF and LF commanders and staffs.
- Organize and prepare research teams to respond to the commanders' critical information requirements (CCIRs) throughout all phases of STOM operations.
- Update and maintain the CATF and CLF's mutual link to the joint deployable intelligence support system (JDISS).

REQUIRED CAPABILITIES

The ISR needs of the STOM force are all encompassing, ranging from the location of underwater obstacles, to trafficability of soil on the beach, to the capacity of bridges on egress routes, to the ground slope and conditions in helicopter landing zones (HLZs). Enemy capabilities must be determined based on detailed study of all order of battle factors, in-depth terrain, hydrography, and weather analysis.

The CATF and CLF have certain basic intelligence requirements during the planning and execution of STOM operations.

- Detailed terrain, weather, and hydrographic analysis to identify suitable LPPs (e.g., beach gradients, potential CLZs, HLZs, etc.)
- Standoff collection capabilities that satisfy requirements from OTH.
- Intelligence and information systems that allow for full integration with national, theater and joint/multinational organizations.
- Dissemination systems linking widely dispersed forces afloat and those on, or closing with, the LF objectives.
- Flexible intelligence systems that can influence the decisionmaking process during the waterborne/airborne movement of the LF (e.g., alter the selection of LPPs upon the arrival of LF elements at DPs and phaselines.).

To avoid compromise of the operation, the collection plan may be limited to imagery and communications/electronic intelligence prior to the LF crossing the LOD. As mentioned earlier, the **ISR capabilities of the force after debarkation of the LF will be key to the CLF's ability to maintain operational surprise and tempo within the LPA**.

SUPPORTING AND PREASSAULT OPERATIONS

Supporting operations are conducted by forces other than the AF and may set the conditions for the AF to move into the operational area. They include all actions conducted in the theater of operations that support or contribute to the amphibious operation. They may be directed by the theater commander or requested by CATF and CLF. Supporting operations may include tasks such as destruction of specific targets in the LPA, psychological operations (PSYOP), intelligence collection, special operations, and mine countermeasures operations.

Preassault operations are the final preparations of the LPA and are under the control of the CATF and CLF. These operations may be conducted covertly prior to the debarkation of the STOM force or as "in stride" actions.

Preparation of Sea Areas

The AF prepares the sea areas in the LPA by conducting mine countermeasures operations and hydrographic surveys, as necessary. Given the great dispersion of forces within the LPA, it may be necessary to establish en route rendezvous points (ERPs) within the sea areas.

Pre-D-Day Reconnaissance and Preparation

Reconnaissance elements will track enemy movements, acquire targets, attempt to determine enemy intentions and prepare the LPPs for the assault force. Manned reconnaissance (sea-air-land teams

[SEALs], force reconnaissance, SOF, etc.), UAVs, remote sensors, satellite imagery, and other Service, theater, and national assets can be employed to accomplish these missions.

Beach Reconnaissance

Beach reconnaissance collects the most recent detailed information on beach gradients, obstacles (natural and manmade), tide and surf, water depths, contour of the sea bottom, routes of egress from the beaches, soil trafficability, beach defenses, and suitability of selected LPPs for surface assault. ATF personnel (SEALs) are responsible for beach and hydrographic reconnaissance, but other forces, such as LF reconnaissance and SOF divers, may be able to assist in these missions.

Preparation of LPZs and LPPs

By using clandestine means, the AF prepares the LPZs/LPPs for passage of landing craft, landing ships, and amphibious vehicles. All detected natural or manmade obstacles (between the 3 ½ fathom curve and the high-water mark) that will impede the landing are destroyed or marked. In certain situations, with the approval of the CATF, explosive ordnance disposal (EOD)-qualified SEAL personnel may assist with removing land mines and obstacles above the high-water mark.

Destruction of Defenses Ashore

The AF destroys beach, DZ, and LZ defenses in the LPA; gun emplacements; observation and control posts; and any other enemy capability that could impede the advancement of the LF to their objectives.

Electronic Countermeasures

The AF obtains maximum information on the enemy's communications and electronic facilities in and adjacent to the LPA. As necessary, these facilities are neutralized, destroyed or marked for exploitation by the AF.

Meteorological and Oceanographic Information

The AF will observe and transmit meteorological and oceanographic data in the LPA to CATF. Of particular concern are surf, sea state, and weather conditions in the intended LPZs.

SPECIAL OPERATIONS

SOF can assist the AF commander's effort to shape the LPA for the introduction of the LF. If used, SOF should be fully integrated into preassault plans. SOF capabilities are normally limited so prioritization of requirements and selected tasks is essential.

The JFC usually designates a joint special operations task force (JSOTF) to conduct SOF missions in the area of operations. The CATF and CLF will have to compete with other commanders for the use of these SOF assets and must ensure that their use is critical to the accomplishment of the JFC's objectives. SOF forces will be able to complement the organic capabilities of the LF ground, airborne and signals intelligence (SIGINT) units.

DECEPTION PLANS

Deception is an operational concern that is directed from the highest headquarters controlling operational forces in the field, generally the combatant commander. Any forces in the theater may therefore be assigned specific actions and tasks as part of the overall plan, including the ATF and the LF.

Implementation of a deception plan will normally be through as many channels as possible, including communications and radio-electronic means, and through the use of false documentation. Implementation will usually consist of either an actual deception using real forces or an imaginary deception using electronic and other means without the actual deployment of combat assets. Troop or ship movements will usually be made in conjunction with other IO measures to reinforce the supposed intent.

In addition to the deception plan, CATF and CLF will usually employ tactical diversions, demonstrations or ruses with forces under their control as part of the operation.

SURVEILLANCE AND RECONNAISSANCE

Accurate and timely reconnaissance of the LPA is fundamental to the successful employment of STOM. During preassault operations, it must focus on the surface and vertical LPSs and the routes and axes leading to the initial objectives. Reconnaissance will determine the size and location of the enemy order of battle and will support targeting requirements, including terminal guidance and control of strikes. Reconnaissance units will use aircraft, UAVs, satellite imagery, ground-mounted sensors, and passive EW assets. A continuous flow of information on the enemy, terrain, weather, and hydrographics will update the common tactical picture, allowing the ACG to make tactically sound decisions during the maneuver of the LF.

Geolocation equipment, in conjunction with a new family of sensors, provides real-time video imagery of selected locations, accurate readings of vehicular and foot movement, detection of local electronic emissions, and a pinpoint terminal-guidance capability. In addition, UAV reconnaissance of potential landing sites and associated littoral areas will enhance covert intelligence gathering and reduce risk to personnel. Upgraded avionics packages in the EW and aircraft sensor fields will also enhance the real-time reconnaissance capabilities of the AF.

Reconnaissance of the objective area may be divided into three tiers:

- **Tier 1.** Initial IPB estimates, map studies, known enemy situation, and LF objectives will determine initial IRs. Initial cueing of ATF and LF units for possible missions, especially SEAL and force reconnaissance, will assist in their mission effectiveness. Tier 1 analysis will produce the initial reconnaissance requirements.
- **Tier 2.** Based on the priority intelligence requirements (PIRs) of the AF commanders, national, theater and JTF collection assets are tasked to provide imagery and other forms of reconnaissance information needed to successfully penetrate the enemy littorals. Reconnaissance requirements and supporting actions, such as air/sealift of assets and fire support, are then refined and integrated across the joint force.
- **Tier 3.** Sensors and reconnaissance teams are emplaced according to the AF's collection plan.

Reconnaissance missions may be designated as route, area, zone, and force-oriented or a combination of all four. The basic principles of orienting on the enemy, gaining and maintaining contact, confirming information, using stealth, and reporting accurately should apply to all reconnaissance missions.

STOM will require that a significant number of landing sites be analyzed to produce the maneuver flexibility that is required.

- A combination of map study, IPB, air reconnaissance, and UAV reconnaissance will assist in determining potential landing sites for the AF. Once a prioritized list of potential landing sites is finalized, manned reconnaissance may be required to conduct hydrographic surveys and further reconnaissance of the littoral areas.
- Littoral reconnaissance will normally be conducted by a combination of ATF and LF reconnaissance personnel. Follow-on reconnaissance missions may be assigned to the teams conducting the hydrographic survey and littoral reconnaissance. Teams will be able to launch from a variety of platforms, including submarines, MV-22s, CH-53Es, and various landing and small craft.
- Littoral reconnaissance and hydrographic survey teams should concentrate on providing information that would hamper the movement of units ashore. Detailed analysis of obstacles, mines, bars, reefs, and fortifications will be required.

Airborne ISR is an essential intelligence-gathering element during the preassault phase of an amphibious landing and will normally be executed by national or theater assets in coordination with the JFACC (if established) and in concert with the air tasking order (ATO). LF and carrier-based aviation units can provide multisensor imagery of areas of interest, thereby augmenting products of theater and national ISR assets.

PREPARATION OF THE LANDING AREAS

LFs will attack through LPPs that best support accomplishment of the operational mission. The best option might not be the shortest route but rather the one that best takes advantage of gaps in the enemy defenses. Some situations will require creating a gap by destroying or neutralizing enemy forces and obstacles.

Preparation of the landing areas will facilitate rapid tactical movement of the landing force from ship to objective. Detailed planning for reconnaissance, preassault fires and breaching operations is required.

Close reconnaissance will determine the viability of specific landing zones, drop zones, LPSs, and LPPs.

It may be necessary to target areas near the coastline or in the vicinity of landing sites or points before an amphibious assault. Targeting analysis and prioritization should take place in the AF targeting cell and should result in the attack of high-value targets. Bombardment of the entire LPS, as in an old-fashioned beach preparation, is not an effective use of limited resources.

Because of the decentralized nature of maneuver in a STOM environment, individual assault task forces (typically, reinforced infantry battalions) may have to perform breaching tasks enroute to their assigned LPPs. All attempts will be made to avoid major obstacles, but this may not always be possible for the individual assault elements. Any overt breaching activity before the debarkation of the STOM force may negate the surprise advantage associated with these OTH operations so the STOM force will concentrate on the covert breach.

A covert breach is used when surprise is essential to overcome obstacles without being detected by the enemy. It can be selectively used in a STOM environment to prepare and mark breaching lanes before the arrival of the assault force. Limited covert breaching can be accomplished by special forces elements with the assistance of naval EOD and landing force engineers during the preassault phase of an operation. Specialized naval shallow-water mine countermeasures forces may use special reconnaissance, classification, minehunting, and neutralization techniques and equipment to clear LPP barriers much more rapidly than with swimmers. Breaching principles remain the same as for conventional breaching operations with the exception of suppression of the breaching area.

Covert, shallow-water techniques will depend on the availability of submarines or stealthy surface craft to support the operation. Remotely operated or fully autonomous (robotic) underwater vehicles will search for, classify, and neutralize shallow-water mines up to the surf zone. Special aerial detection systems will furnish evidence of enemy mining operations and cue the deployment of the mine countermeasures detachments. Neutralization can be timed to coincide with the planned arrival of the surface assault task force to preserve tactical surprise. Electronic beacons and GPS position fixes will mark the cleared lanes.

The actual breach of obstacles and minefields in the surf zone will be accomplished by the assault force possessing an stand-off delivery systems breaching capability. The CLF assumes responsibility for obstacle clearance beyond the beach exits of LPSs. Assault task force commanders will reduce obstacles in stride if surprise is essential. Obstacles and minefields may also be detected and cleared with a combination of reconnaissance and engineer teams during preassault operations using raid-type tactics.

Chapter 9. Fire Support

Fire support during STOM will provide destruction, neutralization, and suppression fires to the LF. Fire support agencies will receive and respond to calls for fire with sufficient speed and accuracy to support LF maneuver. Fire support includes both lethal and nonlethal assets.

The LF commander will create favorable conditions through battlespace shaping. During battlespace shaping, the fire support system will provide precision and area fires that are capable of destroying or neutralizing key enemy capabilities. The fire support system will employ munitions that are designed for attacking a wide array of target sets.

The fire support system depends on the MAGTF command and coordination system, which is integrated with target acquisition and weapons systems. The command and coordination system will present commanders and staffs with a common picture of the battlespace and a shared situational awareness. This common picture is the means by which commanders remain abreast of developments and commit fire support resources to influence the action.

THE BASIS OF FIRE SUPPORT

Battlespace

Battlespace is a physical volume that expands and contracts in relation to the ability to acquire and engage the enemy. The successful integration and employment of fires throughout the LPA is required.

Fires

Fires are the effects of lethal or nonlethal weapons. Lethal fires include naval surface fires (NSF), air-delivered weapons, artillery, and mortars. Nonlethal fires create weapons effects that are specifically designed with reduced probability of inflicting death or serious injury.

Fire Support

Fire support is the collective and coordinated use of fires from armed aircraft, sea- and land-based indirect-fire systems, and EW systems against targets to support the operational and tactical objectives of a force. Integrated fire support is used to delay, disrupt or destroy enemy forces, combat functions, and facilities in pursuit of operational and tactical objectives. An integrated fire support system of complementary capabilities provides 24-hour, all-weather, accurate, lethal or nonlethal fires throughout the battlespace.

FIRE SUPPORT SYSTEM

Fire support depends on the following three subsystems:

- Target acquisition
- Weapons systems
- C2.

The fire support system is complex and does not generally function under a single chain of command. Fire support must be synchronized to produce relative combat power at a decisive place and time.

Combined arms operations are the synchronized and simultaneous application of several arms to achieve greater effects on the enemy than that achieved if each arm were used against the enemy in sequence or against separate objectives. The challenge to the STOM force commander, given the assumption that he does not possess unlimited combat resources, is to achieve synchronization. The commander's ability to effectively integrate fire support subsystems and synchronize fires results from an established process known as fire support planning and coordination.

FIRE SUPPORT PLANNING AND COORDINATION

Fire Support Planning

The purpose of fire support planning is to maximize the effectiveness of the fire support system by integrating it with the battle plan. Fire support plans that are not integrated with maneuver plans result in unsuccessful fires in support of the operation. Integrating fire support leads to synchronization. It requires both commanders and their staffs to think both fires and maneuver at each step of the Marine Corps Planning Process (MCPP).

Fire Support Coordination

Fire support coordination is the continuous process of implementing fire support planning and managing all available fire support systems. It involves operational, tactical, and technical considerations and the exercise of fire support command, control, and communications (C3). It provides the means to deconflicted attacks, reduce duplication of effort, facilitate battlespace shaping, and avoid fratricide. Coordination procedures must be highly automated, flexible, and responsive to change. Simplified procedures for approval and concurrence should be established, as well as highly permissive protocols for automated systems. However, fire support coordination should not be automated to the extent that the commander, or the fire support coordinator (FSC), cannot monitor and override all automated functions. There must be a "man in the loop" to ensure that the fire support system is fully responsive. For more information on fire support planning and coordination see MCWP 3-16.

Fire Support Coordinator

While responsibility for command, control, and coordination of the fire support system begins with CLF, effective control of fire support is as critical as the control of maneuver forces. For this reason, CLF delegates to the FSC the authority to perform specific fire support tasks. Before H-hour, CATF will have responsibility for fire support. Both commanders will use the same facilities of the SACC and TACC to effect fire support coordination while the LF CE remains seabased. For more information on the FSC see MCWP 3-16 and MCPP 3-16C.

FSCC/SACC Integration

STOM operations will require detailed coordination between the ATF and the LF. This coordination will take place for fires in the FSCC/SACC. Information and fires from a variety of organic and joint sources must be effectively coordinated to support highly mobile and dispersed forces. The LF must be able to rapidly mass the effects of various weapons systems without physically massing the systems.

The FSCC/SACC established by the CATF/CLF is a network of ATF and LF personnel; C4I, surveillance, and reconnaissance systems; and processes designed to increase situational awareness and decrease the planning, decision, execution, and assessment cycle associated with employing a multitude of sensors and shooters in support of highly mobile and dispersed combat elements. The FSCC/SACC provides a means to network sensor/target acquisition systems, weapons platforms, C2 warfare systems, intelligence analysis, targeting elements, and C2 elements. Although it may consist of personnel and supporting equipment that are physically collocated, it more likely will involve a combination of physical, electronic, and virtual links. The networked nature of the FSCC/SACC will permit rapid, effective execution of fire support without imposing restrictions on continuous, direct sensor-to-shooter links.

The FSCC/SACC will monitor aircraft sorties and manage allocations to ensure the most appropriate and responsive fire support to each planned and immediate mission request. In a joint operation, there may be requirements to provide LF fixed-wing aircraft to the JFACC. Therefore, LF planners must be precise and persistent in establishing the number of sorties needed for planned and on-call requirements. The control of LF aviation in joint operations is governed by the policy for C2 of Marine Corps tactical air as stated in Joint Pub 0-2, UNAAF.

Sorties assigned to support the amphibious operation initially come under the control of the NAVY TACC of the ATF, with which the LF TACC and tactical air operations center (TACO) share links and situational awareness under the direction of the ACG. Sorties are controlled by the Navy TACC and/or handed off to subordinate tactical air direction centers (Tads) for use before H-hour and to LF control via the LF TACC, TACO, and DASC after H-hour, assuming that H-hour signals the shift of operational responsibilities of CLF from supporting to supported commander. Shipboard facilities may support operating both CATF and CLF air control agencies from the same spaces and equipment, with supervisors changing according to supported/supporting command relationships.

As essential fire support tasks (EFSTs) are determined during the MCPP using a top-down planning, bottom up refinement process, fires are integrated into the scheme of maneuver. If the staff has thoroughly wargamed possible enemy and friendly courses of action, the resultant fire support plan is focused. That is, it provides the effects desired by the commander when and where he wants them to help him accomplish the mission. During execution, the only thing that should be allowed to desynchronize the plan is (are) enemy actions not previously considered. Since this will almost always occur, a system must be in place to immediately make decide-detect-deliver-assess (D3A) decisions, then disseminate and execute them. Fighting the enemy (not the plan) in accordance with the commander's guidance provides focus.

The FSCC/SACC must ensure deconfliction of all aviation sorties, as well as deconfliction from surface-delivered munition gun target lines and projectile trajectories within the LPA. Control measures will remain as the standard control points, initial points (IPs), battle positions, and airspace coordination areas. The FSCC/SACC will use these control measures, along with timing and spacing, to synchronize all air-related actions in the LPA. To the maximum extent, information flows digitally, according to automated protocols. Messages, friendly and enemy situation updates, routing, and mission taskings will all be passed via data link. Voice communication nets will be available as a backup. This same type of networking serves equally the final controllers (forward observer, forward air controller (FAC) of the GCE, and FAC(A) of the ACE, primarily) and the fire systems. The sensor-to-decider-to-shooter network will allow target information and imagery to be passed between these same elements and will advise and update data held at the LF, ATF, and JTF levels of coordination. For more information on fire support coordination and fire support agencies see MCWP 3-16.

TARGETING

During execution, the FSCC/SACC is continually assessing the situation, tracking decision points, and preparing to execute fires in support of the STOM force. The targeting process is used to extend the MCPP throughout the operation by providing a forum to reconsider "who kills whom" decisions and modify or initiate actions to implement those decisions. The process normally occurs within the setting of a targeting meeting.

En route to the LPA, the LF and ATF CE can begin preparing for the upcoming targeting requirements by carefully cataloging the available units and systems. Requests for intelligence gathering missions to define the enemy's capabilities can also begin en route and will establish the framework for the target list and the fire support plan. As more sources for intelligence gathering become available, the details of the enemy's situation will be more sharply defined. Commanders and their staffs will begin tactical planning by placing known enemy positions onto an electronic situation map, which will clearly depict the threat rings or spheres of influence, of their weapons systems. With the threat rings established and juxtaposition in relation to the specific objectives, the fire support plan can focus on those threat systems that most directly challenge the tactical forces and their insertions. Using the electronic map as the centerpiece for all tactical decisions will allow the CE to continually refine the plan based on its objectives, own tactical mobility, terrain restrictions and obstacles, and suitability of supporting arms to deal with each situation.

TARGET ACQUISITION

Target Acquisition and Sensors

Target acquisition is the detection, identification, and location of a target in sufficient detail to permit the effective use of weapons. A sensor is a piece of equipment that detects and may indicate and/or record objects and activities by means of energy or particles emitted, reflected or modified by those objects. Effective employment of fires in support of STOM relies significantly on the management and integration of all available sensor and target acquisition systems.

Target Acquisition and Sensor Sources

Target acquisition and sensor sources include ground sources, airborne sources, national systems, and military space systems. The C2 system must provide for the rapid passage of target acquisition information to commanders and staffs at all levels. Integrated sensors must provide information that will allow commanders to make rapid, accurate decisions.

Ground Systems

Target information may be obtained by patrols, combat reports, remote sensors, locating and surveillance devices, and observation. The forward observer is the traditional target acquisition means for the fire support system. Marines equipped with devices such as the target location, designation, and handoff system will continue to be a major target acquisition source. Weapons locating radars will continue to play a significant role in acquiring enemy mortar, artillery, and rocket systems. Seabased fire support must also have radar systems that are capable of acquiring enemy indirect fire support systems, depending on the operating ranges and sensor horizon.

Airborne Sources

Unmanned Aerial Vehicles

UAVs provide a relatively survivable means of maintaining surveillance over the battlespace. UAVs can locate and identify targets during daylight and darkness and provide real-time surveillance by data-linked electro-optical or infrared sensors. They can also provide laser designation of targets for attack by fire support means.

Aircraft

Aerial reconnaissance and target acquisition carried out by JTF aviation elements may provide suitable detail for target attack purposes. Information may be acquired by visual, photographic, radar, and electronic or infrared reconnaissance.

National Systems

These systems are controlled by the US intelligence community and provide direct support to the President/Secretary of Defense. The Service component Tactical Exploitation of National Capabilities Program (TENCAP) provides the supported JTF headquarters with information from national systems.

Theater Space Systems

Space systems operated or tasked by theater commanders can provide imagery information from radar, infrared, and photographic sensor packages. The C4I, surveillance, and reconnaissance system incorporates the connectivity necessary to ensure near-real-time information from these sources. For more information on sensors see JP 2-02.

NAVAL SURFACE FIRES

NSFS will provide long-range, accurate fires from OTH. The range and seabasing of these fires make them ideally suited for battlespace shaping before the employment of the LF. NSF will support both the vertical assault and the surface assault with high-volume, area fires to facilitate maneuver. These systems will also be capable of providing fires in support of a maneuver force operating deep in a littoral region. The sea provides both security and maneuver space, thereby giving NSFS an unparalleled capability to influence events ashore. The mission of NSFS is to support the assault by destroying, neutralizing or suppressing shore installations that oppose the approach of ships and aircraft and those defenses that threaten the success of the LF.

NSF requires the coordinated and complementary use of shipboard guns, missiles, rockets, target acquisition, and C2 systems that are directed in support of fighting units ashore or against shore-based enemy units. NSF provides responsive fires through largely automated fire support coordination procedures.

NSFS accurately and precisely engages targets at extended ranges due to gun and missile technological improvement. Given the limits of ships available during any operation, NSFS augments the maneuver units' organic fire support capabilities, especially during the critical, early entry (surface and/or vertical) phases of STOM. Essential characteristics of NSFS are:

- **C2.** The NSF integration into the C4I architecture furnishes ground units of both surface and vertical assaults with direct access for continuous and rapid support. The MAGTF C2 system and procedures provide rapid integration, coordination, and deconfliction of naval fires within the ATF, LF, and joint units and weapons systems, both surface and air. The system must provide embedded planning and execution tools that interface directly and efficiently with the shared database. Although highly centralized for planning, the C2 system allows both centralized and decentralized execution.
- **Mobility.** NSFS ships move rapidly along the coastline within the limits imposed by hydrography and hostile action.
- **Range.** NSFS systems will engage targets out to extended ranges with gun and missile systems.

- **Volume.** NSFS systems can provide the firepower and volume of fires equal to those of an artillery battalion because of automatic loading, stability, and security for brief periods of time, which are largely defined by magazine capacity.
- **Ammunition.** NSFS systems can be improved to provide a mix of munitions similar to that available for ground-based artillery systems. NSF platforms will continue to provide both guided and precision guided projectiles to support long-range battlespace shaping operations and high-volume, close supporting are fires during the early stages of the assault. These fires complement aviation assets until LF artillery comes ashore.
- **Responsiveness.** Responsiveness depends largely on automated protocols introduced into the C2 system that permit immediate fires from a direct-support or general-support NSF ship assigned to a designated main effort of the LF. Such responsiveness compensates for the necessary time of flight when providing close supporting fires to maneuver forces in contact with the enemy.
- **Limitations.** As with other fire support systems, NSF is subject to several limitations:
    - Weather and hydrographic conditions.
    - Fixed magazine capacity and difficulty of underway replenishment of missiles.
    - Ships require periodic and time-consuming replenishment of gun ammunition.
    - Long time of flight.

For detailed information about NSF planning, see MCWP 3-16.

AVIATION

Aviation systems will continue to provide deep air support (DAS) to facilitate the commander's efforts to shape the battlespace and to provide CAS for the ground maneuver force. By seabasing LF aviation, advantage can be taken of seabased logistic support facilities while reducing the requirement to establish and defend large air facilities ashore. LF aviation will continue to have the capability of operating from expeditionary, shore-based sites should it become advantageous to do so.

Roles

Marine aviation participates as the LF ACE in an amphibious operation and forms an integral component of naval aviation in the execution of such other functions as the theater commander and commander, joint task force (CJTF) may direct. CATF and CLF may also call on available support of the other Service components of the JTF and theater air support. Especially useful will be CVBG aviation and the air superiority, strike, long-range bomber, and reconnaissance aircraft of the theater air component. Such supporting aviation will be requested through the JFC and controlled in the LPA by ATF or LF air control systems.

Marine aviation is unique in its ability to conduct all aviation functions that are essential to the support of a ground campaign. Marine aviation functions in the following roles:

- Air reconnaissance
- Antiair warfare
- Assault support
- Offensive air support
- Electronic warfare

- Control of aircraft and missiles.

Characteristics

Aviation units are equipped with a variety of aircraft, weapons, and associated systems. The variety of ordnance, coupled with myriad attack tactics, permits the selection of attack means that are best suited to the target. Marine aviation fire support is a critical element of LF and MAGTF capabilities. Its range, accuracy, and all-weather attack capability make it particularly important for attacking targets beyond the range of NSF and artillery systems. Essential characteristics of aviation are:

Accuracy

Accurate weapons delivery is especially critical when engaging targets in proximity to friendly troops. Aviation systems provide for accuracy while reducing the risk to the aircraft and pilot.

Range

Because of their range, aircraft may at times be the sole fire support systems available to ground forces. Aviation mobility permits it to provide close support to troops who are deployed at great distances from other sea- or ground-based fire support systems. It also provides the LF with a deep attack capability.

Responsiveness

Responsiveness is related to distance from takeoff point to target, aircraft speed, degree of control and coordination required, and especially the planning of aviation requirements. Properly deployed aviation can be first on the scene with decisive firepower. Situational awareness systems in the cockpits of attack aviation and airborne control systems ensure timely and accurate delivery of ordnance.

Lethality

The improved aviation munitions deliver firepower and accuracy, especially in the categories of precision and near-precision weapons.

All-Weather Delivery

Aviation navigation systems, sensors, and ordnance seekers will present a high probability of kill against most target arrays.

Observation of the Battlespace

Aviation is the only supporting arm that is able to observe the battlespace on which it fires. This poses opportunities for massing against mobile targets, armed reconnaissance, immediate reattack, and airborne fire direction with minimal coordination or reliance on ground spotting.

Limitations

Aviation limitations consist of:

- **Vulnerability.** As long as there is a threat air defense system, aircraft and the pilots who fly them will be vulnerable.
- **Endurance.** The ability for aviation to provide continuous air support is contingent on support requirements, aircraft availability, weather, and visibility.

Aviation Fires Planning

Specific aviation targeting requirements are covered in detail in individual aircraft tactical manuals. While planning for the OAS portion of the amphibious assault, it is important to remember that additional mission requirements will limit the numbers of available OAS aircraft. Many of these missions occur in advance of the STOM force and are meant to shape the battlespace, gain air superiority, defend the AF or JTF, and gather intelligence. Some of these actions may be continuous throughout the amphibious operation. Although these missions are part of the overall AF effort, they are at a level beyond that of assault fire support and will not be discussed in detail in this chapter. These missions may, however, reduce the number of sorties available for the escort and CAS functions that directly support the assault phase. For this reason, retaining LF control of as many OAS sorties as possible is a critical requirement of the planning process. Such planning also maintains the combined-arms array of the LF.

Once the number of sorties in support of the ATF and LF has been determined, the LF staff must plan the necessary sortie rate. Sortie rates will be greatly affected by deck availability. Every effort should be made to physically separate the OAS aircraft from the assault support aircraft to maximize the efficiency of the ships and their ability to generate sorties. This sortie regeneration capability is a critical aspect of the amphibious assault. Matching the ordnance to the mission requests will be the responsibility of the ACG and lower echelon control systems, but air planners must estimate the numbers and types of aircraft and the appropriate ordnance to ensure that the air tasking order generated by the JFACC has the requisite flexibility to meet the LF’s demands.

The situational awareness of the attack aviation will come from cockpit systems in the aircraft, whether in a waiting “stack” airborne or through cable connection while on pad alert onboard an assault ship. The use of the airborne battlefield command and control center (ABCCC), which carries command and fire support personnel, will extend such awareness across the LPA to the ground CPs and ships offshore alike (see figure 9-1). Some of the most significant aircraft systems are:

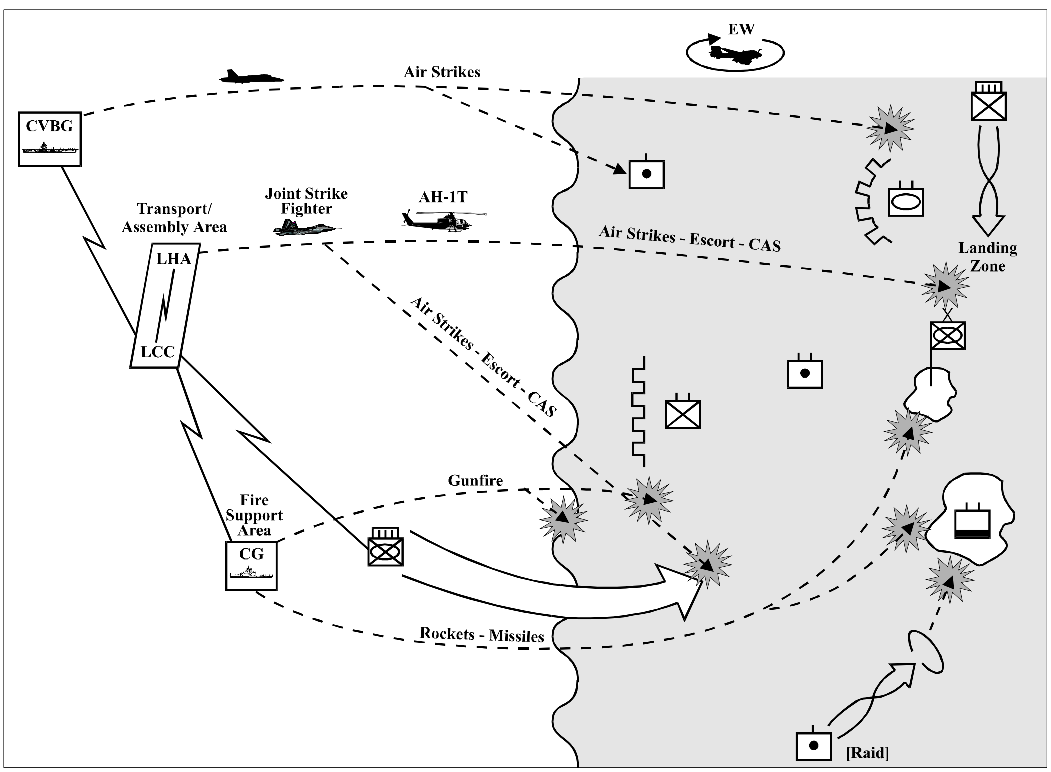


Figure 9-1. Planned Fires in Support of STOM

Inertial navigation systems (INSs) with an embedded GPS allow each aircraft to operate anywhere in the world without relying on fixed navigational aids. They provide pinpoint accuracy for the aircraft themselves, for precisely locating the aircraft for all friendly forces, and as an initializing point for locating enemy positions by the use of laser rangefinders/designators with simultaneous burst transmission to the C2 system.

Multipurpose color displays (also called multifunction displays) are the heart of the information presentations inside the cockpits. These multiple, flat-plate monitors present a wide array of information to the pilots in a variety of forms ranging from text to maps to presentations of the battlespace by numerous sensors for all-weather fighting.

Moving map displays have the ability to show aircraft position in relation to the planned route, known threat envelopes, friendly positions, timing information en route, control features, etc. The maps also have a "scroll forward" feature for pilots to visualize what the terrain at any location will look like before their arrival.

UAVs provide continuous, real-time battlespace surveillance. They can perform missions including EW, communications, battle damage assessment (BDA), OTH targeting with a 1-meter resolution, ship detection, and supporting arms observation. Such missions collectively increase the commander's situational awareness without placing pilots in harm's way. Armed reconnaissance and suppression of enemy air defense (SEAD) round out these impressive capabilities.

Nowhere else is the concept of "every shooter is a sensor" realized as efficiently as in modern aircraft. The ability to detect, locate, and instantly relay vital information to the C2 system and to receive updates to the in-progress mission is invaluable to the successful execution of amphibious missions.

ARTILLERY

LF artillery will furnish close and continuous fire support by neutralizing, destroying or suppressing targets.

Artillery provides close support to maneuver forces, SEAD, counterfire, fires for deep operations, and interdiction as required. These fires limit, disrupt, delay, divert, destroy or damage enemy formations or defenses; obscure the enemy's vision or otherwise inhibit his ability to acquire and attack friendly targets; and destroy deep targets with long-range rocket or missile fires. The employment of artillery in the assault depends on standard factors of METT-T, as in the case of other parts of the ground task forces that are landed.

