MCRP 3-10C.1

# Amphibious Combat Vehicle Company


## U.S. Marine Corps



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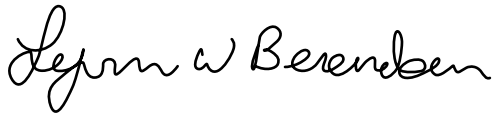
## FOREWORD

Marine Corps Reference Publication (MCRP) 3-10C.1, *Amphibious Combat Vehicle Company* provides a foundational basis for employment and sustainability within an assault amphibian structure while supporting a mechanized infantry company. This document is designed to be updated continually from within the assault amphibian community and with feedback from key stakeholders in the ground combat element. Updates will be incorporated as the amphibious combat vehicle (ACV) platform matures, additional variants are fielded, and concepts of employment are refined using lessons learned and after-action reports from exercises (including Service-level training exercises) and forward-deployed units.

The ACV offers a modern ship-to-objective amphibian platform with enhanced mobility, survivability, and lethality attributes to match near-peer threats. The fundamental objective of this MCRP is to support assault amphibian and infantry unit leaders as they conceptualize and develop planning products and employ an assault amphibian unit of ACVs in various environments. It provides the infantry unit leaders with tactics and techniques to exploit infantry and ACV capabilities, reduce vulnerabilities, and enable the unit to succeed on the battlefield.

This publication supersedes MCRP 3-10C.1, *Amphibious Combat Vehicle Employment*, dated 8 July 2022.

Reviewed and approved this date.



L.W. BERENDSEN
Colonel, United States Marine Corps
Commanding Officer, Assault Amphibian School

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# CHAPTER 1.
# ASSAULT AMPHIBIAN FUNDAMENTALS

The mission of the assault amphibian (AA) battalion is to conduct amphibious and mechanized operations to support the ground combat element (GCE) with maneuver, fires, force protection, and command and control (C2). The AA battalion and subordinate units—

- Provide task-organized forces to transport assault elements, selected equipment, and supplies ashore in mechanized ship-to-shore movement and to conduct other combat support operations.
- Support amphibious operations, including participating in the planning, coordination, and execution of ship-to-shore, shore-to-shore, riverine, and other operations, as directed.
- Conduct offensive and defensive mechanized operations to support embarked infantry with armor protected firepower, communication assets, and mobility.
- Provide platforms and capability for establishing and maintaining tactical command and control of forces during amphibious and mechanized operations.

## ORGANIZATION

### Assault Amphibian Battalion

The AA battalion is a separate battalion organic to the Marine division. The AA battalion has the assets to mechanize one infantry regiment or parts of multiple regiments. In some cases, task organizations will rely on aggregation to fulfill this requirement, as equipment and manning capabilities vary based on assigned Marine divisions. The battalion or its subordinate units are attached to or placed in support of a GCE commander to provide ship-to-shore lift of the surface assault elements of the landing force. Once ashore, the battalion provides tactical mobility, firepower, and C2 capabilities to the supported force.

The AA battalion augments the AA company's organic logistical capability by providing personnel, medical, resupply, and field-level maintenance. Though primarily employed to mechanize the surface assault elements of a regimental landing team, with additional assets, AA battalion elements can be employed in a combat service support (CSS) role. Assault amphibian battalions are capable of planning and executing independent operations only after being heavily augmented with personnel and equipment based on METT-T analysis.

> NOTE: Organization for the AA battalions is currently in transition as new vehicles come on line over the next few years. The new formation is anticipated to be finalized by Fiscal Year 2028.

## ASSAULT AMPHIBIAN EMPLOYMENT EXPERTISE

Positioned near the division forward combat operations center (COC) or co-located with an infantry regiment, the AA battalion leverages its inherent expertise in AA employment and support requirements to enable the division or regiment's momentum. Assault amphibious battalion staff members (e.g., from the operations, logistics, and maintenance sections) closely coordinate with the division and regiment staffs to facilitate planning; anticipate and communicate requirements; and translate and coordinate operations, logistics, and maintenance considerations.

### Maintenance Operations

The AA battalion provides responsive maintenance support to its detached subordinate units. It employs robust organic maintenance capabilities, fielding contact teams and conducting critical field-level maintenance activities, such as preventive maintenance checks and services, discrepancy troubleshooting and repairs, parts fabrication and replacement, limited electronics maintenance and repair, and battle-damage assessment and repair.

***Maintenance Platoon.*** The maintenance platoon provides field-level maintenance, to include complete organizational and limited intermediate maintenance capabilities for the ACV family of vehicles and associated equipment. The maintenance platoon operates and maintains the battalion's two recovery teams, which are equipped with Assault Amphibious Vehicle-Recovery 7 (AAVR7). During deployment, the maintenance section is task organized to the combat logistics battalion detachments and is on call for the AA unit.

### Logistics Operations

The AA battalion employs organic motor transport assets and general support to amphibious combat vehicles (ACVs) while coordinating with the supported regiment and the appropriate designated units in the logistics combat element (LCE). The battalion ensures flexible and responsive logistics support is provided to its detached subordinate units. The AA battalion's logistics trains often provide their own security when they augment LCE efforts to deliver personnel, fuel, and supplies to detached subordinate AA units.

### Headquarters and Service Company

The H&S company conducts functions associated with supporting and coordinating personnel, logistics, and training requirements for assigned personnel. The H&S company provides advice on the employment of ACVs as mobile aid stations and casualty evacuation vehicles.

### Assault Amphibian Company

Like the AA battalion, the AA company has the assets to mechanize one infantry company, combat support, or combat service support (CSS) unit (e.g., task-organized within a larger force participating in a foreign humanitarian assistance [FHA] mission or attached to a battalion landing team [BLT]). The AA company commander's primary duties include directing the company's organic maintenance and logistics support and advising the supported commander on employing ACVs. During amphibious operations the AA company commander is in control from ship-to-shore and shifts controls when forces land.

The supported unit and AA units are task-organized to create a single tactical combat unit. The AA company commander and the subordinate platoon commanders work with their supported unit counterparts to achieve unity of command and effort according to the supported unit commander's concept of operations. The AA company's amphibious combat vehicle-command and control (ACV-C), along with its support ACV-P, are employed by the supported unit headquarters to facilitate command and control. The AA company's limited CSS capabilities, augmented by AA battalion resources, provide essential administrative and logistics support.

The AA company is generally organized into three ACV-P platoons and a headquarters platoon, which has the assets to provide lift for one infantry company. Based on the mission, the supported commander could be from a combat, combat support, or CSS unit.

### Assault Amphibian Headquarters Platoon

The vehicles that make up the company headquarters platoon support recovery efforts and assist in delivering ACVs to the maintenance collection point for repair. They also provide C2 capabilities to the supported unit, support the company logistics train, and provide local security to the AA company headquarters.

Headquarters platoon has six ACV-Ps, one ACV-C, and one AAVR7. The supported and AA company commanders and executive officers are co-located in the headquarters platoon to synchronize their efforts and surge to the point of friction as needed. The AAVR7's primary function is to support ACVs in the field, providing direct field support, maintenance, and recovery services. This includes recovering vehicles that are mired, damaged, or disabled, as well as performing repairs on the battlefield. The AAVR7 should always be accompanied by an ACV-P, providing security and lift for any crew or infantrymen with the down vehicle.

For ease of command and control, the supported commander is generally co-located with the AA company commander in the command vehicle. The AA company commanders and their staff situate themselves where they can best support the formation.

### Assault Amphibian Platoon

The AA platoon has the assets to mechanize one infantry platoon or similar size supported unit. The AA platoon commander occupies the vehicle commander hatch, thus filling the position of vehicle commander, and must train as part of the crew for gunnery and other collective tasks.

The supported unit leader is positioned in the commander's hatch. Platoon commanders serve as a focal point for rapid dissemination of the AA unit's tactical standing operating procedure (SOPs) to the supported unit leader. They also help the supported unit leader and AA platoon form a cohesive team. Infantry can direct ACV fires or target precedence, while the AA leader maneuvers the vehicle to best support the operation. See Figure 1-1 for ACV crew positions.

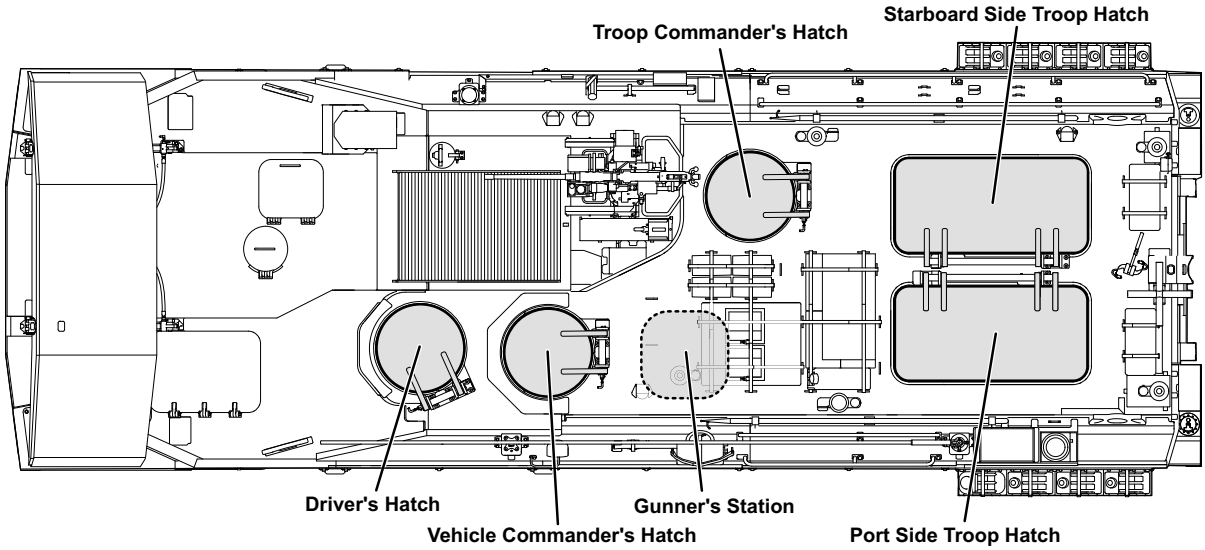



**Figure 1-1. ACV Crew Positions.**

### Assault Amphibian Section

The AA platoon is organized into two sections (Alpha and Bravo), with two ACV-Ps in each section. Alpha section consists of the platoon commander and staff sergeant's vehicle. Bravo section consists of the platoon sergeant and sergeant's vehicle. Typically, ACVs move as a section on the battlefield.

### Assault Amphibian Crew

The ACV-P crew generally consists of three Marines (ACV commander, vehicle driver, and gunner) who primarily support a reinforced infantry squad or similar size supported unit. The ACV commander is responsible for the ACV's employment and serves as the subject matter expert to the senior embarked unit leader. Vehicle commanders are responsible for the tactical employment of the vehicle, maintenance, and readiness of their ACVs.

## TASK ORGANIZATION

The decentralized nature of an AA unit allows supported unit commanders the flexibility to task organize the commander's forces based on the situation and mission analysis without sacrificing the mobility and direct fire support the vehicles provide to the supported units.

To maximize the capabilities of ACVs and their crews, the supported unit should fully integrate the AA unit, establish close working relationships at all levels, and jointly develop an SOP that is understood, adhered to. and rehearsed to maximize the capabilities of the mechanized infantry team. Employed as an integrated team, the level of success achieved largely depends on the level of cooperation and trust established at the lowest levels between ACV crews and their embarked Marine infantry elements.

### Task Organizational Fundamentals

The process of task organization distributes available units to a supported headquarters by establishing various command and support relationships. The following fundamentals apply to task organization:

- Flexibility. Task organization varies with the situation; however, it must also be prepared to meet new requirements caused by rapidly changing events.
- Unity of Command. Mechanized forces typically operate at a distance and tempo that preclude the centralized control of supporting units by the parent headquarters. To ensure positive control and unity of effort, supporting and supported commanders should position themselves where they can best command and control their forces to meet the commander's intent and successfully accomplish the mission. Command and support relationships must provide the commander maximum flexibility to accomplish the mission. To develop familiarity, teamwork, and trust within subordinate units, the supported commander should avoid making frequent changes to the task organization whenever possible.
- Self-Sufficiency. Subordinate units are highly mobile and can operate at considerable distances from one another. The supported commander should assign sufficient logistical assets to accomplish the mission.
- Tactical Integrity. To facilitate command and control, the supported commander should maintain the tactical integrity of units when task organizing. Maintaining the tactical integrity of combat support units is secondary to the tactical integrity of combat units.
- Cross-Attachment. Specific task organizations are often formed by an AA unit (usually at the battalion or company level) attaching a subordinate unit to an infantry unit and the infantry unit attaching one of its subordinate units to the AA unit headquarters, as described in the following sections.

Assault amphibian units might be task-organized with other combat and combat support units into a task force or a company, battalion, or regimental landing team. A landing team (company- through regimental-level) is a task-organized, combined-arms force, based on a core infantry unit, reinforced with any necessary combination of combat and combat support assets required by the mission. Refer to Marine Corps Warfighting Publication (MCWP) 3-10, *MAGTF Ground Operation* for further information on classifications.

## COMBAT SUPPORT TO A MECHANIZED TASK FORCE OR LANDING TEAM

An AA unit supporting a mechanized task force or landing team provides armor-protected mobility to the combat service support. In carrying out their mission of supporting the infantry, AA units typically work in conjunction with antiarmor, mortar, artillery, combat engineer, heavy machine gun, and reconnaissance units, along with naval surface fire support, antiaircraft support, and air support. These combat support elements could be attached, in general support or direct support, or organic to the supported unit. Support comes from the GCE and other elements of the Marine air-ground task force (MAGTF). The types of combat support provided depends on mission, enemy, terrain and weather, troops and support available—time available (METT-T) considerations.

## OPERATIONAL EMPLOYMENT CONSIDERATIONS

When maneuvering forces, commanders should consider dispersion, speed, possible immediate actions, and their location and ability to effectively control the unit. During movement, commanders should—

- Use terrain to mask movement and noise to avoid exposure to the enemy.
- Use supporting arms to suppress enemy antiarmor fires.
- Move quickly out of the impact area when encountering enemy indirect fire.
- Change the ACV's primary position after engaging the enemy.

## COMMAND AT THE TACTICAL LEVEL

The ACV company commander and supported company commander should be co-located; the ACV, infantry platoon commanders, and platoon sergeants should also be co-located. The ACV commanders should be part of the planning process to ensure the ACV capabilities are maximized and support the scheme of maneuver.

When the supported unit is embarked and dependent on the ACVs for amphibious movement, the ACV unit commanders should have tactical control to ensure the safe and tactical movement of the force in support of the scheme of maneuver. Once on land, the supported unit has control, and the ACV company commander or platoon commander advises on how to best employ the vehicles. If there is a change to the scheme of maneuver, supported commanders need to work with the ACV commanders to make updates on the move. If required to conduct danger area crossings, ACV commanders direct personnel to perform the appropriate drill (intervisibility or immediate action).

The ACV unit commander is responsible for providing recommendations regarding the unit's tactical employment, operational safety, and logistical support requirements.

When personnel are dismounting during the attack, ACVs move in support of the scheme of maneuver with infantry Marines able to direct ACVs direct fire. The vehicle commanders should be allowed to move the vehicles as needed to ensure gun target lines are not affected by dismounts and to make the most of cover and concealment. To synchronize efforts and minimize friendly fire incidents requires a well-thought-out and robust communication and signal plan between ACVs and dismounts.

## OPERATIONAL CAPABILITIES AND LIMITATIONS FOR THE SUPPORTED COMMANDER

The ACV provides the infantry with cross-country mobility and water transit capability not found in other armored vehicles. The ACV provides heavy machine gun fire from a stabilized platform. Because ACVs do not have thick armor, they are not employed as infantry fighting

vehicles but rather as maneuver-enabling assets that deliver overmatch effects in support of infantry-centric operations. Additionally, the ACV interior preserves combat power by providing protection from the elements, allowing forces to conduct operations during inclement weather.

The ACV has limitations in open water and surf. The ACV unit leaders conduct surf observation (SUROB) reports to ensure a safe transition from shore to ship. The ACV unit depends on the Navy and other forces to determine the surf conditions for shore-to-ship operations. MCRP 2-10.3, *Naval Amphibious Surf Manual* provides further information on SUROB reports and employment limitations.

Each ACV, particularly the ACV-C variant, provides various power-amplified radios or connections for radio interfaces for the AA unit and the supported commander to use. Capabilities are further described in Chapter 2.

The ACV unit requires planning to align resupply with the operational plan. While mileage and terrain dictate fuel usage, a typical planning factor is that fuel is needed every three days. The ACV can receive fuel from air-delivered ground refueling.

Because of the ACV's size, route selection that includes bridges and low-hanging obstacles requires special attention be given to trafficability. Vehicle infantry integration is critical for increasing survivability. The ACV crew members are trained to use micro-terrain, and infantry should be familiar with identifying vehicle positions. Trafficability considerations are discussed in Chapter 5.

# CHAPTER 2.
# COMMAND AND CONTROL

Assault amphibian operations are fast paced and characterized by uncertainty and fleeting tactical opportunities, which requires rapid and decisive action. Success of operations in a high-tempo environment depends on the effective and responsive use of command and control. The AA units must rely on mission tactics, which acknowledges the turbulence and uncertainty of war. Mission command empowers subordinate commanders to execute mission-type orders with disciplined initiative within the commander's intent, rather than missing opportunities by requiring a higher level of certainty. To gain situational awareness of operations, both the AA and infantry commanders must position themselves where they can best develop their understanding of the unfolding tactical operations and coordinate efforts. Mounted activities typically cover large geographic areas that pose significant C2 challenges. To further complicate the issue, both the supported commander (the commander having primary responsibility for all aspects of a task assigned) and supporting commanders (a commander who provides actions and other directed support to a supported commander to overcome challenges, keeps pace with operations, coordinates with the supported commander, and mitigates the effects of terrain and dispersion. The AA units must have a highly mobile command and control structure. The ACV-Cs provide the commanders and the command group a capability to perform all staff actions.

## COMMAND RELATIONSHIPS

Command and support relationships should provide for cooperative planning between the supported commander and the AA commander to accomplish the specified mission. Both commanders must develop unit SOPs inherent to successful mechanized operations. To ensure the proper employment of the AA unit, the AA unit commander or special staff officer must be involved with planning operational phases involving waterborne and ground movement. Once the commander's intent is established, the AA unit commander or special staff officer will provide valuable guidance on the maneuver and employment of the AA unit, based on its capabilities and limitations and in relation to an analysis of the METT-T. The AA units can be assigned to provide any combination of command or support relationships as outlined in Joint Publication (JP) 1 Vol 2, *The Joint Force*. Tables 2-1 and 2-2 describe the C2 relationships, respectively.

**Table 2-1. Command Relationships.**

| Type | Description |
|---|---|
| Organic | Assigned to and forming an essential part of a military organization as listed in its table of organization for the Army, Air Force, and Marine Corps and are assigned to the operating forces for the Navy (see JP 1 Vol 2). |
| Attached | Refers to the relatively temporary placement of units or personnel in an organization (see MCWP 3-30, *Marine Air-Ground Task Force Command and Control*). |
| OPCON | The authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission (see JP 1 Vol 2). |
| TACON | The authority over forces that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned (see JP 1 Vol 2). |
| ADCON | Direction or exercise of authority over subordinate or other organizations in respect to administration and support (see JP 1 Vol 2). |
| Supporting | A support relationship represents a command authority. A common senior commander typically establishes a support relationship between subordinate commanders when one organization aids, protects, complements, or sustains another force (see MCWP 3-30). |
| DIRLAUTH | That authority granted by a commander (any level) to a subordinate to directly consult or coordinate an action with a command or agency within or outside of the granting command (*DoD Dictionary*). |
| **Legend** | |
| ADCON | administrative control |
| DIRLAUTH | direct liaison authorized |
| FM | field manual |
| OPCON | operational control |
| TACON | tactical control |

**Table 2-2. Support Relationships.**

| Type | Description |
|---|---|
| Direct Support | A mission requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for action (see MCWP 3-30).<br>For example, the BLT is responsible for all administrative and logistic support to the AA unit. |
| General Support | Support given to the supported force as a whole and not to any particular subdivision thereof (see MCWP 3-30). |
| General Support—Reinforcing | The artillery mission of supporting the force as a whole and of providing reinforcing fires for other artillery units (see JP 3-09.3, *Joint Fire Support*).<br>A support relationship assigned to a unit to support the force as a whole and to reinforce another similar-type unit (see FM 3-0, *Operations*). |
| Reinforcing | A support mission in which the supporting unit assists the supported unit's mission. Only like units, such as artillery supporting artillery, intelligence supporting intelligence, or armor supporting armor, can be given a reinforcing or reinforced mission (see FM 3-0). |
| **Legend** | |
| FM | field manual |

### Communications

Communications are critical to facilitating effective command and control. This fact is further heightened by the operational range of AA units. In addition, AA units have the full range of available communications means described in the following sections.

***Radio.*** Assault amphibian operations heavily depend on radio communications as the primary means of sharing information. The AA units strive to use various methods, such as emission control (EMCOM) procedures and primary, alternate, contingency, and emergency (PACE) plans, to develop resilient and redundant communication plans while minimizing detection. The AA units select the lowest amplitude power setting possible to minimize their electronic signatures. This is particularly important when operating near other units or in a stationary position, such as assembly areas, forward arming and refueling points (FARPs), or near command facilities. Once a unit comes in contact with the threat forces, the primary means of communication is frequency modulation voice. To facilitate command and control, the capabilities and limitations of radio communications, equipment, and the spectrums they use must be considered. The primary spectrum used by the ACV-P is very high frequency (VHF); however, the ACV-P is also capable of high frequency (HF), ultra-high frequency (UHF), and satellite communications (SATCOM). The purpose, capabilities, limitations, and employment considerations for each are described in the following sections.

***High Frequency.*** The expansive geographic areas that typically characterize AA operations make HF a critical communications capability. Using HF radios provides tactical elements with standalone, terrain-independent, robust communications for line-of-sight (LOS) and beyond-line-of-sight (BLOS), secure voice, and data communications. An HF radio provide long-distance, wide-area, fixed or on-the-move, ground, and ground-to-air communications. Additionally, an HF radio, terrestrial BLOS system requires an antenna design and capabilities to support local requirements.

***Very High Frequency.*** Very high frequency signals mainly propagate by LOS. The VHF transmitters could be manpack-, vehicle-, or airframe-mounted units with power ranging from 0.25 watts in a manpack configuration to 120 watts in a multichannel, amplified system. Ground stations use VHF LOS for short range (approximately 25–50 miles, directly) or long-haul communications using LOS retransmission. Uses include short-range, frequency modulation, combat radio networks radar, radio navigation, ground-to-air communications, and wideband LOS multichannel systems.

Before operations, radio checks must be conducted between handheld and vehicle-mounted radios. Vehicle radios need to be on low power to prevent “over-shooting” handheld radios that are nearby.

Communications in urban terrain are complicated by both natural and man-made features blocking the line-of-sight. Power lines can also interfere with VHF radios, as they generate electromagnetic interference that can disrupt radio signals.

***Ultrahigh Frequency.*** An ultrahigh frequency range can provide short-range and long-haul communications. In the UHF band, direct wave is used for transmissions from 15–100 miles. Communications are limited to a short distance beyond the horizon. Lack of static and fading in

these bands makes LOS reception satisfactory. Directional antennas can focus the beam of radio frequency energy, increasing the signal intensity over long distances. Directional antennas enable satellite transmissions over thousands of miles, depending on altitude, power, and configuration. Ultrahigh frequency systems, which play an important role in network-centric warfare, are Link 16, Force XXI Battle Command, brigade and below, and high-capacity LOS. These systems provide the joint Service communities with ground-to-air, ship-to-shore, and multinational communications capabilities.

***Ultrahigh Frequency Military Satellite Communications.*** The DoD's primary means of BLOS communications-on-the-move for tactical users is UHF military SATCOM. Its primary use is command and control by employing voice and data transmission. The next generation mobile user objective system (MUOS) wideband code division multiple access operates over UHF military SATCOM and is capable of global satellite relay communications.

For more information regarding radio communications, refer to MCRP 3-30B.3, *TAC Radios*.

### Networks

***Battalion Command Network.*** The battalion command network is primarily used for tactical communications. The AA battalion commander uses it for control.

***Battalion Logistics Network.*** A battalion logistics network could be established for coordinating and reporting administrative and logistic requests and reports.