Artillery delivery systems include cannons, rockets, and missiles. These systems can provide fires under all-weather conditions and in all types of terrain. They can shift and mass fires rapidly without having to displace. Improved C2 and position locating systems dramatically reduce unit footprints and permit autonomous or semi-autonomous tube/launcher operations. A variety of cannon munitions provides the most flexibility of any one lethal system in attacking targets. The extended ranges of rockets and missiles enable the commander to strike deep. Artillery units have two serious limitations that will reduce their utility in the early phases of the assault:

The availability of long-range missile or rocket systems and their resupply.

The relative mobility of the ground fire support systems and their munitions carriers compared to the vertical or surface assault task forces that they must support.

The objective of artillery organization for combat is to ensure that each artillery unit is in a tactical organization and is assigned a tactical mission. Organization for combat involves establishing a command relationship and assigning a tactical mission. Early placement of artillery into landing zones, the artillery raid, the use of offshore islands, and other types of employment flexibility will increase the relative contribution of LF artillery and reduce demands on other types of fire support.

MORTARS

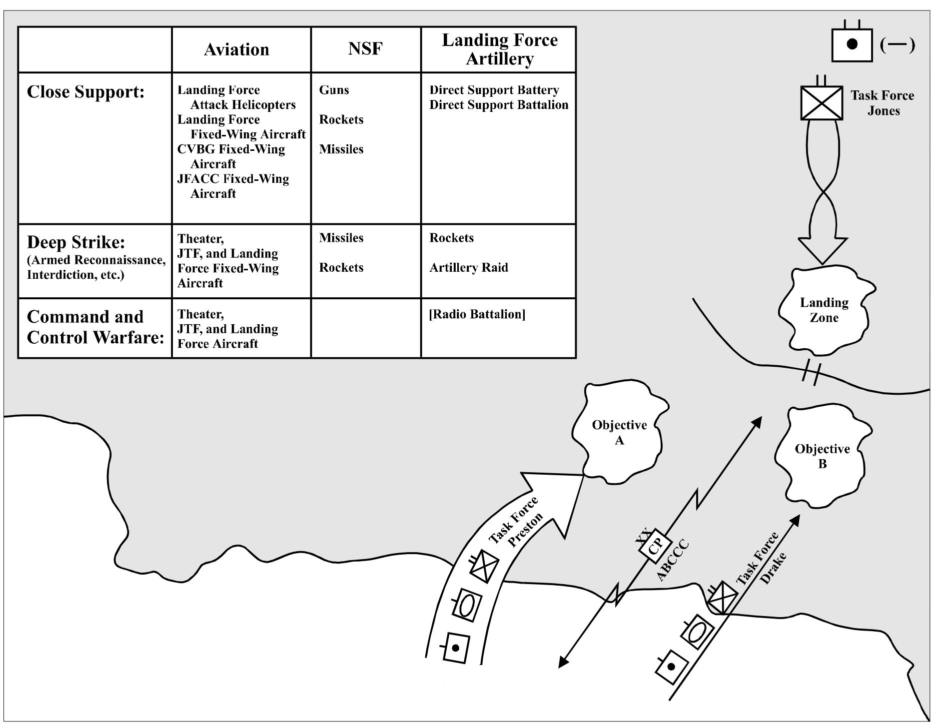
Maneuver unit mortars provide close, immediately responsive fire support for committed battalions, companies, and smaller units. These fires harass, suppress, neutralize, or destroy enemy attack formations and defenses; obscure the enemy's vision; or otherwise inhibit his ability to acquire friendly targets. Mortars are also used for final protective fires, smoke, and illumination. Generally speaking, they contribute little to the fire support of the LF at large and respond to small-unit requirements in specific engagements. Heavy mortars, of 120-mm or greater caliber, can contribute to assault and other phases of the operation in support of LF operations, equivalent to tube or rocket artillery.

Mortars are high-angle, high-rate-of-fire weapons. The weapons system trajectory makes it especially suitable for attacking targets on reverse slopes, in military operations on urbanized terrain, and in other areas that are difficult to reach with low-angle fire or air-dropped munitions. Mortar limitations include:

Ammunition carrying capability of the parent unit

High-angle fire, which makes them particularly detectable to enemy-weapons locating radar and thus vulnerable to counterfire.

Mortars that can be placed into action in the touchdown phase of the initial assault can provide significant support to the ground task forces in the landing zones and when passing through the LPP on the shoreline. LAV-mounted mortars may be fired from LCACs to support the in-stride breaching of minefields and obstacles with smoke (see Figure 9-2).



	Aviation	NSF	Landing Force Artillery
Close Support:	Landing Force Attack Helicopters Landing Force Fixed-Wing Aircraft CVBG Fixed-Wing Aircraft JFACC Fixed-Wing Aircraft	Guns Rockets Missiles	Direct Support Battery Direct Support Battalion
Deep Strike: (Armed Reconnaissance, Interdiction, etc.)	Theater, JTF, and Landing Force Fixed-Wing Aircraft	Missiles Rockets	Rockets Artillery Raid
Command and Control Warfare:	Theater, JTF, and Landing Force Aircraft		[Radio Battalion]

Figure 9-2. Fire Support for Movement to Objective

SUMMARY

The successful orchestration of C4I, surveillance, reconnaissance, and fire support planning will result in a continuous array of fires available to the LF as it begins the assault. Onboard the amphibious ships, the commanders first monitor the positions of the aircraft and landing craft, then pick up the movements of unit CPs. In-stride mine clearing operations are screened by NSF-delivered smoke, as well as by suppressive fires. Escort aircraft of both vertical and surface assault task forces provide CAS on call. LF artillery lands in the newly cleared landing zones, and other such units prepare to board turnaround V/STOL and LCAC sorties. Situation reports, real-time reception of sensor data, and fire support requests update the common picture and facilitate the use of all types of fire support according to protocols placed in the C4I, surveillance, and reconnaissance system. Intelligence reports of new enemy contacts also update the common picture.

Airborne relays and the ABCCC keep the C2 architecture functional over distances of hundreds of miles and through the continuous relays of aircraft, helicopters, and assault craft flowing to and from the units ashore. Carrier and LF aviation and surface fires from the accompanying task forces maintain air and fire superiority throughout the operation.

When fire support is required by a maneuver element, a small unit leader, forward observer, FAC, or airborne controller keys the target into the C4I, surveillance, and reconnaissance system. According to the automated protocols, the C4I, surveillance, and reconnaissance system routes the request for fire either to a firing unit (in the event of a main effort requesting unit) or to an FSC cell at the appropriate level to gain release of the desired ordnance. The request for fire is either approved, denied or changed to an alternate weapon or firing unit, which then executes the observer's mission. Within seconds, a tube or launcher (ashore or afloat) or an aircrew is cued to the target designation, coordinates, and control measures along with weapons release or firing orders. Simultaneously, a message to observer reports the time on target and required observer actions (laser or visual designation).

For targets beyond visual control of the forward combat units, the commander's FSCs key the targets into the C4I, surveillance, and reconnaissance system in place of the terminal controllers to initiate the same cueing and firing sequence from the desired fire support systems. If desired, airborne controllers can be assigned to control such targets or to take responsibility for continuous engagement of a moving or mass target requiring more actions.

The use of fully automated systems will provide real-time user access to the targets, the available fire support, the weapons capabilities, and the system responsiveness. With this information, the best weapon for the target is rapidly determined and tasked to the weapons system launcher, with control provided (if necessary) for terminal guidance, and the target is prosecuted with speed and effectiveness.

Chapter 10. Logistics

In amphibious operations, seabasing is a specialized form of floating base support. Amphibious operations will be launched, supported and sustained from the seabase, which involves use of assigned shipping as a base of operations for the deliberate, managed provision of combat support and CSS to the LF ashore from ships off shore. It does not involve selective unloading as applied to the initial unloading period, but emphasizes the provision of sustainment capabilities from ships afloat to LFs ashore on a selected basis. In maritime operations and routine forward deployment operations, seabasing involves area operations and the stationing of alert forces and/or associated materiel afloat on assigned shipping for rapid response to contingencies.

Under EMW, the Marine LF continues to be sustained by a combination of its accompanying supplies and the resupply it receives through naval logistics. What is key is that the support for maneuver forces ashore will come from the seabase. Accompanying supplies in a seabase are an integral part of the MAGTF and, based on assigned mission(s), can vary from up to 15 days for a MEU to up to 30 days for a Marine Expeditionary Brigade (MEB). Seabasing requires doing at sea, often under severe weather and sea-state conditions, many of the functions traditionally performed at logistics bases on shore (or transferring the function out of theater).

A primary enabler will be the coupling of seabased ship-to-objective distribution and network-based, automated logistics information to provide *in-stride sustainment* for maneuvering and fighting naval expeditionary forces. Seabasing is not new; it is embedded in naval doctrine and actual practice, although seabased support of LFs ashore has been limited to supporting small forces close to shore for relatively short periods of time. Reducing or eliminating the logistic footprint ashore will be the primary thrust of seabased logistics. Although seabased logistics is designed to make an expeditionary force inherently self-sufficient, seabased logistics will be part of a theater logistic effort under naval logistics. By keeping much (though not necessarily all) of the supplies and support activities at sea, naval expeditionary forces reduce both the vulnerability of logistics operations to enemy attack and allow greater maneuverability of forces ashore. EMW, however, does not rule out a transition to shore-based support. A small CSS area ashore may be needed. This will not be a major supply stockpoint with enough materiel to sustain a lengthy campaign. Rather, it may contain a few days supply, to serve both as a reservoir from which maneuver forces can draw when resupply from the seabase is interrupted, and as an immediate reserve capability to support any disparities between the flow of supplies from the fleet and the tactical demand for supplies by the operating forces.

Enabling expeditionary logistics defines the expected sustaining actions for Marine Corps forces afloat/ashore. Enabling expeditionary logistics highlights deployment support, force closure, sustainment, reconstitution and redeployment, and information advantage as its pillars of success. Navy CLF forces and strategic sealift assets are key components to the sustainment pillar. Sustaining actions afloat/ashore equates to moving vast quantities (1,700+ tons per day for a MEB-sized force) of supplies. Shuttling ordnance and fuel for MAGTFs within naval logistics remains a critical evolution and the endpoint can be a forward logistic site or a seabase, future MPF/ARG ships, the beachhead, or a LZ inland. Cargo can be moved ashore via helicopter, pontoon causeways, or landing craft—but time and distance are critical support metrics. Fuel can also be delivered ashore via the Offshore Petroleum Distribution System pipeline.

BACKGROUND

Seabasing of logistics and CSS will be implemented by making four key changes to the way that AFs have previously conducted operations and provided sustainment to forces ashore. The first, as already noted, is operating from a base at sea rather than establishing a base of operations on shore. The second involves reducing logistic demand. The third is implementing in-stride sustainment of both the seabase itself (a process with well-established techniques and procedures for forward-deployed shipping) and maneuver forces operating ashore (which historically have relied on establishment of support areas at the beach and also farther inland). The last encompasses the ability to smoothly transition to joint and landbased operations, if required, or to reconstitute the maneuver force at sea for subsequent operations. *Seabased logistics may not always be an efficient process for supporting forces ashore, but continuing refinement of support techniques and procedures will improve its effectiveness and make tradeoffs between efficiency and effectiveness increasingly acceptable.* A general discussion of seabased logistics and MPF employment in support of amphibious operations follows. Specific operational requirements, as well as higher order techniques and procedures for seabased support of amphibious operations, are discussed later in this chapter.

SEABASED LOGISTICS

The primary enabler will be a coupling of seabased ship-to-shore transport with network-based, advanced logistic information technologies to provide sustainment ashore. *Seabased logistics is a capability that can support a wide spectrum of military operations; this manual focuses on a discussion of seabased logistics in support of amphibious operations*.

Support to Amphibious Operations

The seabase will provide operational and tactical logistic support to amphibious operations. It cannot be assumed that accompanying supplies alone will always be sufficient to support operations; therefore, the seabase itself will be capable of replenishment. MPF shipping provides a readily available store of LF supplies and equipment, but AFs will normally be capable of conducting amphibious operations without MPF augmentation or reinforcement. The seabase—consisting of the AF, with or without the MPF—may be supported directly from the continental United States (CONUS) by the AFOE. Underway replenishment may take place in the LPA near the seabase transport and assembly areas or at separate afloat replenishment stations established by CATF. CATF and/or the supported joint commander may also operate intermediate staging bases (ISBs) ashore by using existing in-theater facilities or expeditionary facilities. ISBs would replenish the ATF with stocks received from CONUS or other forward-deployed resources (see Figure 10-1).

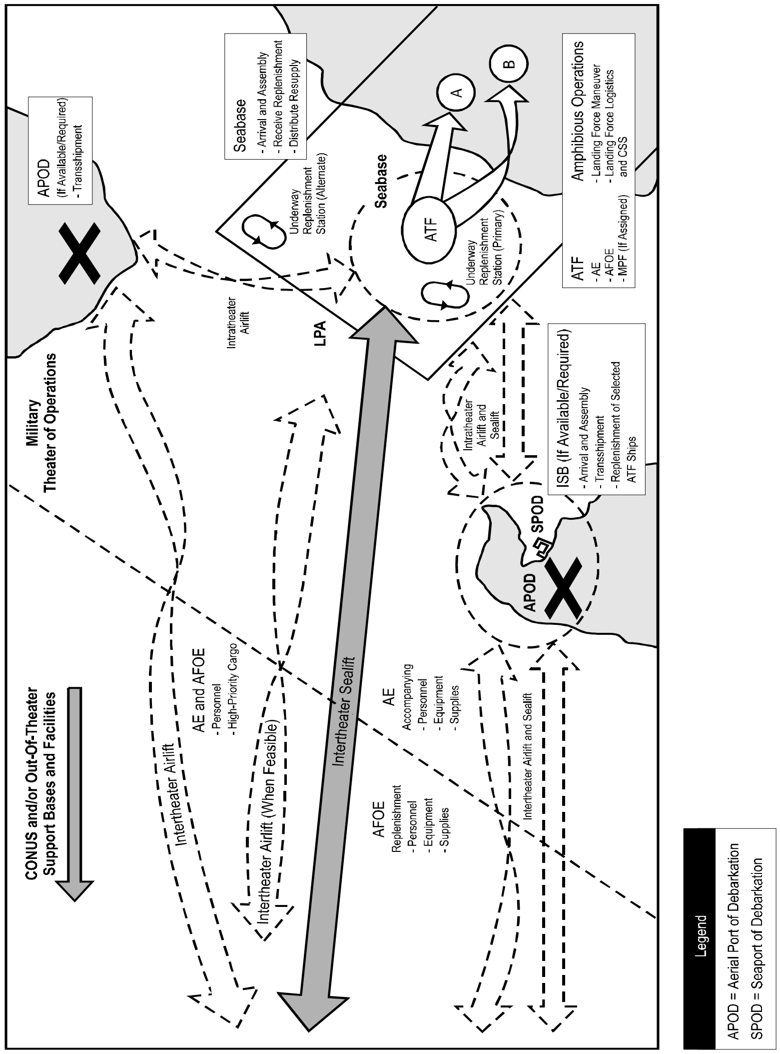


Figure 10-1. Seabased Logistics and Amphibious Operations

Limitations

Seabased logistics will operate within limits imposed by the environment, the adversary, and the laws of physics. Support operations will be challenged by bad weather and high sea states. Adversaries will endeavor to attack transportation and information resources. There will be limits imposed by the capacity of transportation resources and the amount of available electronic bandwidth. When conditions permit, the AF must have the capability to extend the endurance of its maneuver forces, possibly by transitioning to shore based logistic systems that employ a greater variety of transportation assets and throughput capacity. Seabased logistics draws on, and is compatible with, the *Joint Vision 2010* tenets of focused logistics: joint theater logistics, TAV, rapid distribution, information fusion, right-sizing the logistic footprint, agile CONUS infrastructure, improved health services support, and multinational logistics.

Capabilities

Many capabilities envisioned for seabasing have been successfully adapted to commercial applications at present and simply await adaptation and integration for military use. Others, such as GCCS and the Global Transportation Network (GTN), are available or coming online. Existing naval assets can be adapted. The specific changes described for effective seabasing will have synergistic effects when combined, but also offer expanded capability when taken separately or incrementally. It will be important to recognize that seabased logistics is a process as well as a capability. Seabased logistics will be an ongoing effort that offers a continuous stream of activity as long as the endurance of its personnel permits. It will be a maneuverable asset that is able to go where and when needed to get the job done. The developing operational capabilities that will make the execution of seabased logistic support operations possible are summarized below:

- Selective offloading —the ability to access essential items from storage at the seabase.
- Strategic logistic interface—commercially compatible resupply of the seabase.
- Intermediate maintenance—seabased for protracted sustainment and reconstitution.
- Joint interoperability—comprehensive, integrated, joint logistic information system.

The Tenets of Seabased Logistics

The following tenets of seabased logistics use improved functions of logistics to deliver flexible, highly responsive support for future naval and joint operations.

Force closure and reconstitution at sea will expand force employment options. The seabase will not be one vessel or type of platform, but will be a tailorable mix of ships that delivers specialized contributions to an integrated force.

- Primacy of the seabase—reduced footprint ashore and OTH presence.
- Reduced demand—seabased support, technology improvement, fewer forces ashore.
- In-stride sustainment—network-centric, automated logistics for maneuver forces ashore.
- Ability to transition ashore—flexible and mission tailored; joint interoperable.
- Force closure and reconsitution at sea—building and restoring combat power.

The Primacy of the Seabase

The primacy of seabasing will be its ability to build, project, and sustain combat power. Seabased logistics will continuously provide the materials and the working while underway. Reducing or eliminating the logistic footprint on shore will be the primary thrust of seabased logistics. It will reduce double handling of materiel by cutting out the intermediate step of building up a shorebased logistic depot and eliminating the operational pause associated with that effort. It will not depend on basing rights and host nation support. Forces ashore will be free to maneuver, having been liberated from protecting a logistic base and land supply routes.

Advances in ship-to-shore transportation technology will minimize the buildup of materiel on a beachhead. Air transport will allow vertical replenishment of forces operating well inland. Surface transport carrying heavy land-mobile forces can also land combat trains that will maneuver with these forces and will be capable of allowing overland LOC to close behind them. Later resupply of bulk fuel and water will be accomplished vertically or by reopening an alternate supply line on the ground with escorted vehicles. Small caches of logistic support items can be established at selected locations. FARPs can be established vertically or with mobile ground units deployed off the beach. UAVs offer the promise of expanded options for delivery systems.

The ships of the seabase offer a tailorable mix of capabilities for performing varied missions and functions. Intermediate maintenance activity capability for both aviation assets and ground combat equipment will be critical to maintaining high-tempo operations for extended periods and to reconstituting equipment after an operation has been completed. The seabase will have ready access to spare parts through its sustainment network or by fabrication on site, adequate spaces and personnel, and the specialized tools and test equipment required to perform those repairs. Other unique and dedicated functions—such as logistic over-the-shore systems, hospital support, and specialized sustainment—will be integrated as required.

Reducing Logistic Demand

Seabased logistics will expand its reach, responsiveness, and operational tempo through reduced demand from the supported forces. The LF will reduce its footprint ashore. C2, logistics, CSS, and naval fires will be primarily seabased. Ongoing improvements in operating methods, materiel reliability, precision ordnance and targeting, and fuel-efficient systems will continue to reduce logistic demand. Concurrent with this, the tradition of establishing massive inventories of materiel ashore to engage in attrition warfare and cover remote contingencies will dramatically change. This buildup wastes valuable time and resources as excessive materiel is received, staged, reissued, and forwarded to its receiving unit. Refinements in planning and execution techniques and procedures will reduce the amount of materiel flowing through the logistic distribution system and will allow critical items to flow freely and quickly. The resulting increased agility will allow more fighting forces to be sustained ashore than would otherwise be possible.

In-Stride Sustainment

Automation of procurement and distribution management systems will reduce human input, accelerate materiel movement, and reduce costs. Aggressive application of this commercially successful technology will be used to anticipate demand for resupply before a unit is even aware of the need. Logistic telemetry will supply consumption data that will tailor support to maneuver units in anticipation of need; the highly automated nature of "anticipated pull" logistics will allow a management-by-exception approach described as "logistics by negation." With TAV, improved knowledge of how our inventories are moved will result in improved allocation of transportation resources and increased velocity of materiel movement through the system. Increased velocity of materiel movement allows for lower levels of inventory and enhances response. Inevitably, the dynamics of any situation will result in an imbalance of resources among forward operating units. To overcome this inefficiency, units will have the capability to reallocate and cross-level resources among themselves through TAV. In-stride sustainment relies on information technology and carries burdens of bandwidth availability and information warfare vulnerability.

In-stride sustainment requires immediate access to essential items from the seabased distribution point. The methods and selective offloading capabilities used by the combat logistic force (active Navy and Military Sealift Command-operated Naval Fleet Auxiliary Force station ships, shuttle ships, and a variety of other support ships that provide underway replenishment at sea for battle groups, ARGs, and individual ships) and the AF (assault echelon [AE] and AFOE) will be retained and expanded to support sustainment of operations ashore. The MPF will provide a complementary capability to initiate or expand seabased sustainment operations. Selective offloading at sea is the fundamental capability needed to make seabased support possible; it includes cargo stowage using commercial-type automated storage and retrieval technologies, package assembly areas, multiple helicopter landing sites, a capability to support lighterage, and the capability to receive or supply replenishment while underway.

Transition to Theater Logistics

Although seabased logistics is designed to make an expeditionary force inherently self-sufficient, seabased logistics will be part of a theater logistic effort. Seabased logistics will be joint capable but will not be a replacement for a multifunctional shore-based theater logistic effort whenever it is reasonably available. Support for major sustained operations ashore may require augmentation by shorebased logistic systems when sustainment demand exceeds the supply capacity of the seabase, assuming that overland link-up has been achieved. Such operations will normally be conducted by one or more MEFs established in theater by some combination of amphibious and MPF operations conducted by forward-deployed forces, specially deployed amphibious forces, and MPFs to permit deployment of follow-on forces. Most functions of seabased logistics will remain seabased and ready for redeployment with their supported forces, but they could be brought pierside or at anchorage, if conditions permit, to shorten LOC; if necessary, LF components of the seabased logistic capability could also be deployed ashore. The seabase offers the best way to prepare the transition to joint theater logistic operations ashore, and logistic over-the-shore capabilities will be retained. Figure 10-2 depicts the place of seabasing in the continuum of logistic support.

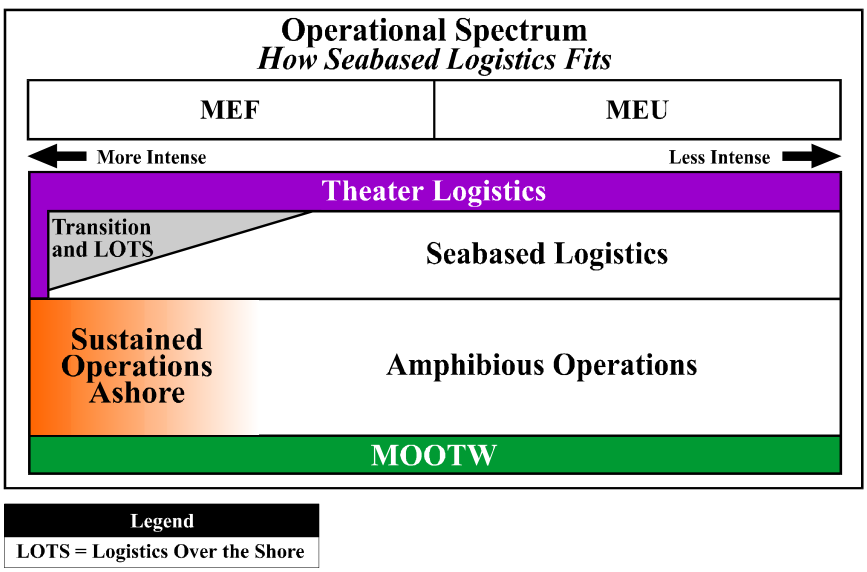


Figure 10-2. Seabased Logistics in the Operational Spectrum

Force Closure

The essence of force closure is generating combat power. The main thrust of the force closure process is the physical joining of military equipment and materiel and manpower in a planned sequence and where required to support the mission. To accomplish this, the instruments of force closure will be orchestrated within a cohesive strategy that deliberately integrates the selected instruments of the combat logistics force, the MPF, the Ready Reserve Force (RRF), and other forces of the Military Sealift Command, the Naval Expeditionary Logistics Support Force (NAVELSF), the Naval Control and Protection of Shipping (NCAPS), and port security and harbor defense (PS/HD) to achieve specified objectives. Afloat prepositioned assets of the Army and Air Force will be integrated when and as required by their participation in a JTF. The functions of seabased logistics will require integration with these capabilities and synchronization with their activities. Key to performing this will be integrating individual units into the overall command structure. Seabased logistics will allow force closure at sea and will thereby magnify the ATF's and LF's power projection potential.

Force Reconstitution and Redeployment

As an amphibious operation terminates or transitions to a major joint operation ashore, LF and ATF forces will reconstitute at sea and become available for other operations. Improvements in storage, handling, distribution, and maintenance capabilities will permit recovery of personnel, supplies, and equipment; decontamination, salvage, and disposal; intermediate maintenance; and repacking and restowing of materiel. Improvements in information technology will enable sourcing of needed replenishment materiel and replacement personnel.

MARITIME PREPOSITIONING FORCE OPERATIONS

MPFs will be capable of seamless integration with AFs. Evolving improvements in ship design and exploitation of emerging materiel-handling technologies will permit the MPF to reinforce the AF as part of the AFOE. The next generation of MPFs will contribute to operational employment of MAGTFs across the full range of operations, including the rapid reinforcement of forward-deployed amphibious forces. Parallel enhancements in seabased storage and maintenance will facilitate reconstitution of LFs on the seabase.

Enhancements will expand the functionality of the future MPF across an increased range of contingencies. An examination of the four pillars of future MPF operations provides an understanding of the concept of such MPF operations:

- Force closure—at-sea arrival and assembly of the MPF.
- AF integration—selective offloading to reinforce the AF assault echelon.
- Indefinite sustainment—seabased conduit for logistic support.
- In theater reconstitution and redeployment—immediate transition to the next mission.

Force closure will provide for the at-sea arrival and assembly of the MPF, thereby eliminating the requirement for access to secure ports and airfields. Marines will deploy via a combination of inter- and intratheater surface transport and strategic, theater, and tactical airlift—including the MV-22—to meet maritime prepositioning platforms while they are underway and en route to objective areas. Units will be billeted while completing the process of making their equipment combat ready. Platform design will facilitate this preparation process by providing for easy access to all equipment for inspection, maintenance, testing, and selective reconfiguration of tactical loads. This enhanced force closure characteristic will permit elements of the MPF MAGTF to be already prepared for operations when they arrive in the objective area.

AF integration, MPFs will participate in amphibious operations by using selective offloading capabilities to reinforce the assault echelon of an AF, as depicted in Figure 10-3. Although future MPS will not have a true forcible-entry capability, they will possess the versatility to reinforce the striking power of an AF.

- Amphibious ships in the AF provide operating platforms optimized for landing craft and aircraft, C2 systems, troop berthing, staff accommodations, weapons suites, and damage control. These characteristics allow for the transportation, projection ashore, support, recovery, and redeployment of MAGTFs.

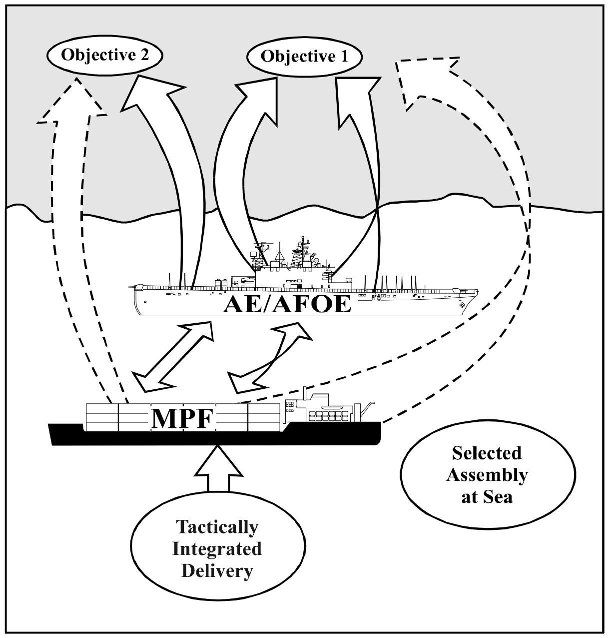


Figure 10-3. MPF Operations in Support of Amphibious Operations

- MPS will be multipurpose in nature but are optimized for storage and transportation of large quantities of heavy, bulky cargo. MPS will also provide facilities for tactical employment of assault support aircraft, surface assault craft, AAAVs, and the ships' organic lighterage in conditions of at least sea state 3. Further, the ships' communications systems will be fully compatible with the tactical C2 architecture of the AF, thereby allowing access to the advanced capabilities and shared situational awareness that will be available in the future.

MPFs can provide **indefinite sustainment** by serving as an AF seabased conduit for logistic support. This support will flow from bases located in the U.S. or overseas, via the seabase provided by the MPF, then on to Marine units conducting operations ashore or at sea. This might be accomplished as part of a larger seabased logistic effort, which would include not only MPS, but also aviation logistic support ships, hospital ships, and offshore petroleum distribution systems. The MPF will also be able to integrate operations with joint in-theater logistic agencies and to transition from a seabased logistic support system to a shorebased system.

MPFs will conduct **in-theater reconstitution and redeployment** without a requirement for extensive materiel maintenance or replenishment at a strategic sustainment base. This ability to rapidly reconstitute the MPF MAGTF will allow immediate employment in follow-on missions.

The centerpiece of MPF operations will be fast deployment, reinforcement, and sustained seabasing. To perform the full range of MPF evolutions, all three of these capabilities will be required. In some contingencies, however, a JTF may need only one or two legs of the MPF triad; the MPF will have the flexibility to constitute forces that are specifically tailored for each mission.

- The fast-deployment capability will deploy the combat-essential equipment for a MEU or similarly sized special purpose (SP)MAGTF, along with a limited amount of palletized cargo.

- The reinforcement capability will deploy the equipment and 30 days of sustainment for a MEF forward (FWD).

- The sustained seabasing capability will furnish a full range of logistic support, as well as the conduit to strategic bases through which the MPF will provide indefinite sustainment for a MEF.

SPECIAL CONSIDERATIONS

Seabased logistics and CSS in support of amphibious operations require particular attention to several critical factors. These factors are not new, but assume greater importance in seabasing. CLF will not have resources ashore to use for unanticipated or emergency requirements as he had in traditional amphibious operations, in which LF supplies and CSS functional capabilities were accumulated ashore in beach support areas (BSAs) and CSS areas (CSSAs). Neither will he always have as much freedom to launch resupply or maneuver transportation on short notice from the seabase as he did from shore facilities. Weather, ATF force protection operations, and replenishment operations are just a few of the activities that might preclude providing immediate support to the maneuver force ashore.

Transportation

The seabase for amphibious operations executed under the precepts of STOM will normally be well offshore. CLF and CATF will depend on the high speed and endurance of the LCACs, AAAVs, MV-22s, and CH-53Es to reduce the long sortie cycle times that this distance would impose on both maneuver and support movement between ship and shore. The need to use these surface craft and aircraft for operational support of the maneuver force must be balanced with an oftentimes equally compelling need to use these same craft for logistic and CSS support operations.

Timely availability of adequate transportation is necessary for the execution of amphibious operations.

- Execution of STOM will be based on employment of critically important high-value, low-density ATF and LF resources (LCACs and AAAVS/MV-22s/CH-53Es, respectively). Other assets, such as the LCX, other surface craft, and other aircraft, may also support the maneuver force ashore and may be needed to support the seabase shipping.
- Tactical maneuver ashore will be conducted principally with the LF assets and maneuver force/support force organic assets, such as AAAVs, other tracked vehicles, and wheeled vehicles.
- Administrative movement ashore will be supported with the LF assets and maneuver force/support force organic assets.
- Seabase-to-maneuver force logistic and CSS operations will be conducted with the high-value/low-density ATF and LF assets.
- Shore-to-ship recovery operations will be conducted with the high-value/ low-density ATF and LF assets.

LF use of LCACs and employment of AAAVs, MV-22s, and CH-53Es will be centrally controlled to maximize operational flexibility and efficiency. The tools that CATF and CLF will use for exercising this control are as follows:

- **Task Organization and Mission Assignments.** For example, AAAV units may be assigned to the OPCON of a maneuver task force commander, or a AAAV detachment commander may be given orders to operate in direct support of a maneuver force commander for a specified period of time or sequence of events. Aircraft and LCACs are more likely to be given general support missions.
- **Allocation of Sorties to Subordinate Commanders.** CATF and/or CLF may elect to divide the available sorties between different subordinate commanders.

- **Direct Control of Transportation Employment.** CLF may elect to control transportation sorties directly in real time or near real time (i.e., short lead time) through a request/tasking network.

Operational imperatives may dictate otherwise, but, when possible, amphibious operations should not be initiated until it has been demonstrated that the concept of operations and scheme of maneuver can be supported with the available LCACs, AAAVs, MV-22s, and CH-53Es. This calculation can be made by processing anticipated movement requirements and operational parameters with logistics automated information system (LOGAIS) transportation feasibility estimators (TFE) designed for amphibious operations and modeled on existing TFEs, such as those built into the Joint Operation Planning and Execution System (JOPES) for assessing strategic deployment plans. Feasibility calculations should be based on the factors portrayed in Table 10-1, at a minimum.

Adequacy of Supplies

Accompanying supplies are intended to support initial LF operations before the arrival of the AFOE and the start of sustained replenishment operations. The amount of supplies held in accompanying supplies, normally expressed as days of supplies, must *both* support ongoing operations and provide a safety stock to cover LF requirements during delays or disruptions of replenishment operations.

CLF will determine the safety levels to be maintained on the basis of the recommendations of his staff logisticians and subordinate commanders. The degree of risk associated with a particular level of supplies for safety stocks will vary with the operational situation, as will the degree of risk that CLF must assume.

It will be necessary to examine every possible way to reduce the demand for consumable items. Logistic and CSS planning must be closely integrated with operational planning to achieve a flexible balance between operational and support requirements.

CATF and CLF should pay particular attention to plans for bulk fuel, water, and ammunition replenishment and resupply. Replenishing these items will be time consuming. Resupplying these items will periodically absorb large portions (if not the majority) of available ship-to-shore transportation. Water is basic to survival, fuel is basic to mobility, and ammunition is basic to destruction of enemy forces. Inability to meet the demand for other classes of supply may acquire critical importance but will not affect operations as readily as an inability to supply water, fuel, and ammunition.

Common-use C2 systems must support LF logistic and CSS operations as well as maneuver force operations. C2 systems must link the seabase with the maneuver force and with any logistic and/or CSS organizations dispatched ashore. The dedicated logistic C2 systems that will link supporting and supported forces must be as capable and robust as the comparable operations C2 systems, implement TAV, and support precision logistic goals. An essential capability will be real-time recording and reporting of sustainment resources inventory and storage location/status.

LOGISTIC FACTORS

Logistic and CSS operations in support of amphibious operations can be considered in terms of several basic factors: organizations and responsibilities, classification of materiel, plans and planning documents, embarkation planning, C2, and the functional areas of logistics. These factors are neither new nor unique to amphibious operations, and they are addressed comprehensively in existing doctrine. However, the seabasing of logistic support does introduce new considerations for preparing and conducting amphibious operations. The following paragraphs address these new considerations.

Table 10-1. Transportation Feasibility Estimation Factors

Available Sorties

- Quantities of LCACs, AAAVs, MV-22s, and CH-53Es on hand
- Planning factors for combat losses
- Planning factors for maintenance availability
- Crew-day limits on employment

Transportation Requirements

- Assault/maneuver ashore/support of the maneuver force/recovery
- Load (passengers/cargo)/origin/destination
- Desired and/or required movement time frames
- Preferred mode of transport
    - Personnel and light/compact cargo: AAAVs* and MV-22s
    - Heavy/compact cargo and light vehicles: CH-53Es
    - Heavy/bulky cargo and tracked and wheeled vehicles: LCACs
- Acceptable alternative mode(s) of transport
    - Alternate transport/same mode acceptable (e.g., MV-22 instead of CH-53E)
    - Alternate transport/alternate mode acceptable (e.g., LCAC instead of CH-53E)

AAAV units/detachments will normally be attached to, or assigned in direct support of, maneuver task forces for the duration of an amphibious operation.

Time Available

- Operational time constraints
- Anticipated sortie cycle times

Key Considerations

- Enemy activity
- Casualty, evacuee, prisoner, and refugee projections
- Weather and sea conditions
- Coastline hydrography and geography
- Trafficability ashore
- Anticipated ratio of operational sortie requirements to support sortie requirements
- ATF resupply throughput capacity (tons or gallons/day)

BASIC ORGANIZATION AND RESPONSIBILITIES

The basic logistic working relationship between CATF and CLF (see Table 10-1) reflects a supporting-supported commander relationship based on function, rather than on phasing of an operation. Both CATF and CLF are responsible for Service-unique support of their commands, but these activities must be fully coordinated between Navy and Marine Corps forces. The requirement to coordinate operational-level and tactical-level support operations is particularly compelling because they must facilitate, not impede, an amphibious operation. Furthermore, they will sometimes occur simultaneously and normally will take place in rapid succession through constantly repeating cycles. CLF is the supported commander for tactical-level logistics (resupply) because of the imperative to support the task forces ashore. CATF is the supported commander for operational-level logistics (replenishment) because execution of these functions depends on proper positioning and maneuvering of the ships of the seabase.

Table 10-2. CATF and CLF Logistic Responsibilities.

CATF	<u>Function</u>	CLF
Supported	**Operational Logistics**	**Supporting**
Position the ATF and LF in the LPA so that it is operationally and logistically ready for amphibious operations; identify and source ATF replenishment requirements; conduct ATF and LF replenishment operations.	Force closure Arrival and assembly Intratheater lift Theater distribution Sustainment Redeployment Reconstitution	Direct LF assembly and preparation for amphibious operations; identify and source LF replenishment requirements; coordinate LF maneuver operations with ATF/LF replenishment operations.
Supporting	**Tactical Logistics**	**Supported**
Identify ATF requirements; support ATF ships and organizations through appropriate Service channels.	Supply Transportation Maintenance General engineering Health service Services	Identify LF requirements; support the LF through internal and external Service channels.
Support LF operations through maintenance of ATF capabilities and integration of ATF positioning, replenishment, and force protection with LF maneuver ashore.	Logistic and CSS operations	Identify LF requirements; support the maneuver force ashore.

Support requirements must be calculated with great precision and specificity to facilitate adequate provisioning at the time of mount-out for providing this support and to facilitate locating these support resources within the seabase, breaking them out, and delivering them during operations.

The LF must precisely focus its logistic structure. Each element must organize its logistic resources for the mission, concept of operations, and scheme of maneuver without losing its operational flexibility.

General

Each element—CE, GCE, ACE, and CSSE—will retain its organic logistic capability and responsibility, as well as responsibility for coordinating ground-common CSS received from the CSSE. Additionally, the ACE will retain its responsibility for providing aviation-peculiar logistic support. All elements must aggressively establish organizations aboard ship to monitor the logistic posture of forces ashore and locate, prepare, and dispatch resupply, contact teams, personnel replacements, and other support that may be required by the forces ashore. Figure 10-2 depicts the general logistic responsibilities and capabilities discussed below. Note that primary responsibility for LF operational-level logistic planning and coordination resides with CLF, who may also be dual-hatted in theater as the Marine Forces component commander. The CSSE and ACE execute operational-level logistic functions as appropriate for the LF mission and situation.

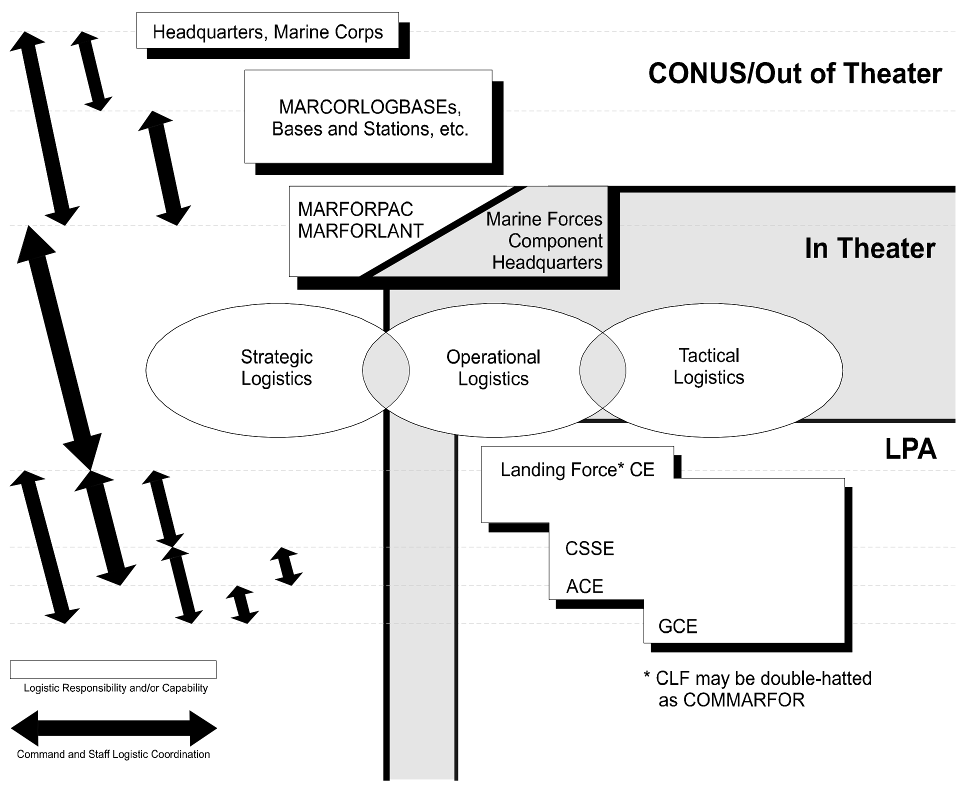


Figure 10-2. Organizational Capabilities and Responsibilities for Logistics

Command Element

The CE will coordinate and oversee LF operational-level logistics as well as tactical-level logistics and CSS operations. It will also prioritize competing requirements and retain authority to redirect support based on the operational situation.

Ground Combat Element

The GCE will task organize organic tactical logistic resources to support GCE components of the maneuver force. It may also provide combat forces for the protection of CSSE and ACE detachments ashore, when directed.

Aviation Combat Element

Normally, the ACE will remain seabased. It will conduct aviation-peculiar operational logistics in addition to ground-common and aviation-peculiar tactical logistic and CSS operations with organic resources. It will provide transportation of logistic personnel and materiel between the seabase and the maneuver forces ashore. It will also provide detachments for aircraft servicing, refueling, and rearming ashore as required.

CSS Element

The CSSE has broad responsibilities for providing ground-common CSS and operational logistic support to the LF, as well as the organic tactical logistic support that it provides itself. It possesses more capabilities than the other elements and is also responsible for providing overflow support to elements whose organic capabilities are overtaxed. Accordingly, it must be prepared to receive, organize, and manage the accompanying and replenishment supplies and equipment; establish landing zones ashore and manage personnel and materiel throughput there; organize resupply packages aboard ship and dispatch them to the maneuver force; organize contact teams and dispatch them ashore as required; and direct equipment preparation and storage during LF reconstitution aboard the seabase.

CLASSIFICATION OF MARINE CORPS MATERIEL

Materiel has been classified over the years by its characteristics, which mandate special handling and storage considerations.

Initially, cargo was classified as either vehicles, general cargo, perishables, high explosives, troop space cargo, flammables, or airplanes. The Marine Corps has refined this list since it was originally developed; additionally, joint transportation planning has introduced cargo categories based on the weight, critical dimensions, suitability for containerization, suitability for air transport, and special handling requirements. The latter classifications are essential for managing and transporting the materiel that will be distributed from the seabase in support of the LF maneuver force.

MAGTF II/LOGAIS is the family of evolving computer hardware and software systems with which the Marine Corps is managing forces and materiel and preparing MAGTF data in formats required for assimilation into joint data and force management systems. The time-phased force and deployment data (TPFDD) prepared in MAGTF II/LOGAIS for joint strategic deployment planning and execution can be adapted to include amphibious operation-specific data elements. From the logistic perspective, data elements that describe, or provide links to information about, shipboard storage location and inventory status and also describe the physical characteristics that govern how the materiel can be transported between the seabase and the supported force are readily achievable without the need to prepare separate documentation that is unique to amphibious operations. Furthermore, current and projected TPFDD capabilities can be adapted to support the development of landing plans and documentation of schedules and transportation resource allocation from a single, comprehensive database describing the LF, thereby facilitating the integration of operational and logistic concerns in conducting amphibious operations.

ADMINISTRATIVE PLANS

Logistic planning documents will serve the same purposes as always: to describe support requirements and assign tasks, record the location and inventory of support resources, direct task organization, and prescribe support procedures. OPLANs/OPORDs and SOPs will be prepared in accordance with the applicable, general-purpose MAGTF procedures. Plans and documentation that are unique to amphibious operations and that address shipboard stowage and ship-to-shore movement will be prepared by using common procedures and information management systems. There is no need for redundant documentation and databases that can be used only for amphibious operations when new data elements and report formats that serve the purposes of amphibious operations can be added to the Marine Corps' MAGTF II/LOGAIS programs. Furthermore, this approach streamlines the LF's transition to sustained operations ashore and MOOTW as well as its TAV interface with joint programs.

Support Requirements and Tasks

General MAGTF procedures and documentation for listing support requirements and assigning support tasks do not need to be changed for amphibious operations.

Location and Inventory of Support Resources

Ship-load documentation will be based on TAV methods and procedures, which are ideally drawn from a common database such as MAGTF II/LOGAIS. The seabase mount-out inventories must provide mission-appropriate initial levels of LF endurance. The current norms for the MEU, MEF(FWD)/MPF, and MEF are 15, 30, and 60 days of supplies, respectively. Properly prepared and executed replenishment plans can, in effect, give a LF unlimited endurance.

Task Organization

General procedures and documentation for describing and managing task organization do not need to be changed for amphibious operations, although the trend toward reflecting greater levels of detail in databases of organizational and materiel information must continue for management of task organization to be effective. It is worth noting that the "force module" procedure used with time-phased force and deployment data (TPFDD) can facilitate task-organization promulgation and management.

Standing Operating Procedures

General procedures and documentation used for preparing and disseminating SOPs do not need to be changed for amphibious operations.

EMBARKATION PLANNING

Proper embarkation is the primary enabler for successful amphibious operations conducted from the seabase. Established techniques and factors for planning and executing embarkation remain valid, with one overarching difference: *It will be absolutely necessary to dedicate otherwise usable cargo storage space to maintaining access to cargo stowed throughout the ships.* Traditional ship loading procedures maximize use of a ship's cargo carrying capacity by blocking cargo in place with other cargo loaded after the first items. The ratio of cargo loaded to the nominal cargo capacity is relatively high because the only cargo capacity not used is lost as a result of conflicts between cargo dimensions and configuration and stowage area dimensions and configuration. It must be accepted that this ratio will be lower for seabased amphibious operations because of the need to maintain access to all cargo. *It is far more likely that this access to cargo will be achieved with stowage techniques and procedures than by acquiring adequate numbers of special-purpose ships optimized for this function by design.* Factors affecting embarkation planning are listed in Table 10-3.

Table 10-3. Factors Affecting Embarkation Planning

1. Amphibious shipping is specially designed for ship-to-shore operations. Consequently, cargo capacity measured relative to ship size is lower for amphibious ships than it is for comparable commercial-type ships.

2. Some accompanying supplies and most replenishment will be transported on commercial-type shipping that is optimized for carrying cargo between established ports.

3. The ATF and LF must be able to handle accompanying supplies and resupply and replenishment of the seabase with:

- Specialized equipment for moving containers and bulk cargo within ships, unstuffing containers, and transferring cargo between ships
- Specialized techniques and procedures for tracking and reporting inventory balances and storage locations
- Specialized techniques and procedures for placing cargo in ships' holds to allow:
    - Selective access to any type of item in the inventory
    - Easy movement of all cargo from hold-stowage locations to work spaces, flight decks, well decks, and boat stations.

4. Many ATF ships will not be available for secondary logistic tasks after the LF goes ashore.

- All troop carrying ships must stay on station for C2, support of the maneuver and logistic/CSS forces ashore, and eventual recovery of the forces ashore.
    - LF berthing spaces normally converted to hospital spaces or holding areas for personnel replacements must be held open for recovery of the LF.
    - Cargo space used for LF organizational equipment and supplies must be held open for recovery and reconstitution.
- AE shipping and a portion of AFOE shipping will not be available for return to CONUS to pick up replenishment cargo or additional forces.

On-station underway replenishment will be the normal replenishment technique for ATF shipping carrying key LF organizations and C2 needs.

Offloading Priorities

In theory, all different types of cargo should be equally accessible, which would negate the need to embark cargo in the traditional "last in, first out" sequence. However, it is still necessary to plan embarkation by considering the probable desired sequence for offloading. Common sense dictates that universal access to embarked cargo does not obviate the desirability of placing equipment intended for early offload closest to the hatches and ramp doors.

Access to Flight Decks and Well Decks

All stowage spaces will have at least indirect access within a ship to both flight decks and well decks, preferably by vehicle/forklift-capable ramps rather than via elevators or booming from one shipboard location to another. This is necessary to preserve the operational flexibility to transport materiel ashore by the most available means, that is, by either aircraft, surface craft, or both, with minimum time required for spotting cargo.

Access to Cargo

Bulk cargo, containerized cargo, and vehicles will be stowed in lanes that keep hatch squares, turntables, ramp doors, and ramps clear. Shipboard forklifts must have free access to bulk cargo and to the doors of stowed containers, and it must be possible to selectively pull different vehicles from their stowage locations and move them to their debarkation stations.

Work Spaces

Significant areas of what would otherwise be cargo storage space must be set aside for LF work spaces. These set-aside areas will be used for troop staging, equipment maintenance, and cargo preparation. Troop staging and equipment maintenance areas will be used on an as-required basis and may be dual-use areas. However, for amphibious operations, shipboard areas where supplies are assembled and netted or containerized and then moved to the flight or well decks should be set aside for that purpose exclusively. Maneuver forces ashore will need regular resupply, within very narrow windows of opportunity, especially if the maneuver force is engaged and/or is traveling light with minimum prescribed loads.

Handling Bulk Cargo

The ATF and LF must have the capability to handle containerized cargo, but the utility of containers in OMFTS/STOM amphibious operations supported from the seabase is likely to be very different than it is in traditional amphibious operations. Intermodal containers that are 20- and 40-feet long are the standard means for shipping cargo worldwide, and port facilities, ships, aircraft, trucks, trains, and cargo handling equipment are universally optimized for handling containerized cargo. Organizational supplies and equipment will be palletized and/or crated, normally on the standard 40-inch x 48-inch pallet/base configuration, and transported as bulk cargo or mobile loads on organizational vehicles. However, most nonorganizational material will be transported at some point in standard containers, even if it is palletized/crated inside the container.

Containers as currently configured will have limited utility for resupply operations. The Marine Corps does possess specialized equipment for handling 20-foot containers ashore in expeditionary operations, but these containers will normally be too large and heavy for effective use in amphibious operations conducted as described in this manual, that is, based on the concepts of OMFTS/STOM and supported with seabased logistics. Even when containers might be transported ashore, the routine absence of built-up support areas, the imperative to maintain maneuver force mobility, and the need to minimize the size of support forces ashore will make handling containers and distributing their contents problematic. Routine resupply operations will be based on distributing palletized or crated dry bulk cargo, and bulk liquid cargo in bladders or drums, when it is not feasible to run distribution pipelines from the seabase to the shore.

In contrast, most dry or packaged-liquid replenishment and reconstitution cargo will be containerized. The ATF and LF must have the ability within the seabase to receive, manage, marshal, stuff/unstuff, and retrograde containers. Bulk liquids will be transferred directly between ships' tanks. The ATF and LF must also be able to repackage material received in containers and transport this cargo between ships and to the shore for distribution to the LF.

COMMAND AND CONTROL OF SEABASED LOGISTICS

C2 of seabased logistics will be an inherent aspect of the operational C2 process. It will be executed by LF command and support personnel through the LF C2 structure and organizations, using LF-common communications and information systems. LF logisticians will conduct seabased operational logistics, tactical logistics, and CSS operations with the same information systems, or systems compatible with and providing connectivity to, joint theater logistic systems.

Movement Control

Movement between the ATF and the shore before the start of general offloading has been controlled by the TACLOG. Implementation of the concepts for STOM in amphibious operations and for seabasing logistics have made the TACLOG organization obsolete.

TACLOG has been a temporary LF organization that was separate from the LFOC and manned by operations, logistic, and communications personnel. TACLOG has monitored the status of serials, waves, floating dumps, and supplies prepositioned for delivery by helicopters; maintained records of the location of troop organizations and cargo aboard the shipping; and coordinated between the LF elements ashore and Navy control agencies for landing materiel and organizations requested from the beach.

The requirement for the TACLOG functions has been both streamlined and elevated in importance by the implementation of STOM and seabasing. In seabasing, the whole LF and all of its materiel is, in effect, on call. In STOM, movement between ship and shore is no longer incidental to the conduct of combat operations ashore; this movement is now a transparent component of the LF's tactical maneuver to the objective. Movement between ship and shore is largely based on efficient, centralized employment of the high-value, low-density transportation resources in general support of the LF (i.e., MV-22s, CH-53Es, AAAVs, and LCACs). Control of MV-22, CH-53E, AAAV, and LCAC tactical maneuver sorties and logistic/CSS support sorties must be consolidated in one agency to ensure effective coordination and prioritization of competing operational and logistic requirements for allocating these sorties. The ACG must assume responsibility for TACLOG tasks and integrate them with its operations duties; TAV and automated information systems support make this transfer of responsibility as much practical as it is necessary.

LF-Level Logistic C2

The ACG will direct amphibious operations and combine the historical functions of the LFOC and the TACLOG and coordinate with counterpart Navy control agencies. The CE will exchange liaison officers with each of its subordinate elements to facilitate direction of shipboard activities. TAV links between all LF command groups will provide all commanders with real-time information on the progress of the operation, requirements for drawing selected cargo from storage and preparing it for shipment ashore, updated movement schedules, transportation platform assignments and staging/load/launch/touchdown times, and the status of in-progress movements.

LF Element-Level Logistic C2

Each element must provide for a stable shipboard support organization that is specifically designed, by training and a mixture of military occupational specialties, to fulfill both Navy/ship coordination requirements aboard ship and support requirements for LF organizations both afloat and ashore. This structure must encompass the ground-common logistic capabilities that are organic to some degree in all LF elements, general support capabilities with which the CSSE provides ground-common logistic support to all LF elements (including assigned Navy organizations), and the aviation-peculiar logistic and CSS capabilities with which the ACE supports aircraft operations.

Information Management

Information management will be the backbone of seabased logistic C2.

The C4I features of seabased logistics will be organic to the naval forces and will offer robust voice, data, and video transmission capabilities. The C4I architecture must interface with tactical, intelligence, medical, and weather data systems to allow in-stride sustainment of combat forces on the move. The sensor-to-shooter picture will be monitored by logistic C4I to forecast demand and take preparatory action in anticipation of the next tactical move.

Theater distribution and other information support systems should be the same for all Services or should at least be fully compatible. The GCCS is being designed to provide an Internet-like information system that will eventually allow information to flow from fighter to manufacturer. The global transportation network is the first step toward realization of defense TAV. Once fully employed and integrated with all strategic and theater distribution networks, these systems will serve as a framework that will both sense consumption and control supply. Seabased logistics will be fully integrated in this joint arena and will effect a simple handoff to a "logistic anchor desk" of theater logistics and/or to supporting Service agencies.

Logistic/CSS Operations

Logistic/CSS operations are the culmination of the general preparation of MAGTFs for conducting seabased amphibious operations, as described previously in this chapter.

Support operations will be conducted for the purpose of enabling the maneuver force commander to perform his operational tasks, which accomplish the LF mission. This statement of the obvious is not superfluous; it is made to highlight the fact that support operations are normally an enabling activity rather than the LF focus of effort. They must be responsive—characterized by the timely provision of needed support coordinated over an efficient request/task communications net and delivered to exactly where it is needed. There will be seabased operations whose main effort is logistical in nature, but these will be clearly defined situations that normally involve noncombat operations, such as disaster relief and

"Zero logistic footprint ashore" is an ideal state that is achievable in certain seabased amphibious operations, but it is unlikely to be the norm; keeping the footprint as small as possible is essential. Although the CSSE and the ACE may never put CSS detachments (CSSDs) ashore for more than short periods of time to perform specific tasks, the maneuver element, which is normally task organized from the GCE, must include organic tactical logistic capabilities such as selected medical, maintenance, and supply functions. The maneuver element must also request and direct the activities of necessary CSS attachments and/or direct-support detachments, for example, motor transport units or landing support personnel for HLZ control and so on. Operational considerations may also make it feasible and desirable to put mobile CSSDs ashore to support the maneuver element, and it may also be appropriate to establish caches of supplies and limited functional capabilities (resupply points and FARPs) or even ship-to-shore fuel transfer points ashore. However, it will be possible to minimize the CSSE and ACE logistic footprint ashore at all times, principally by providing support on a "contact-team" basis from the seabase.

The maneuver force commander will request the support that he needs and will coordinate delivery times and locations. TAV will provide the CSSE with maneuver element equipment density information and some supply consumption and maintenance information, which will enable the CSSE to anticipate support requirements and prepare delivery efficiently. However, the supported commander should still expect to confirm his requirements for consumables resupply and to specify his requirements for maintenance, transportation, engineering, and other services.

Aboard the seabase, each commander will be responsible for the management, distribution, and use of organic or initial-issue supplies and equipment. The CSSE commander will be responsible for management, issuance, and replenishment of ground-common supplies; the LF commander will be responsible for apportioning and allocating these resources. The ACE commander will be responsible for aviation-peculiar supplies and equipment; the LF commander will exercise review and confirmation of apportionments and allocations of critical aviation-peculiar materiel.

PERSONNEL SUPPORT OPERATIONS

It is necessary to call attention to the particular difficulties that operating from the seabase will impose on personnel issues. Space for billeting, feeding, hospitalizing, and even guarding people will be far more limited than in traditional, shore-based operations.

Innovative techniques and procedures for establishing temporary living facilities and effecting rapid throughput transport of “extra” personnel who are awaiting evacuation from the LPA, debarking for arrival and assembly operations, or scheduled for assignment to LF units must be devised and tested. The LF obligation to transport casualties to safety is an inviolable trust; planning for casualty evacuation will continue to be an inherent part of any OPLAN.

Policies that prescribe the limits of ATF/LF mission-oriented interest in, and responsibility for, civilians and enemy combatants must be prepared in a manner that is consistent with the seabase’s capability to accommodate these persons. A further consideration is that transporting prisoners, evacuees, and refugees between the shore and the seabase could significantly degrade the LF’s ability to support operational maneuver and logistic/CSS support movement requirements; mission requirements and operational tradeoffs must be assessed carefully.

Appendix A. Landing Plan Documents

DESCRIPTION

Planning an amphibious operation will be greatly facilitated by the innovative use of the systems that provide TAV of the landing force to all commanders and staffs. TAV systems will be based on databases that contain data records reflecting the landing force organization, personnel, cargo, and equipment, as well as the location of these assets while maneuvering ashore, on the seabase, or in transit from CONUS or other locations to the seabase assembly areas. The databases will be updated continuously through automated sensing and reporting equipment (e.g., GPS and PLRS) and manual input (e.g., keyboard data entry and use of bar code reading/reporting technology).

Contemporary examples exist for most of these future systems, although they are not yet as capable as they must become to allow implementation of the process described below. Those systems most applicable to preparing a landing plan are the Marine Corps' MAGTF II/LOGAIS family of systems and JOPES. JOPES encompasses automated planning and execution of strategic (i.e., intertheater) transportation of forces. The basic JOPES data is the unit line number (ULN) which identifies ~~portrays~~ a transportation requirement for selected personnel, cargo, or equipment that moves from the same origin to the same destination at the same time by the same means. Therefore, a ULN is the functional equivalent of the "serial" as it is defined and used in traditional landing plan documents.

MAGTF commanders and staffs use MAGTF II/LOGAIS to prepare the Marine portion of JOPES databases, which reflect force identification (type-unit and assigned unit, task organization and organization for movement), force composition (personnel, cargo, and equipment), and force movement (routing, schedules, and modes/sources of transport). This database is known as the time-phased force and deployment data (TPFDD). MAGTF II/LOGAIS and JOPES should be modified with the addition of an "amphibious assault" module to record ~~for~~ each ULN's information that is specific to ship-to-shore movement, maneuver ashore (if performed with common-use landing force assets, such as the MV-22), and shore-to-ship recovery.

A TPFDD prepared upon departure from CONUS could be modified by adding, deleting, changing, or "splitting" (dividing a single record into two or more records that, in sum, equal the original single record) ULNs. This review and modification could take place at any time—en route, in the assembly area, or even during the conduct of an amphibious operation. ULNs reflecting a combined-arms task force for the assault and operations ashore could be labeled in the TPFDD by using standard techniques for building so-called "force modules" and then managed by the task force commander and his staff. Their changes would be reflected in the TPFDD as a whole, so senior, adjacent, and subordinate commanders would know the plan, could see support requirements, and could input data entries reflecting the support they will provide.

Landing plan documents can be extracted from the TPFDD for display on terminal screens and/or for printing paper copies. The basic elements for any report format are the data entries ("fields") from each record to be displayed in the report and the physical alignment of these fields on the screen or paper. Producing a report is a matter of specifying the format to use and the ULNs (one or more) that the report covers. Standard formats for landing plan documents can be designated for systemwide use (in the example below, contemporary formats are portrayed). The system will also have the basic database management functions that enable an individual user to design special formats ("ad hoc" reports) for selected use and possible adoption as a new, or revised, standard report format.

USING THE TIME-PHASED FORCE AND DEPLOYMENT DATA

ULNs are assigned to all landing force *units*, including any Navy units to be landed with the landing force. The ULNs are assigned to deploying units under JOPES and are merged into the necessary landing force documents as required. The ULNs also serve logistically in TAV and in embarkation and debarkation of units not landed in the initial assault of the landing force.

The creative use of JOPES and landing force documents should satisfy all requirements of the Navy and landing force commanders before and during the amphibious operation. There is no requirement for numerical sequencing of ULNs to satisfy aesthetics of the documents because their central value lies in their universal application across all planning requirements. Thus, a vertical assault flight may carry ULNs 103 and 5502, followed by ULN 342 in the next flight, but last-minute changes in the landing plan may result in substituting ULN 5502 with ULN 4312. The universality of the ULN, coupled with the support of TAV in logistics, will permit such substitutions with great ease at any point, in any document, with automatic corrections resulting in other planning and operating documents.

The electronic preparation and dissemination of these plans and documents also permit complete cross-indexing of units and actions. For instance, the unit leader of a particular ULN-designated unit may find all pertinent actions and schedules for that unit by means of a simple search function. Likewise, a commander or planner wishing to review all planned actions across LPS “Red” may view the same via a similar search.

PREPARATION OF THE LANDING PLAN

During the time that a determination of landing means is made, other planning is also accomplished. Before receiving input from the subordinate commanders on their landing requirements, CLF must inform them of their specific mission(s) and other planning guidance. Therefore, as soon as the concept is developed, this support, CSS, and landing and embarkation planning guidance are provided to subordinate echelons through the landing force chain of command in the form of an outline plan, warning order, or planning guidance. Information is disseminated to subordinate echelons as soon as it is available rather than waiting to publish a firm document.

The battalion task force is the basic organization for the amphibious assault. Guidance that is required before detailed preparation of the landing plan can begin includes the following:

- Commander’s intent and concept of operations
- Designation of LPPs
- Task organization of assault units
- ULNs associated with the task organization
- Availability of landing craft, assault vehicles, and assault support aircraft

During the planning phase, concurrent planning is conducted ~~goes on~~ at all echelons. Input for the various landing documents constantly changes; this requires continued coordination between all planning agencies until firm planning data is known.

The Marine division and the corresponding Navy echelon, the transport group, normally represent the highest level at which detailed planning for the landing and assault is conducted. Planning at higher levels is confined primarily to establishing relative landing priorities for ground combat, aviation combat, CSS, and the CE and to matters of overall coordination.

A definite format is followed in producing the landing plan in accordance with the JOPES format. The landing plan is always Appendix 3 (Landing Plan) to Annex R (Amphibious Operations) to the OPORD. This appendix contains the necessary details to accomplish the primary purpose of the amphibious assault—to get the troops, equipment, and supplies ashore in formations over designated LPPs and landing zones as required by the concept of operations. The landing plans of higher headquarters are similar but contain some higher level documents and a compilation of the documents from their subordinate units.

Within the development of the landing plan, regardless of echelon, provisions must be made for a landing ashore of adequate combat strength. Certain types of units must be put ashore ahead of the other units. In other words, a sequence of landing is established that requires planners to anticipate the needs ashore for the landing of troops, equipment, and supplies during the initial stages of the assault.

The landing plan appendix briefly states how the landing is envisioned; all of the details are contained in the tabs. Because all information is not initially known, these tabs cannot always be prepared in precise order.

Sequence

The general sequence of the landing plan document preparation follows. The following documents are developed first because subsequent landing plan documents contained in the landing plan appendix depend on the information provided in them.

Concept of Operation and Operations Overlay

The landing plan must support the concept of operations. The concept of operations provides planners with information pertaining to the landing force scheme of maneuver, initial task organization and phasing of the operation. The operations overlay is located at Appendix C (Operations) and graphically portrays the LF scheme of maneuver. Separate overlays may be developed for the surface assault and vertical assault, if required.

Landing Craft, Assault Vehicle, and Aircraft Availability Tables

These is tables lists the types and number of landing craft available from the transport group, specifies the total number required for naval use, and indicates those available for troop use. It provides the basis for assigning landing craft for the assault and is prepared early in the planning process. The senior naval officer of the transport group, who functions as the transport group commander during the landing, usually prepares this table, but in some cases the CATF staff would prepare it

Landing Craft, Assault Vehicle, and Aircraft Employment and Assault Table (Outline)

The commander's next step is to visualize how he will place the personnel and equipment in each type of assault craft. The final form of the landing craft, assault vehicle, and aircraft assignment table is not yet developed, but the commander must account for gross numbers of persons, vehicles, and supplies to be carried ashore to confirm that he has the landing means necessary. During this process, he prioritizes the units for mounting in assault support aircraft, AAAVs, and LCACs. Remaining units are assigned to other task forces or, as in the case of administrative and service units, remain seabased.

Other Documents

As soon as shipping is confirmed, the following remaining documents must be completed:

- The ULN assignment table

- The landing craft, assault vehicle, and aircraft employment and assault table (detailed version)
- The process that has been outlined above is the generally accepted procedure; however, each operation is unique and may require a different approach. In many instances, embarkation occurs long before a mission is even determined, and the number of landing craft and assault support aircraft influences the concept of operation and scheme of maneuver for the assault. In the absence of sufficient data, a notional assault plan will be devised to guide the embarkation of assault task forces and associated AAAVs, LCACs, and assault support aircraft. However, when the mission is known in advance, the concept of operations, the landing plan, aircraft, landing craft and vehicles, and shipping should be tailored to the tactical situation.

NAVY DOCUMENTS TO SUPPORT THE SHIP-TO-SHORE MOVEMENT

Assault Area Diagram

This is a graphic chart overlay that shows details such as LPP designation, axies of advance, directions of attack, lines of departure, attack positions, salvage areas, transport areas, and fire support areas. It is usually prepared very early in the planning process, and its focus is on an overall view of the assault area and those items of interest to staff planners and senior commanders.