***Company Command Network.*** The AA company commander uses the company command network as a means of coordinating support and controlling subordinate AA units. The company command post, platoon commanders, and AA maintenance and recovery elements attached to or in support of the company generally use this network. It is strongly encouraged this network becomes the mechanized-infantry company network, allowing for coordination between the AA and infantry leadership. Additionally, the use of power amplified radios provides the infantry long-range communications that handheld radios lack. The supported unit commander is given two radios to configure as deemed necessary.

***Platoon Network.*** Each platoon is designated a platoon network. It is strongly encouraged that the platoon network becomes the mechanized-infantry shared network, allowing for coordination between the AA platoon and the infantry platoon leadership. Additionally, the use of power amplified radios provides the infantry long range communications that handheld radios lack. This helps build situational awareness and facilitates communication when the supported unit is dismounted and communicating with the ACV crew.

## EMISSIONS CONTROL AND COMMUNICATION RESILIENCY

### Emission Control

The control of friendly electromagnetic emissions is essential to successfully defend against enemy attempts to destroy or disrupt US communications. Emission control is, "the selective and controlled use of electromagnetic, acoustic, or other emitters to optimize C2 capabilities while minimizing, for operations security: a. detection by enemy sensors; b. mutual interference among

friendly systems; and c. enemy interference with the ability to execute a military deception plan" (JP 3-85, *Joint Electromagnetic Spectrum Operations*). When operating radios, exercise emission control. Only turn transmitters on when needed to accomplish the mission. Enemy intelligence analysts look for patterns they can turn into valuable information. Inactive friendly transmitters do not provide the enemy with usable intelligence. Emission control can be total; for example, the commander can direct radio silence whenever desired. Radio silence is the status on a radio network in which all stations are directed to continuously monitor without transmitting, except under established criteria.

Keep power output to a minimum, transmissions to 20 seconds absolute maximum (15 seconds maximum is preferred), and transmit only mission-critical information. Good EMCON makes using communications equipment appear random and is consistent with electromagnetic protection practices. This technique alone does not eliminate the enemy's ability to find a friendly transmitter; but when combined with other electronic protection techniques, it makes locating a transmitter more difficult (see Table 2-3). Refer to Army Techniques Publications (ATP) 06-02.53, *Techniques for Tactical Radio Operations* for further information.

**Table 2-3. Example EMCON Techniques and Procedures.**

| Techniques and Procedures | |
|---|---|
| Minimize duration and frequency of radio transmissions.* | Use SATCOM information on these practices. |
| Use appropriate power settings. * | Use HF transmissions. |
| Plan radio messages. * | Use electronic counter-countermeasures. |
| Use electronic terrain masking.* | Train while employing radio silence. |
| Establish and enforce a PACE communication plan. *(see Radios). | Ensure electronic equipment is properly grounded and has shield cables. |
| Use remote antennas. | Train on land navigation (without GPS). |
| Use brevity codes and pro-word execution matrices. | Set radar cueing cycles. |
| Use secure landlines. | Execute survivability moves. |
| Use directional antennas. | Ensure electronic equipment is properly grounded and has shield cables. |
| Use LOS communications parallel to the forward line of own troops. | Understand the impact of terrain composition on emissions. |
| Use alternate means of communications for planning and preparations; use primary for execution. | Recognize communications jamming (reporting criteria). |
| Use data-burst transmissions. | Recognize GPS jamming (reporting criteria). |
| Mask with camouflage netting. | Recognize radar jamming (reporting criteria). |
| Use encrypted GPS. | Recognize satellite jamming (reporting criteria). |
| Note*: Emission control considerations should always be practiced, but leaders can elevate them as threats involving the electromagnetic spectrum are evaluated. | |

Properly conducted EMCON prevents the enemy from discovering and attacking the locations of friendly forces with electromagnetic warfare. When establishing EMCON best practices, it is important to adhere to the general categories and status criteria for EMCON levels. Based on the tactical situation, the commander can dictate the appropriate EMCON level to the platoon. Even

without guidance, AA commanders should implement EMCON measures within the unit. Table 2-4 captures the four EMCON levels and the general descriptive criteria associated with each level.

**Table 2-4. EMCON Conditions.**

| TACSIT and EMCON Modules | |
|---|---|
| **TACSIT 1** – The exact location of the strike group (unit) known to the enemy. | **EMCON Delta** – The first level with no emission restrictions, used during normal operations. |
| **TACSIT 2** – The location of the strike group (unit) known to the enemy. | **EMCON Charlie** – The second level, allowing ships (units) to transmit from mission-essential equipment. This level requires that any sensor unique to the vessel [unit] must be turned off to prevent identification or classification by adversaries. |
| **TACSIT 3** – The location of the strike group (unit)] unknown to the enemy. | **EMCON Bravo** – The third level, electronic emissions are limited further but some communications are still allowed. |
| No TACSIT equivalent. | **EMCON Alpha** – The fourth and most restrictive level. Employed when an operation requires complete silence, no emissions or radiations are permitted. |
| Note*: This table is patterned after the US Navy's tactical situation model. | |
| **Legend**<br>TACSIT tactical situation | |

## PACE Plan

In an environment where every transmission is potentially targeted, the PACE plan enables both mission success and survivability. The PACE plan (see Table 2-5) designates the order in which an element moves through available sharing of information methods until contact can be established with the desired distant element. To be effective, the PACE plan must be understood and rehearsed by every participant. The PACE plan is a communication plan that exists for a specific mission or task, not a specific unit, as the plan considers both intra- and inter- unit sharing of information. The unit leader's ability to exercise command and control during an operation can suffer when communication systems are not working properly or otherwise unavailable.

**Table 2-5. Example PACE Plan.**

| COMMUNICATION METHODS | COMMAND AND CONTROL | INTELLIGENCE | FIRES | SUSTAINMENT |
|---|---|---|---|---|
| **PRIMARY** | VHF (CMD NET) | VHF (INTEL NET) | AFATDS | VHF (A&L) |
| **ALTERNATE** | MUOS | JBCP | VHF (FIRES NET) | JBCP |
| **CONTINGENCY** | JBCP | MUOS | HF | MUOS |
| **EMERGENCY** | HF (DATA) | HF (DATA) | JBCP | HF (DATA) |

**Legend**

| | | | |
|---|---|---|---|
| A&L | administration and logistics | FM | frequency modulated |
| AFTADS | Advanced Field Artillery Tactical Data System | INTEL NET | intelligence network |
| CMD | command | NET | network |
| TACSAT | tactical satellite | | |

## COMMUNICATION WITH THE NAVY

As per Instruction (COMNAVSURFPAC/COMNAVSURFLANT) 3340.3_, *Wet Well Operations Manual*, [Herein after referred to as Instruction 3340.3]) there will be three networks used during amphibious operations when working with the US Navy. Two of the networks will be used for safety/guide boats designated for each colored beach, Boat Alfa and Boat Bravo. All safety boats must be task-organized with a Marine in possession of communication equipment to communicate with the ship and the ACV formation. Currently, a PRC-152 aboard each safety/guide boats is required. However, a VHF radio of any nomenclature can suffice. Refer to Instruction 3340.3, Appendix J for a sample embarkation and debarkation communications script.

The networks are defined as follows:

- Boat Alpha. The Boat Alpha network is used while transiting from the line of departure (LOD) to the beach through the boat lane. Specifically, it is used for all tactical movements.
- Boat Bravo. The Boat Bravo network is used while transiting from shore-to-ship via the return lane and from ship-to-shore only while in the approach lane. Specifically, it is used for administrative movements. When attempting to gain positive communication with any US Navy ship, the primary network for doing so is Boat Bravo.
- Alpha Station Network. Defined as 500 yards off the stern of the ship. During embarkation, this is where control transitions from the combat information center (CIC) on the Boat Bravo network to well deck control on the Boat Bravo network.

At a minimum, ACV unit leaders or wave commanders monitor the communications with the safety/guide boat and the naval ship. Waves can vary in size, with each wave having one wave commander. The platoon commanders or platoon sergeants are usually wave commanders. Each wave commander checks in on the Alfa network prior to getting underway. The wave commanders in these vehicles will shift to Bravo network as soon as the Alfa network check is complete.

Wave commanders control the movement during ship-to-shore and shore-to-ship operations through the boat lane.

## REQUIRED SAFETY/GUIDE BOAT COORDINATION

Typically, there will be two safety/guide boats in the water. One typically stays toward the front of the column and the other stays toward the back. Safety/guide boats can take station at either flank of the boat lane in which they can best respond to an issue within the wave or formation. When marking the line-of-departure, one safety boat typically goes toward the left lateral limit and the other boat goes to the right lateral limit. Prior coordination is required to ensure roles and responsibilities are understood and adhered to.

The ACV-C, along with the company commanders, should monitor the battalion network, MEU network, and Boat Alfa and Bravo networks. Coordination with adjacent unit with be made via the company commanders or company executive officers.

## SHORE-TO-OBJECTIVE

Ideally, little to no administrative traffic is passed over the network during the movement to the objective. Communications over the radios should be limited to updates to higher, wave commanders controlling the waves, and coordination with adjacent units.

## ACTIONS ON OBJECTIVE PRE-DISMOUNT

Prior to dismounting infantry, final adjustments to the plan are made and relayed to the platoons over the company network. Executive officers provide updates to the BLT or MEU.

### Actions on Objective Post-Dismount

Company commanders control the platoons over the company network. To free up radio traffic, the company commanders can roll to the platoon networks to go into further details. Radio operators located in the ACV-C should monitor MOUS for BLT and MEU traffic.

# CHAPTER 3.
# TACTICAL EMPLOYMENT

The ACV is an armored personnel carrier. Its maneuverability, survivability, and lethality characteristics allow a supported unit commander to plan offensive operations with the capability to move troops ship-to-shore and off-road deep inland while protecting the infantry from small arms and shrapnel. No ACV variant has the requisite armor to go vehicle-on-vehicle against heavily armored enemy forces.

The ACV company employs up to 18 stabilized, heavy machine guns with three platoons of four vehicles each and the six headquarters' ACV-Ps. Coordination is required to achieve the desired effects of the heavy machine guns while mitigating friendly casualties. The power of the ACV's MK19 and M2HB machine guns enables ACVs to provide effective direct fire in support of operations ashore, other elements of the MAGTF, or riverine assault squadrons afloat. The MK19 is highly effective against ground forces; it provides an excellent overhead burst effect, which is useful in areas with heavy vegetation.

The ACV can traverse complex terrain while simultaneously providing precision fires. When infantry dismount, the ACV should continue to support the scheme of maneuver by employing its weapons systems to support the infantry as they maneuver in and around the objective area. When maneuvering forces, commanders should consider all factors, including dispersion, speed, terrain, immediate actions, enemy threat rings, and their ability to control the unit effectively. During movement, the commander should use terrain to mask movement and noise to avoid exposure to the enemy.

## MOVEMENT AND MANEUVER TECHNIQUES

A mechanized unit's leadership develops a maneuver plan to capitalize on capabilities while minimizing weaknesses. The ACV commander advises on general scheme of maneuver, including route, movement technique, and formation. The ACV commander incorporates fields of observation, fires, and engagement areas when advising on maneuver plans based on anticipated actions on contact. Maneuver incorporates employment, movement, and employment of fires.

Movement is in preparation for combat involving the formation and dispersion. Dispersion distances vary based on enemy composition and disposition. As the probability of enemy contact increases, the mechanized unit adjusts the movement technique to provide applicable security.

Selecting one of the three movement techniques—traveling, traveling overwatch, and bounding overwatch—is based on several battlefield factors, including—

- The likelihood of enemy contact and the type of contact expected.
- Unit composition.
- The terrain over which the moving element will pass and the requisite security requirement.
- Established timelines.

While traveling on roads is faster and easier than off-road, vehicles on roads are easy to observe and target. Speed often increases the size of dust signatures. Although it slows the speed of travel, vehicles should hug terrain features or tree lines rather than drive in open terrain.

Leaders should take positions where they can best control the situation. In a four-vehicle formation, the platoon commander is typically the second vehicle. In a company formation, the company commander is usually behind the first two platoons, providing the company commander the flexibility to move to the point of friction in the formation.

Selecting the best method of movement is based on probability of contact, control dispersion, speed, and security as depicted in Table 3-1.

**Table 3-1. Movement Techniques.**

| Movement Technique | When Typically Used | Advantage | | | |
|---|---|---|---|---|---|
| | | Control | Dispersion | Speed | Security |
| Traveling | Contact not likely | More | Less | Fastest | Least |
| Traveling overwatch | Contact is possible | Less | More | Slower | More |
| Bounding overwatch | Contact is expected | Most | Most | Slowest | Most |

### Traveling

The traveling movement technique is used when speed is necessary and contact with the enemy is not likely. All elements move simultaneously, adopting appropriate movement formations suitable for the terrain and visibility. Figure 3-1 depicts an example of the traveling technique. While it might look similar, traveling is not a tactical road march. A tactical road march is used to relocate units within the combat zone to prepare for future operations. Figure 3-1 is an example of a mechanized unit scheme of maneuver.