Sea Echelon Plan

This applies only when a sea echelon concept is used (if ships come in closer than OTH because of a reduced threat). Sea echeloning reduces the concentration of amphibious shipping in the transport areas and reduces the area that must be swept for mines. Use of a sea echelon concept and the extent of employment are joint decisions of CATF and CLF, but the CATF staff prepares the plan.

Approach Schedule

The approach schedule is a figure that details information of primary interest to the ACG. The information depicted is oriented to support the buildup of forces and materiel after the assault task force has landed. The approach schedule indicates, for each assault task force, arrival and departure at various points, including:

- Parent ship
- Rendezvous area
- Line of departure
- Other control points

The approach schedule also provides the estimated time of arrival at the LPP. It gives task force designations, courses, names of unit commanders, lists of launching ships, and other pertinent information.

Landing Craft Availability Table

This table lists the type and number of landing craft available from the transport group, specifies the total number required for naval use, and indicates those available for troop use. It provides the basis for assigning landing craft for the assault and is prepared early in the planning process. The senior naval officer of the transport group, who functions as the transport group commander during the landing, usually prepares this table, but in some cases the CATF staff would prepare it.

Landing Craft Employment Plan

This plan provides the assigned movement of landing craft from the various ships to satisfy naval and landing force requirements. It indicates the number of landing craft, their type and parent ship, the ship or assault task force to which they will report, and the period attached. The transport group commander or the CATF staff prepares it. Somewhat later in the planning process after the allocation of craft to groups has been determined based on landing force requirements, the landing craft employment plan is completed.

DEVELOPMENT OF THE LANDING FORCE SURFACE ASSAULT PLAN

Organization for Combat

Based on the concept of operations, the task force commander prepares the desired organization for combat. Planning the organization for combat is more complex than just planning a task organization because it must be considered in terms of specific formations and methods of landing. The length of the LPS and the number of LPPs may limit the number of units employed at a given moment, and the limited numbers of assault vehicles or landing craft employed within a unit will in turn affect the tactics and formations used. For example, the task force commander might want to use AAAVs to land two companies leading in the assault—with the 81-mm mortar platoon, also mounted on AAAVs, following immediately after the two assault companies—and then land the remainder of the task force infantry and engineers in a column of companies mounted on AAAVs. These would be followed by the LCAC group delivering the task force LAV and tank unit(s), followed by thin-skinned vehicles carrying various support weapons. After determining the general scheme for landing, the commander then considers the resulting assignments of vehicles and craft as well as the general order of maneuver and the formations to be used, both in surface and vertical assaults.

Availability of Craft

The task force commander simultaneously considers the available means of assault mobility to see whether the landing vehicles and craft available will support the desired organization. To decide this, he must determine the numbers and type of craft required to transport the organization as planned. Any shortfalls will dictate changes in the task organization envisioned.

Assault Vehicle Loads

The AAAV normally carries 18 Marines with assigned individual equipment. Allowances must be made for additional space occupied by bulkier equipment and crew-served weapons.

Organization of Loads

By knowing the total number of personnel and equating them to AAAV loads or “chalks,” the task force commander can compute the number of craft and vehicles required to lift each assaulting unit. For example, by referring to the desired organization for landing, he determines that it will require 54 AAAVs and 4 LCACs to land the task force. The task force commander receives guidance on landing means availability from CLF. This guidance might allow for only 44 personnel-variant AAAVs (AAAV(P)s), 2 command-variant AAAVs (AAAV(C)s), and 6 LCACs. A possible new organization for landing might involve landing only part of the weapons company. The two AAAV(C)s, in any case, would be used to land the command group(s).

Sequencing in Organization for Combat

During the assault, the task forces land as integral units at the same time, not by stages or echelons. The availability of landing craft and assault vehicles determines the number of personnel and equipment that can be carried to the LPP in AAAVs and in the initial use of the landing craft. The remaining landing force elements land in subsequent trips of landing craft as follow-on or support to the initial assault operation. Usually, these will consist of artillery, tank, reconnaissance, CSS, and other units that are capable of mobile operations or of following in trace of the assault task forces.

Operations Overlay

Next, the commander depicts graphically in the OPORD overlays how he envisions the landing of the forces.

ULN Assignments

After the commander has resolved the formation, craft assignment, and shipping assignments, he can now load the organization for the surface maneuver. All units have unique ULNs assigned under JOPES. The task force commander and the staff use these numbers to identify units of Marines and their equipment. These ULN assignments will be used in the command and control system to facilitate loading and sequencing of AAAVs and landing craft cycles by presenting automated load orders; this is equivalent to airlift movement “chalkings.”

Landing Priority Table

Finally, the commander sequences all units, including those not in the initial assault. The landing priority table depicts the anticipated order of landing. This document assists the embarkation personnel in loading the ship by using the concept of last on, first off, as well as cueing ship and ACG personnel to proximate requirements during the assault.

Unit Movement Tables

Purpose and Use

These tables portray the organization of troop units into vehicle/boat/aircraft teams, or chalks. They are no different than those required in land combat for mechanized or vertical assault operations. The table details the assignment of vehicle/boat teams within the organization of the surface assault task force and the organization of units scheduled for sorties of LCACs. This table, together with the debarkation schedule, furnishes the ship’s commanding officer with necessary information for debarkation of troops and materiel. It is distributed to all personnel responsible for offloading troops and supplies.

Content

The craft or vehicles are listed in numerical sequence. The landing craft or assault vehicle and its vehicle/boat team are numbered as follows:

Load. These are numbered from front to rear, with the first task force to land designated number 1.

Vehicle/Boat Teams and the Craft or Vehicle. These are assigned a designation based on the order in which they are landed. The designation consists of the flight number (AAAV, LCAC, or aircraft), the order of the craft/AAAV in the flight, and the chalk number, which consists of the last three digits of the ULN followed by the sequential number of the vehicle/boat team.

Example

The flight is made up of the:

- Company/group call sign: Tuna
- Lift number: 1
- Vehicle/craft sequence in lift: 01.

The chalk is the:

- ULN (last three digits): D11
- Troop unit number: 1.

Thus, Tuna 101 D11-1 is the boat team designation. Note that the same chalk may be reassigned to another flight for a subsequent mission or return to the ship, solely by changing the flight number.

Preparing Agency

This table will normally be prepared at the task force or team level. The recommendations of subordinate unit commanders should be considered and incorporated as appropriate.

Techniques for Loading Landing Craft, Assault Vehicles and Assault Support Aircraft: An Illustration

A rifle company in ordinary land combat is assigned an objective. The formation that the company commander has adopted is two platoons forward and one in reserve. With the leading platoons, he has placed machine-gun and assault squads to give support. The reserve platoon is in such a position that it can support the attack or be employed at the decisive moment as determined by the company commander. In addition to the reserve, the company commander can influence the action through use of external supporting fires. Therefore, supporting arms personnel are with him during the attack.

Now consider the same rifle company, but this time the attack is being made over water. Another factor has now been added—the troops are boated in assault vehicles. Keeping in mind that the company is going to attack in the same formation, the platoons are assigned to their vehicles. Remember that the other supporting weapons and crews must be mounted in vehicles as well. Complete rifle squads are assigned to the same vehicle. However, in assigning crew-served weapons, it is preferable to assign only one weapon of a type to a single AAAV to avoid losing all of one type of weapon in case the vehicle is lost or disabled. Moreover, the troops will continue to move and fight from the assigned AAAVs; hence, they will carry munitions and other supplies as required through the end of the assigned missions.

Any battalion supporting weapons that may be assigned to the company are also mounted or boated. Battalion supporting weapons, from the antiarmor and mortar platoons, again follow the technique of dispersion.

The company commander rides where he can best influence the action. Supporting arms personnel, such as the artillery forward observer, forward air control element, naval gunfire team, and 81-mm mortar forward observer, ride with the company commander to be immediately responsive to the requests. When the battalion naval gunfire team is not assigned to the company, the company commander can use the artillery forward observer to perform the same job.

Other personnel assigned to support the rifle company, such as communicators and hospital corpsmen, are spread throughout the vehicles of the company. An attached engineer squad usually receives a dedicated vehicle.

At the task force level, the battalion commander and staff may operate in command vehicles (AAAV(C)s). Both vehicles carry sections of the command group that can operate independently in the event that one is lost during the operation. Remaining service and communications personnel of the task force are seabased.

Unit Line Number Assignment Table

Purpose and Use

The ULN assignment table lists the ULNs, in numerical sequence, of all operational components of a landing force, group, or team to be landed by surface means. The table contains a description of the unit comprising the ULN, the number of personnel in the ULN, the ship from which the ULN is to be unloaded, the materiel in the ULN, the number and type of landing craft or assault vehicles that will land the unit, and special instructions where required.

Preparing Agency

This document is prepared at all echelons of command (battalion landing team and above). When prepared at the landing force level, it becomes a compilation of information obtained from documents that subordinate units have prepared. When completed at the battalion level, the assignment table provides much of the information required for preparation of the remaining task force landing documents.

Landing Craft, Assault Vehicle, and Aircraft Employment and Assault Table (Detailed Version)

Purpose and Use

The employment and assault table presents a complete picture of the anticipated sequence for landing units. Troop and naval agencies use it as the principal document in executing and controlling the movement ashore of all units. The completed table forms the basis for the embarkation and loading plans of the units concerned.

Preparing Agency

The landing force prepares the employment and assault table. This table is published by the battalion task force and higher levels.

Content

This table ties the landing craft and AAAVs to the assault sequence of the units involved and describes the timing of their movements. These details are shown according to the anticipated sequence of landing of each task force.

DEVELOPMENT OF THE LANDING FORCE VERTICAL ASSAULT PLAN

Organization for Combat

Based on the concept of operations, the task force commander prepares the desired organization for vertical assault. Actually, planning the organization is more complex than just planning a task organization because it must be considered in terms of specific formations and methods of landing. The size and number of landing zones may limit the number of aircraft employed within a flight, which in turn affects the formation. For example, the task force commander might want to use MV-22s to land two companies leading in the assault, with the antitank platoon, mounted on wheeled vehicles, following immediately after the two assault companies in CH-53Es, and then land the remainder of the task force in a flight of MV-22s. This would be followed by the reinforcing task force LAV and artillery unit(s), followed by thin-skinned vehicles carrying various support weapons. After determining the general scheme for vertical assault, the commander then considers the resulting assignments of aircraft as well as the general order of flight and formations to be used.

Availability of Aircraft

The task force commander simultaneously considers the available means of assault movement to see whether the aircraft available will support the desired organization. To decide this, he must determine the numbers and type of aircraft required to transport the organization as planned. Any shortfalls will dictate changes in the task organization envisioned.

Assault Support Aircraft Loads

The MV-22 aircraft normally carries 24 Marines with assigned individual equipment. Allowances must be made for the additional space that will be occupied by bulkier equipment and crew-served weapons. Although designed as a heavy-cargo helicopter, the CH-53E may also carry 35 fully equipped troops.

Organization of Loads

By knowing the total number of personnel and equating them to aircraft loads or chalks, the task force commander can compute the number of aircraft required to lift each assaulting unit. For example, by referring to the desired organization for landing, he determines that it will require 35 MV-22s and 8 CH-53Es to land the task force. The task force commander receives guidance on landing means availability from CLF. This guidance might allow for only 32 MV-22s and 6 CH-53Es. A possible new organization for landing might involve landing only part of the weapons company.

Sequencing in Organization for Combat

During the assault, the task forces land either as integral units at the same time or by stages or echelons. The availability of aircraft determines the number of personnel and equipment that can be carried to the landing zone in the initial lift. The remaining landing force elements land in aircraft of subsequent trips as follow-on or support to the initial assault operation. Usually, these will consist of artillery, antiarmor, and CSS following in trace of the assault task forces or occupying terrain adjacent to the landing zones.

Vertical Assault Operations Overlay

The next step is to graphically portray the scheme of maneuver. This diagram is prepared along with the landing craft, assault vehicle, and aircraft assignment table and the landing craft, assault vehicle, and aircraft employment and assault table (detailed version) and is based on the commander's concept of landing. It portrays the routes to and from landing zones and the transport area, navigation and control points, and the locations of the landing zones.

ULN Assignments

After the commander has resolved the formation, aircraft assignment, and shipping assignments, he can now load the organization for the vertical assault maneuver. All units have unique ULNs assigned under JOPES. The task force commander and the staff use these numbers to identify units of Marines and their equipment. These ULN assignments will be used in the command and control system to facilitate loading and sequencing of aircraft flights and cycles by presenting automated load orders equivalent to airlift chalkings for assault support aircraft.

Landing Priority Table

Finally, the commander sequences all units, including those not in the initial assault. The assault schedule depicts the anticipated order of landing. This document assists the embarkation personnel in loading the ship by using the concept of last on, first off, as well as cueing ship and ACG personnel to proximate requirements during the assault.

Unit Movement Tables

These tables portray the organization of troop units into aircraft teams, or chalks. They are no different from those required in land combat for mechanized or vertical assault operations. The table details the assignment of aircraft teams within the organization of the vertical assault task force. This table, together with the debarkation schedule, furnishes the ship's commanding officer with necessary information for debarkation of troops and materiel. It is distributed to all personnel responsible for offloading troops and supplies.

Content

The aircraft are listed in numerical sequence. The aircraft teams are numbered as follows:

Lift. These are numbered from front to rear, with the first task force to land designated number 1.

Aircraft Teams and the Flight. These are assigned a designation based on the order in which they are loaded. The designation consists of the flight name (~~AAAV, LCAC,~~ or aircraft), the lift number, the order of the aircraft in the flight, and the chalk number, which consists of the last three digits of the ULN followed by the sequential number of the aircraft team.

Example

The flight is made up of the:

- Squadron/group call sign: Anvil
- Lift number: 1
- Aircraft sequence in lift: 01

The chalk is the:

- ULN (last three digits): D11
- Troop unit number: 1

Thus, Anvil 101 D11-1 is the aircraft team designation. Note that the same chalk may be reassigned to another flight for a subsequent mission or return to the ship, solely by changing the flight number.

Preparing Agency

This table will normally be prepared at the *task force* level. The recommendations of subordinate unit commanders should be considered and incorporated as appropriate.

Techniques for Loading Landing Craft, Assault Vehicles, and Assault Support Aircraft: An Illustration

Technics used would be the same as mentioned above for surface assault.Imagine that you have taken a rifle company in ordinary land combat and assigned it an objective. The formation that the company commander has adopted is two platoons forward and one in reserve. With the leading platoons, he has placed machine-gun and assault squads to give support. The reserve platoon is in such a position that it can support the attack or be employed at the decisive moment as determined by the company commander. In addition to the reserve, the company commander can influence the action through use of external supporting fires. Therefore, supporting arms personnel are with him during the attack.

Now consider the same rifle company, but this time the attack is being made over water. Another factor has now been added—the troops are loaded in assault support aircraft. Keeping in mind that the company is going to attack in the same sequence, the platoons are assigned to their aircraft. Remember that the other supporting weapons and crews must be loaded in aircraft as well. Complete rifle squads are assigned to the same aircraft. However, in assigning crew-served weapons, it is preferable to assign only one weapon of a type to a single aircraft to avoid losing all of one type of weapon in case the aircraft is lost or disabled. Unlike in mounted combat, however, the troops leave their assigned aircraft upon landing; hence, they will carry munitions and other supplies as required, or receive them in the landing area, through the end of the assigned missions.

Any battalion supporting weapons that may be assigned to the company are also loaded on accompanying aircraft or subsequent flights. Battalion supporting weapons from the antiarmor and mortar platoons again follow the technique of dispersion.

The company commander rides where he can best influence the action. Supporting arms personnel, such as the artillery forward observer, forward air control element, naval gunfire team, and 81-mm mortar forward observer, ride with the company commander to be immediately responsive to the requests. When the battalion naval gunfire team is not assigned to the company, the company commander can use the artillery forward observer to perform the same job.

Other personnel assigned to support the rifle company, such as communicators and hospital corpsmen, are spread throughout the aircraft assigned to lift the company.

At the task force level, the battalion commander and staff may operate in command aircraft. Remaining service and communications personnel of the task force are seabased.

Unit Line Number Assignment Table.

ULN assignments and tables will be generated in the same fashion as for surface assault.

Purpose and Use

The ULN assignment table lists the ULNs, in numerical sequence, of all operational components of a landing force, group or team to be landed by surface means. The table contains a description of the unit comprising the ULN, the number of personnel in the ULN, the ship from which the ULN is to be unloaded, the materiel in the ULN, the number and type of aircraft that will land the unit, and special instructions where required.

Preparing Agency

This document is prepared at all echelons of command (battalion landing team and above). When prepared at the landing force level, it becomes a compilation of information obtained from documents that subordinate units have prepared. When completed at the battalion level, the assignment table provides much of the information required for preparation of the remaining task force landing documents.

Landing Craft, Assault Vehicle, and Aircraft Employment and Assault Table (Detailed Version)

Purpose and Use

The employment and assault table presents a complete picture of the anticipated sequence for landing units. Troop and naval agencies use it as the principal document in executing and controlling the movement ashore of all units. The completed table forms the basis for the embarkation and loading plans of the units concerned.

Preparing Agency

The landing force prepares the employment and assault table. This table is published by the battalion task force and higher levels.

Content

This table ties the aircraft units to the assault sequence of the ground units involved and describes the timing of their movements. These details are shown according to the anticipated sequence of landing of each task force.

EXAMPLES

The following series of documents presents a landing with a regiment as the ground combat element. Note that most documents refer to both surface and vertical assault portions of the assault. The reduction of the types of landing craft and vehicles has greatly simplified the older forms of planning, which required an accounting for larger numbers of craft of all types. Also, the STOM of the surface forces now resembles that of the vertical assault, introducing the possibility of similar formatting of the typical documents. None of the formats may be considered binding; they are only recommended. The ~~c~~entering of data in the JOPES ULNs will permit considerable cross-referencing of these documents, creating other formats that are easily accessible to commanders and permitting logistical data such as TAV to be fully compatible.

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DTG 18001Z Mar 14

OPERATION ORDER 01-14 (OPERATION STOM)

Ref: (a) Special Map

Task Organization: Annex A (Task Organization)

1. SITUATION

a. Enemy Forces. Annex B (Intelligence)

b. Friendly Forces

(1) BATTLEFORCECETHIRDFLT conducts offensive operations in support of BLUBINIAN armed forces to eject enemy forces from BLUBINIAN sovereign territory and to restore the integrity of BLUBINIA's international borders.

(2) TF 31 provides force protection and fire support for MEF amphibious operations and accomplishes deception operations vic PORT WETTIN.

(3) TF 33 provides amphibious shipping, assault craft, and seabased command and control capability in support of MEF amphibious operations.

a. Elements of MPSRON-1 augment landing force assault echelon surface maneuver capability through instream offloading of one company of AAAVs.

(1) Attachments and Detachments (eff o/o). 22 MEU(SOC) will composite with II MEF.

2.MISSION

At H-Hour on D-Day, II MEF seizes ATF Obj A and LF Obj 1 in order to destroy the enemy operational reserve.

3.EXECUTION

Commander's intent: I believe the enemy will defend from prepared defenses. His *critical vulnerability* is the relatively great distance between his mechanized reserve division and other enemy units capable of providing mutual support. The focus of effort is to destroy or neutralize ~~ing~~ the enemy's fixed defensive positions before his mobile reserve can react. The endstate is (1) prepared enemy defensive position destroyed vic ATF Obj A, (2) II MEF defeats counterattack vic LF Obj 1, and (3) enemy forces withdraw to Blubinian.

Concept of Operations. At H-hour on D-day, II MEF will conduct an amphibious attack vic LPZ YANKEE to destroy the enemy mechanized division located vic JALALABAD. On order, continue the attack in support of BLUBINIAN offensive operations. The GCE is the *main effort* and will conduct a surface and vertical amphibious attack to close with and destroy designated elements of the mechanized division and to delay possible counterattacks by other enemy units. The MEF reserve will consist of 10 percent of the available OAS.

a. Tasks

(1) 2d Marine Division(-) (Main Effort)

(a) Destroy the enemy armor brigade and mechanized brigade, located vic JALALABAD.

(b) On D-1, conduct pre-H-hour transfer of personnel to designated MV elements of MPSRON-1 to launch one company of AAAVs.

(c) On order, continue the attack to support the advance of BLUBINIAN ground forces.

(1) 2d Marine Aircraft Wing

(a) Support MEF operations, per Annex M (Air Operations).

(b) Destroy the enemy mechanized brigade, located vic JALALABAD.

(1) 2d Force Service Support Group. Provide seabased logistic support to elements of the MEF per Annex D (Logistics).

a. MEF Reserve

(1) Be prepared to assume the mission of the 2d Marine Division.

(2) Be prepared to assume the mission of the 2d Marine Aircraft Wing.

d. Coordinating Instructions

(3) D-day: On order

(4) H-hour: On order

(5) Priority Intelligence Requirements:

(a) Location/movement of subordinate elements of enemy mechanized division (division HQ, brigade HQ, combat/combat support units of company size and larger).

(b) Location/movement of elements of enemy mechanized division.

4. ADMINISTRATION AND LOGISTICS

Annex D (Logistics)

5. COMMAND AND SIGNAL

a. Command Relationships. Annex J (Command Relationships)

b. Signal. Annex K (Communications-Electronics) (Omitted)

c. Command Posts. II MEF CE initially afloat onboard USS LHD-5.

ACKNOWLEDGE RECEIPT

BY COMMAND OF LTGEN JONES

V.J. GOULDING, JR.
Colonel, U.S. Marine Corps
Chief of Staff

ANNEXES:

A - Task Organization
B - Intelligence (Omitted)
C - Operations
D - Logistics (Omitted)
E - Personnel (Omitted)
F - Public Affairs (Omitted)
G - Civil Affairs (Omitted)
H - Environmental Services (Omitted)
J - Command Relationships (Omitted)
K - Communications-Electronics (Omitted)
L - Operations Security (Omitted)
M - Air Operations (Omitted)
R - Amphibious Operations
X - Execution Checklists (Omitted)

Annex A (Task Organization) to Operation Order 01-14 (Operation STOM)

II MARINE EXPEDITIONARY FORCE

Command Element, II MEF
2d Force Reconnaissance Co
Det, 4th Civil Affairs Group
2d Radio Bn(-)
8th Comm Bn(-)

<u>2d Marine Div(-)</u>
HQ Bn
2d Mar
6th Mar
10th Mar
2d AA Bn
2d Combat Engr Bn
Btry A, 2d LAAD Bn
2d LAR Bn
Recon Co
2d Tank Bn

<u>2d Marine Aircraft Wing</u>
- Det, MWHS-2
- Det, MWSS-272
- MACG-28
  - Det, MASS-1
  - Det, MWCS-28
  - Det, MACS-6
  - 2d LAAD Bn(-)
- MAG-14
  - MALS-14
  - VMAQ-1
  - VMA-214 (JSF- PAA 12)
  - VMA-223 (JSF- PAA 12)
  - VMA-231 (JSF- PAA 12)
  - VMA-542 (JSF- PAA 12)
  - VMFA(AW)-224 (F/A-18D – PAA 12)
  - VMFA(AW)-232 (F/A-18D – PAA 12)
- MAG-26
  - MALS-26
  - VHMM-261 (MV-22 – PAA 14)
  - VHMM-264 (MV-22 – PAA 14)
  - VHMM-266 (MV-22 – PAA 14
  - HMH-461 (CH-53E – PAA 12)
  - HMH-464 (CH-53E – PAA 12)

HMLA-167 (AH-1W/UH-1N – PAA 6/3)
HMLA-269 (AH-1W/UH-1N – PAA 6/3)

2d Force Service Support Group
Command Element, 2d FSSG(FWD)
Det, H&S Bn
Det, 2d Supply Bn
Det, 2d Maintenance Bn
Det, 8th Engr Support Bn
Det, 8th Motor Transport Bn
Det, 2d Landing Support Bn
Det, 2d Medical/Dental Bn

Annex C (Operations) to Operation Order 01-14 (Operation STOM)

Ref: (a) Special Map

1. GENERAL

a. Mission. (Basic Order)

b. Area of Operations. Appendix 10 (Operations Overlay) (Omitted)

c. Situation. Basic Order and Annex B (Intelligence) (Omitted)

2. CONCEPT OF OPERATIONS

Basic Order

3. CONDUCT OF OPERATIONS

a. Nuclear Operations. The employment of nuclear weapons is not authorized. Appendix 1 (Nuclear Operations) (Omitted)

b. NBC Defense. Appendix 2 (NBC Defense) (Omitted)

c. Electronic Warfare. Appendix 3 (Electronic Warfare) (Omitted)

d. Psychological Operations. Appendix 4 (Psychological Operations) (Omitted)

e. Unconventional Warfare. Appendix 5 (Unconventional Warfare) (Omitted)

f. Search and Rescue. Annex M (Air Operations) (Omitted)

g. Deception. Appendix 7 (Deception) (Omitted)

h. Rules of Engagement. CJCS standing ROE are in effect. Exceptions will be promulgated by record traffic.

i. Reconnaissance. Annex B (Intelligence) (Omitted)

j. Fire Support. Appendix 12 (Fire Support) (Omitted)

k. Air Operations and Air Defense. Annex M (Air Operations) (Omitted)

l. Coordinating Instructions. Basic Order

4. OPERATIONAL CONSTRAINTS

The portion of the MEF mission relative to destruction of the ORANGOVAN reserve mechanized division must be accomplished before D+3. This will facilitate offensive operations being conducted by BLUBINIAN forces and will free MEF assets to conduct follow-on operations in support of the BLUBINIAN offensive.

5. LIMITING FACTORS

None.

6. COMMAND AND SIGNAL

a. Command. Basic Order

b. Signal. Annex K (Communications-Electronics) (Omitted)

APPENDIXES:

1 - Nuclear Operations (Omitted)
2 - NBC Defense (Omitted)
3 - Electronic Warfare (Omitted)
4 - Psychological Warfare (Omitted)
6 - Search and Rescue (Omitted)
7 - Deception (Omitted)
8 - Rules of Engagement (Omitted)
9 - Reconnaissance (Omitted)
10 - Operations Overlay (Omitted)
11 - Concept of Operations (Omitted)
12 - Fire Support (Omitted)

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Annex R (Amphibious Operations) to Operation Order 01-14 (Operation STOM)

Ref: (a) Special Map

1. SITUATION

a. Enemy Forces. Annex B (Intelligence) (Omitted)

b. Friendly Forces. CTF 33/COMPHIBGRU-2, with ARG-1, ARG-2, ARG-3

c. Attachments and Detachments. Basic Order

2. MISSION. II MEF will destroy the operational reserve of the enemy I Corps and, on order, support the advance of BLUBINIAN ground forces.

3. EXECUTION

a. Concept of Operations. Basic Order

b. Advance Force Operations. Appendix 1 (Preassault Operations) (Omitted)

c. Beach Reconnaissance and Underwater Demolition. Annex B (Intelligence) (Omitted)

d. Embarkation. Appendix 2 (Embarkation Plan) (Omitted)

e. Landing Plan. Appendix 3 (Landing Plan)

f. Rehearsal. Appendix 4 (Rehearsal Plan) (Omitted)

g. Control. Appendix 5 (CSS Control Agencies Plan) (Omitted)

h. Withdrawal. Appendix 6 (Withdrawal Plan) (Omitted)

i. Coordinating Instructions

Effective H-hour, CATF reports in support of CLF for this operation.

4. ADMINISTRATION AND LOGISTICS. Annex D (Logistics)

5. <u>COMMAND AND SIGNAL</u>

a. <u>Command</u>. Basic Order

b. <u>Signal</u>. Annex K (Communications-Electronics) (Omitted)

APPENDIXES:

1 - Preassault Operations (Omitted)
2 - Embarkation Plan (Omitted)
3 - Landing Plan
4 - Rehearsal Plan (Omitted)
5 - CSS Control Agencies Plan (Omitted)
6 - Withdrawal Plan (Omitted)

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Appendix 3 (Landing Plan) to Annex R (Amphibious Operations) to Operation Order 01-14 (Operation STOM)

Ref: (a) Special Map
(b) NWP/FMFM xx-xx

1. STOM operations will be conducted IAW Annex C to the basic order. Tabs A through F of this appendix provide detailed instructions.
2. Preassault operations are IAW Appendix 1 to Annex R.
3. Reembarkation plan is Appendix 6 to Annex R.
4. Landing force scheme of maneuver is IAW Annex C.
5. Supporting arms are IAW Appendix 12, Annex C.

TABS:

A - Landing Priority Table
B - ULN Assignment Table
C - Landing Craft, Assault Vehicle, and Aircraft Availability Table
D - Landing Craft, Assault Vehicle, and Aircraft Employment and Assault Table
E - Assault Schedule
F - Vertical Assault Landing Diagram

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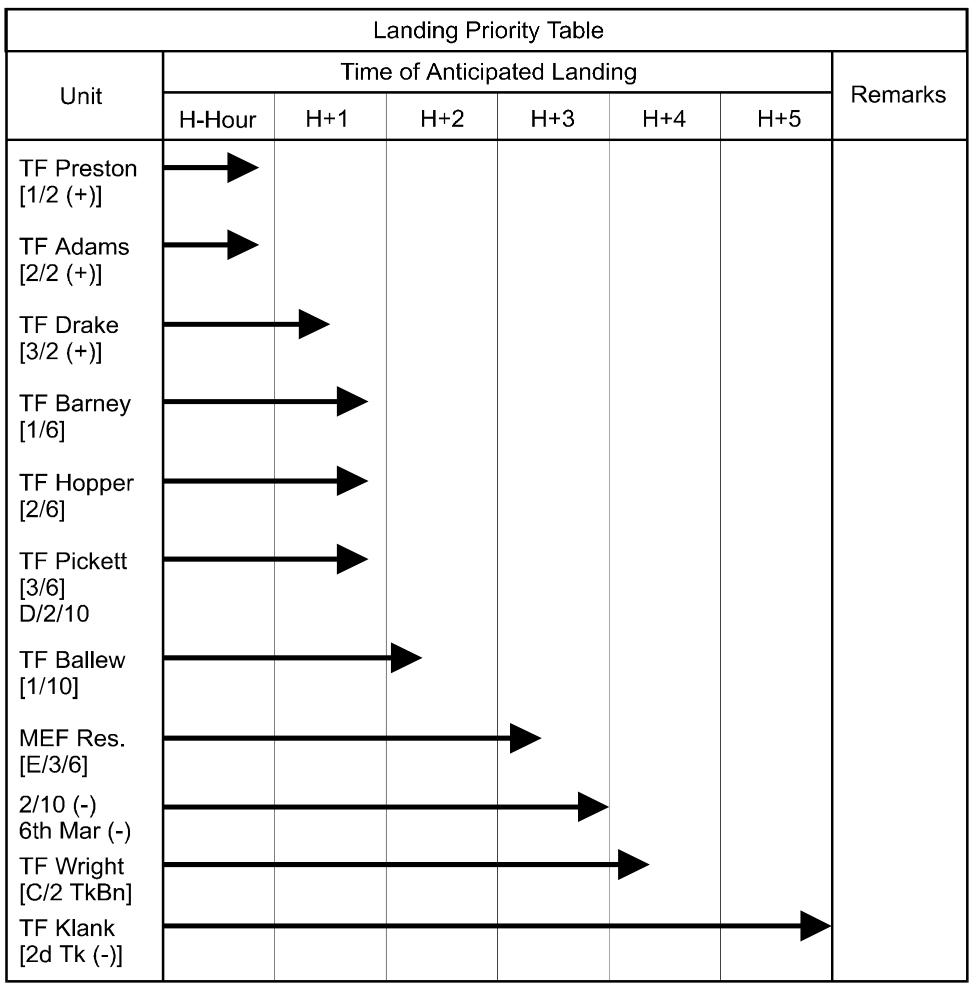
Tab A (Landing Priority Table) to Appendix 3 (Landing Plan) to Annex R (Amphibious Operations) to Operation Order 01-14 (Operation STOM)



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Tab B (ULN Assignment Table) to Appendix 3 (Landing Plan) to Annex R (Amphibious Operations) to Operation Order 01-14 (Operation STOM)

Ref: (a) Special Map

ULN Assignment Table

ULN	Unit	Pers	Materiel Equipment Vehicles	Craft Number Type	Ship	Remarks
P1CD11	Co A, 1st Bn, 2d Mar	216		12 AAAV(P)s	LHA-2	
P1CD12	Co B, 1st Bn, 2d Mar	216		12 AAAV(P)s	LHA-2	
P1CD13	Co C, 1st Bn, 2d Mar	216		12 AAAV(P)s	LHA-2	
P1CD1A	H&S Co, 1st Bn, 2d Mar	144		2 AAAV(C)s 7 AAAV(P)s	LHA-2	
P1CD21	Co E, 2d Bn, 2d Mar	216		12 AAAV(P)s	LHA-3	
P1CD22	Co F, 2d Bn, 2d Mar	216		12 AAAV(P)s	LHA-3	
P1CD23	Co G, 2d Bn, 2d Mar	216		12 AAAV(P)s	LHA-3	
P1CD2A	H&S Co, 2d Bn, 2d Mar	144		2 AAAV(C)s 7 AAAV(P)s	LHA-3	
P1CD31	Co I, 3d Bn, 2d Mar	216		12 AAAV(P)s	LHA-1	
P1CD32	Co K, 3d Bn, 2d Mar	216		12 AAAV(P)s	LHA-1	
P1CD33	Co L, 3d Bn, 2d Mar	216		12 AAAV(P)s	LHA-1	
P1CD3A	H&S Co, 3d Bn, 2d Mar	144		2 AAAV(C)s 7 AAAV(P)s	LHA-1	
P1CDA	HQ Co, 2d Mar	90		2 AAAV(C)s 4 AAAV(P)s	LPD 17-4	
P1CF1A	Elms, HQ Btry, 1st Bn, 10th Mar	30		1 LCAC	LHD-1	
P1CF1B	Elms, HQ Btry, 1st Bn, 10th Mar	50		1 LCAC	LPD 17-2	
P1CF1A	Elms, Btry A, 1st Bn, 10th Mar	40		2 LCACs	LHD-2	
P1CF11B	Elms, Btry A, 1st Bn, 10th Mar	50	6 LW-155	3 LCACs	LHD-3	
P1CF11C	Elms, Btry A, 1st Bn, 10th Mar	40		2 LCACs	LPD 17-1	
P1CF12A	Elms, Btry B, 1st Bn, 10th Mar	50		1 LCAC	LPD 17-2	
P1CF12B	Elms, Btry B, 1st Bn, 10th Mar	35	4 LW-155	2 LCACs	LPD 17-3	
P1CF12C	Elms, Btry B, 1st Bn, 10th Mar	35	2 LW-155	2 LCACs	LPD 17-4	