### Traveling Overwatch

Traveling overwatch (Figure 3-2) is an extended form of traveling that provides additional security when speed is desirable but contact is possible. The intent is to maintain depth, provide flexibility, and maintain the ability to maneuver if contact occurs. The AA unit uses traveling overwatch technique mounted, or if part of a mechanized infantry formation, dismounted, and in combination with one another. Mounted or dismounted movement when in traveling overwatch requires an overwatch element supporting the moving element. This is typically conducted at scaling echelons. For example, a platoon can overwatch for a company, a section or squad can overwatch for a platoon, and a team or an ACV can overwatch for a section or squad.

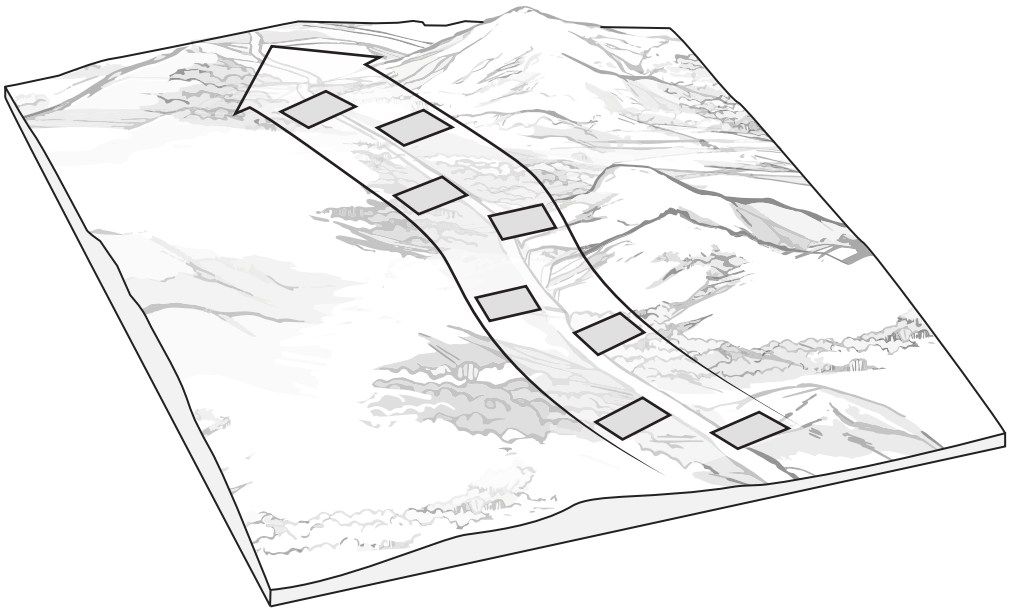


**Figure 3-1. Traveling Technique.**

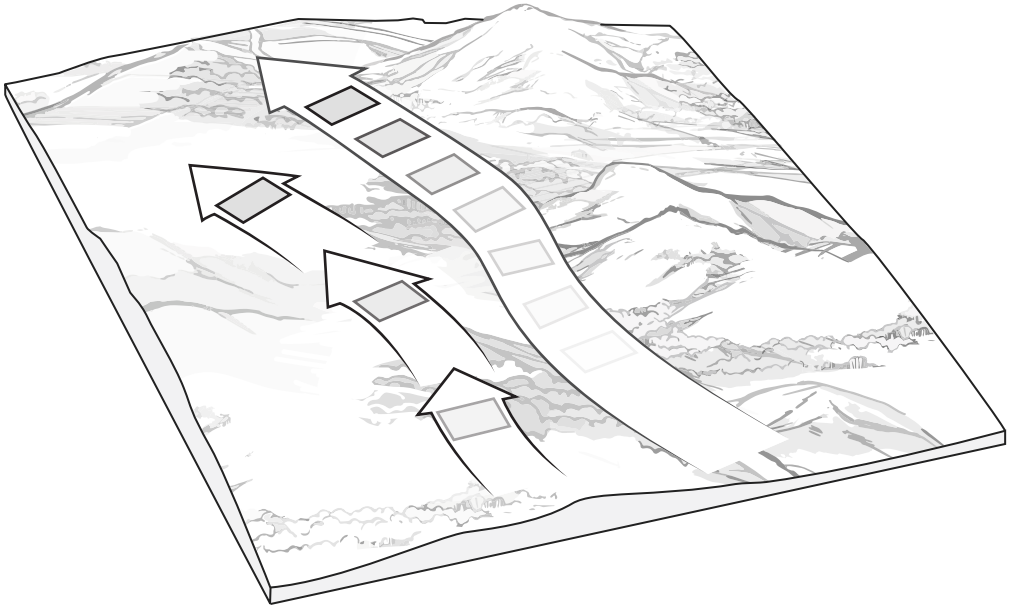


**Figure 3-2. Traveling Overwatch Technique.**

### Bounding Overwatch

Bounding overwatch is used when contact with enemy forces is expected. The unit moves by bounds; one element is always halted in position to overwatch another element while it moves (refer to MCWP 3-01, *Offensive and Defensive Tactics*). The overwatch elements are positioned to support the movement of the main body by fire or by fire and movement.

Bounding overwatch is performed using the following two techniques:

- Alternate Bounds. Covered by the rear element, the lead element moves forward, halts, and assumes overwatch positions. The rear element advances past the lead element and takes up overwatch positions. This sequence continues as necessary, with only one element moving at a time. This method is usually more rapid than successive bounds (Figure 3-3).
- Successive Bounds. Covered by the rear element, the lead element advances and takes up overwatch positions. The rear element then advances to an overwatch position roughly abreast of the lead element and halts. The lead element then moves to the next position, and the process is continued. Only one element moves at a time, and the rear element avoids advancing beyond the lead element. This method is slower, though easier to control and more secure than the alternate bounding method (Figure 3-4).

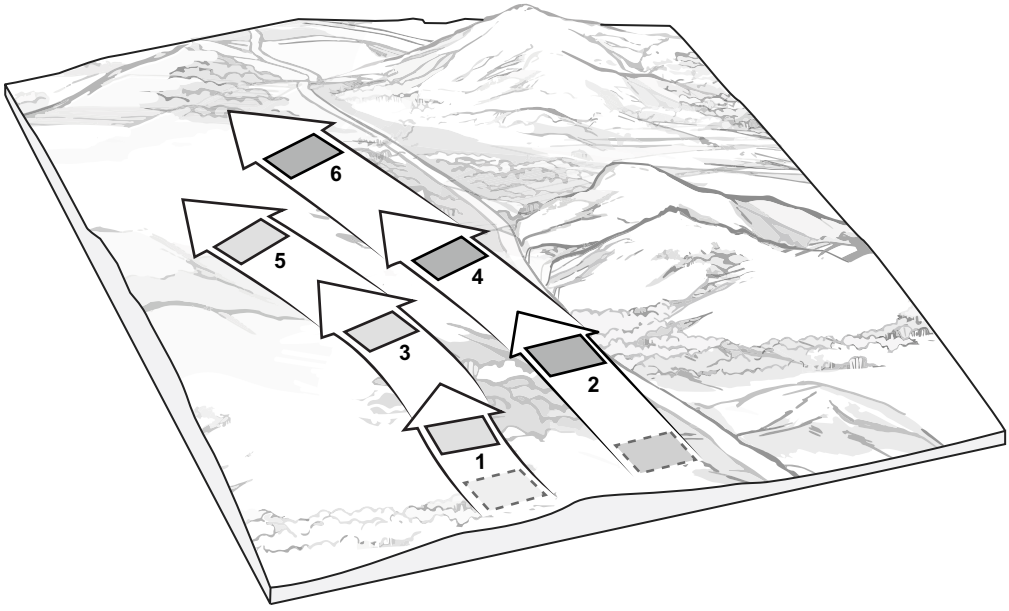



**Figure 3-3. Bounding Overwatch Using Alternate Bounds.**

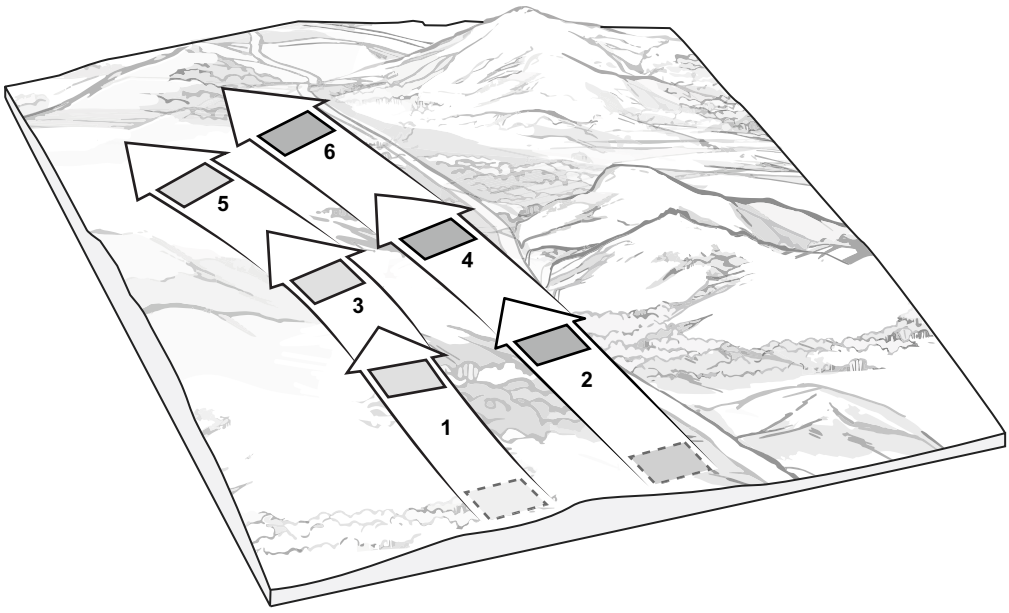



**Figure 3-4. Bounding Overwatch Using Successive Bounds.**

**Listening Tip**

After each bound, the driver shuts off the engine. The vehicle commander lifts up one side of their communication helmet and listens for any audio signatures. Embarked personnel tasked with air sentry duties also listen for audio signatures. Upon determining there is no threat, the vehicle commander puts the helmet back on and continues the scheme of maneuver.

## FORMATIONS

The unit commander uses mechanized formations for movement and halts, such as column, wedge, vee, line, echelon, coil, and herringbone to—

- Establish the relationship between one element and another on the ground.
- Allow the team to position firepower where it is needed in support of the direct fire plan.
- Establish responsibilities for sector security among small units.
- Facilitate the concept of operations and immediate actions.

As with movement techniques, formations are planned based on where enemy contact is expected, how the higher commander expects to react to the contact, and what the terrain and vegetation allow. The unit commander must conduct a thorough estimate of the situation to determine which formation to use. It is not necessary for a subordinate unit's formation to be the same as the main body formation; however, it is critical for the subordinate unit commander to coordinate formations with those of other subordinate units moving in the main body.

An important consideration in movement planning and execution is that formations are not rigid. Spacing requirements and other METT-T considerations require the mechanized unit commander and subordinate leaders to adapt the basic formations. Each movement formation provides varied degrees of security, fires, control, and speed (see Table 3-2). Mechanized unit leaders must be ready to adjust the distance between elements and individual vehicles based on terrain, visibility, and mission requirements. Generally, the mechanized unit moves in formation when traveling or using traveling overwatch. When the unit is using bounding overwatch, the bounding element makes the best use of the terrain to move effectively while maintaining adequate security, rather than adopting a precise formation.

When conducting movement as a company, the company commander designates a base platoon, usually the center platoon, to set the speed of the formation and for the rest of the company to guide on. In a platoon formation, the platoon commander's vehicle serves as the base vehicle.

**Table 3-2. Formations.**

| Formation | Security | Fires | Control | Speed |
|---|---|---|---|---|
| Column | Good dispersion.<br>Good all-around security. | Good to the front and to the rear.<br>Excellent to the flanks. | Easy to control.<br>Flexible formation. | Fast |
| Wedge | Good all-around security. | Good to the front and flanks. | Less difficult to control than line.<br>Flexible formation. | Medium |
| Line | Excellent to the front.<br>Poor to the flanks and to the rear. | Excellent to the front.<br>Poor to the flanks and to the rear. | Difficult to control.<br>Inflexible formation. | Slow |
| Echelon | Good to the front and flank. | Good to the front and flank. | Difficult to control. | Slow |
| Vee | Better to the front. | Very good to the front. | Very difficult to control. | Slow |

### Column

The column formation is used when enemy contact is not likely, speed is critical, or the mechanized unit is moving through restricted terrain on a specific route or a breached lane. When possible, vehicles should be staggered during movement (Figure 3-5). The column formation advantages are that it—

- Is easy to control over long distances, at night, or during periods of limited visibility.
- Provides excellent control and fires to the flanks.
- Increases firepower to the flanks.
- Adapts to restrictive terrain or breach lanes.

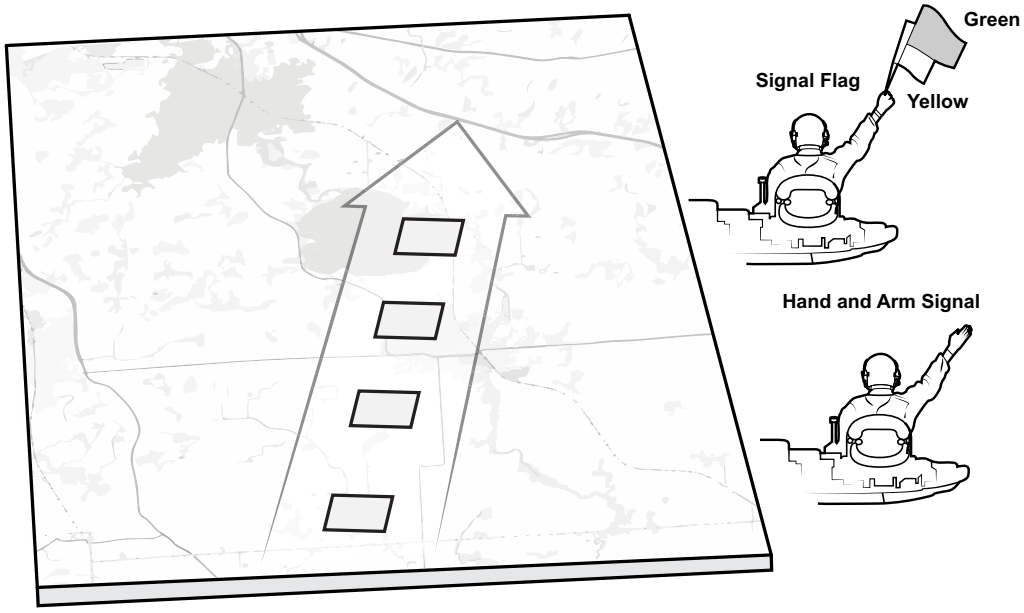



**Figure 3-5. Column and Associated Signals.**

### Wedge

The wedge formation is often used when the enemy situation is unclear or when contact is possible. When in a wedge formation, the lead element of a mechanized force is in the center of the formation with the remaining elements located to the rear and outside of the lead element (Figure 3-6). The wedge formation advantages are that it—

- Provides security and firepower to the flanks and front.
- Is easy to control.
- Can be used with the traveling and traveling overwatch techniques.
- Allows for rapid transition to bounding overwatch.

The wedge formation disadvantage during amphibious operations is that they cause a slower buildup of power ashore.

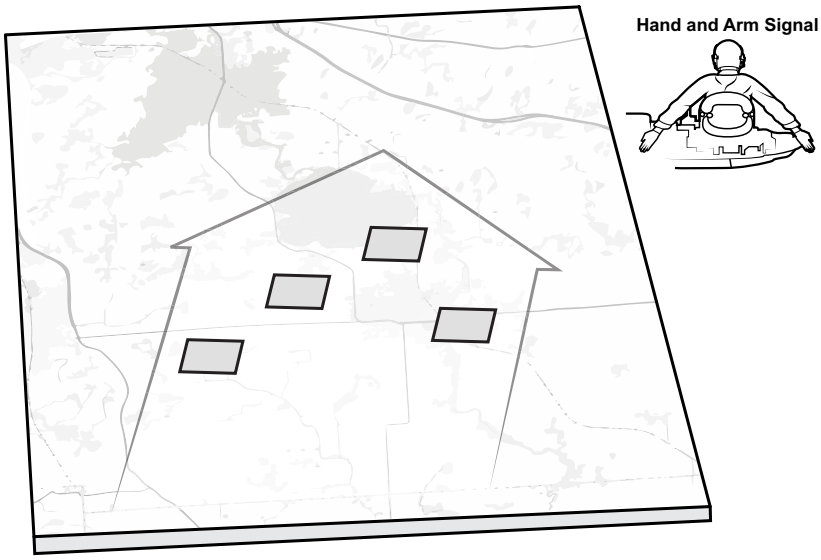



**Figure 3-6. Wedge and Associated Hand and Arm Signal.**

### Line

The line formation is primarily used when a unit or element is crossing a danger area or otherwise needs to maximize firepower to the front (Figure 3-7). When in a line formation, elements of a mechanized force move abreast of one another and are dispersed laterally.

The line formation advantages are that it—

- Permits maximum fires to the front or rear.
- Can be used in an assault to maximize the firepower and shock effects of the heavy mechanized unit. This is typically done when there is no more intervening terrain between the unit and the enemy, when antitank systems are suppressed, or when the unit is exposed to artillery fire and must move rapidly.
- Is typically used to assault defended beaches while waterborne and are used as the attack formation on land.

The line formation disadvantages are that it—

- Is difficult to control over long distances, at night, and during periods of limited visibility.
- Is less secure than other formations because of the lack of depth.
- Permits minimum fires to the flanks.
- Is vulnerable to fire from the flanks.
- Requires large frontages.
- Is the most difficult to transition to other formations.

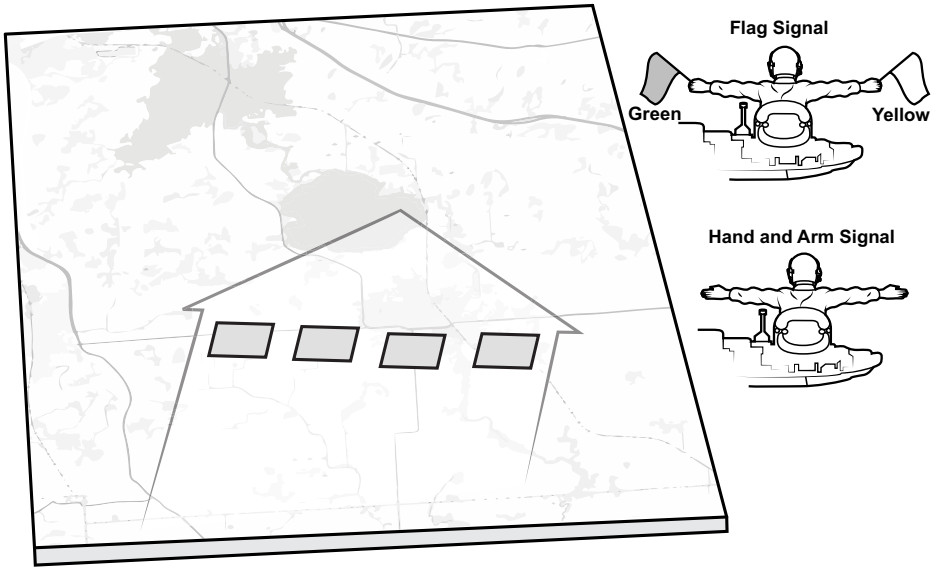



**Figure 3-7. Line Formation and Associated Signals.**

### Echelon

The echelon formation is used when the mechanized unit wants to maintain security and observation toward one flank and enemy contact is not likely. In the echelon formation (echelon left or echelon right), the lead element is positioned farthest from the echeloned flank, with each subsequent element located to the rear and outside the element in front of it (Figure 3-8).
The echelon formation advantages are that it—

- Affords excellent security for the parent unit in the direction of the echelon.
- Facilitates deployment toward the echeloned flank.

The echelon formation disadvantages are that it is difficult to control, or to use over long distances and in poor visibility.

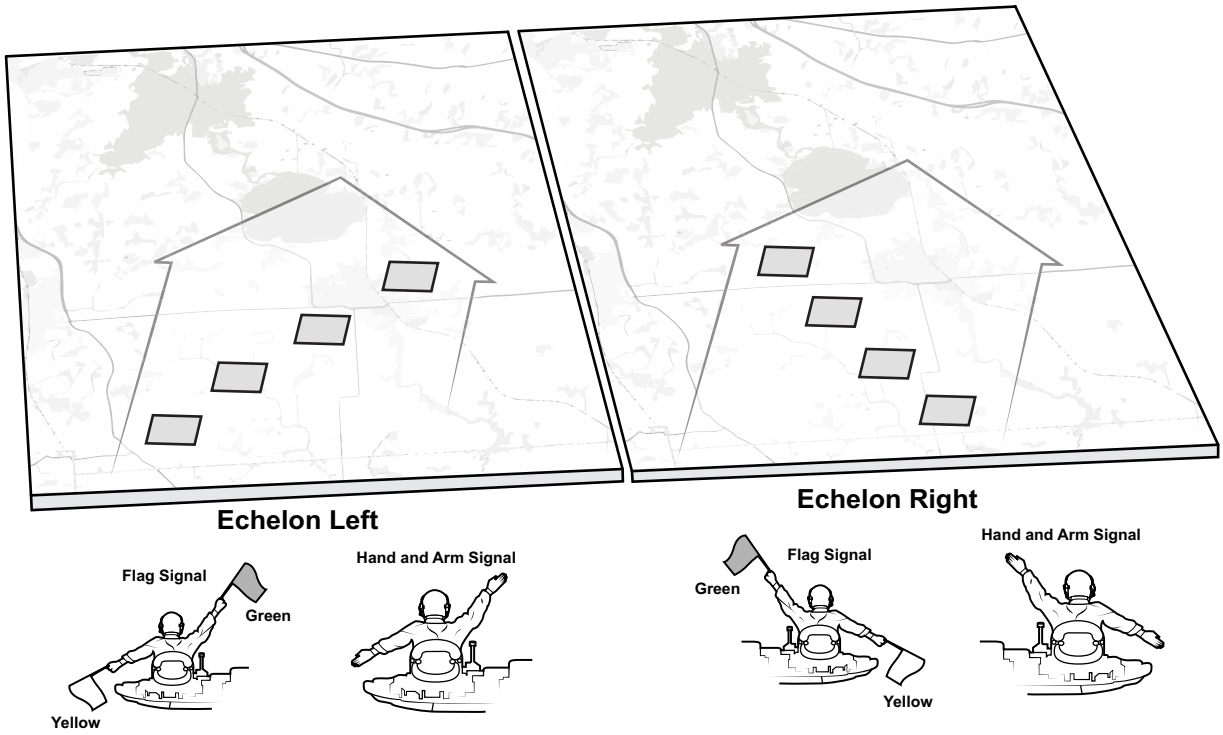



**Figure 3-8. Echelon Left and Right and Associated Signals.**

### Vee

The vee formation is typically used by the lead or trace (i.e., rear guard or rear point) elements in a larger movement formation. As a lead element, the vee formation allows an ACV company to use a section or a platoon as a maneuver element on enemy contact. As a trace element, the vee formation effectively creates a wedge formation upon contact from the rear (Figure 3-9).

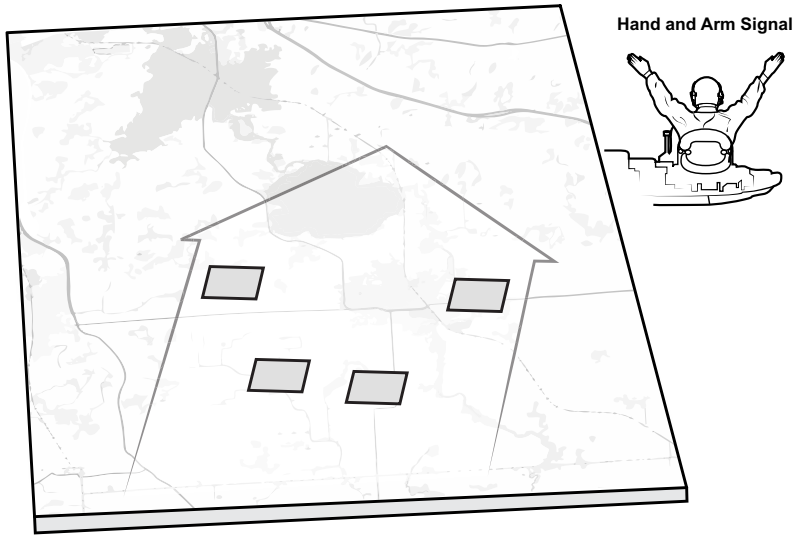



**Figure 3-9. Vee Formation and Associated Hand and Arm Signal.**

### Coil

The coil is a defensive formation employed when the mechanized unit will be stationary for an extended period of time and must maintain 360-degree security. The lead vehicle halts in the direction of travel (i.e., 12 o'clock) while the other vehicles position themselves in a circular formation covering all suspected enemy avenues of approach and assigned sectors of responsibility (see Figure 3-10). The coil should not be located near or straddle roads to prevent traffic from passing through the formation and maximize micro-terrain and vegetation. The ACV-C and any logistic vehicles should be facing away from the enemy's most likely avenue of approach to facilitate displacement if attacked.