P1CF12D	Elms, Btry B, 1st Bn, 10th Mar	35		2 LCACs	LPD 17-5	
P1CF21A	Elms, Btry C, 1st Bn, 10th Mar	40	6 LW-155	3 LCACs	LHD-2	
P1CF21B	Elms, Btry C, 1st Bn, 10th Mar	50		2 LCACs	LHD-3	
P1CF21C	Elms, Btry C, 1st Bn, 10th Mar	40		2 LCACs	LPD 17-1	
P1CG1A	Elms, Co A, 2d Combat Engr Bn	57		5 AAAV(P)s	LPD 17-1	Preboated
P1CG1B	Elms, Co A, 2d Combat Engr Bn	57		5 AAAV(P)s	LPD 17-2	Preboated
P1CH11	1st Plat, Co A, 2d LAR Bn	28	4 LAVs	1 LCAC	LSD 49-2	Preboated
P1CH12	2d Plat, Co A, 2d LAR Bn	28	4 LAVs	1 LCAC	LSD 49-3	Preboated
P1CH13	3d Plat, Co A, 2d LAR Bn	28	4 LAVs	1 LCAC	LSD 49-3	Preboated
P1CB2A	HQ Sec, Co B, 2d Tank Bn	20	2 M1 Tanks 1 VTR	3 LCACs	LSPD 17-3, 6	Preboated
P1CB21	1st Plat, Co B, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-1	Preboated
P1CB22	2d Plat, Co B, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-2	Preboated
P1CB23	3d Plat, Co B, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LPD 17-4, 5	Preboated
P1CFA1	Elms, HQ Btry, 10th Mar	40		1 LCAC	LHD-1	
P1CF3A1	HQ Btry, 3d Bn, 10th Mar	25		1 LCAC	LHD-1	
P1CF31	Btry G, 3d Bn, 10th Mar	130	6 LW-155s	7 LCACs	LHD-1	
P1CF32	Btry H, 3d Bn, 10th Mar	130	6 LW-155s	7 LCACs	LHD-2	
P1CF33	Btry I, 3d Bn, 10th Mar	130	6 LW-155s	7 LCACs	LHD-3	
P1CFA3	Elms, HQ Btry, 10th Mar	40		1 LCAC	LSD 49-2	
P1CHA6	Elms, H&S Co, 2d LAR Bn	40	8 LAV-Ms	2 LCACs	LPD 17-1	Preboated
P1CHA31	Elms, H&S Co, 2d LAR Bn	44	5 LAV-ATs 2 LAVs, 3 LAV-Ls	3~~2~~ LCACs	LPD 17-2	Preboated
P1CH31	1st Plat, Co C, 2d LAR Bn	28	4 LAVs	1 LCAC	LHD-2	Preboated
P1CH32	2d Plat, Co C, 2d LAR Bn	28	4 LAVs	1 LCAC	LHD-2	Preboated
P1CH33	3d Plat, Co C, 2d LAR Bn	28	4 LAVs	1 LCAC	LHD-3	Preboated
P1CBA4	Elms, H&S Co, 2d Tank Bn	6	2 AVLBs	2 LCACs	LSD 49-1	
P1CBA7	Elms, H&S Co, 2d Tank Bn	48	VTR 2 LVSs	2 LCACs	LSD 49-2	
P1CB1A	HQ Sec, Co A, 2d Tank Bn	20	2 M1 Tanks 1 VTR	3 LCACs	LSD 41-3	
P1CB11	1st Plat, Co A, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-3	Preboated
P1CB12	2d Plat, Co A, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 49-1	
P1CB13	3d Plat, Co A, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 49-2	
P1CB3A1	HQ Sec, Co C, 2d Tank Bn	4	1 M1 Tank	1 LCAC	LPD 17-6	
P1CB3A2	HQ Sec, Co C, 2d Tank Bn	11	1 M1 Tank 1 VTR	1 LCAC	LPD 17-6	
P1CB31	1st Plat, Co C, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-1	
P1CB32	2d Plat, Co C, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-2	
P1CB33	3d Plat, Co C, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-3	
P1CB4A	HQ Sec, Co D, 2d Tank Bn	20	2 M1 Tanks 1 VTR	3 LCACs	LPD 17-5	
P1CB41	1st Plat, Co D, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-1	
P1CB42	2d Plat, Co D, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-2	

P1CB43	3d Plat, Co D, 2d Tank Bn	16	4 M1 Tanks	4 LCACs	LSD 41-3	
P1CE31	Co I, 3d Bn, 6th Mar	216		12 AAAV(P)s	LHD-2-3	LF reserve
P1CH26	Elms, Co B, 2d LAR Bn	60	8 LAVs	2 LCACs	LHD-1	Preboated
P1CH1A	HQ, Co A, 2d LAR Bn	20	4 LAVs	1 LCAC	LSD 49-2	Preboated
P1CH2A	HQ, Co B, 2d LAR Bn	20	4 LAVs	1 LCAC	LPD 17-6	Preboated
P1CH3A	HQ, Co C, 2d LAR Bn	20	4 LAVs	1 LCAC	LHD-3	Preboated
	For Vertical Assault:					
P1CE11	Co A, 1st Bn, 6th Mar	216		9 MV-22s	LHD-1	
P1CE12	Co B, 1st Bn, 6th Mar	216		9 MV-22s	LHD-1	
P1CE13	Co C, 1st Bn, 6th Mar	216		9 MV-22s	LHD-1	
P1CE1A1	Elms H&S Co, 1st Bn, 6th Mar	96		4 MV-22s	LHD-1	
P1CE21	Co E, 2d Bn, 6th Mar	216		9 MV-22s	LHD-3	
P1CE22A	Co F, 2d Bn, 6th Mar	216		2 MV-22s	LHD-3	
P1CE22B	Co F, 2d Bn, 6th Mar	216		7 MV-22s	LHD-3	
P1CE23	Co G, 2d Bn, 6th Mar	216		9 MV-22s	LHD-3	
P1CE2A1	Elms, H&S Co, 2d Bn, 6th Mar	96		4 MV-22s	LHD-3	
P1CE32	Co K, 3d Bn, 6th Mar	216		9 MV-22s	LHD-2	
P1CE33	Co L, 6th Mar	216		9 MV-22s	LHD-2	
P1CE31	Elms, H&S Co, 3d Bn, 6th Mar	96		4 MV-22s	LHD-2	
P1CEA1	Elms, HQ Co, 6th Mar	48		2 MV-22s	LHD-2	
P1CF2A1	Elms, HQ Btry, 2d Bn, 10th Mar	48		2 MV-22s	LHD-2	
P1CF21	Btry D, 2d Bn, 10th Mar	130	6 LW-155s	8 CH-53Es	LHA-1	
P1CF22	Btry E, 2d Bn, 10th Mar	130	6 LW-155s	8 CH-53Es	LHD-1	
P1CF23	Btry F, 2d Bn, 10th Mar	130	6 LW-155s	8 CH-53Es	LPD 17-5	
P1CG2A	Elms, Co B(-), 2d CE Bn	48		2 MV-22s	LHD-3	
P1CG2B	Elms, Co B(-), 2d CE Bn	48		2 MV-22s	LHD-3	
P1CG2C	3/B/2d CE Bn	20		1 MV-22	LHD-2	
P1CH23	3d Plt, Co B, 2d LAR Bn	28	4 LAV-25s	5 CH-53Es	LHD-1	
P1CEA5	AT Plt, HQ Co, 6th Mar	48	8 ATGM vehicles	5 CH-53Es	LHD-3	
P1CHA32	Elms, H&S Co, 2d LAR Bn	12	3 LAV-ATs	4 CH-53Es	LSD 49-3	

Tab C (Landing Craft, Assault Vehicle, and Aircraft Availability Table) to Appendix 3 (Landing Plan) to Annex R (Amphibious Operations) to Operation Order 01-14 (Operation STOM)

Ref: (a) Special Map

Unit	No. of A/C	A/C Avail First Trip	A/C Avail Other Trips	Type/ Model	Carrier	Deck Launch Capacity	Pl. Load Per A/C Troops	Pl. Load Per A/C Cargo	Remark
ACU-2	36	36	31	LCAC	LHD, LPD, LSD	N/A	24	70 tons	
ACU-2	2	2	2	LCX	LSD 49-1	N/A	200	150 tons	MCM fitted
HQ, A/2AA Bn	7	7		AAAV(P)	LHA-2		18	500 lb	2 AAAV(C)s
1/A/2d AA Bn	12	12		AAAV(P)	LHA-2		18	500 lb	
2/A/2d AA Bn	12	12		AAAV(P)	LHA-2		18	500 lb	
3/A/2d AA Bn	12	12		AAAV(P)	LHA-2		18	500 lb	
HQ, B/2AA Bn	7	7		AAAV(P)	LHA-3		18	500 lb	2 AAAV(C)s
1/B/2d AA Bn	12	12		AAAV(P)	LHA-3		18	500 lb	
2/B/2d AA Bn	12	12		AAAV(P)	LHA-3		18	500 lb	
3/B/2d AA Bn	12	12		AAAV(P)	LHA-3		18	500 lb	
HQ, C/2AA Bn	7	7		AAAV(P)	LHA-1		18	500 lb	2 AAAV(C)s
1/C/2d AA Bn	12	12		AAAV(P)	LHA-1		18	500 lb	
2/C/2d AA Bn	12	12		AAAV(P)	LHA-1		18	500 lb	
3/C/2d AA Bn	12	12		AAAV(P)	LHA-1		18	500 lb	
3/D/2d AA Bn	12	12		AAAV(P)	LHD-2		18	500 lb	
H&S/2AA Bn	5	5		AAAV(P)	LPD 17-1		18	500 lb	
H&S/2AA Bn	5	5		AAAV(P)	LPD 17-2		18	500 lb	
H&S/2AA Bn	4	4		AAAV(P)	LPD 17-4		18	500 lb	2 AAAV(C)s
D/2dAA Bn (-3/D)	31	31		AAAV(P)	MPS-1		18	500 lb	2 AAAV(C)s
VHMM-261	14	14	11	MV-22	LHD-1	9	24	10,000 lb	
VHMM-264	14	14	11	MV-22	LHD-2	9	24	10,000 lb	
VHMM-266	14	14	11	MV-22	LHD-3	9	24	10,000 lb	
Det, HMH-461	4	4	3	CH-53E	LHD-1	9	36	15,000 lb	
Det, HMH-461	4	4	3	CH-53E	LHD-2	9	36	15,000 lb	
Det, HMH-461	4	4	3	CH-53E	LHD-3	9	36	15,000 lb	
Det, HMH-464	4	4	3	CH-53E	LHA-1	9	36	15,000 lb	
Det, HMH-464	4	4	3	CH-53E	LHA-2	9	36	15,000 lb	
Det, HMH-464	4	4	3	CH-53E	LHA-3	9	36	15,000 lb	

Tab D (Landing Craft, Assault Vehicle, and Aircraft Employment and Assault Table) to Appendix 3 (Landing Plan) to Annex R (Amphibious Operations) to Operation Order 01-14 (Operation STOM)

Unit	Number and Model	From (Origin)	To Report (Load)	Load Time	Launch Time	Land Time	Destination	Troop Unit
ACU-2	1 LCX	LSD 49-1	LSD 49-1	Preload	H-1:00	H+25	LPS Red	MCM Det-1, TF Preston
ACU-2	1 LCX	LSD 49-1	LSD 49-1	Preload	H-1:00	H+25	LPS Blue	MCM Det-2, TF Adams
A/2d AA Bn	42 AAAVs, 2 AAAV(C)s	LHA-2	LHA-2	Preload	H-10	H+50	LPS Red-1	TF Preston: 1st Bn, 2d Mar
H&S/2d AA Bn	5 AAAVs	LPD 17-1	LPD 17-1	Preload	H-10	H+55	LPS Red-1	TF Preston: 1st Elm/A/CE Bn
ACU-2, LCAC Grp 1	9 LCACs	LSD 41-3, 49-2, 49-3	LSD 41-3, 49-2, 49-3	Preload	H+20	H+1:00	LPS Red-1	TF Preston: A/LAR, 1/A/TkBn
B/2d AA Bn	42 AAAVs, 2 AAAV(C)s	LHA-3	LHA-3	Preload	H-10	H+50	LPS Blue-1	TF Adams: 2d Bn, 2d Mar
H&S/2d AA Bn	5 AAAVs	LPD 17-2	LPD 17-2	Preload	H-10	H+55	LPS Blue-1	TF Adams: 2d Elm/A/CE Bn
ACU-2, LCAC Grp 2	18 LCACs	LHD-1, LSD 41-1, 41-2, 41-3, LPD 17-3, 4, 5, 6	LHD-1, LSD 41-1, 41-2, 41-3, LPD 17-3, 4, 5, 6	Preload	H+20	H+1:00	LPS Blue-1	TF Adams: B/Tk Bn, B(-)/ LAR
C/2d AA Bn	42 AAAVs, 2 AAAV(C)s	LHA-1	LHA-1	Preload	H+20	H+1:20	LPS Blue-1	TF Drake: 3d Bn, 2d Mar
ACU-2, LCAC Grp 3	8 LCACs	LHD-2, 3 LPD 17-1, 2	LHD-2, 3 LPD 17-1, 2	Preload	H+45	H+1:25	LPS Blue-1	TF Drake: C/LAR, H&S/LAR
H&S/2d AA Bn	2 AAAV(C)s 4 AAAVs	LPD 17-4	LPD 17-4	Preload	H+20	H+1:20	LPS Blue-1	Cmd Grp 2d Mar [acc:TF Drake]
Second Sorties:								
ACU-2 LCAC Grp 3	23 LCACs		LHD-1, 2, 3; LPD 17-1, 2, 3, 4, 5	H+1:55	H+2:40	H+3:30	LPS Blue-2	TF Ballew: 1st Bn, 10th Mar
3/D/2dAA Bn	12 AAAVs	LHD-2	LHD-2	Preload	H+2:20	H+3:20	LPS Blue-2	TF Ballew: I/3/6 [MEF Res.]
ACU-2 LCAC Grp 4	13 LCACs		LPD 17-6, LSD 41-1, 2, 3	H+2:35	H+3:20	H+4:10	LPS Red-1	TF Wright: C/2d Tk
Third Sorties:								
ACU-2 LCAC Grp 5	32 LCACs		LSD 41-x LSD 49-x LPD 17-5	H+5:05	H+5:50	H+6:40	LPS Blue-2	TF Klank: 2d Tk Bn (-)[A (-plt), C(2 veh), D, H&S]
HQ/D/2d AA Bn	2 AAAV(C)s	MPS-1	LSD 49-3	H+2:00	H+5:40	H+6:40	LPS Blue-2	TF Klank
Fourth Sorties:								
O/O	23 LCACs		LHD-1, 2, 3					3d Bn, 10th Mar

O/O	2 LCACs		LSD 49-2, LHD-1						HQ Btry, 10th Mar
Vertical Assault Lifts:									
VHMM-266	9 MV-22s	LHD-3	LHD-3	Preload	H+1:00	H+1:30	LZ HAWK	E/2/6
VHMM-266	4 MV-22s	LHD-3	LHD-3	Preload	H+1:10	H+1:40	LZ HAWK	Elms, H&S, 2/6
VHMM-264	9 MV-22s	LHD-2	LHD-2	Preload	H+1:00	H+1:30	LZ SPARROW	K/3/6
VHMM-261	9 MV-22s	LHD-1	LHD-1	Preload	H+1:00	H+1:30	LZ ROBIN	B/1/6
VHMM-261	4 MV-22s	LHD-1	LHD-1	Preload	H+1:10	H+1:40	LZ ROBIN	Elms, H&S, 1/6
VHMM-264	5 MV-22s	LHD-3	LHD-1	Preload	H+1:10	H+1:40	LZ ROBIN	Elms, A/1/6
VHMM-261	1 MV-22	LHD-1	LHD-2	Preload	H+1:10	H+1:40	LZ SPARROW	3/B/2dCE
Det, HMM-464	4 CH-53Es	LHA-1	LHD-3	Preload	H+1:00	H+1:50	LZ SPARROW	AT Plt/6th Mar
Det, HMM-461	1 CH-53E	LHD-3	LHD-3	Preload	H+1:00	H+1:50	LZ SPARROW	AT Plt/6th Mar
Det, HMM-461	4 CH-53Es	LHD-2	LHD-1	Preload/ext	H+1:00	H+1:50	LZ ROBIN	3d Plat/B/2d LAR
Det, HMM-461	1 CH-53E	LHD-3	LHD-1	Preload	H+1:00	H+1:50	LZ ROBIN	3d Plat/B/2d LAR
Det, HMM-461	4 CH-53Es	LHD-1	LHA-1	Preload	H+1:00	H+2:00	LZ SPARROW	Elms, Btry D/2/10
Det, HMM-464	4 CH-53Es	LHA-3	LHA-1	Preload	H+1:00	H+2:00	LZ SPARROW	Elms, Btry D/2/10
Det, HMM-461	2 CH-53Es	LHD-3	LHA-1	Preload	H+1:00	H+2:00	LZ SPARROW	Elms, Btry D/2/10
Det, HMM-464	4 CH-53Es	LHA-2	LSD 49-3	Preload/ext	H+1:10	H+2:00	LZ ROBIN	Elms AT Plt/2d LAR
Second Sortie of Vertical Assault:									
VHMM-266	9 MV-22s		LHD-1	H+2:10	H+2:30	H+3:00	LZ ROBIN	C/1/6
VHMM-264	9 MV-22s		LHD-3	H+2:10	H+2:30	H+3:00	LZ HAWK	G/2/6
VHMM-261	7 MV-22s		LHD-3	H+2:30	H+2:50	H+3:20	LZ HAWK	Elms, F/2/6
VHMM-261	4 MV-22s		LHD-1	H+2:30	H+2:50	H+3:20	LZ ROBIN	Elms, A/1/6
VHMM-266	2 MV-22s		LHD-3	H+2:30	H+2:50	H+3:20	LZ HAWK	Elms, B/2d CE
VHMM-264	2 MV-22s		LHD-3	H+2:30	H+2:50	H+3:20	LZ ROBIN	Elms, B/2d CE
Det, HMM-464	3 CH-53Es		LHD-1	H+2:50	H+3:20	H+3:50	LZ SPARROW	Elm, E/2/10
Det, HMM-464	3 CH-53Es		LHD-1	H+2:50	H+3:20	H+3:50	LZ SPARROW	Elm, E/2/10
Det, HMM-464	3 CH-53Es		LHD-1	H+2:50	H+3:20	H+3:50	LZ SPARROW	Elm, E/2/10
Det, HMM-461	3 CH-53Es		LDS 41-2	H+2:50	H+3:20	H+3:50	LZ SPARROW	Elm HQ Co, 6th Mar
Det, HMM-461	3 CH-53Es		LHD-1	H+2:50	H+3:20	H+3:50	LZ SPARROW	Elm HQ Btry, 2/10
Third Sortie Vertical Assault:									
VHMM-264	4 MV-22s		LHD-2	H+3:40	H+4:00	H+4:30	LZ SPARROW	Elm, H&S/3/6
VHMM-261	9 MV-22s		LHD-2	H+3:40	H+4:00	H+4:30	LZ SPARROW	L/3/6
	8 CH-53Es		LPD 17-5	O/O	O/O	O/O	O/O	Btry F/2/10
	9 MV-22s		O/O	O/O	O/O	O/O	O/O	I/3/6 (MEF Res.)

Tab E (Assault Schedule) to Appendix 3 (Landing Plan) to Annex R (Amphibious Operations) to Operation Order 2-14 (Operation STOM)

Ref: (a) Special Map

Landing Zone: Hawk, Robin, Sparrow		**Red-1**	**Blue-1 and -2**
	Time of Landing	**Unit Craft/Vehicle**	**Unit Craft/Vehicle**
	H+50	TF Preston: 1st Bn, 2d Mar, MCM Det-1, Elm A/CE, A/LAR, 1/A/TkBn 47/2 AAAVs 8 LCACs 1 LCX	TF Adams: 2d Bn, 2d Mar, MCM Det-2, Elm, A/CE, B/TkBn, B(-) LAR 47/2 LCACs 18 LCACs 1 LCX
	H+1:20		TF Drake: 3d Bn, 2d Mar, C/LAR, H&S/LAR, (Cmd Grp 2d Mar) 42/4 AAAVs 8 LCACs
TF Barney: 1/6 TF Hopper: 2/6 TF Pickett: 3/6(-)	H+1:30		
D/2/10	H+2:00		
	H+3:30		TF Ballew: 1/10, E/3/6 (MEF Res.) 12 AAAVs 23 LCACs
2/10 (-) 6th Mar (-)	H+3:50		
	H+4:10	TF Wright: C/2Tk 13 LCACs	
	H+6:40		TF Klank: 2d Tk Bn (-) 2 AAAV(C)s 32 LCACs
G/2/10	O/O	Co D (-) 2d AA Bn Combat Trains (Det FSSG) 31 AAAVs 10 LCACs	3/10, HQ/10th Mar 25 LCACs

EXTRACTS OF TYPICAL UNIT MOVEMENT TABLE ENTRIES

These three elements in the unit movement table (lift, flight, and load (chalk)) collectively designate the specific landing craft, assault vehicle, or aircraft used to move a ground unit.

In TF Barney:

Lift	Flight [1]	Troop Unit [2]	Persons	Equipt/ Supplies	Weight of Persons	Weight of Equipt	Total Weight
1	Anvil 101 E11	1st Sqd, 1st Plt, Co A, 1/6 Asslt Tm, 1st Sqd, Wpns Plt MG Tm, 1st MG Sqd, Wpns Plt MG Tm, 1st MG Sqd, Wpns Plt	13 3 4 4	Predator x 3 (86 lb) 2 x MG (40 lb)	5,760 lb	126 lb	5,886 lb
	Anvil 102 E11-2	2d Sqd, 1st Plt, Co A Plt Cdr, 1st Plt Radio Operator Sqd Ldr, 1st MG Sqd Asslt Tm, 1st Asslt Sqd, Wpns Plt Sect, 3d Sqd, 1st Plt Co A	13 1 1 1 3 5	Predator x 3 (86 lb)	5,760 lb	86 lb	5,746 lb
	Anvil 103 E11-3	Sect, 3d Sqd, 1st Plt Co A Plt Sgt, 1st Plt Mortar Sqd, Mtr Sect, Wpns Plt CoGySgt, A Co Mortar Sqd, Mtr Sect, Wpns Plt Plt Ldr, Wpns Plt Plt Sgt, Wpns Plt Corpsman, 1st Plt Radio Operator Msgr Mtr Sect Ldr, Wpns Plt	8 1 4 1 4 1 1 1 1 1 1	60 mm, 30 rds x 2 (240 lb)	5,520 lb	240 lb	5,760 lb

[1] The flight is made up of the: Squadron/group call sign: Anvil
Lift number: 1
Sequence in lift: 01.
The chalk or team is the : ULN (last three digits): D11
Troop unit team number: 1.

[2] A “bump” sequence is established by means of asterisks or other common marks beside the persons or chalks to be dropped first in the event of shortages of craft/vehicles in the flight.

In TF Adams:

Lift	Flight [1]	Troop Unit [2]	Persons	Equipt/ Supplies	Weight of Persons	Weight of Equipt	Total Weight
4	LCAC Grp 2-1 H26-1	Plt Ldr, 1st Plt, B Co, LAR Bn LAV 11 LAV 12 LAV 13 LAV 14	1 6 7 7 7	LAV-25 x 4	6,720 lb	85,000 lb	91,720 lb
	LCAC Grp 2-2 H26-2	Plt Ldr, 2nd Plt, B Co, LAR Bn LAV 21 LAV 22 LAV 23 LAV 24	1 6 7 7 7	LAV-25 x 4	6,720 lb	85,000 lb	91,720 lb
	LCAC Grp 2-3 B2A-1	Co Cdr, B Co, 2d Tk Bn Tk B51	1 3	M1A1	960 lb	143,000 lb	143,960 lb

[1] The flight is made up of the: Squadron/group call sign: Anvil
Lift number: 1
Sequence in lift: 01.
The chalk or team is the : ULN (last three digits): D11
Troop unit team number: 1.

[2] A “bump” sequence is established by means of asterisks or other common marks beside the persons or chalks to be dropped first in the event of shortages of craft/vehicles in the flight.

In TF Preston:

Lift	Flight [1]	Troop Unit [2]	Persons	Equipt/ Supplies	Weight of Persons	Weight of Equipt	Total Weight
2	Tuna 1-1 D11-1	2d Sqd, 1st Plt, Co A, 1/2 Plt Cdr, 1st Plt Radio Operator Sqd Ldr, 1st Asslt Sqd, Wpns Plt Asslt Tm, Asslt Sqd, Wpns Plt	13 1 1 1 2	Predator x 9 (86 lb) Ammo (120 lb)	4,320 lb	378 lb	4,698 lb
	Tuna 1-2 D11-2	1st Sqd, 1st Plt, Co A, 1/6 Asslt Tm, 1st Asslt Sqd, Wpns Plt MG Tm, 1st MG Sqd, Wpns Plt	13 2 3	Predator x 6 (159 lb) 2 x MG (40 lb) Ammo (120 lb)	4,320 lb	319 lb	4,639 lb
	Tuna C1 D1A-1	Bn Cdr S-3 Off S-2 Off FSC Off AirLnO ArtyLnO CommO CommTech	1 1 1 1 1 1 1 1		1,920 lb		1,920 lb
	Tuna C2 D1A-2	Bn XO S-3A S-2A FSCNCO AirLnNCO ArtyNCO CommNCO CommMaintChf	1 1 1 1 1 1 1 1		1920 lb		1920 lb

[1] The flight is made up of the: Squadron/group call sign: Anvil
Lift number: 1
Sequence in lift: 01.
The chalk or team is the : ULN (last three digits): D11
Troop unit team number: 1.

[2] A “bump” sequence is established by means of asterisks or other common marks beside the persons or chalks to be dropped first in the event of shortages of craft/vehicles in the flight.

Appendix B. Landing Craft and Assault Vehicle Considerations

Section I: AAAV Ship-to Shore Formations and Movement Techniques

The following paragraphs describe the formations and movement techniques employed by the AAAV during the waterborne portion of the amphibious assault. Assault amphibious vehicles (AAVs) will employ the same tactical control measures as the AAAVs, but will not execute their scheme of maneuver from the same distances as the AAAVs. This fact will have to account for during the development of the landing plan.

The AAAV has two modes of waterborne operation. In the *transition* mode, the AAAV travels at a speed of up to 9 knots and can use its tracked suspension to negotiate hydrographic terrain such as sandbars and reefs. The AAAV launches from ships, beaches, and riverbanks in the transition mode. To operate in this mode, the AAAV deploys a bow-mounted transition flap. In the *high water speed* mode, the AAAV travels at speeds between 20 and 25 knots. The high water speed mode requires the AAAV to retract its suspension and deploy appendages (forward bow flap, rear transom flap, and side chine flaps) to achieve a suitable planning hull configuration, which takes approximately 45 seconds. During the transfer to this configuration, the AAAV will continue moving at speeds of up to 9 knots. Once configured in this manner, the AAAV will increase power to the water propulsion system to achieve the speed required to get up "on plane." Once on plane, the AAAV must maintain this speed or risk coming "off plane." Because of the hydrodynamics and power requirements involved, the AAAV will not normally travel at speeds between 10 and 19 knots, except while accelerating to get up on plane.

When formations of AAAVs traveling at high water speed form or link up at sea, approach timing and speeds offer little flexibility. Should an AAAV fail to achieve plane or come off plane for any period of time, waterborne formations of AAAVs can anticipate a relatively slow "catch up" rate of advance for those AAAVs that are late or behind for other reasons. The difference in relative speed between an AAAV formation maintaining the minimum speed to plane and an AAAV making maximum planning speed is not large enough to generate a rapid closure rate.

PLANNING

In the past, tactical-level commanders have often been provided with only a minimum of information pertaining to a 1,000 to 5,000 yard boat lane with the landing site generally visible during the entire transit. To allow safe and effective planning to be accomplished, the AAAV unit commander must be provided with sufficient information about the littoral area, including weather zones and sea states, underwater hydrography, offshore and inshore currents, natural and manmade obstacles, tidal and SZ conditions, beach gradients and composition, and beach exit characteristics.

FORMATIONS

AAAVs will maneuver at sea by using formations that are much the same as those used by aircraft or armor. The formations employed will normally be situation dependent and will take into consideration requirements for C2, speed, the tactical situation, and the inherent characteristics of the vehicle itself. Dispersion between individual AAAVs and AAAV formations varies by speed and vehicle configuration.

At high water speed, AAAVs may experience “side slip” while executing relatively sharp turns. Additionally at high water speed, the AAAV will generate significant wake turbulence, also known as “water cavitation effects.” Such a condition could negatively affect the performance of a closely following AAAV, similar to one aircraft flying through another’s “jet wash.” Given the potential for side slip and water cavitation effects, greater dispersion between AAAVs is required at high water speed than at transition speed. While at high water speed, it is recommended that a minimum column (front-to-rear) dispersion of 150 meters and a lateral (side-to-side) dispersion of 75 meters be maintained between AAAVs. While at transition mode speeds, it is recommended that a minimum linear dispersion of 50 meters and a lateral dispersion of 50 meters be maintained between AAAVs.

To facilitate C2 of AAAV formations, the “leader-wingman” concept is employed down to the lowest level of AAAV units, that of the AAAV section. Typically, between two and four AAAVs will be in a section. Within a section of four AAAVs, there are two sets of “leader-wingman” groups, with the section leader’s “group” being the “leader” of the subordinate group. In a section of three AAAVs, two “wingmen” guide off the movements of the leader. Typically, an AAAV platoon is comprised of three or four AAAV sections. This relationship assists in the transition of AAAVs from one formation to another and in the control of the waterborne maneuver as a whole.

The vehicles in which the AAAV platoon commanders, section leaders, and their associated infantry counterparts will ride will be placed within the formation in positions that best suit the situation. The infantry company commander will normally be aboard the same AAAV as the AAAV platoon commander, and the infantry platoon commanders will normally be aboard the AAAV section leader’s vehicle. During the waterborne maneuver, the AAAV platoon commander is responsible for the efficient and safe execution of the movement, including the coordination and implementation of deviations from the original plan among the subordinate AAAV sections. The AAAV platoon commander will ensure that the unit conforms to the method of control established by the ACG and the control measures depicted on the surface movement control diagram or operations overlay.

During the actual movement, the AAAV formation will proceed, guiding on designated vehicles that continue along the specified axes or directions of attack (using the inherent precision of navigation aids), while other vehicles will guide off the movements of these vehicles based on the formation ordered. The methods and controls correspond to mounted tactical movement ashore. Commanders must analyze hydrographic information provided for a precise route, such as a direction of attack, to ensure that vehicles guiding off the leader at normal intervals can also operate in safe conditions.

AAAV commanders must maintain visual contact within the leader-wingman relationship, particularly at night. Within the AAAV section, each vehicle crew chief is responsible for the navigation of the vehicle and maintaining the appropriate position relative to the section leader’s vehicle. All AAAV crewmen will receive specialized training in open ocean navigation and seamanship to be capable of executing this responsibility. Section leaders are responsible for navigating the section over the appropriate route and for maintaining the section formation and position relative to the AAAV platoon. Finally, the AAAV platoon commander, coordinating with the embarked unit commander, is responsible for navigating the AAAV platoon over the selected route(s), determining the appropriate AAAV platoon formation, and ensuring that all elements of the AAAV platoon adhere to the control measures established for the operation throughout the movement to shore. Unlike the AAV, when AAAVs execute turns to change formations, consideration must be given to potential side slip of the vehicle as it planes across the water surface. This side slip is not overly significant; however, it warrants consideration when changing formations at high water speed, particularly for inboard vehicles when operating during periods of limited visibility (e.g., at night, in fog or during rough sea states).

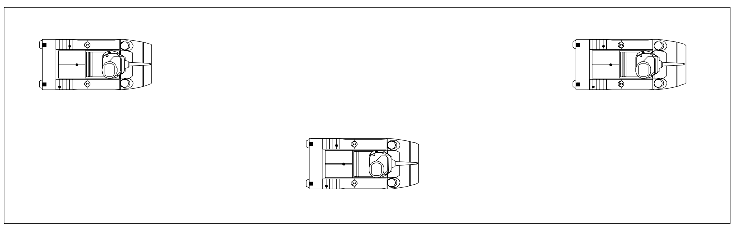
The following is a description of rudimentary tactical formations used by the AAAV section while at the high water speed or transition modes of operations. For illustrative purposes, these formations are based on a section of three AAAVs. These formations can also be applied to the AAAV platoon and company.

The formations can be varied within themselves. As an example, an AAAV platoon wedge can be comprised of section staggered columns.

Staggered Column

The staggered column is the easiest formation to control and provides good protection to the flanks (see figure B-1). Protection to the front and rear is limited. This formation is primarily used while negotiating channelized areas, during administrative movements or during extended water marches. Linear dispersion between vehicles must be considered to ensure that sufficient reaction time is given to avoid collision. The staggered column is not recommended for use during acceleration to high water speed, given the possibility of a AAAV overtaking a preceding AAAV in getting up on plane. Emphasis must be given to maintaining visual contact with the AAAV ahead and astern.