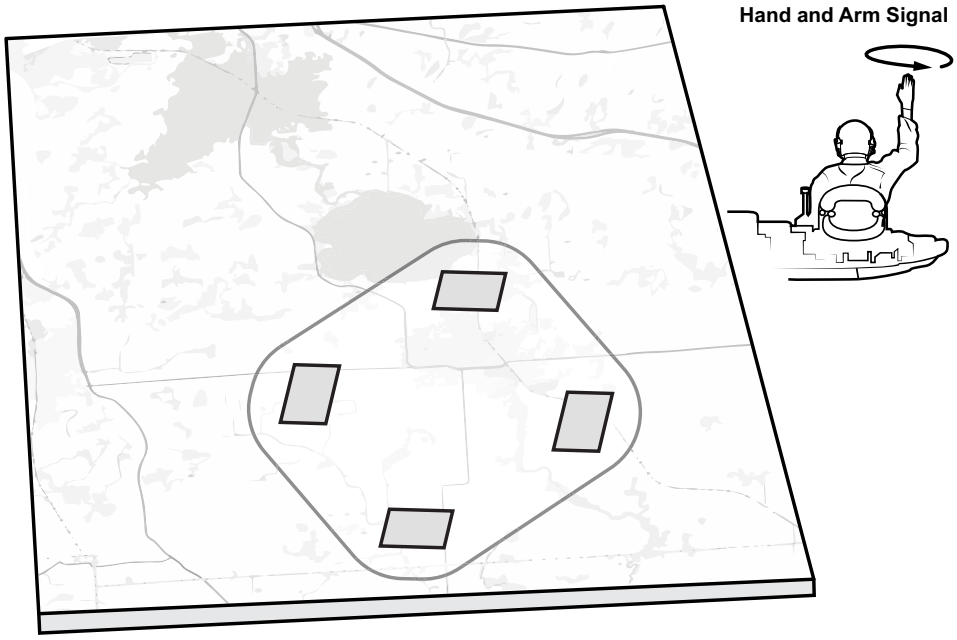



**Figure 3-10. Coil Formation.**

### Herringbone

The unit employs the herringbone formation when it must assume a hasty defense with 360-degree security while remaining postured to resume movement in the direction of travel. It is usually employed during scheduled or unscheduled halts in a road march. If terrain permits, each vehicle should move off the route and stop at a 45-degree angle, allowing for vehicles to pass through the center of the formation (Figure 3-11).

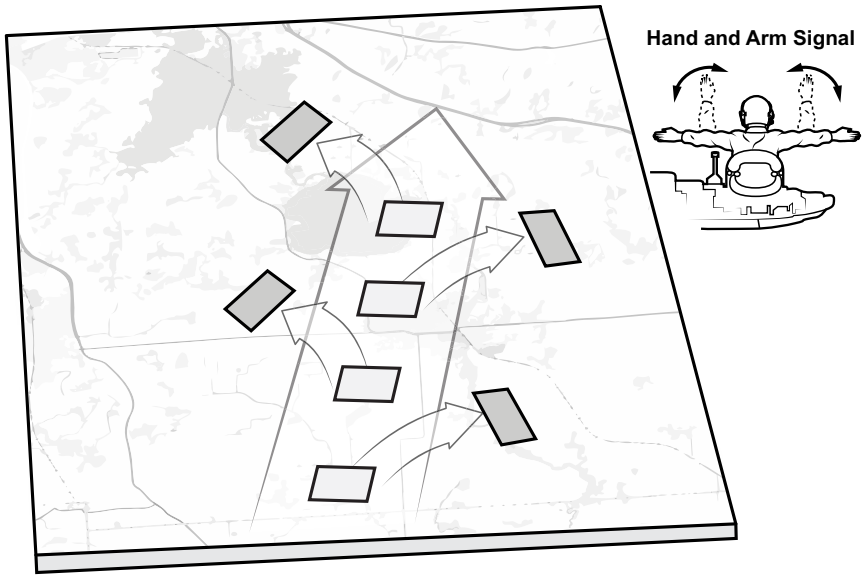



**Figure 3-11. Herringbone and Associated Hand and Arm Signal.**

## MOVEMENT CONSIDERATIONS

### Control

The AA unit's movement is controlled through centralized and decentralized techniques.

The centralized control technique enables the supported commander to control the movement of the mechanized force through verbal orders relayed to the AA unit leader. This technique maximizes the experience and skill of the AA unit to facilitate the movement of the force. In addition, the centralized control technique can be employed for tactical road marches or movement to contact when the unit is traveling together. Centralized control allows the supported commander to—

- Coordinate fire support.
- Plan.
- Issue orders to assigned unit leaders.
- Conduct liaison with other units on the march while retaining centralized control of the embarked force.

The decentralized control technique passes control for the movement of the AA platoon unit to the subordinate leaders of the embarked force. For example, the AA platoon commander receives direction from the infantry platoon commander and controls the movement of the ACV platoon accordingly. The decentralized control technique could be used in the following situations:

- Upon initiating contact.
- In the approach to the point of debarkation.
- When the mechanized infantry platoons are operating away from the main body.

### Speed

Mechanized columns routinely travel at speeds averaging 20 miles per hour (mph). The situation and the unit's SOP determine the rate of march and set the distance between vehicles. A meeting engagement of two opposing mechanized forces can occur quickly, and a single column can quickly move into an opposing force's antiarmor kill zone without notice. The advantages of speed are that it—

- Permits rapidly massing combat power from across a broad expanse of terrain at the decisive point in the battle.
- Supports rapidly exploiting openings in the enemy's front, permitting the armor-protected movement of infantry into the enemy's rear.
- Permits the commander to maneuver forces swiftly and place them on crucial sections of the battlefield, thereby forcing the opposing commander to surrender the initiative.

### Mutually Supporting

Ideally, ACVs are employed at the company level, with two elements (e.g., a two-vehicle section or two platoons) supporting each other. This support prevents an ACV from becoming isolated, increases overall security, and facilitates vehicle recovery.

### Dispersion

The factors of METT-T greatly influence dispersion and mobility. For example, when traveling in a column, a mechanized battalion can occupy more than 17 kilometers (km) from front to rear. In this dispersed state, a unit cannot generate significant combat power quickly. If the point elements halt and engages the enemy, it could take 30 minutes for the remainder of the column to close the formation and join the fight. However, having vehicles too close together makes the formation susceptible to targeting and indirect fires.

At the company level and below, during bounding or while moving across open terrain in formation, dispersion can extend up to half the maximum effective range of the primary weapon by terrain feature or half the range of observation through the weapon's systems optics, always going with the smaller range. Heavy vegetation, urban terrain, and micro-terrain can limit the dispersion to several hundred meters.

### Use of Terrain

Terrain must be an integral consideration in all aspects of planning—establishing the defense, conducting an attack, or making a movement from one point to another. Poor use of terrain might quickly result in the loss of the surprise advantage during an attack or the exposure of vehicle locations in the defense. In natural terrain, observation can be limited by relative, localized, and subtle variations in terrain elevations. These limitations are known in geographic terms as intervisibility lines. Intervisibility is the condition of being able to see one point from another. An intervisibility line is terrain that interrupts the LOS, such as a ridge or horizon, beyond which

equipment or personnel can be hidden from observation. Intervisibility lines should always be considered during the employment of mechanized forces. The following can help maximize the use of terrain and enhance survivability:

- Use available cover and concealment. Cover and concealment are maximized when combined with vehicle camouflage. Additional information can be found in Chapter 10, Force Protection.
- Avoid silhouetting the vehicle. Several techniques are used to minimize the vehicle's signature. The first technique is crest drills (Figure 3-12).
  - A crest drill is conducted when the vehicle commander stops the ACV 50 to 100 meters short of cresting the crest line.
  - The driver shifts the drive gear to LOW. The LOW gear allows the vehicle to crest at a low RPM, minimizing noise and exhaust signatures. Exhaust signatures are noticeable in thermals.
  - The vehicle commander tasks the gunner with a principal direction of observation.
  - The vehicle commander either stands higher in their position with binoculars or uses the weapon's optics to scan the area as the vehicle moves forward.
  - When the gunner has clear version, the gunner stops the driver.
  - In high-threat environments, infantry or an ACV crew member might need to dismount and move tactically to the intervisibility line to identify any threats before calling the ACV forward. An unmanned aircraft system (UAS) can be used to conduct aerial reconnaissance to (visually) clear an area prior to vehicle movements.
  - Crews should tie back the antennas to approximately 45 degrees. This technique has minimal impact on receiving and transmitting yet decreases the vehicle's height.

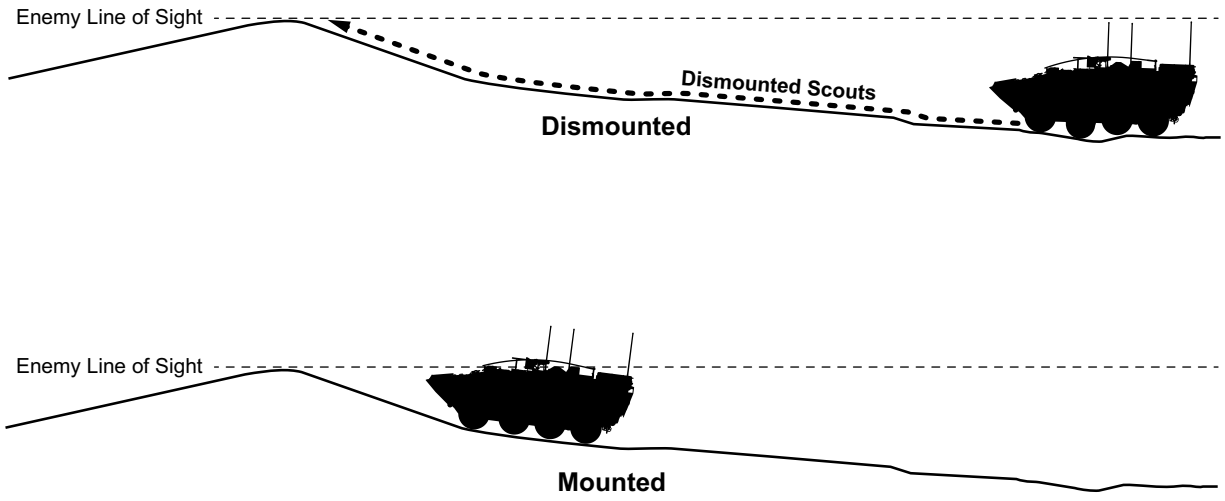



**Figure 3-12. Crest Drill.**

The second technique is using available terrain and vegetation as a backdrop. Vehicle routes should be planned to prevent creating a silhouette; all efforts should be made to conduct a crest drill with a backdrop to mask the silhouette (Figure 3-13).

When all techniques are combined with camouflage, the ACV is difficult to spot.