Figure B-1. Staggered Column



Line

The line formation provides maximum firepower forward, but provides poor protection to the flanks (see figure B-2). The line is considered only a temporary formation. It provides the ability to land all vehicles in the formation quickly and simultaneously. The line can also be used during acceleration to high water speed, allowing each AAAV to get up on plane without running the risk of overtaking a preceding AAAV. However, the line is difficult to control as each vehicle must maintain the same relative speedand heading. Adequate lateral dispersion must be maintained during the run up to high speed. It is also difficult to maintain visual contact between leader vehicles.

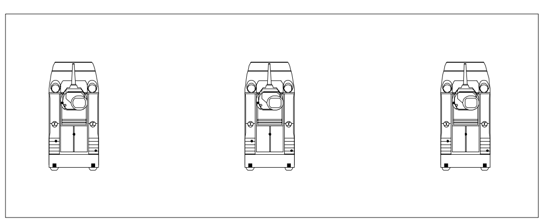


Figure B-2. Line Formation

Echelon

The echelon (left or right) formation provides greater firepower forward and to the flanks (see figure

B-3). It is relatively easy to control, although it does limit visual contact between leader vehicles. The echelon can also be used during the acceleration to high water speed.

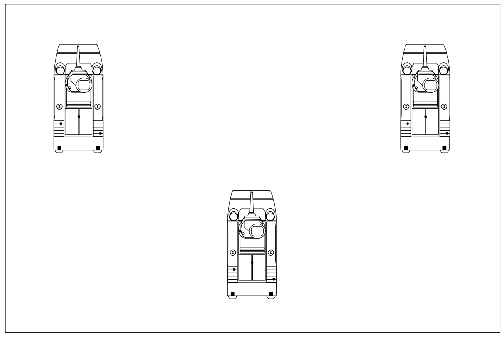


Figure B-3. Echelon (Left) Formation

Wedge

The wedge formation provides the greatest freedom of maneuver because it provides all-around fire and can change quickly to another formation (see figure B-4). The wedge is the most often used formation in addition to the staggered column. However, it requires sufficient space to disperse subordinate units laterally and in depth. The wedge also affords section leaders the ability to maintain visual contact with other leader vehicles and with subordinate AAAVs. The wedge can also be used during the acceleration to high water speed.

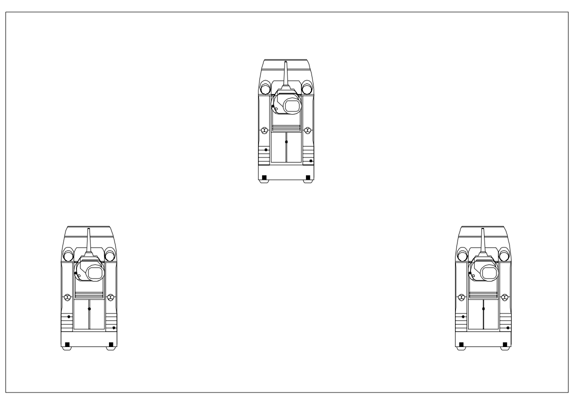


Figure B-4. Wedge Formation

Vee

The vee formation, like the wedge, provides greater firepower forward and allows rapid transition to other formations (see figure B-5). It is more difficult to control than the wedge and requires sufficient space for dispersal both laterally and in depth. Like the wedge, the vee affords the section leader the ability to maintain visual contact with subordinate AAAVs. The vee can also be used during the acceleration to high water speed.

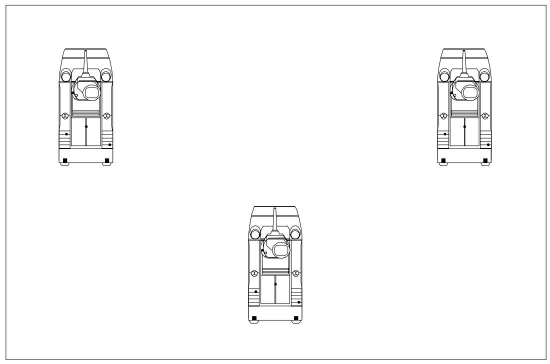


Figure B-5. Vee Formation

Delta Pattern

The delta pattern formation is the *least* desirable formation to assume (see figure B-6). It should be used only in the event that an AAAV has difficulty in achieving high water speed or has temporarily come off plane. The delta pattern can be used to keep other AAAVs on plane while the delaying AAAV undertakes corrective action to achieve plane. The “straight” portion of the “D” should be parallel to the direction of advance of the slower AAAV. The delta pattern should be used only in situations where the AAAV section leader determines that the delayed AAAV, once it does get on plane, would not otherwise be able to catch up to the formation. If the concerned AAAV fails to achieve plane, the responsible commander decides whether the entire AAAV section will continue the movement at transition speeds or whether recovery operations for the concerned AAAV should be initiated. (NOTE: Unlike the “ready” circle employed by the AAV, the AAAV delta pattern will not be used to loiter while in the high water speed or transition modes as this is a waste of fuel. It is more suitable to “loiter” at idle speed in the appropriate tactical formation.)

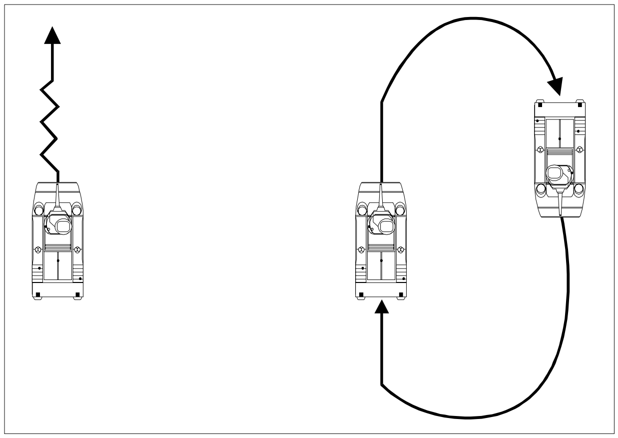


Figure B-6. Delta Pattern

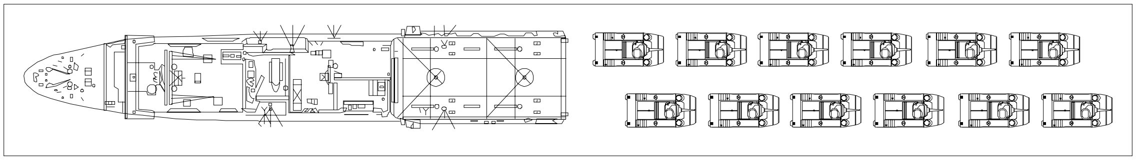
SHIP-TO-SHORE MOVEMENT

The following paragraphs and figures describe the movement of AAAVs from the launch from amphibious shipping through the landing at an LPP. Although task organization will vary depending on the tactical situation, infantry companies will typically be embarked aboard AAAV platoons. For purposes of illustration in this description, an AAAV platoon will consist of 12 AAAV (P)s, divided into four sections of three AAAV (P)s each. Each section of AAAV(P)s will embark an infantry platoon and attachments. The fourth section will embark the infantry company headquarters element and any desired attachments, such as engineers or weapons platoon teams. Given the complexity inherent in executing an OTH waterborne movement and coordinating the movement of several AAAV sections within the parameters of the OPORD, the AAAV platoon commander normally directs the unit with the concurrence of the embarked unit commander, if senior. The embarked unit commander, typically an infantry company commander, having delegated maneuver control, may monitor intelligence updates and the tactical situation as it develops. Once ashore, the AAAV platoon commander will advise the infantry company commander on the use of the vehicles in the assigned mission. The platoon commander directs the movement of the platoon in accordance with the orders and intent of the embarked unit commander. (For more information, see MCWP 3-13, *Employment of AAVs.*)

Depending on the situation, maneuver units can be smaller or larger. One example is an infantry platoon embarked aboard an AAAV section that is maneuvering independently to a specified LPP as part of a larger force that is using several routes and LPPs. Another example is an infantry battalion embarked aboard an AAAV company proceeding to a single LPP of sufficient size to accommodate this larger formation.

Movement in the Attack Position

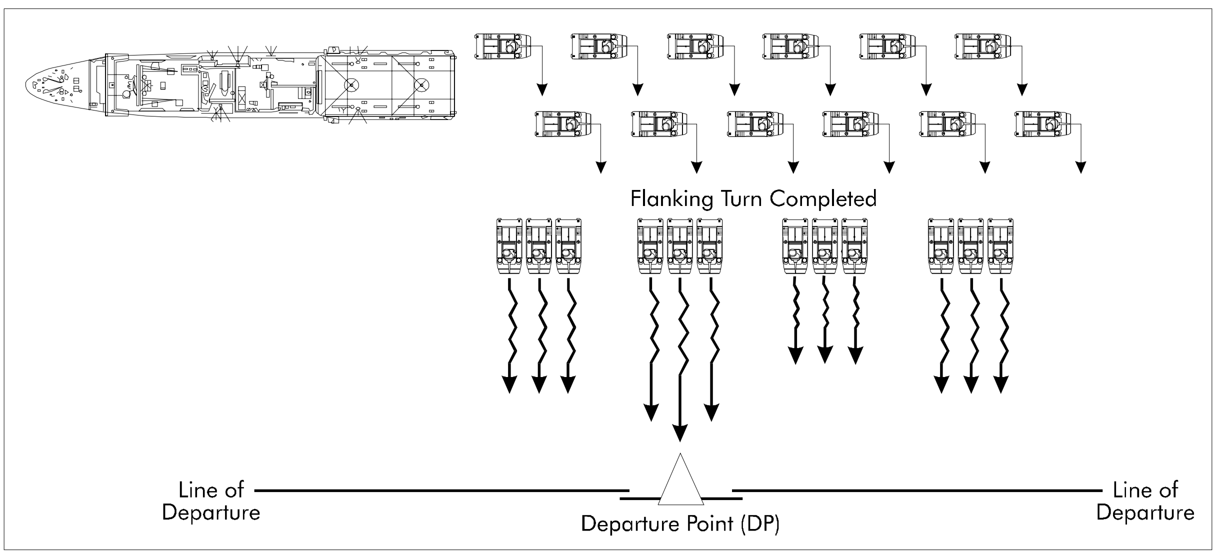
AAAVs will launch either singly or in pairs, in the transition mode, from an underway LHA, LHD, LPD or LSD amphibious ship. As depicted in Figure B-7, the AAAVs will launch from the ship at the attack position, which is located seaward of the LOD. Because the ship and the AAAVs will be moving in opposite directions, the AAAVs will emerge from the well deck in a staggered column formation. Linear dispersion of the AAAVs will depend on the launch interval and speed of the ship. The AAAV platoon commander will move his unit to high water speed mode and proceed to the attack position, forming up the platoon in preparation for crossing the LOD. From the attack position, the unit(s) cross the LOD in the assigned axes of advance or directions of attack.



AAAVs Launched Parallel to the Line of Departure

Figure B-7. AAAVs Launch from an Amphibious Ship into the Attack Position

Upon direction by the AAAV platoon commander, the AAAV column will conduct a flanking movement to obtain a line abreast formation. This line will place the AAAVs no closer than 75 meters apart. At this time the AAAVs will execute reconfiguration for the change from the transition mode to the high water speed mode. Once configuration to high water speed mode is complete, and at the direction of the AAAV



platoon commander, the AAAVs will increase power to obtain high water speed planning. The directed sequencing of AAAV sections (two to four AAAVs) coming on plane will assist the unit in assuming the desired tactical formation. Figure B-8 depicts this movement technique.

Figure B-8. AAAVs Launched Parallel to the LOD

AAAVs Launched Perpendicular to the Line of Departure

Upon direction of the AAAV platoon commander, the AAAVs will change configurations from the transition mode to the high water speed mode. Having been launched into a platoon-staggered column formation, AAAV sections will maneuver into section lines. The sections will then sequentially increase power to obtain high water speed planning. Figure B-9 depicts this movement technique. Although this technique is normally used when AAAVs are launched perpendicular to the LOD, it can also be used during parallel launches, which require the AAAV formation to execute a 90-degree turn to proceed to the appropriate attack position.

Departing the Attack Position To Cross the LOD

Normally, the AAAV platoon passes through the attack position on plane and will assume the appropriate formation before crossing the LOD. Because the LOD may extend for a considerable distance along the LPA, maneuver units may be assigned specific DPs, relative to the attack position, at which to cross the LOD, on the assigned axis of advance or direction of attack (see figure B-9).

It is important to note that the AAAV formation, upon departing the attack position, will normally be traveling in the high water speed mode until the formation closes with the LPP, at which time it will come

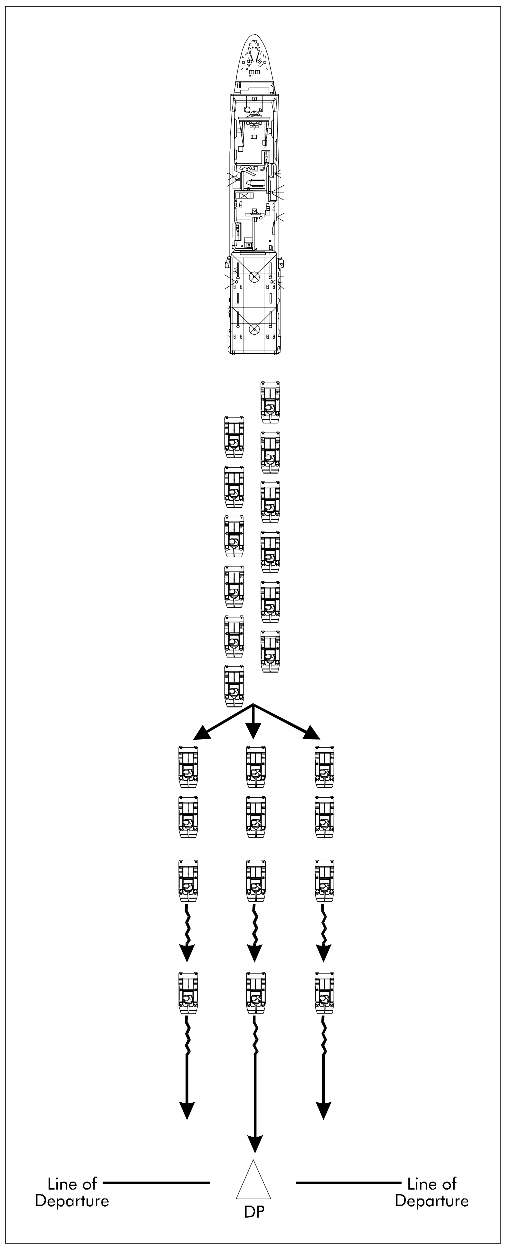


Figure B-9. AAAVs Launched Perpendicular to the LOD

off plane by decreasing power and changing hulls to the transition mode. This does not preclude the capability to come off plane occasionally to loiter; however, this will normally be done only to execute maintenance functions, assist in deception operations or reorient to new formations or routes as a result of changes in the tactical situation.

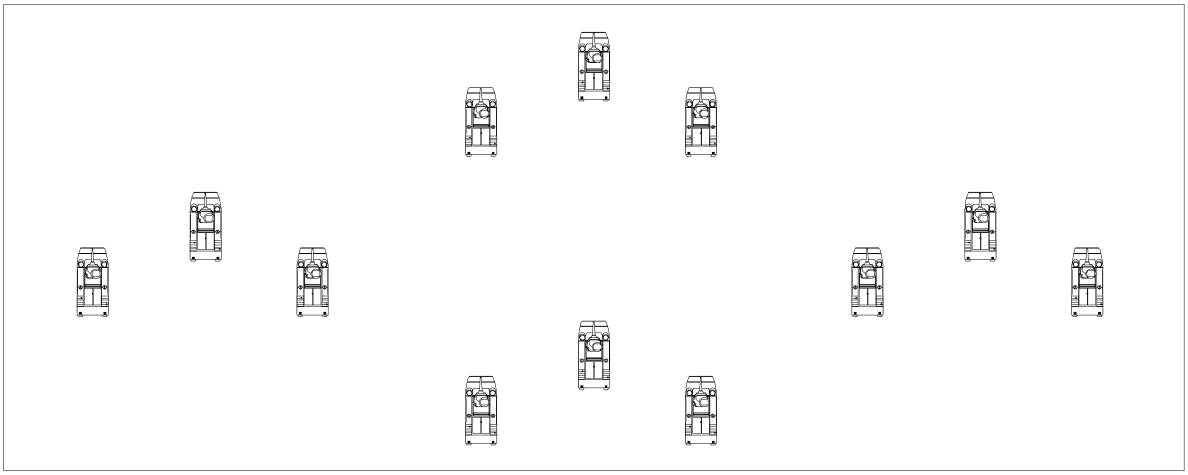


Figure B-10. AAAV Platoon Wedge/Section Wedges

As an example, the maneuver unit assumes an AAAV platoon wedge/section wedges formation as it departs the attack position and crosses the LOD (see figure B-10). Under conditions of EMCON, this formation allows the AAAV platoon commander and the AAAV section leaders to maintain visual contact with wingmen while also maintaining visual contact with the other surface assault task force elements. It also provides sufficient maneuver space for the AAAVs to proceed at high water speed.

The AAAV platoon commander and the lead AAAV section leader share navigation responsibilities. This procedure ensures redundancy in efficiently navigating a large formation across a great distance. Second, and more importantly, it allows the AAAV platoon commander to remain focused on controlling the movements of the platoon as a whole and not become focused on the navigational responsibilities alone. This becomes particularly critical when executing formation changes or turns and when the formation approaches the LPP at which the AAAVs will come off plane.

In rough sea state conditions, the formation may increase its dispersion between vehicles and sections to allow adequate maneuver space while at high water speed. By using a combination of preplanned routes (including alternate routes), headings, and offset headings, the AAAV formation will maneuver across the battlespace to the appropriate LPP.

Combined AAAV/LCAC Assault Task Forces

At times the surface assault task force will include other units employing tanks, engineers, reconnaissance, weapons or command vehicles. LCACs will carry these vehicles and crews to the LPP. The tactical situation and availability of suitable LPPs and CLZs frequently require that the two formations travel in proximity and use the same routes and LPPs. The LCAC group supporting the task force will move in proximity to the AAAV formation(s) or along the same routes, separated in time. Near the LPP, both groups of amphibious carriers will prepare to land, often in tandem, usually with AAAVs landing first.

Detailed planning and a rehearsal will emphasize collision avoidance and actions at the LPP. Much of the required planning will relate to the size and characteristics of the LPP and CLZ. Depending on the tactical requirements of crossing the LPP, one formation will be the "lead" formation, while the other acts as the "wing," guiding off the movements of the lead. During times of limited visibility, including rough sea states that negate AAAV visibility, the AAAV and LCAC formations may follow offset routes to enhance collision avoidance. Actions for rendezvous at sea and at the LPP/CLZ are discussed later in this appendix.

Movement From the Line of Departure to the Littoral Penetration Point

After crossing the LOD, the AAAV formation will follow the appropriate route depicted in the OPORD within the assigned LPZ. Depending on the tactical situation, formations may change as they close with the LPP. Navigation and the C2 system will provide situational awareness among the various battalion- and company-sized task forces affecting these maneuvers. As the tactical situation develops, alternate routes may be used. When required, deconfliction functions will be provided through the ACG. This would typically be needed when task forces are required to use common control points or LPPs, specifically if one task force is following another or if they must "cross routes" at some point during the ship-to-shore movement. Deconfliction functions are mandatory during rendezvous-at-sea operations. Given the desire to remain flexible in a rapidly changing tactical situation, the capability for task forces to maintain a degree of freedom of maneuver at the tactical level must be balanced with deconfliction of maneuver space at an operational level. This is particularly true when a limited number of LPPs exist to accommodate a large force moving ashore.

Movement Approaching the Littoral Penetration Point

As the AAAV formation closes with the LPP, and at a designated point along the task force route, typically at a control point, the AAAV formation will begin the process of coming off plane. This will be executed at the command of the AAAV unit commander. Given the hydrodynamics of the AAAV, the change from high water speed to slow water speed will be almost immediate and will require prior planning. Depending on the formation required by the tactical situation, care must be given to ensure that lead AAAVs do not come off plane as following AAAVs continue at high water speed. If the AAAVs have been traveling in a relatively dispersed formation, formation closure will be accomplished by using rendezvous-at-sea techniques described later in this appendix. Consideration must be given to when specific AAAV sections come off plane so as not to leave the formation unacceptably strung out. Once off plane, the AAAVs will configure to the transition mode and will then maneuver at a speed of up to 9 knots. The control point will be selected for several reasons, but primarily on the basis of hydrography (presence of offshore reefs, sandbars, and overall water depth). While in the transition mode, the AAAVs have the ability to negotiate offshore obstacles.

Crossing a Restrictive Littoral Penetration Point

If the LPP is limited in size or the route from the last control point to the LPP is restrictive because of mines and obstacles (natural or manmade), the AAAV formation must assume a staggered column formation. This formation can be achieved from the platoon wedge/section wedges formation relatively quickly as sections are "funneled" through the channel or lane. Again, depending on the tactical situation, sections remaining to the seaward side of the obstacle or SZ may position themselves to perform overwatch duties. Figure B-11 depicts this technique.

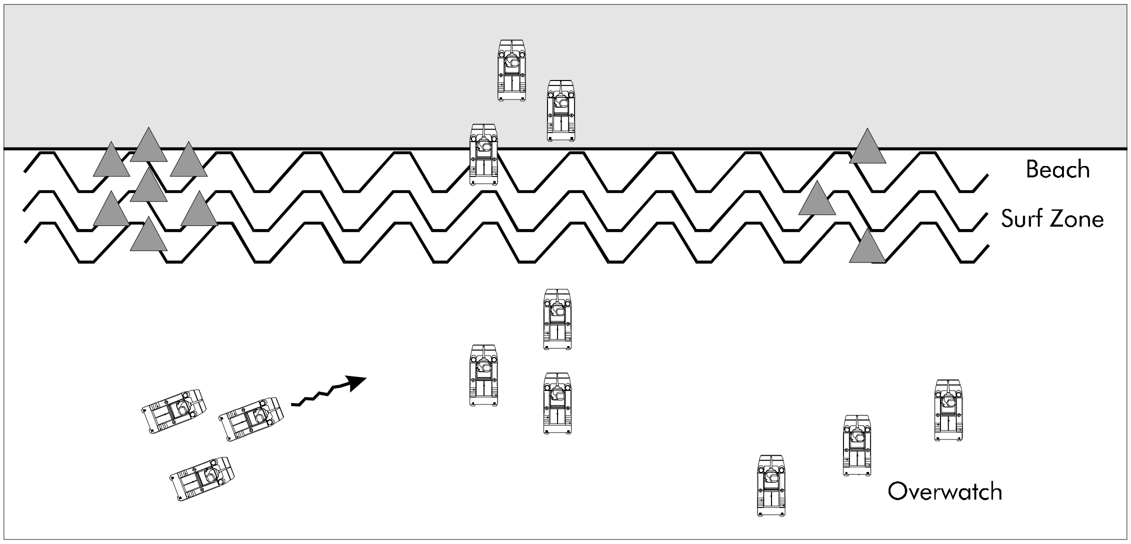


Figure B-11. AAAVs Crossing a Restrictive LPP

Crossing an Unrestricted Littoral Penetration Point

Depending on the tactical situation and size of the LPP, the AAAV formation may remain in the current formation of platoon wedge/section wedges. This will allow the assaulting task force to cross the LPP, a natural danger area with regard to the SZ and the supposition that the threat will intend to defend the beaching of a fighting formation, where the bulk of the task force maintains a degree of tactical mobility and/or assumes an overwatch posture. As AAAVs become feet dry, they maneuver and accelerate, seeking cover and concealment offered by inland terrain. As an alternative, a large LPP permits a line formation that allows the AAAVs to go feet dry simultaneously to eliminate the “gap” between waterborne and landborne vehicles. Regardless, the assault task force will cross the LPP as rapidly as possible and proceed inland. Figure B-12 depicts this technique.

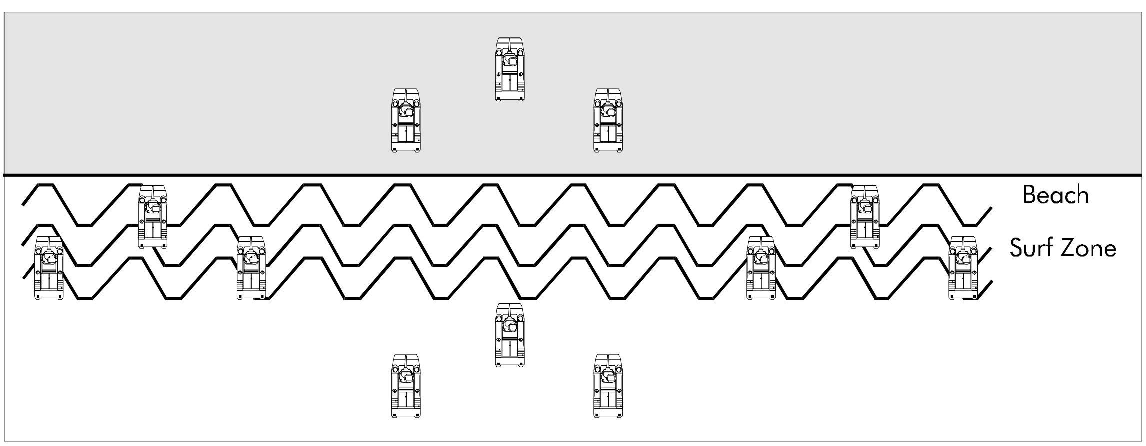


Figure B-12. AAAVs Crossing an Unrestricted LPP

Actions at the Littoral Penetration Point

The overall focus of actions at the LPP is to minimize the exposure time of LFs both seaward and at the LPP. It is assumed that LFs potentially will be within range of enemy direct and/or indirect fire support assets. Where possible, multiple LPPs should be used; otherwise, the tactical situation could create a bottleneck effect.

The assault task force is at its most vulnerable state when passing through the LPP. For this reason, sound tactical formations, supporting arms, and overwatch firepower are used to pass through the LPP quickly, while still maintaining the ability to react to the tactical situation. This is particularly true if the assault task force consists of combined AAAV/LCAC platforms landing simultaneously or in tandem. The AAAVs will be accomplishing their maneuver through the SZ, which, depending on hydrographic characteristics can be a tedious task. Once inside the SZ, the AAAV is limited in its maneuverability while still waterborne. The LCACs will also be transiting the SZ and proceeding to specified cushion landing sites within the CLZ. Congestion within the LPP is likely, particularly during periods of limited visibility, and should be avoided at all costs.

The preferred method of landing combined assault task forces is to use LPPs of sufficient size to allow suitable dispersion between the AAAV penetration point and the LCAC penetration point. As a guide, AAAV and LCAC penetration points should be no closer than 500 yards. The LPP should possess multiple inland access routes to allow the AAAVs to rapidly depart the LPP without interfering with LCAC debarkation activities and movement within the CLZ. If access routes are limited, given that the AAAV is self-deploying and can continue maneuver ashore quickly, the AAAVs penetration point should facilitate its rapid departure away from the LCAC CLZ and the debarkation activities occurring in that area. Consideration must also be given to the LCAC egress route as they return seaward via assigned retirement routes depicted in the surface movement control diagram for subsequent loads. Figure B-13 depicts an idealized, notional organization of an LPP of sufficient size for combined AAAV and LCAC operations, without accounting for threat and tactical requirements.

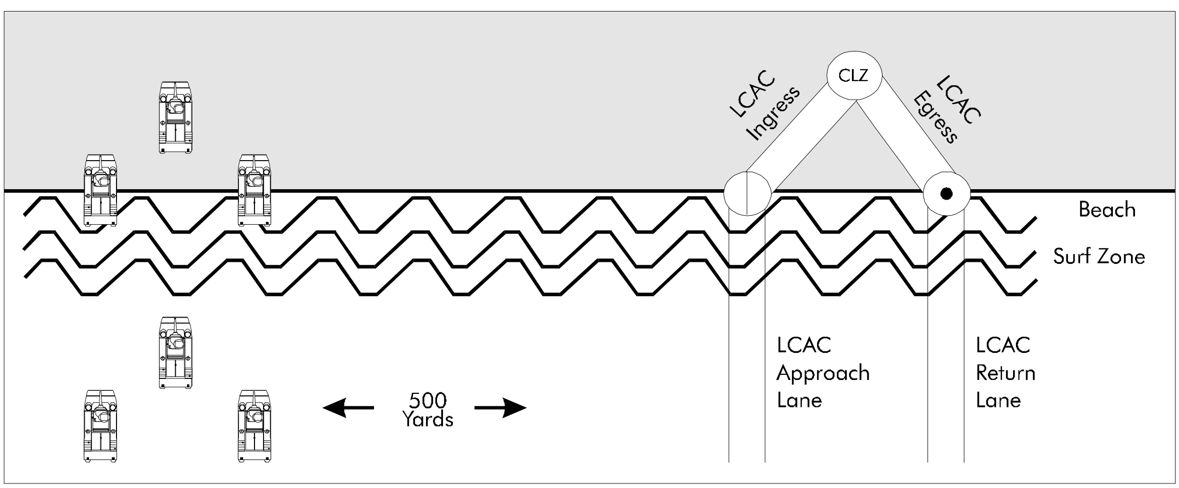


Figure B-13. LPP Configuration for Combined AAAV/LCAC Operations

If the LPP is of insufficient size to allow for suitable dispersion of AAAV and LCAC penetration or if the tactical situation and enemy dispositions require the AAAV-mounted units to fight through, clear or otherwise protect the LPP, then the LCAC group supporting the assault task force will land immediately after the AAAV touchdown. The timing and sequencing will depend on the tactical situation ashore. It must be remembered that once the LCACs disgorge their cargo, they must have sufficient maneuver space to quickly and safely exit the CLZ. Such a situation not only presents a lucrative target to the enemy, but also creates a significant movement hazard to both platforms.

During penetrations of assault task forces consisting of only AAAVs, the team will normally pass through the LPP rapidly, exiting the beach area and proceeding deeper inland to avoid congestion in the area and to allow subsequent assault task forces to move ashore unobstructed. Once ashore, AAAV-mounted unit commanders maneuver and provide mutual support as directed by the task force commander.

Actions for Rendezvous at Sea

The following paragraphs describe the procedures to be used when assault task forces comprised of AAAVs and LCACs must be formed at sea and travel across the battlespace in proximity. If at all possible, the AAAV and LCAC formations will travel as separate assault task forces and will cross separate LPPs, linking up only after assets have been debarked from the LCACs once ashore. This is particularly true during periods of limited visibility. However, the tactical situation and availability of suitable LPPs and CLZs may require that the two formations travel in proximity and use the same routes and LPPs. Unless these formations are separated by time, this will require a rendezvous at sea between the AAAV formation and the LCAC formation. The difficulty of this task should not be underestimated, and the rendezvous should be preceded by a rehearsal. The same technique can be applied to two assault task forces consisting of AAAVs linking up at sea.

There are three individuals who play a key role in rendezvous-at-sea operations: the ACG commander (CATF/CLF); the LCAC group commander, who is the officer responsible for theC2 and maneuver of the LCAC unit supporting the assault task force; and the AAAV commander, who has been delegated the responsibility for control and maneuver of the assault task force.

For planning purposes, it is recommended that even when carrying a single assault task force, AAAVs and LCACs should not operate any closer than 500 yards apart. Additionally, all formations of AAAVs and LCACs should take into account the low profile of the AAAV, particularly when in the transition mode, and the limited visibility available to the LCAC craftmasters on the port side of their craft.

LCACs will launch from amphibious shipping in the assembly area. From there, LCACs will proceed to the attack position. Local traffic control measures assign loiter areas to LCAC groups to prevent interference with the underway launching of AAAVs in the transport area and their movement to the attack positions, which are positioned along the LOD. The LCACs will assume the appropriate formation as determined by the LCAC group commander.

To facilitate the rendezvous at sea, the ACG may assume positive control, at least for a period of time, of both the AAAV formation and the LCAC formation. A determination will be made as to which formation will be the base formation or “lead,” and which formation will be the trail or “wingman,” of the combined assault task force formation. The base formation will then be instructed by the ACG to proceed on the assigned route. The ACG will then vector the trail formation to a point astern and offset from the base formation. The ACG will provide control and vectors to the trail formation as this formation increases speed gradually and closes to a point where visual contact is made with the base formation. Once visual contact has been established between the two formations, and if the situation warrants, recognition signals may be exchanged. This will let the trail formation know that it has assumed the appropriate station on the base formation. Given the difference in maneuver characteristics of both platforms, continual adjustments will be made as necessary with regard to station keeping. Both the LCAC group commander and the AAAV unit commander will notify the ACG that the formation has completed the rendezvous at sea.

As the assault task force approaches the LPP, consideration must be given to the position of the LCACs relative to the AAAVs when they come off plane. In the end, the LCAC group commander determines by observation and coordination with the task force commander the moment that it is safe to follow the AAAVs to land.

Section II: LCAC Ship-To-Shore Formations and Movement Techniques

This section describes the formations and movement techniques used by the LCAC during the waterborne portion of the amphibious assault.

The LCAC provides a high-speed landing craft for the delivery of LF weapons and vehicles from OTH launch positions, with enhanced independence from the effects of weather, hydrography, and obstacles. Supported on a pressurized cushion of air, the LCAC travels much faster than conventional displacement landing craft, in excess of 40 knots, depending on the sea state. The high speed and long range of LCACs make OTH amphibious operations possible.

PLANNING

LCACs operate at all speeds while cushionborne, but surface conditions dictate operating at speeds above 20 knots (“hump” speed). Thereafter, endurance may be expressed in hours of operation, rather than as speed. Overloading LCACs or extreme sea states can prevent hump speeds from being achieved, with consequent loss of capability. LCAC resistance to mines is high, and redundant systems will permit continued operations, even after the loss of a single main engine, propeller or thruster; skirt damage can be tolerated to a limited extent. Crew endurance (12 hours/day) will not permit 24-hour operation of LCACs.

LCAC experience remains noncombatant, and the system has not been exploited to its theoretical limits. Control measures and parameters observed in peacetime will not necessarily pertain to combat operations. Separated lanes and operating areas, large touchdown zones, and beachmaster support may all be altered for assault operations. Operations of follow-on LCAC sorties to a previously occupied LPP may be conducted by using the normal administrative procedures.

LCAC movement techniques and formations are identical to those of the AAAV.

LCAC armament consists of mounts for light and heavy machine guns, which normally cannot be used while underway. Troop weapons systems mounted in vehicles, especially LAV types, could be used while underway, but no firing arcs can be reliably established. Hand-held antiair missiles can also be used. Any threat to the waterborne maneuver of the LF is best handled by surface and air escorts.

LCACs may operate with troop shelters for personnel transportation and medical evacuation. The fitting-out of LCACs with the shelters will require up to 3 hours onboard the designated support ship.

MAINTENANCE COLLECTION OPERATIONS

Amphibious craft and vehicle maintenance, salvage, and recovery operations will be conducted under the cognizance of the Navy control group. A dual system of air and water detachments is desirable.

A V/STOL maintenance collection detachment (MCD(H)) will be constituted when LF aircraft become available, probably after L-hour, or by using US Navy aircraft. The flight will carry AAAV and LCX maintenance teams and a small class IX parts block. The MCD(H) may be combined with normal aviation search and rescue (SAR) or tactical recovery of aircraft and personnel (TRAP) mission planning. If feasible, the flight launches before the launch of the AAAVs and LCACs. Shore-based reinforcement of LF aviation may make such measures more feasible. The MCD(H) responds immediately to mechanical problems that occur with amphibious vehicles and landing craft. If a vehicle has a maintenance operator onboard who has identified the problem and can affect the repair, then the MCD(H) will deliver the required parts. If maintenance personnel are not onboard the vehicle, then an MCD(H) maintenance team will troubleshoot the problem and make repairs. If the required repairs are too extensive to conduct on the water, then the waterborne maintenance collection detachment (MCD(W)) team will be required.

The MCD (W) team consists of a LF maintenance team and is embarked on an LCX (in the interim, an LCU or an LCAC detailed from the return assault cycle). The designated LCX carries a fairly extensive class IX parts block as well as a recovery vehicle or deck-mounted equipment for lifting hardware and winching disabled AAAVs aboard. An LCAC will not have a recovery capability on this mission. The MCD (W) is ideally launched before launching the LCACs and AAAVs. The MCD(W) meets LCACs and AAAVs at or en route to maintenance collection points at intervals along the routes to the beach. AAAVs that have water integrity but are having problems attaining planning speed may head toward these maintenance collection points or continue to the LPP at the slow-water speed, on the basis of the decision of the task force commander or subordinate unit leader. Either en route to or at the maintenance collection point, the AAAV would link up with either type of MCD. The maneuver unit commander will normally leave a downed AAAV and proceed with the mission. The provision of aviation-type survival equipment for AAAV crews will enhance SAR of sinking AAAVs and embarked troops. Specialized Coast Guard craft and aircraft, if available from that Service component may be suited to this mission.

IN-STRIDE BREACHING OPERATIONS

Conducting an in-stride breach while afloat is a critical requirement and one of the most difficult amphibious missions to undertake (see figure 5-17). If possible, mission planners should avoid any area that is mined or has numerous natural or manmade obstacles. Key to breaching enemy anti-access systems is early and continuous ISR of potential LPA/LPZ/LPS/LPPs that becomes more focused as we approach D-Day. Maneuver, Fires and MCM planning and execution must be tightly integrated and synchronized. An in-stride breach is conducted in the following manner.

Intelligence Preparation of the Battlespace

Intel requirements regarding threat mining capabilities, enviromental analysis and employment of wide-area reconnaissance and surveillance sensors to determine potential LPAs is initiated as early as possible.

Battlespace Shaping

Forward deployed tactical sensors begin focused ISR in potential LPZ/LPS to support the mission. ISR data collected is evaluated and incorporated in the planning process to identify the best geometry to support STOM and deal with the mine and obstacle threat. Deep water mines are neutralized as required to support maneuver of ships over-the-horizon. Mines under-the-horizon are “marked” for avoidance or for future neutralization synchronized with the surface STOM. Primary and alternate transit lanes and asssault lanes leading to LPPs are designated for the maneuver task forces. See figure B-14.

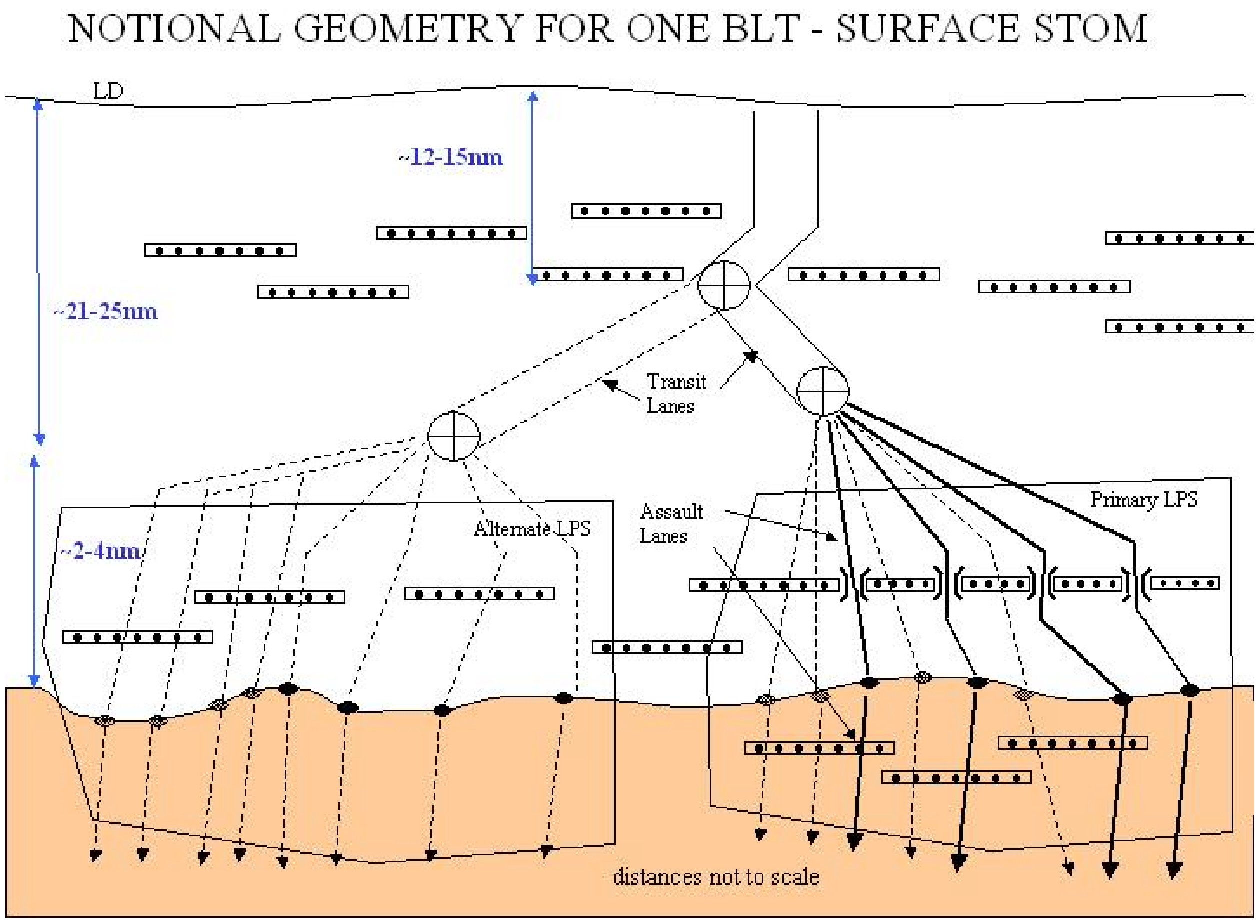


Figure B-14. Notional Geometry for a BLT Conducting STOM in a Mined Environment

Conduct of the Breach

Naval mine countermeasure assets will be used as required to clear transit and assault lanes from the deep water through the shallow water, the very shallow water, the surf zone and beach up to beach exits within the LPS.

Mines in deeper water under-the horizon will be neutralized in advance of maneuver forces once they begin their seaward movement by UUVs or other organic MCM assets. As maneuver task forces approach decision points, commanders will confirm primary or alternate LPS/LPPs based on the situation. Then countermine/counterobstacle systems, including stand-off delivery systems, will neutralize mine/obstacle belts within lanes minutes before units pass through. Maneuver will be covered by suppressive fires from supporting arms and the AAAVs of the task force that is waiting to pass.

Once ashore, the LF task force may employ combat engineers and specialized vehicles and equipment to clear areas within the LPS necessary to permit the operation to continue.

Proper marking and reporting of cleared areas is necessary to maintain a rapid advance.

Appendix C. Vertical Assault Tactical Considerations

ORGANIZING

Organizing for a vertical assault consists of integrating a ground task force with vertical assault support aircraft for a specific mission.

Development of the Vertical Assault Task Force

- The availability of aviation support is normally the major factor in determining task force composition.
- The task force must provide a mission-specific balance of mobility, combat power, and sustainability. It must have sufficient combat power to seize initial objectives, protect landing zones, and retain sustainability to support a rapid tempo and follow-on missions.
- The required combat power must be delivered to the objective as soon as possible, consistent with aircraft and flight deck capabilities, to provide surprise and shock effect.
- To arrive intact at the landing zone, the task force must be protected en route through route security, landing zone preparation, and isolation.
- Tactical integrity demands that squads and weapons teams be loaded intact on assigned assault support aircraft. Combat support and CSS units must be landed as tactical units to ensure close coordination and continuous, dedicated support throughout the operation.

Missions and Tasks

Infantry units form the nucleus of the vertical envelopment task force. However, ground mobility is limited unless vehicles are provided. Range and effectiveness of communications, reconnaissance, crew-served weapons, and antitank units will suffer limitations unless vehicles are provided.

Combat engineer units perform tactical functions on or near the objectives; provide mobility, countermobility, and field fortification construction support; and provide essential improvements to the LZs for continued operations.

Artillery batteries and battalions can follow the infantry into LZs and provide direct support for continuing operations. They must be prepared to move quickly and frequently between LZs and to fire suppression missions against enemy air defense and other units firing on the LZs.

Reconnaissance (foot and light armored) units may accompany or precede the infantry into the LZ, providing scouting and security for LZ operations and supporting actions against the initial objectives and beyond.

Air defense units provide man-portable and mounted point defense missile support to the airhead and other locations in the objective area.

LANDING

The landing of the vertical assault force is conducted in the time and sequence of the ground tactical plan.

The availability, location, and size of the potential LZs and alternate landing zones are overriding factors.

The task force lands in its most vulnerable moment; hence, unit integrity, execution of the plan as briefed, effective supporting fires, and inherent flexibility remain key conditions contributing to success.

Resupply and medical evacuation must be available on short notice.

If LZ options permit, the ones that best support the mission are selected. Choices involve landing on or near the objective or landing away from it and maneuvering over the ground. Combat power, enemy strength and dispositions, surprise, and time available will become prime considerations. Single LZs permit the concentration of power in one location, facilitate C2, provide better security, and economize on support. Multiple LZs avoid grouping of lucrative targets for the enemy, permit rapid dispersal of ground units, force the enemy to react in multiple directions, and reduce congestion on the ground and in the air.

AIR MANEUVER

Air maneuver of the vertical assault force will be determined by the task force commander and the AMC together. It must support the landing plan and take advantage of weather, terrain, and known enemy dispositions. Fire support will be integrated into maneuver planning. Multiple flight routes, release points, and start points retain the maximum flexibility for aerial maneuver.

The flight route and other control points are published by CATF and CLF to all subordinate units. Formations, staggering of flights, and flight profiles are decentralized to the maximum extent to take advantage of the situational awareness of the AFL and task force commander.

Supporting arms during the aerial maneuver serve to suppress known or suspected enemy positions along the flight routes and landing zones.

Success will result from a precise execution of the vertical assault portion of the landing craft, assault vehicle, and aircraft employment plan. All times in vertical assault are determined by L-hour. If delays are encountered as a result of weather or aircraft delays, the commander (usually CLF) announces a new L-hour.

Refueling is planned so that a flight completes refueling before it becomes critically low on fuel. In large vertical envelopment operations, this means that some flights must refuel from the ship or FARP an hour before necessary. Other flights may continue to operate while some are refueling. A smooth and continuous rotation of aircraft in and out of these sites is the responsibility of the AMC.

LOADING

Loading the task force for a vertical envelopment is a critical step in the execution of the vertical envelopment portion of the landing craft, assault vehicle, and aircraft employment plan.

When planning loads for vertical envelopment, the unit breaks down into chalks for a given flight. Squad and team integrity are maintained in aircraft loads, and platoon integrity is maintained in the same flight. The commander's goal is to load with maximum unit integrity at every level. Crews are loaded with weapons (with possible exceptions for heavy loads such as artillery and LAVs). Ammunition is carried with all but the largest weapons systems. Supplies are accompanied by personnel to unload the aircraft. Leaders and crew-served weapons are spread loaded among aircraft within the flight to the extent possible.

The chalkings are informal and last-minute; they correspond to aircraft flight and ULN assignments of the landing craft, assault vehicle, and aircraft employment plan.

Aircraft load plans of the unit contain “bump plans” that indicate which loads or chalks are to be left behind in the event that too few aircraft land, meteorological conditions reduce lift capacities, or mechanical problems interfere with the plan. This measure ensures that the most essential personnel and equipment arrive at the landing zone on schedule. Bump plans pertain to chalks within a single aircraft and among unit chalks assigned to a given flight.

Lifts, flights, and loads comprise the aircraft groupings in vertical envelopment operations. A lift is comprised of the aircraft assigned to a given task force as designated in the landing craft, assault vehicle, and aircraft employment plan. A flight is comprised of two or more aircraft, under a single leader, flying the same route into the same landing zone. A load or chalk is the assignment for a single aircraft mission within each flight to carry and deliver as required. In lift 1, there may be 4 flights, and flights 1 through 3 may have loads 9 through 12.

AIRCRAFT FORMATIONS

Aircraft lifts and flights follow the commands of their leaders (usually the AFL) while en route according to the tactical situations encountered. Landing in the LZ, however, usually depends on the desire of the task force or subordinate ground commander of the unit being transported, with concurrence of the AFL.

Heavy Left (or Right)

A heavy left (or right) formation requires a relatively long, wide landing zone and provides firepower to the front and flank. (See Figure C-1.)

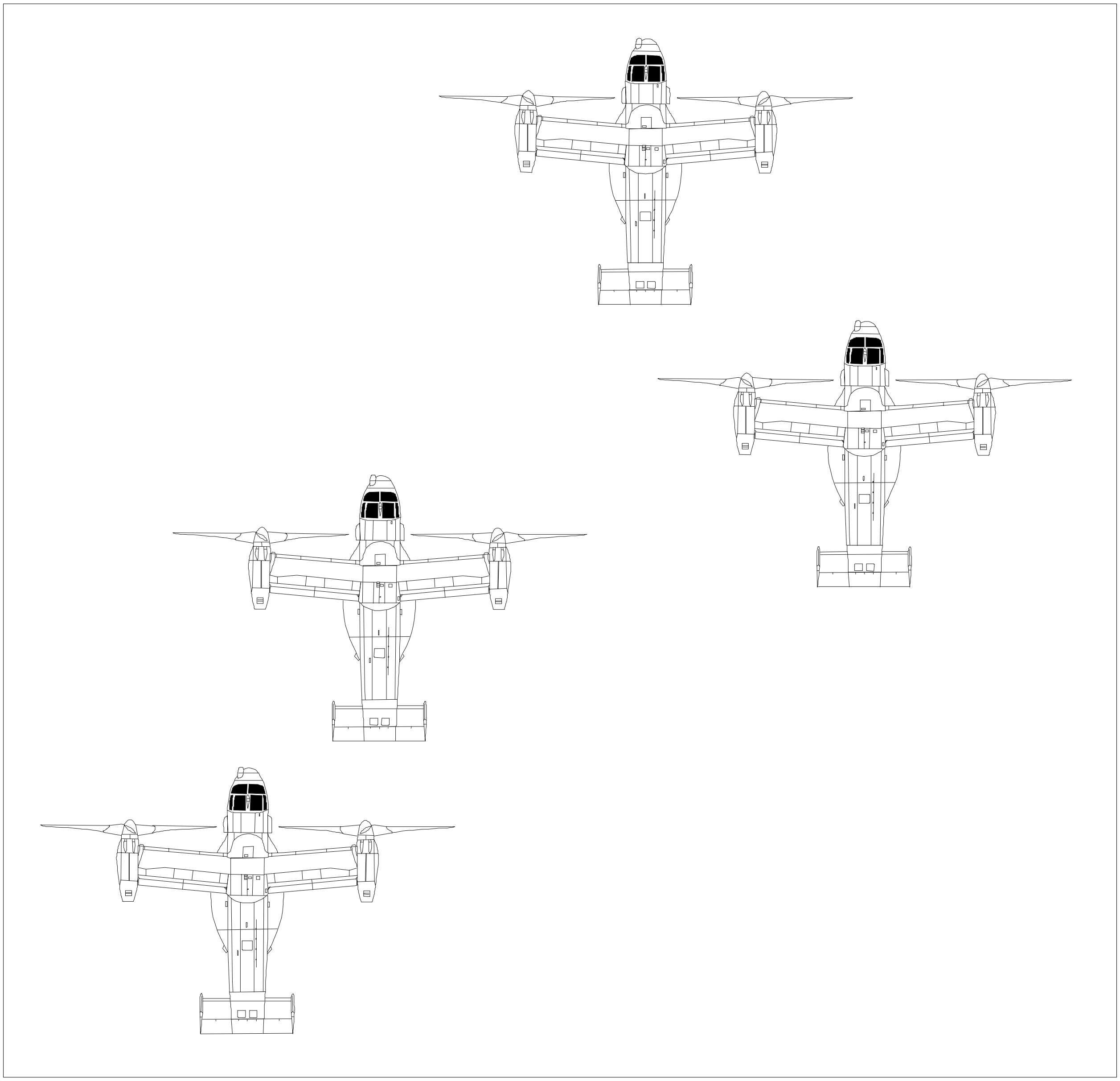


Figure C-1. Heavy Left

Diamond

A diamond formation allows rapid deployment to all-around defense, requires a relatively small landing zone, and restricts maximum fire to the flank. (See Figure C-2.)

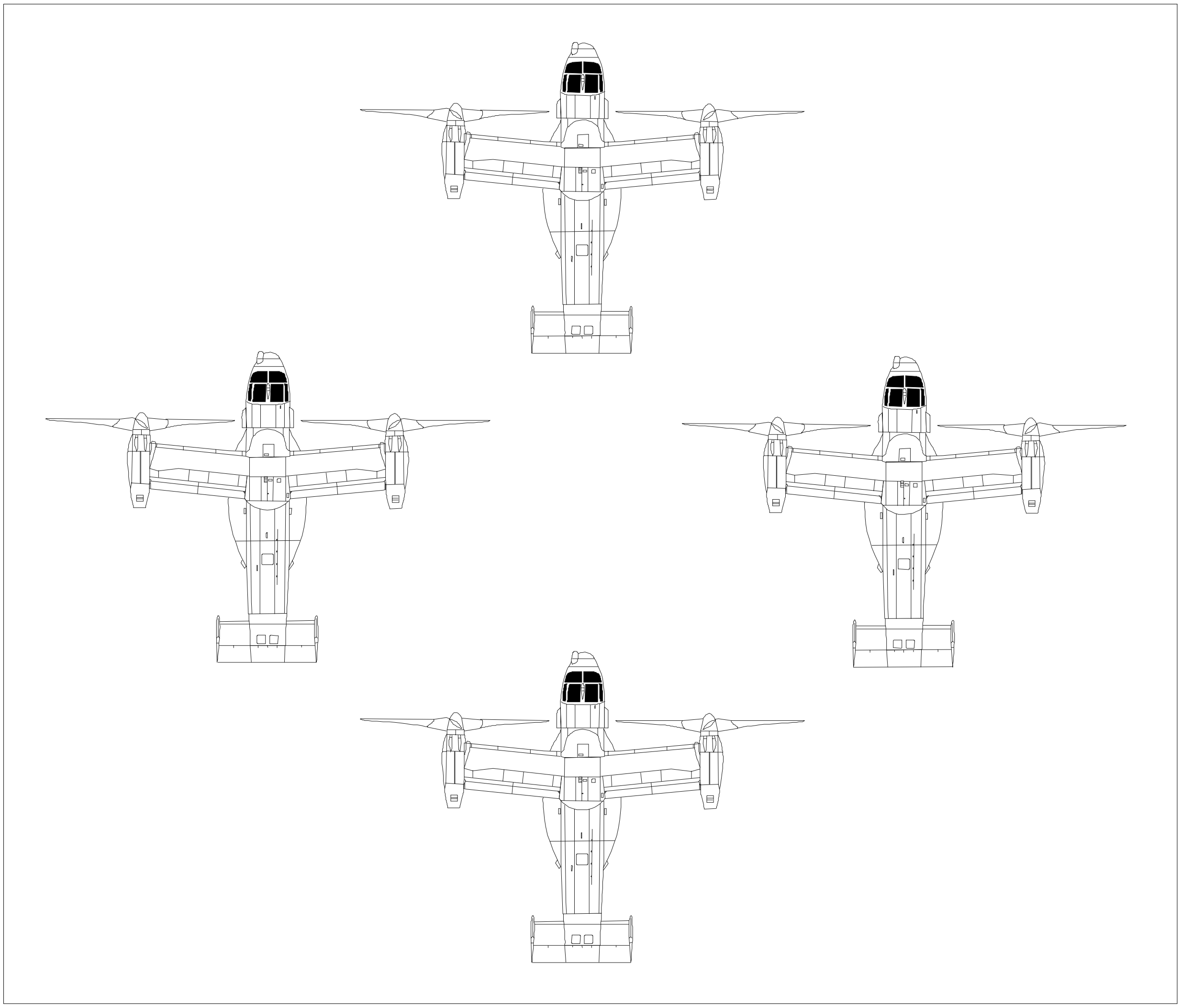


Figure C-2. Diamond

Vee

A vee formation requires a relatively small landing zone, allows rapid deployment, and restricts maximum firepower to the front. (See Figure C-3.)

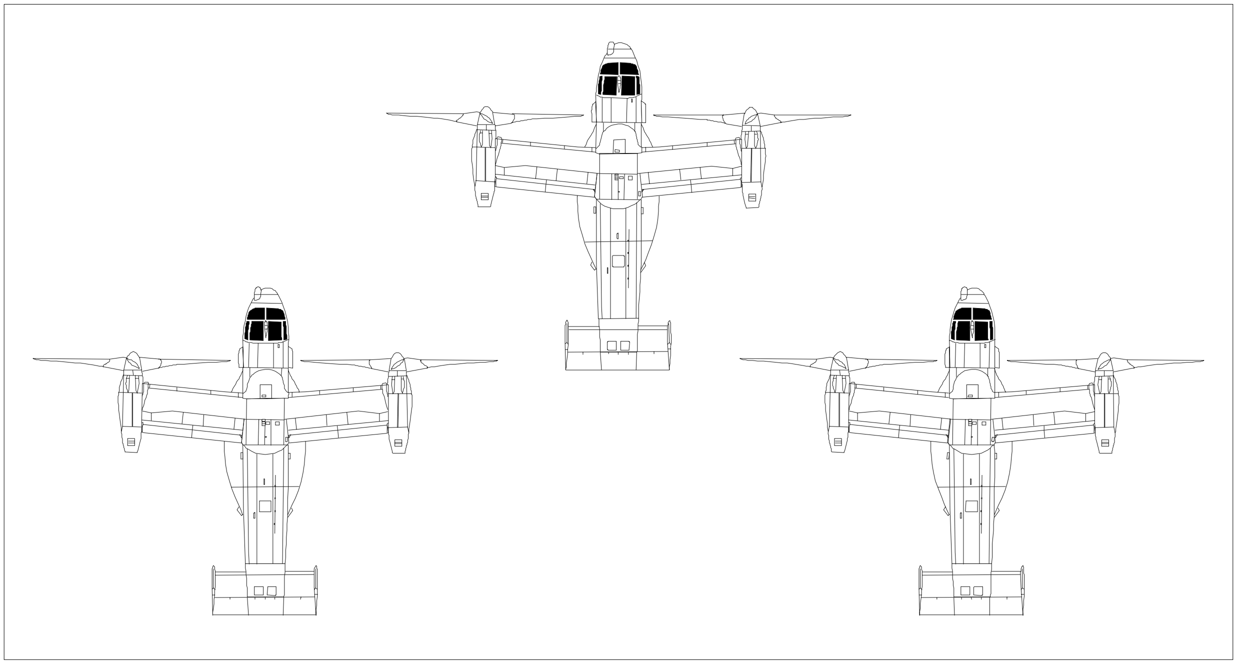


Figure C-3. Vee

Echelon Left (or Right)

An echelon left (or right) formation requires a relatively long, wide landing zone, allows rapid deployment to the flank, and restricts maximum fire to the flank. (See Figure C-4.)

Column

A column formation requires a relatively small landing zone, allows rapid deployment to the flank, and provides maximum firepower to the flank. (See Figure C-5.)

Staggered Column

A staggered column requires a long, wide landing zone. It allows for rapid deployment all around, but fire is somewhat restricted. (See Figure C-6.)

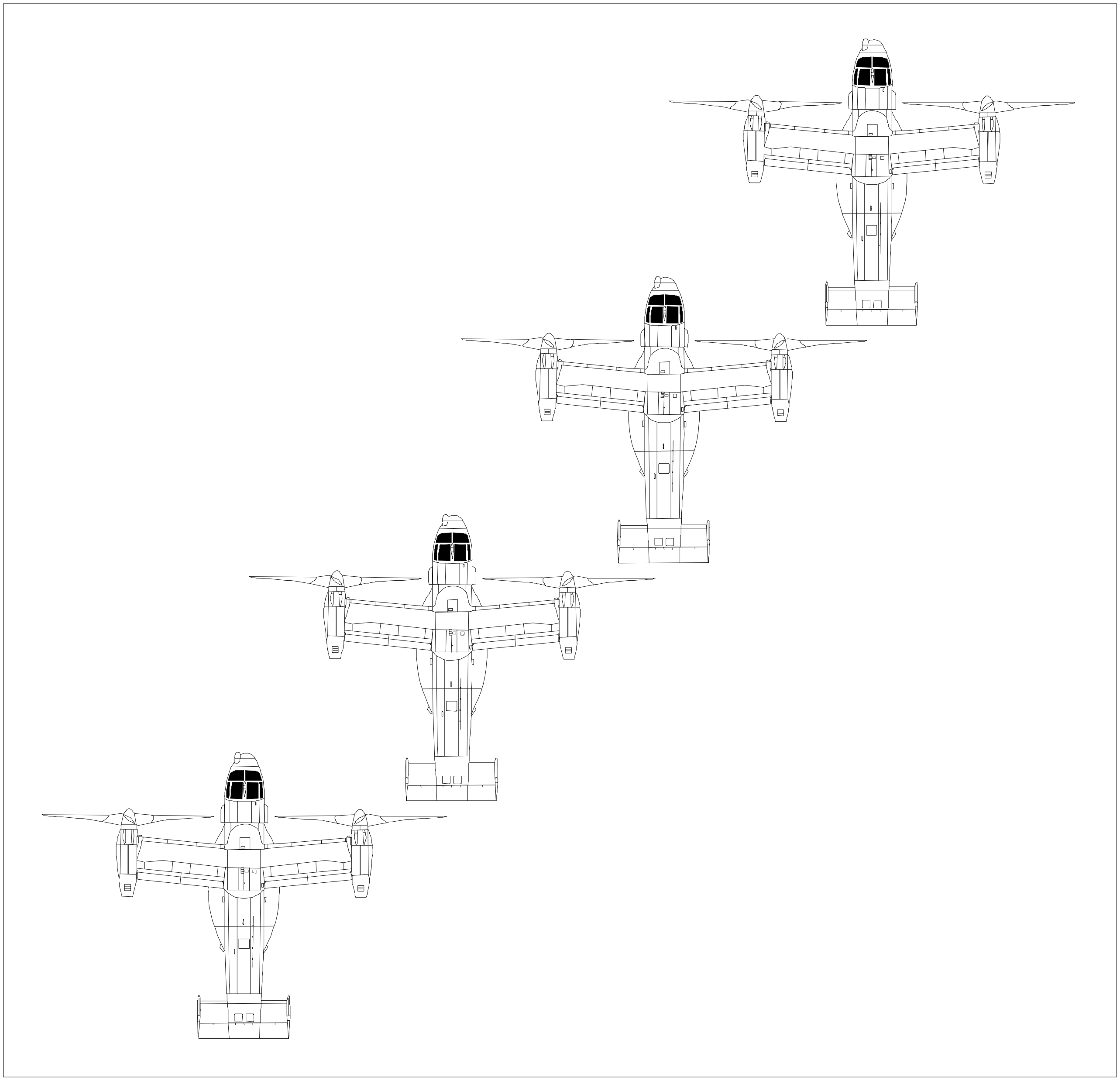


Figure C-4. Echelon Left

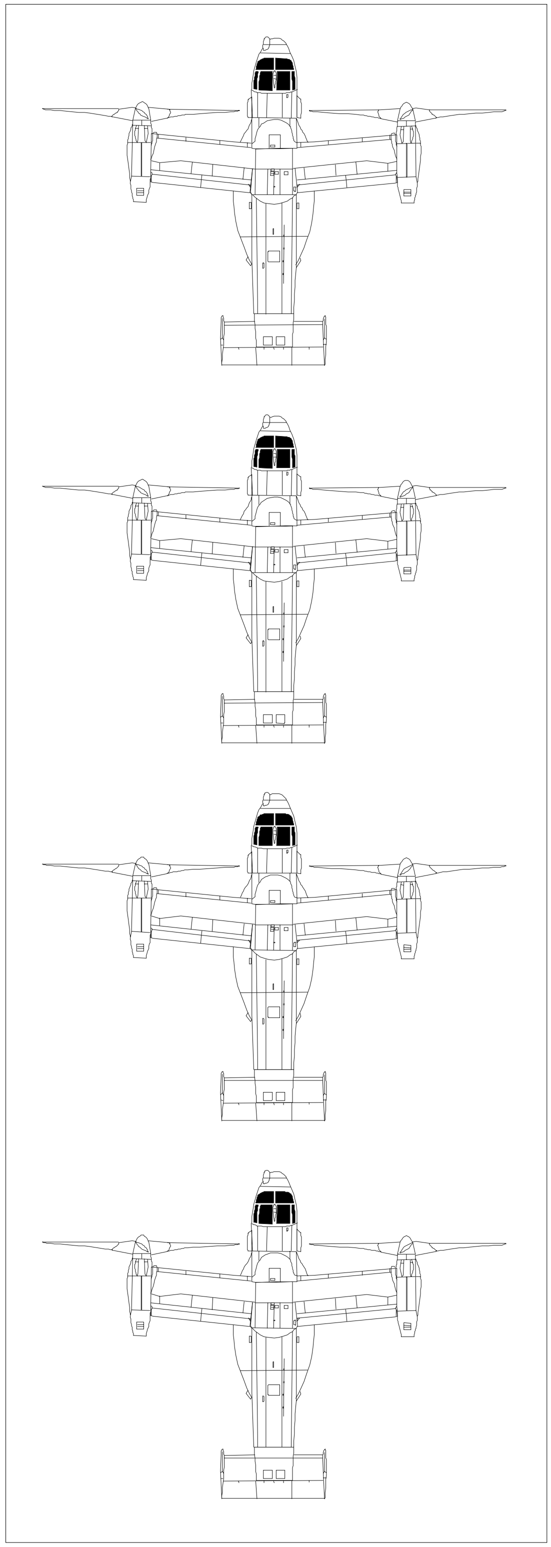


Figure C-5. Column

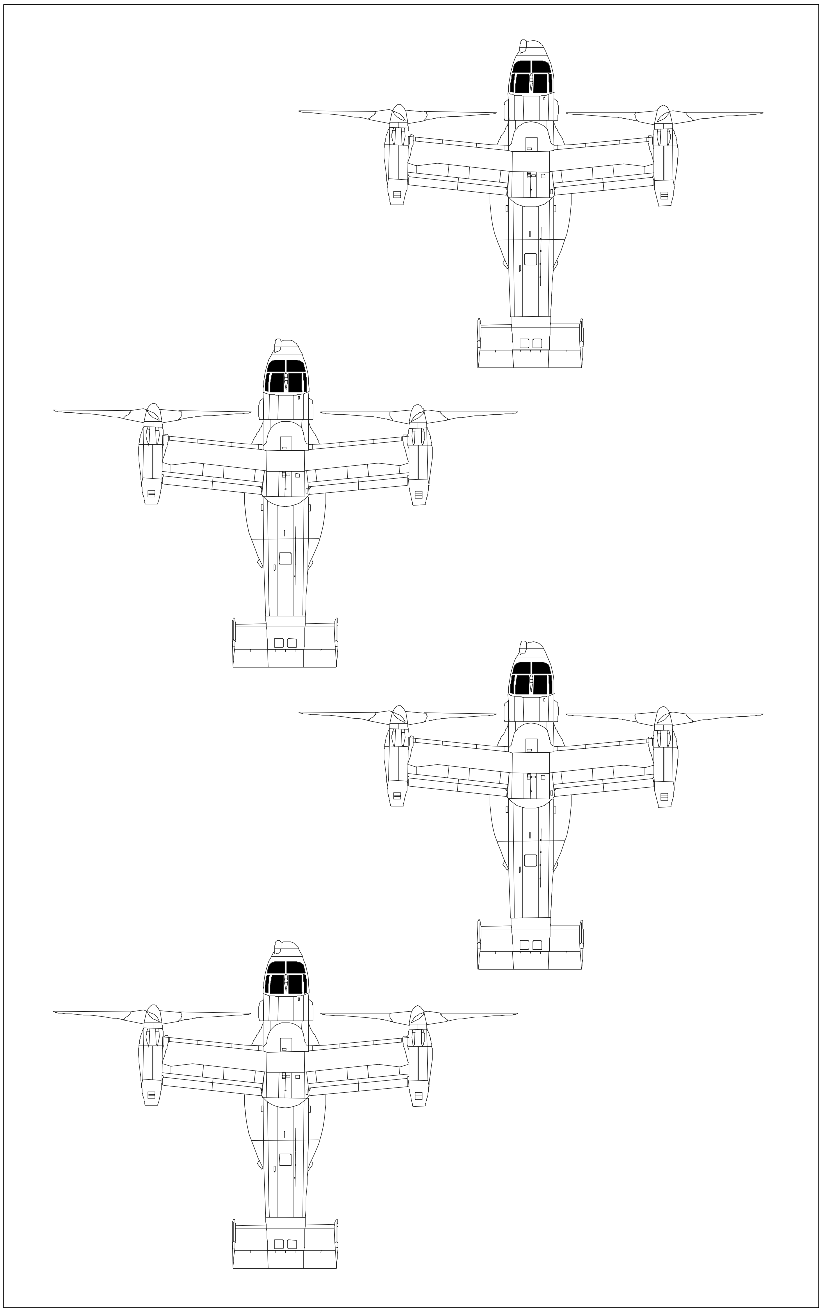


Figure C-6. Staggered Column

MV-22 PERFORMANCE DATA

Table C-1 provides performance data for the MV-22.