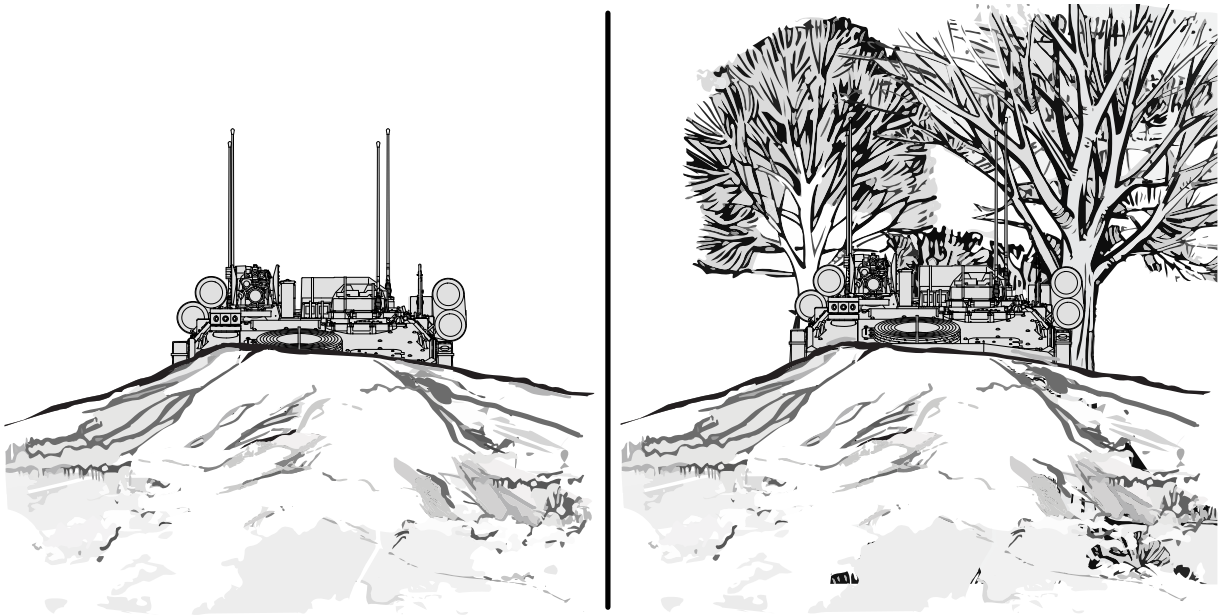


**Figure 3-13. Masked Silhouette.**

Other movement considerations include the following:

- Control the dust signature. Dust signatures can be spotted even if the vehicle movements are concealed. The faster the vehicle, the larger the dust signature.
- Move quickly across open areas. Open areas should be treated as a danger area crossing, with the crossing area scanned to ensure the enemy cannot affect the movement.
- Back out of a defilade position. Backing out allows the ACV to move laterally without exposing the vehicle flanks to likely enemy locations (Figure 3-14). This should be considered—
  - When redeploying to a secondary or alternate fire position.
  - After an engagement.
  - When a better position is required to observe or engage.

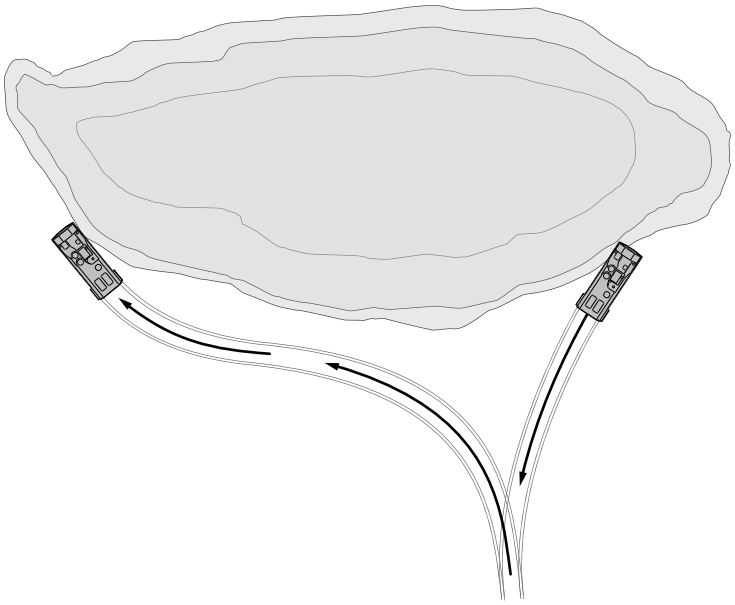


**Figure 3-14. Repositioning Drill.**

## USE OF WATERWAYS

Although the ACV can use inland waterways as nontraditional avenues of approach, special consideration must be made to ensure the ACV can maneuver over the underwater topography, and that the entry and exit points are within the ACV's limitations. Trafficability requirements are discussed in Chapter 8, Reconnaissance and Security Operations. Unlike deploying from a ground main supply route, a force is unable to move quickly from a waterway if targeted. If the inland waterways are passable, they permit surprise, speed, and the ability to mass forces in unexpected locations. When the situation permits, AA unit leaders are expected to follow the international and inland navigation rules for maritime vessels and boats when ACVs are waterborne in coastal waters, rivers, and bays. For further information concerning riverine operations, see Chapter 5.

## IMMEDIATE ACTION AND BATTLE DRILLS

The individual training of ACV crew members and infantry is critical in the first moments of a mechanized battle, when the mechanized force maneuvers by advancing or seeking cover and concealment from enemy fire. Immediate action drills to enemy actions and unforeseen threats must be wargamed and rehearsed to the point that they can be carried out instantly with confidence. In mechanized operations, the commander's decision-making process is often limited to a matter of seconds, and actions are executed in less time than it takes the commander to assess the situation and decide on a specific action.

### Immediate Action Drill

Mounted immediate action drills are usually similar to dismounted drills. Whether the contact is from the front, rear, flanks, from a near or far ambush, or in open or restrictive terrain, the goal of the section or platoon should be to conduct the following procedures:

- Identify the source of the contact by calling out, "*Contact front (or right, left, rear)*."
- Return fire and establish fire superiority.
- Use the appropriate technique to withdraw or assault through the kill zone.
- Maintain support by fire and overwatch throughout maneuver.
- Deploy dismounted infantry to evacuate vehicles if rendered unrecoverable.

### Battle Drills

Battle drills at the vehicle and crew level represent the basic actions needed for the vehicle to perform as an effective part of the unit in unforeseen circumstances. Mounted battle drills include the following:

- Dismount drills.
- Disabled vehicle or roll-over.
- Disabled weapon and reload drills.
- Incapacitated driver.
- Establishing hasty roadblocks or traffic control points.
- Sensitive equipment destruction plan.
- Vehicle recovery plan.

## COMMANDER'S LOCATION

The commander should position the command vehicle immediately behind the forward section of ACVs or light armored vehicles, usually as far forward in the formation as tactically feasible. From an overwatch position, the commander can employ supporting arms and direct additional mechanized forces forward to the developing tactical situation.

### Actions on Contact

Actions on contact are a series of actions taken upon contact with the enemy to develop the situation. The supported infantry and ACV commanders analyze the enemy to identify all likely contact situations that could occur during an operation. Through planning and rehearsals conducted, mechanized units develop and refine courses of action (COAs) to deal with the probable enemy actions. The determined COA becomes the foundation for a support scheme of maneuver.

While executing offensive and defensive tasks, contact occurs when the mechanized unit encounters a situation that requires a response to the enemy.

***Expected Contact.*** When enemy contact is expected, using bounding overwatch as a form of maneuver is the most effective. Bounding overwatch allows the mechanized unit to establish visual contact and then physical contact on its own terms. Contact, either visual or physical, is typically made by the bounding unit executing overwatch; they initiate the unit's actions on contact. The M153 common remotely operated weapon station (CROWS) optics must be maximized to scan the battlefield throughout movement to gain an early visualization of the enemy. If the enemy is not located and the overwatch unit becomes engaged, then the entire unit conducts an immediate action drill, engaging the enemy and allowing for continuing actions by the supported infantry and ACV commanders.

***During Contact.*** Actions during contact can include a planned attack or a meeting engagement:

- Planned Attack. The attack could be conducted mounted or dismounted. Once the attack has begun and as the tactical situation changes, it might be necessary to alter the plan. The commander selects the most advantageous position from which to command and control the unit. The mechanized unit commander should attempt to make maximum use of fire support and direct fire assets throughout the unit to support movement and exploit the enemy.
- Contact During Meeting Engagement. A combat action that occurs when a moving force, incompletely deployed for combat, engages the enemy at an unexpected time and place. The basic principle of a meeting engagement is to gain, maintain, or retain the initiative. To increase the odds of adhering to this principle, the ACV commander uses immediate action drills and the speed and firepower of the ACV platform to gain an advantage on the enemy. Well rehearsed immediate action drills aid in out pacing the enemy.

***Consolidation and Reorganization.*** The mechanized unit should consolidate and reorganize once contact has culminated. An objective is held until the commander orders other actions. At times, the attack can be continued with little or no hesitation to exploit success using the ACVs' speed and firepower to pursue the enemy by fire or maneuver. In this case, only required reorganization is conducted, and consolidation is unnecessary. Consolidation consists of actions taken to secure an objective and prepare to repel an enemy counterattack. The commander typically designates hasty unit defensive positions and actions to be taken upon consolidation. The ACVs should utilize natural terrain and concealment to the greatest extent possible, while maintaining effective fields of fire and dispersion in the hasty defense. Unit integrity and combat effectiveness is reevaluated to determine its ability to carry out follow-on missions. Battle damage assessments and logistics reports are send to higher headquarters.

## READINESS CONDITIONS AND STAND TO

The REDCON is a system of four readiness postures designed to alert subordinate units to combat operations or movements (see Table 3-3).

**Table 3-3. Readiness Conditions.**

| | REDCON 1 | REDCON 1 SILENT | REDCON 2 | REDCON 3 | REDCON 4 |
|---|---|---|---|---|---|
| Essential Personnel | All personnel alert and at designated position. All weapons manned. | Same as REDCON 1. | All personnel alert. All weapons manned. | Fifty percent of crew and embarked troops man vehicles, observations posts, weapons, and monitor radios. | Two Marines per platoon conduct dismounted checks (perimeter patrol). One Marine alert per vehicle, monitoring radios and manning turret weapons. Platoon commander's vehicle monitors company network. |
| Non-Essential Personnel | N/A | Same as REDCON 1. | N/A | Remaining personnel conduct rest plan, feeding, and maintenance not requiring disassembly. | Same as REDCON 3 plus camouflage nets are set out, listening posts and observation posts are set out. |
| Time to move | Vehicle is already loaded, all gear secured, engine is running, and ready to move immediately. | Same as REDCON 1 except engine is turned off. | Vehicles ready to move in 15 minutes. Listening and observation posts are pulled in and camouflage nets are put away. | Vehicles ready to move in 30 minutes. | Vehicles ready to move in one hour. |

### Stand To

Stand to is typically conducted 30 minutes prior to sunrise and sunset or when dictated by the unit commander. The formation is at REDCON 1 Silent.

Fifteen minutes prior to sunrise and sunset or when directed by the unit commander—

- Short count start-up.
- Submit status report to HQ (dependent on EMCON).

# CHAPTER 4.
# ACV PERSONNEL CARRIER GUNNERY

Through its combination of weapon systems, mobility, speed, and agility over rough and varied terrain, the ACV gives its crew and embarked personnel the means to survive as an effective fighting element. The ACV-Ps are equipped with CROWS-mounted M2 or MK-19, thermal sights, stabilized turret, and laser range finder make the weapon systems capable of precision fire.

The ACV-P is manned and operated by a driver, a gunner, and a vehicle commander; its role is to bring accurate, high-volume firepower to bear against the enemy. The ACV's advanced optics and a laser range finder greatly enhance accuracy and first-round effects on target. Fire control requires an ACV unit to acquire the enemy and mass the effects of fires rapidly to achieve fire superiority. When planning and executing direct fires, the ACV-P must know and apply fundamental principles of direct fire.

## DIRECT FIRE PRINCIPLES

The purpose of direct fire principles is to assist the ACV unit in accomplishing its primary goal during direct fire engagements to acquire and engage first; not to restrict the actions of subordinates. These principles give subordinates the freedom to act quickly upon acquisition of the enemy. The following sections discuss direct fire principles that can be employed.

### Mass the Effects of Fire

The ACV unit must mass its fires to achieve decisive results. Massing entails focusing fires at critical points and distributing the effects.

### Destroy the Greatest Threat First

The order in which the ACV unit engages enemy forces is in direct relation to the danger the enemy presents. The threat posed by the enemy depends on its weapons, range, and position. Presented with multiple targets, an ACV unit must initially concentrate fires to destroy the greatest threat and then distribute fires over the remainder of the enemy force.

### Avoid Target Overkill

Use only the fires required to achieve necessary effects. Target overkill wastes ammunition and ties up weapons that are better employed acquiring and engaging other targets. The idea of having every weapon engage a different target must be tempered by the requirement to destroy the greatest threats first.

### Employ Appropriate Weapon-to-Target Match

Using the appropriate weapon for the target increases the probability of rapid enemy destruction or suppression; at the same time, it saves ammunition.