Table C-1. MV-22 Performance Data

Parameters	Remarks	USMC	U.S. Special Operations Command
Cruise airspeed		240 kts (T) 270 kts (O)	230 kts (T) 250 kts (O)
Mission radius	Land trooplift	200 nm x 1 (T)/(O)	
	Land external	50 nm x 1 (T) 110 nm x 1 (O)	
	Sea trooplift	50 nm x 2 (T) 110 nm x 2 (O)	
	Sea external	50 nm x 1 (T) 110 nm x 1 (O)	
Self-deployment capability		2,100 nm with one refuel (T) 2,100 nm with no refuel (O)	2,100 nm with one refuel (T) 2,100 nm with no refuel (O)
Payload	Troops	24 (T)/(O)	18 (T)/24 (O)
	External lift	10,000 lb (4,536 kg) (T) 15,000 lb (6,804 kg) (O)	N/A
V/STOL capable		Yes (T)/(O)	Yes (T)/(O)
Shipboard compatible		Yes (T)/(O)	Yes (T)/(O)
Aerial refuel capable		Yes (T)/(O)	Yes (T)/(O)
Survivability		Resists 12.7-mm fire at 90% muzzle velocity (T) Resists 14.5-mm fire at 90% muzzle velocity (O)	N/A
Operational environment		N/A	300-ft terrain following (TF)/terrain avoidance (TA), day/night, visual meteorologic conditions (VMC)/ instrumental meteorologic conditions (IMC) (T) 100-ft TF/TA, day/night, VMC/IMC (O)
Precision navigation		N/A	Locate LZ within 2x rotor diameter at maximum combat radius (T) Locate LZ within 1x rotor diameter at maximum combat radius(O)

(T) = Threshold (O) = Objective

MV-22 PLANNING PARAMETERS

Table C-2 provides mission planning parameters for the MV-22. The MV-22 is capable of carrying fuel in a total of five structural tanks, eight wing-mounted external tanks, and three cabin-mounted internal tanks and has an in-flight refueling capability. The MV-22 requires an escort in medium- and high-threat environments.

Table C-2. MV-22 Mission Planning Parameters

En route airspeed	230 kts
Maximum en route airspeed	270 kts
Maximum altitude	21,500 ft[1]
En route airspeed with external load	200 kts (with dual point load)
Maximum external load	10,000 lb (dual hooks: 15,000 lb)
Maximum internal load	20,000 lb
Number of combat-loaded troops	24 (or 12 NATO litters)
Combat radius	200 nm (with 10 min of loiter time in the objective area)
Self-deployment range	2,100 nm (with one refueling)
Maximum fuel endurance	3 hr
Minimum landing pad	36 x 23 feet[2]
Empty weight	33,140 lb
Maximum vertical takeoff weight	52,600 lb (useful load: 19,460 lb)[3]
Maximum short takeoff weight	57,000 lb (useful load 27,360 lb)[3]

[1] Altitude is degradable by meteorological and other variables.
[2] The pad or landing zone size is based on the assumption that the ground is clear of obstructions and reasonably level for 56 x 62 feet and that the immediate area surrounding the zone is clear of obstructions out to 79 x 105 feet.
[3] The useful load is any combination of fuel, internal cargo, and external cargo (provided no preexisting limitations are exceeded).

Appendix D. Fires Planning

NAVAL SURFACE FIRES PLANNING

NSFS is the coordinated and complementary use of shipboard guns, missiles, rockets, target acquisition, and command and control in support of fighting units ashore or against shore-based enemy units.

Control of Naval Surface Fires

STOM depends on commanders having the authority, within prescribed parameters, to control their own movement. This authority must include diverting through alternate penetration points and/or to alternate landing sites as the situation dictates. Such authority is, however, both a strength and a potential weakness. There is no room for haphazard or gratuitous maneuver in an arena in which the coordinated and integrated application of combined arms is our principal strength. Thus, there remains a requirement for centralized awareness, integration, and coordination.

NSFS elements share the common picture of the battlespace from the command and control system and have the ability to rapidly implement short-notice decisions by maneuvering forces and to translate those decisions into changes to preplanned and on-call fires in support of surface and/or vertical assault forces. This common appreciation is crucial for controlling and streamlining supporting arms fires, of which NSFS will play a critical role. To support the principles of STOM, supporting arms agencies will have to plan for and focus on rapid and near-simultaneous integration, coordination, and deconfliction of all available weapons to accommodate and support the potentially fluid demands of the maneuvering force(s) commander. During planning, command and control of fires will be highly centralized. During execution, actual command and control of fires will be delegated to the lowest appropriate level (decentralized).

Allocation (and thus delegated control) of NSFS units will still be a key responsibility of the commander during the planning phase. Because of the future range and lethality of NSFS, it is highly probable that a portion of naval fires units will be tasked by CJTF to participate in the JTF's deep battle (shaping operations). A process of allocation must take place that outlines what portion of naval units will be tasked with JTF/CINC targeting initiatives and what portion will be allocated to provide fires to support the landing forces. This process must be accomplished well in advance of an operation, during the initial planning phase. Once this allocation has been determined, the supporting arms coordinator at the ATF level can begin to plan the use of the available supporting arms units. Although systems will be limited and widely dispersed, commanders of surface and vertical maneuver forces will still require rapid and responsive fires. With the implications of decentralized control, as described in amphibious operations and STOM where the maneuver commander has the ability and authority to make on-the-spot decisions with regard to maneuver (i.e., selecting LPPs), flexibility and a common picture at the supporting arms coordination node allow rapid coordination and integration of changes to the fire support plan. The supporting arms coordination node will be automated, enabling naval fires to respond to the threat and the tactical situation with the appropriate balance of automated response and human intervention and the optimal balance between centralized, and decentralized execution.

Control of NSFS is a function of the assigned mission, the availability of units, and the level of responsiveness required. Once the overall allocation of units has been determined, the supporting arms coordinator tailors the desired level of control by means of three basic operating methods: centralized, decentralized, and autonomous control.

Centralized

In this method of control, all NSFS missions are processed through the supporting arms coordination node, where they are reviewed by the supporting arms coordinator and a determination is made as to what weapon is best suited to prosecute the mission. This is done by a combination of automated decision protocols and human intervention. Several key factors to be considered are aircraft and ship availability, availability of ammunition, range to target, target type, weapon location, degree of accuracy required, commander's guidance, level of responsiveness required, target location error, and ROE. Once approved by the supporting arms coordinator, the mission is passed to the appropriate unit(s) for execution. Simultaneously, any required coordination and/or deconfliction with other joint and combined force agencies is accomplished (e.g., JFACC).

Decentralized

In this method of control, responsiveness and flexibility of fires are favored. Normally, this method of control is associated with the preplanned allocation of weapons to support a specific mission. This type of control is generally associated with the assault phase of an amphibious operation. In this method, missions are routed simultaneously via joint variable formatted messages to the specified shooter(s) and the appropriate-level supporting arms coordination node. While the ship's weapons system is processing the mission in preparation for execution, the supporting arms coordination node automatically monitors the mission request and simultaneously initiates any additional integration, coordination, and/or deconfliction in excess of that already achieved by the requesting agency (deconfliction and coordination accomplished at the lowest level). The supporting arms coordinator retains the ability/opportunity to deny or alter the mission if it violates any protocols established by CJTF, CATF, or CLF.

Naval Surface Fire Support Organization

In a JTF organization, CJTF, through the naval component commander, influences NSFS issues. Normally, the highest naval echelon *directly* concerned with NSFS of an *amphibious operation* is the AF commander. The ATF, in addition to the landing force, includes the fire support group that contains the various types of fire support ships necessary to support the landing force. CATF will normally control the NSFS during STOM but may delegate this control authority to the fire support group commander.

The fire support group is a naval task organization of the ATF that contains all of the fire support ships assigned to the force. Its organization may vary with each operation, depending on the numbers and types of ships available. If many ships are available that are capable of fire support, the fire support group may be subdivided into echelons, such as fire support units. The fire support group commander normally does not deal directly with landing force agencies unless directed to do so by CATF. This is the responsibility of liaisons to the FSCC/SACC.

The task organization for NSF is presented in the form of tactical arrangements of fire support groups, units, and elements, according to the tasks assigned. Data pertinent to the tactical subdivision of forces include:

- Requirements to support CJTF, CATF, and CLF
- Numbers and types of ships available
- Number, size, and relative location of the LPZs, LPSs, and LPPs
- Hydrography and terrain features as they affect positioning of ships (as required)
- Scheme of maneuver of the supported unit
- Location, type, and density of known and suspected enemy targets.

Naval Surface Fire Support Planning

NSFS planning begins upon receipt of directives (Order initiating the amphibious operation, or Initiating Directive), concerning a forthcoming operation. The commander provides guidance and instructions to his staff. This guidance may take a variety of forms, including planning directives, memorandums, or outline plans, or it may be announced at informal staff conferences or briefings. The guidance is the commander's assistance to his staff in preparing and revising their estimates. Landing force fire support planners will rely on the commander's guidance to ensure the integration of the NSFS plan with the landing force scheme of maneuver and concept of operations ashore.

Time permitting, by means of an orderly and systematic planning process an NSFS plan is developed by the landing force NSFS liaison officer (NGLO)). Each NSFS plan is designed to provide sufficient information and instructions to the fire support platforms to ensure that efficient NSFS will be provided. The four general phases of NSFS planning involve the preparation of:

- Estimates of supportability
- Initial or overall NSFS requirements
- Detailed NSFS requirements
- NSFS plans.

CATF is responsible for the preparation and execution of the overall NSFS plan. The plan is based on the support requirements of the landing force, as represented by CLF, and on requirements to support naval forces and other joint forces. CLF is responsible for determining landing force requirements for NSFS.

CLF selects the targets to be engaged in the preassault operations (if applicable), those to be fired on during STOM (submitted by maneuvering forces), and the overall timing of these fires. CLF presents these requirements to CATF for consolidation and integration with naval and joint requirements.

NSFS plans must support the landing force scheme of maneuver and the operations of naval and joint forces. Estimates of overall requirements are submitted by the CATF and landing force commanders as soon as practicable after the directive for the operation is received. These estimates enable CATF to determine the general extent of fire support required. They form the basis for his decision concerning the adequacy of fire support means provided to him by higher authority. When NSFS means have been balanced with joint, naval, and landing force requirements, CATF makes a tentative allocation of forces so that detailed planning may begin. Detailed requirements are determined after the details of the landing force scheme of maneuver and supporting naval and joint operations have been established. A final allocation of units is made, and detailed NSFS plans are prepared based on the established detailed requirements.

The NSFS plan is based on information available during the planning phase. Because of the nature of amphibious operations and the level of flexibility given maneuver commanders, the plan should be written with the flexibility to support rapid execution of changes to the basic plan. Fire support planners should take into account and make branch plans to execute fires to support changes in the scheme of maneuver. Planners must plan for multiple LPPs and/or landing sites. These branch plans must consider and establish procedures to rapidly coordinate, deconflict, and integrate fires to support a potentially rapidly changing scenario.

Naval Surface Fire Support Plan

The NSFS plan, with enclosures as required, is published as a tab to the fire support appendix to the operation annex to the OPLAN/OPORD of CATF, CLF, the advance force commander (if advance force operations are planned), and maneuver force commanders. It is largely informational rather than directive. Certain instructions, however, are normally given in the plan.

The ATF NSF plan, which is based on the detailed requirements, is the basis for the landing force plan. The landing force NSF plan is prepared and issued to support the landing force OPLAN. It contains information pertaining to the use of NSF. Information in the CATF plan that is of interest only to the Navy forces is not included in the landing force plan. The NSF plan for the landing force is prepared and submitted by the landing force NGF officer. It is entered into the command and control system as information and as automated protocols governing the coordination of fires.

Basic Plan Format

The task organization for NSF is presented in the form of arrangements of fire support groups, units, and/or elements.

- **Paragraph 1, General Situation.** This paragraph provides appropriate details of the general situation that bear particularly on aspects of NSFS.
- **Paragraph 2, Mission.** This paragraph sets forth the missions to be accomplished by the fire support groups.
- **Paragraph 3, Execution.** A summary of the overall intended concept of operations is given in the first subparagraph. A subparagraph that contains all information that is applicable to two or more NSFS platforms is also included. Subsequent subparagraphs assign specific tasks to each command appearing in the task organization.
- **Paragraph 4, Administration and Logistics.** This paragraph details initial loading and replacement of ammunition or refers to proper enclosures or appendices to the plan. Information and instructions on transfer of ammunition at sea may also be included.
- **Paragraph 5, Command and Signal.** This paragraph details peculiarities of NSFS communications and refers to the communications annex and/or the enclosure on NSFS communications.
- **Enclosures and Tabs.**

Sequence and Procedures

The planning sequence and procedures outlined below are typical of those necessary for developing the NSFS plan. The steps are listed in chronological order, although circumstances frequently will require deviation from this order.

1. **Preparation of Planning Program.** Each echelon planning NSFS prepares a planning sequence containing a day-to-day program.
2. **Preparation of Estimate of Supportability.** Early in the planning phase, NSFS liaison officers prepare an NSFS estimate of supportability. Each proposed COA is analyzed to determine which can best be supported by NSFS. The commander studies the NSFS estimate along with other estimates, makes his decision on the preferred COA, and determines his concept of operations.
3. **Determination of Requirements.** Once a concept of operations has been approved, planners determine NSFS requirements which consist of the ammunition, ships, UAVs, and periods of time necessary to the operation.
4. **Allocation of Naval Surface Fires Means.** After approving the consolidated overall requirements, CATF makes a tentative allocation of units.
5. **Preparation and Submission of Naval Surface Fire Support Tab.**

6. **Installation of Fire Support Coordination Protocols.** These establish limits on munitions expenditure, types of munitions, target locations, and standard fire support coordination measures (restrictive fire line, fire support coordination line, etc.) that a particular level of unit (e.g., platoon, company, division) may engage. Specified units receiving priority of fires from their commanders will usually receive more engagement latitude under these protocols, as approved by CATF and CLF.

Naval Surface Fires in Support of Preassault Operations

Planning Considerations

CLF is responsible for the preparation of landing force requirements for NSFS and air support, pre-H-hour/L-hour seizure of supporting positions, demonstrations, and reconnaissance. If pre-H-hour/L-hour landings or demonstrations are to be conducted, CLF will direct the landing group commander of that force to report to the commander of the advance force for planning.

CATF is responsible for consolidating the requirements of the landing force with those of the other elements of the AF.

If employed, an advance force commander is responsible for the detailed planning for the operations conducted by his force, including an NSFS plan to support advance force operations.

Execution

Pre-H-hour/L-hour fires are the preliminary fires executed before ships, craft, and aircraft begin STOM (arrive in the transport area). The emphasis in this phase will be on destruction, harassment, interdiction, and suppression fires in support of preassault operations.

Naval Surface Fire Support in Support of Ship-to-Objective Maneuver

In this phase, emphasis shifts from the ATF in general to the LF. Of primary importance will be the close supporting fires (neutralization and suppression) delivered immediately in direct support of maneuvering surface and/or vertical assault task forces. In addition, fires will be planned to isolate the LPPs and landing sites and to neutralize and/or suppress targets that can directly influence the scheme of maneuver. Examples of such targets include antiair defense, fire support, C2, mobile forces, and LOC.

CATF assumes responsibility for the coordination, control, and integration of NSFS on his arrival in the LPA. The support group commander may continue technical control and execution of details. Details requiring careful and constant supervision during the execution of fires in support of STOM are:

- Because the fires occur during the most critical period, the schedule of fires must be carefully supervised and integrated during execution. Casualties, deviations from original maneuver plans, and unforeseen events must be met with prompt and effective action.
- Provisions must be made for prompt relief of fire support units that are low on ammunition.
- The FSCC/SACC must continuously monitor scheduled and called fires to ensure that the appropriate system/munitions effects, quantity of fire, and responsiveness requirements are being met.

Both near- and long-term development programs in NSFS technology will produce a more robust and reliable capability for the support of LF operations OTH. Older 5-inch guns, lengthened and refitted for advanced munitions, remain as staple weapons. The navalized weapons previously used ashore (rockets, missiles, and guns) will offer even greater ranges and capacities.

AIR FIRES PLANNING

All aircraft entering and operating in the LPA must adhere to control measures established by CATF and CLF.

Control of Air Fires

Amphibious Tactical Air Control System (ATACS)

In an amphibious operation, a single coordinated tactical air control system controls and coordinates all air operations in the LPA and any other assigned area of responsibility. ATACS provides the organization and equipment to plan, direct, and control tactical air operations within the assigned areas and to coordinate as required with joint and theater air control systems.

Tactical Air Command Center/Tactical Air Direction Center

The TACC is the primary air control agency within the LPA and other designated areas of responsibility of the ATF. Normally established onboard the flagship of the ATF, the TACC controls air support and AAW functions. If two or more air control agencies operate in the areas of responsibility, they are designated as TADCs under the OPCON of the TACC. These TADCs carry out functions as delegated by the TACC, as prescribed by CATF or CLF. The TACC has five functional sections: the air traffic control section (ATCS), the air support control section (ASCS), the helicopter coordination section (HCS), the AAW section (AAWS), and the plans and support section (PSS). Those sections most involved in providing air fire support are the ATCS, ASCS, and HCS (for attack helicopters). The TACC coordinates all air operations with the SACC to deconflict with other supporting arms actions.

Helicopter Direction Center (HDC)

The HDC, also located on the flagship, coordinates all helicopter and assault support aircraft operations with the TACC.

Landing Force Tactical Air Command Center and Tactical Air Direction Center

Landing force TACC and TADC functions afloat are accomplished by providing personnel to the Navy centers during periods when CATF is the supported commander and by providing the officers in charge during periods when CLF is the supported commander. A separate landing force TADC may operate at any time, executing specified functions under the TACC. Operations ashore may require landing a TADC and even a TACC, depending on CLF requirements and responsibilities. In that case, the Marine Air Command and Control System (MACCS) operates ashore as provided by doctrine.

Direct Air Support Center

The DASC accompanies the GCE FSCC ashore, and provides essential coordination of CAS, assault support, and some air defense and reconnaissance functions. It also coordinates the assignment of aircraft to terminal control agencies in the LPA.

Employment of Offensive Air Support

OAS for the landing force may be close to or beyond the fire support coordination line, immediate or planned, and neutralizing or destructive. The amount of OAS used will depend on the size and scope of the operation, capabilities of the enemy, and the commander's concept of the operation. In concert with other supporting arms, air support must be tailored to meet the commander's requirements.

Principal considerations for any air support are the concept of operation and the commander's intent. Among many factors affecting the commander's concept of air support will be:

- Aircraft availability
- Air superiority
- Weather
- Enemy antiair capabilities

In the concept for amphibious operations, the key orientation for air support will be the planned maneuver of the assault force from the ships to the objectives. Once the degree of OAS has been determined, the landing force ACE commander will plan how to employ strike aircraft available from all sources: theater, carrier support, and landing force. The planning will include both preassault and assault phases, as well as provisions for continuing operations after the amphibious operation terminates.

Deck, ground, and airborne alerts will provide key responses to landing force requirements and supplement the planned air fires as required. Although most OAS operations are planned, a certain element of the available strike force must be prepared for opportune or emergency employment. As the operation unfolds, targets emerge that threaten the landing force or ATF or present fleeting opportunities to inflict damage on the enemy. To destroy or neutralize such targets, aircraft are placed on alert status on flight decks of the ATF and CVBG, ashore in FARPs or at ground bases near the LPA, or in designated holding points in the air. Maintaining an airborne alert will require numerous aircraft and/or extensive in-flight refueling to ensure that adequate numbers of aircraft are on station with sufficient combat flying time available for support missions. A preferred method in the ATF will be the use of deck alert V/STOL aircraft, linked by cable to the command and control system for situational awareness and immediate tasking.

Air Fires Planning

Specific air targeting requirements are covered in detail in individual aircraft tactical manuals. While planning for the OAS portion of the amphibious assault, it is important to remember that additional mission requirements will limit the numbers of available OAS aircraft. Many of these missions occur in advance of the assault and are meant to shape the battlespace, gain air superiority, defend the ATF or JTF, and gather intelligence. Some of these actions may be continuous throughout the amphibious operation. Although these missions are part of the overall ATF effort, they are at a level beyond that of assault fire support and will not be discussed in detail in this chapter. These missions may, however, reduce the number of sorties available for the escort and CAS functions that directly support the assault phase. For this reason, retaining landing force control of as many OAS sorties as possible is a critical requirement of the planning process. Such planning also maintains the combined-arms array of the landing force.

Once the number of sorties in support of the ATF and landing force has been determined, the landing force staff must plan the necessary sortie rate. Sortie rates will be greatly affected by deck availability. Every effort should be made to physically separate the OAS aircraft from the assault support aircraft to maximize the efficiency of the ships and their ability to generate sorties. This sortie regeneration capability is a critical aspect of the amphibious assault. Matching the ordnance to the mission requests will be the responsibility of the ACG and lower echelon control systems, but air planners must estimate the numbers and types of aircraft and the appropriate ordnance to ensure that the air tasking order generated by the JFACC has the requisite flexibility to meet the landing force's demands.

The situational awareness of the attack aviation will come from cockpit systems in the aircraft, whether in a waiting “stack” airborne or through cable connection while on pad alert onboard an assault ship. The use of the ABCCC, which carries command and fire support personnel, will extend such awareness across the LPA to the ground CPs and ships offshore alike.

Air Fires Basic Plan Format

The plan for air fires appears as the air fire support tab to Appendix 12 (Fire Support) to Annex C (Operations) of the basic OPLAN of CATF, CLF, the advance force commander (if advance force operations are planned), and maneuver force commanders. It is largely informational rather than directive. Certain instructions, however, are normally given in the plan. The task organization for air support is presented in the form of arrangements of sorties per the ATO.

- **Paragraph 1, General Situation** This paragraph provides appropriate details of the general situation that bear particularly on aspects of air fires.
- **Paragraph 2, Concept.** This paragraph sets forth the guidance for subordinate units to compile initial requests for air fires, to be incorporated into succeeding higher headquarters plans.
- **Paragraph 3, Conduct of Air Fire Support.** This paragraph provides a summary of the overall intended fire support effort, including preassault, assault, and postassault periods. Priorities are assigned to control agencies, and control measures are identified.
- **Paragraph 4, Administration and Logistics.** This paragraph details initial target reporting, BDA, and other instructions. Any limitations or instructions dealing with ordnance will be covered as well.
- **Paragraph 5, Command and Signal.** This paragraph details peculiarities of OAS communications and refers to the communications annex and/or the enclosure on OAS communications.
- **Enclosures and Tabs.**

Air Fires in Support of Preassault Operations

Planning Considerations

The planning considerations confronting the major commanders are:

- CLF is responsible for the preparation of landing force requirements for NSFS and air support, pre-H-hour/L-hour seizure of supporting positions, demonstrations, and reconnaissance. If pre-H-hour/L-hour landings or demonstrations are to be conducted, CLF will direct the landing group commander of that force to report to the commander of the advance force for planning.
- CATF is responsible for consolidating the requirements of the landing force with those of the other elements of the ATF.
- If employed, an advance force commander is responsible for the detailed planning for the operations conducted by his force, including an air fire support plan to support advance force operations.

Execution

Pre-H-hour/L-hour fires are the preliminary fires executed before ships, craft, and aircraft begin the assault phase (arrive in the transport area). The emphasis in this phase will be on destruction, harassment, interdiction, and neutralization fires in support of preassault operations.

Air Fire Support in Support of Ship-to-Objective Maneuver

In this phase, emphasis shifts from the ATF in general to the landing force. Of primary importance will be the close supporting fires (neutralization and destruction) delivered immediately in close support of maneuvering surface and/or vertical assault task forces. In addition, fires will be planned to isolate the LPPs and landing sites and to neutralize and/or destroy targets that can directly influence the scheme of maneuver. Examples of such targets include antiair defense, fire support, command and control, mobile forces, and lines of communications. In addition, armed reconnaissance of routes and LPPs of the assaulting task forces and their escort while air- or waterborne will require priority action.

CATF assumes responsibility for the coordination, control, and integration of air operations on his arrival in the LPA. The supporting carrier battle group commander may continue technical control and execution of details. Details requiring careful and constant supervision during the execution of fires in support of STOM are:

- Because the fires occur during the most critical period, the schedule of fires must be carefully supervised and integrated during execution. Casualties, deviations from original maneuver plans, and unforeseen events must be met with prompt and effective action.
- Provisions must be made for prompt relief of alert units that are low on ammunition or fuel.
- The supporting arms coordination node must continuously monitor scheduled and called fires to ensure that the appropriate system/munitions effects, quantity of fire, and responsiveness requirements are being met.
- Forward basing of V/STOL strike aircraft and attack helicopters offers a flexibility in air fire support. The rapid response and high sortie rate must be balanced by the potential for misuse of sorties and attendant logistical burdens. Generally, forward basing in the form of a designated aviation-capable ship operating in the near-the-shore area (assuming a manageable mine threat) will reap dividends. Shorebasing usually carries security and logistical burdens that are not desired by the commander but that can be accommodated in well-defended areas, such as the vertical assault landing area.

Appendix E . Glossary

AAAV	advanced amphibious assault vehicle
AAV	assault amphibious vehicle
AAAV(C)	command-variant AAAV
AAAV(P)	personnel-variant AAAV
AAW	antiair warfare
AAWS	AAW section
ABCCC	airborne battlefield command and control center
AC/S	assistant chief of staff
ACE	aviation combat element
ACG	amphibious control group
AE	assault echelon
AF	amphibious force
AFIC	Amphibious Force Intelligence Center
AFL	assault flight leader
AFOE	assault follow-on echelon
AMC	air mission commander
ARG	amphibious ready group
ASCS	air support control section
ATACS	amphibious tactical air control system
ATCS	air traffic control section
ATF	amphibious task force
ATFIC	ATF intelligence center
ATO	air tasking order
AVLV	armored vehicle-launched bridge
BDA	battle damage assessment
BLT	battalion landing team
BSA	beach support area
C2	command and control
C3	command, control, and communications
C4	command, control, communications, and computers
C4I	command, control, communications, computers, and intelligence
CA	combat assessment
CAP	close air support
CAS	close air support
CASVAC	casualty evacuation
CCIR	commander's critical information requirement
CE	command element
CIC	combat information center
CINC	commander in chief
CJTF	commander, joint task force
CLF	commander, landing force
CLZ	cushion landing zone
COA	course of action

COC	combat operations center
COE	common operating environment
COG	center of gravity
COMMARFOR	Commander, Marine Corps Forces
COMSEC	communications security
CONOPS	concept of operations
CONUS	continental United States
CP	command post
CSS	combat service support
CSSA	CSS area
CSSD	CSS detachment
COMSEC	communications security
CSSE	CSS element
CVBG	carrier battle group
D3A	decide-detect-deliver-assess
DAS	deep air support
DASC	direct air support center
DII	Defense Information Infrastructure
DMS	Defense Message System
DOD	Department of Defense
DON	Department of the Navy
DP	decision point
DRSN	Defense Red Switched Network
DSN	Defense Switched Network
DZ	drop zone
EFDS	Expeditionary Force Development System
EFST	essential fire support task
EFL	escort flight leader
EIC	engagement integration center
ELINT	electronic intelligence
EMCON	emission control
EMW	expeditionary maneuver warfare
EOD	explosive ordnance disposal
ERGM	extended range guided munitions
ERP	en route rendezvous point
EW	electronic warfare
FAC	forward air controller
FAC(A)	forward air controller (airborne)
FARP	forward arming and refueling point
FDC	fire direction center
FFC	force fires coordinator
FFCC	force fires coordination center
FIE	fly-in echelon
FMFM	Fleet Marine Force manual
FSC	fire support coordinator

FSCC	fire support coordination center
FSE	fire support element
GCCS	Global Command and Control System
GCCS-M	Global Command and Control System-Maritime
GCE	ground combat element
GI&S	geospatial information and services
GPS	global positioning system
GTN	Global Transportation Network
HA	holding area
HCS	helicopter coordination section
HDC	helicopter direction center
HF	high frequency
HLZ	helicopter landing zone
HML/A	Marine light/attack helicopter squadron
HMMWV	high-mobility multipurpose wheeled vehicle
HST	helicopter support team
HUMINT	human intelligence
I&W	indications and warning
IMC	instrument meteorologic conditions
IMINT	imagery intelligence
INS	inertial navigation system
IO	information operations
IP	initial point
IPB	intelligence preparation of the battlespace
ISR	intelligence, surveillance, and reconnaissance
IR	intelligence requirement
ISB	intermediate staging base
JCS	Joint Chiefs of Staff
JFACC	joint force air component commander
JFC	joint force commander
JFLCC	joint force land component commander
JFMCC	joint force maritime component commander
JMCIS	Joint Maritime Command Information System
JMCOMS	Joint Maritime Communications System
JOA	joint operations area
JOPES	Joint Operation Planning and Execution System
JSOTF	joint special operations task force
JTF	joint task force
kts	knots
LAR	light armored reconnaissance
LAV	light armored vehicle
LCAC	landing craft air cushion
LCU	landing craft, utility
LCX	landing craft, utility (next generation)
LF	landing force

LFOC	landing force operations center
LOC	line of communications
LOD	line of departure
LOGAIS	logistics automated information system
LOI	letter of instruction
LPA	littoral penetration area
LPP	littoral penetration point
LPS	littoral penetration site
LPZ	littoral penetration zone
LZ	landing zone
MACCS	Marine air command and control system
MAFC	MAGTF all-source fusion center
MAGTF	Marine air-ground task force
MCAC	multiple craft air cushion
MCD(H)	V/STOL maintenance collection detachment
MCD(W)	waterborne maintenance collection detachment
MCDP	Marine Corps doctrinal publication
MCM	mine countermine
MCPP	Marine Corps Planning Process
MCWP	Marine Corps warfighting publication
MEB	Marine Expeditionary Brigade
MEF	Marine Expeditionary Force
MEF (FWD)	MEF (Forward)
METT-T	mission, enemy, terrain and weather, troops and support available-time available
MEU (SOC)	Marine Expeditionary Unit (Special Operations Capable)
MOOTW	military operations other than war
MPF	maritime prepositioning force
MPS	maritime prepositioning ships
MUOS	Mobile User Objective System
NAVELSF	Naval Expeditionary Logistics Support Force
NBC	nuclear, biological, and chemical
NCAPS	Naval Control and Protection of Shipping
NCO	noncommissioned officer
NEO	noncombatant evacuation operation
NGLO	naval gunfire liaison officer
nm	nautical miles(s)
NSF	naval surface fires
NSFS	naval surface fire support
NSFO	NSF officer
NWP	naval warfare publication
OAS	offensive air support
OMFTS	operational maneuver from the sea
OPCON	operational control
OPLAN	operation plan

OPORD	operation order
OPP	off-load preparation party
OPSEC	operations security
OTH	over the horizon
PIR	priority intelligence requirement
PLI	position location information
PLRS	Position Location Reporting System
POE	port of embarkation
prifly	primary flight control
PS/HD	port security and harbor defense
PSS	plans and support section
PSYOP	psychological operations
RLT	regimental landing team
ROE	rules of engagement
RP	rendezvous point
RRF	Ready Reserve Force
SAC	supporting arms coordinator
SACC	supporting arms coordination center
SAM	surface-to-air missile
SAR	search and rescue
SARC	surveillance and reconnaissance center
SEAD	suppression of enemy air defenses
SEAL	sea-air-land team
SIGINT	signals intelligence
SIPRNET	SECRET Internet Protocol Router Network
SOF	special operations forces
SOP	standing operating procedure
SPMAGTF	special purpose MAGTF
SPOE	seaport of embarkation
STOM	ship-to-objective maneuver
SW	shallow water
SZ	surf zone
TA	terrain avoidance
TAC (A)	tactical air coordinator (airborne)
TACC	tactical air command center
TACLOG	tactical-logistical group
TACMS	Navy Tactical Missile System
TACON	tactical control
TADC	tactical air direction center
TAOC	tactical air operations center
TAV	total asset visibility
TBFDS	tactical bulk fuel dispensing system
TENCAP	Tactical Exploitation of National Capabilities Program
TF	terrain following
TFE	transportation feasibility estimators

TIC	target information center
TOA	tactical operating area
TPFDD	time-phased force and deployment data
TRAP	tactical recovery of aircraft and personnel
TSS	target selection standards
TTP	tactics, techniques, and procedures
UAV	unmanned aerial vehicle
ULN	unit line number
UNAAF	Unified Action Armed Forces
V/STOL	vertical/short takeoff and landing
VGAS	vertical gun for advance ships
VMA	Marine attack squadron
VMC	visual meteorological conditions
VSW	very shallow water