Target type, range, and exposure are key factors in determining the weapon and ammunition that should be employed, as are weapons and ammunition availability and desired target effects. Additionally, ACV commanders should consider individual crew capabilities and arrays fires capabilities based on terrain, enemy, and desired effects of fires.

### Minimize Friendly Exposure and Avoid Friendly Fire Incidents

Units increase survivability by limiting their exposure to the enemy to only to the extent necessary to engage effectively. Natural or man-made defilade provides the cover. Crews minimize their exposure by continually seeking effective cover, attempting to engage the enemy from the flank, remaining dispersed, firing from multiple positions, and limiting engagement times. The ACV vehicle commanders must be proactive in reducing the risk of friendly fire incidents, and noncombatant casualties. They have several tools to help them in this effort: identification training for combat vehicles and aircraft, the unit's weapons safety posture, recognition markings, understanding of rules of engagement and a common operational picture that includes range cards and rehearsals.

### Plan for Limited Visibility Conditions

Obscurants, such as dense fog, heavy smoke, and blowing sand can degrade the capabilities of thermal and other equipment. Leaders should therefore develop contingency plans for such extreme limited visibility conditions.

Although decreased acquisition capabilities have minimal effect on area fire, point target engagements likely occur at decreased ranges. Typically firing positions must be adjusted closer to the area or point where the unit leader intends to focus fires. Another alternative is the use of visual or infrared illumination when there is insufficient ambient light for passive light intensification devices.

### Develop Contingency Plans

Supported infantry and ACV commanders develop initial plans based on the unit's maximum capabilities; they make contingency plans for implementation in the event of casualties or weapon damage or failure. While leaders cannot anticipate or plan for every situation, they should develop plans for what they view as the most probable occurrences.

Building redundancy into these plans, such as having two systems observe the same sector, provides an invaluable asset when the situation permits. Designating alternate sectors of fire provides a means of shifting fires if adjacent elements are knocked out of action.

## MACHINE GUNS

A heavy machine gun is most effective when employed with other weapons. The fires of one weapon complement or augment the fires of another to create a collaborative effect. The number of shots in a burst of fire is limited by several factors, including the size and shape of the target, ground formation, and ammunition supply. For typical ground targets, the number of rounds in each burst varies from about 6 to 20 for heavy machine guns. Rates of fire can be specific to one vehicle, one section, or an entire platoon. On some occasions, fires can be integrated with infantry or other supporting units to achieve desired effects.

The greatest surprise and shock effect is obtained by simultaneously combining the maximum rate of fire and opening fire from all weapons. Fleeting targets are engaged as soon as possible and with the maximum fire available. The initial delivery of fire using the rapid rate facilitates adjustment of fire. When the rate of fire is not specified, the rapid rate is used. Unless otherwise ordered, the first few bursts are at a rapid rate; thereafter, the prescribed rate is used. To conserve ammunition, gunners should count the duration of the burst and time the pause in between bursts. Another way to regulate ammunition expenditure is to employ machine guns in pairs or to use alternating fires. In alternating fires, as one machine gun finishes its burst and is about to pause, the other machine gun opens fire; this technique is commonly referred to as "talking guns." In addition to controlling ammunition consumption, these techniques reduce the wear on machine guns as well as prevent overheating and damage to barrels. Table 4-1 provides the three rate of fire measurements.

**Table 4-1. Machine Gun Rate of Fire Measurements.**

| Suppression time provided by one full load –5 seconds between each burst | Burst/Full (5 round burst at the cyclic rate) | Burst/Reduced |
|---|---|---|
| M2 50 Caliber – 400 rounds | 8 minutes (450-600 rounds per minute) | 9.5 minutes<br>(250 rounds per minute) |
| Mk 19 40mm – 96 rounds<br>(5 seconds between each burst assuming rounds are on target) | Approx 2 minutes of suppression<br>(325-375 rounds per minute) | 2.5 minutes of suppression<br>(200 rounds per minute) |

## Economy

A machine gun's high rate of fire makes excessive ammunition consumption a concern for both machine gunners and infantry leaders. Wasteful use of ammunition can severely jeopardize the success of an operation if resupply is delayed or halted by enemy action, weather, terrain, and/or other factors beyond friendly control. Therefore, an accurate, detailed mission analysis should be conducted to plan for those types and amounts of ammunition that will effectively cripple or destroy the enemy. Balancing rates of fire, duration of fire, and ammunition supply are essential when conducting mission analysis.

Machine gunners should employ a method referred to as "talking guns." With this method, guns employed in pairs alternate bursts at a rate that achieves the desired effects on the enemy while controlling ammunition consumption and the wear/overheating of the operating parts.

The ACV-P can be equipped with the M2A1 .50 cal machine gun or the MK-19 automatic grenade launcher. The following is the amount of ammunition at the ready for each CROWS mounted weapon system:

- Ammunition Box holds 400 rounds of .50 cal ammunition.
- Ammunition Box holds 96 rounds of 40MM, ammunition.

The LOW AMMO signal displays—

- For M2A1 (50 cal), when there are approximately 50-55 rounds left in ammunition box.
- For MK19 (40 mm), when there are approximately 22-24 rounds left in ammunition box.

### Weapon Safety Posture Levels

Weapons safety should feature a common language that is understood and adhered to by embarked and vehicle personnel. Weapons safety should feature a common language that is understood and adhered to by embarked and vehicle personnel. Table 4-2 depicts weapon safety posture levels for heavy machine guns.

**Table 4-2. Weapon Safety Posture Levels.**

| Element Safety Posture | ACV-P |
|---|---|
| Ammunition Loaded | M2HB rounds on feed tray; weapon cycled with round on bolt.<br>MK19 rounds on feed tray; bolt locked to the rear with round on face. Weapons on electrical safe. |
| Ammunition Locked | M2HB rounds on feed tray but are not cycled to bolt. MK19 rounds on feed tray, bolt forward with no round on bolt; Weapon on electrical safe. |
| Ammunition Prepared | M2HB rounds in ammunition cradles; MK19 rounds in ammunition cradles.<br>Weapon on electrical safe. |
| Weapons Cleared | M2HB chamber cleared, bolt forward, no rounds on feed tray.<br>MK19 chamber cleared, bolt forward, no rounds on feed tray; ammunition removed from cradles and cage. Weapon on electrical safe. |

***Weapon Control Status.*** The three levels of weapon control status outline the conditions based on target identification criteria, under which friendly elements can engage. The unit commander sets and adjusts the control status based on friendly and enemy disposition and the clarity of the situation.

Generally speaking, the higher probability of a friendly fire incident, the more restrictive the weapon control status. The three levels, in descending order of restrictiveness are—

- Weapons Hold. Engage only if engaged or ordered to engage.
- Weapons Tight. Engage only targets that are positively identified as enemy.
- Weapons Free. Engage any targets that are not positively identified as friendly.

***Best Practices .*** Vehicle gunners should be counting the seconds between bursts so that unit suppression gaps are minimized. This mitigates a gun going down that was next in the suppression cycle, without commands, and allows suppression to be maintained. On contact, open fire with a rate of fire to establish fire superiority. Once positive effects on target are attained, determine adjustments to sustain fires based on ammunition quantity and remaining targets. Based on the ACV's ability to fire while maneuvering, reload periods must be considered when cover presents itself. This ensures adequate fires are used when vehicles within the section or platoon are required to reload their weapon systems.

Embarked personnel are at their most vulnerable during dismount. Upon reaching a dismount point, rates of fire should be increased as ramps are lowered.

When conducting a phase line battle drill and handing the fight over to dismounted infantry before ACVs cease fire, increase rates of fire to cyclic for a short period in conjunction with infantry fires just prior to them cutting off fires when crossing a vehicle's trim vane. If a brevity code for this is generated, infantry leaders must brief it to facilitate coordinating fires.

In long-rage engagements, the MK19 might not be as effective as the M2HB due to ammunition flight time and drift. Flight time depicted in Table 4-3 is for infantry planning purposes to determine the delay in rounds on target. For additional information refer to MCTP 3-01C, *Machine Guns and Machine Gun Gunnery*.

**Table 4-3. MK19 HEDP, M430 Time of Flight.**

| Range (meters) | Time of Flight (seconds) | Range (meters) | Time of Flight (seconds) | Range (meters) | Time of Flight (seconds) |
|---|---|---|---|---|---|
| 100 | 0.43 | 800 | 4.21 | 1500 | 10.1 |
| 200 | 0.88 | 900 | 4.89 | 1600 | 11.25 |
| 300 | 1.36 | 1000 | 5.62 | 1700 | 12.53 |
| 400 | 1.86 | 1100 | 6.39 | 1800 | 14.01 |
| 500 | 2.4 | 1200 | 7.22 | 1900 | 15.81 |
| 600 | 2.9 | 1300 | 8.1 | 2000 | 18.39 |
| 700 | 3.5 | 1400 | 9.06 | | |

To achieve complementary effects of the MK19 and M2HB, ACVs must suppress to allow for ACVs armed with MK19s to close in to the target where their weapon system will be more effective (Figure 4-1).

Fire commands should be as brief and concise as possible; redundant information is omitted. All initial fire commands must contain ALERT, RANGE, and COMMAND.

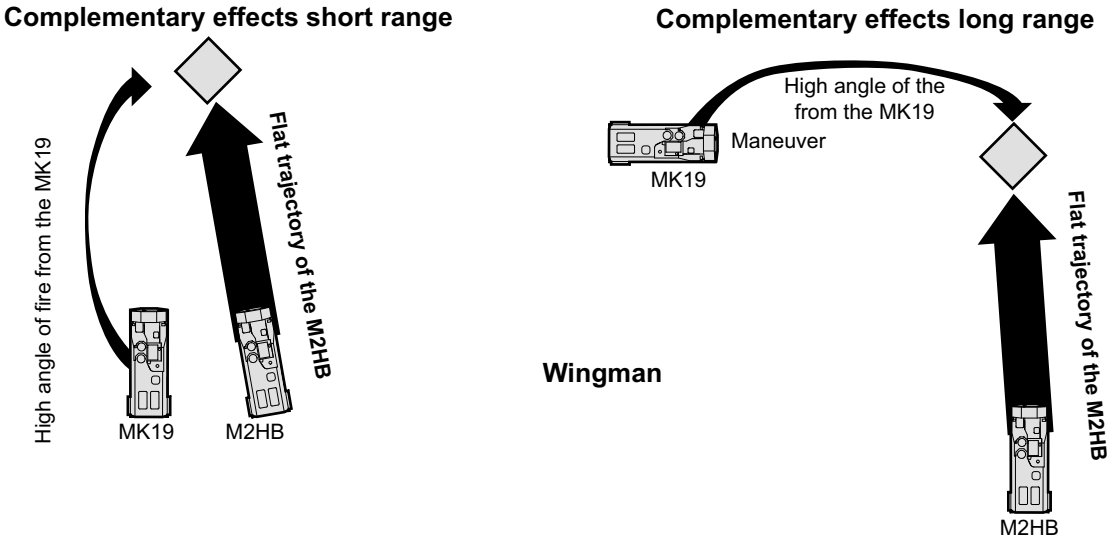



**Figure 4-1. MK19 and M2HB Complementary Effects.**

### Fire Patterns

Fire patterns are a threat-based measure designed to distribute the fires of a unit simultaneously among multiple, similar targets. The ACV section leaders designate and adjust fire patterns based on terrain and anticipated enemy formation. The basic fire patterns (Figure 4-2) include—

- Frontal fire.
- Cross fire.
- Depth fire.

***Frontal Fire.*** Frontal fire is used when targets are arrayed in front of the unit in a lateral configuration. Weapons systems engage targets to their respective fronts. For example, the left flank weapon engages the left-most target; the right flank weapon engages the right-most target. As weapons systems destroy targets, weapons shift fires toward the center of the enemy formation from near to far.

***Cross Fire.*** Cross fire is used when targets are arrayed laterally across the unit's front in a manner permitting diagonal fires at the enemy's flank, or when terrain features or man-made features prevent unit weapons from firing frontally. Right flank weapons engage the left-most targets; left flank weapons engage the right-most targets. Firing diagonally across an engagement provides flank shots while also reducing the possibility of the enemy detecting friendly elements if the enemy continue to move forward. As friendly elements destroy targets, weapons shift fires toward the center of the enemy formation.

***Depth Fire.*** Depth fire is used when enemy targets disperse in-depth, perpendicular to the unit. Center weapons engage the closest targets; flank weapons engage deeper targets. As the unit destroys targets, weapons shift fires toward the center of the enemy formation.

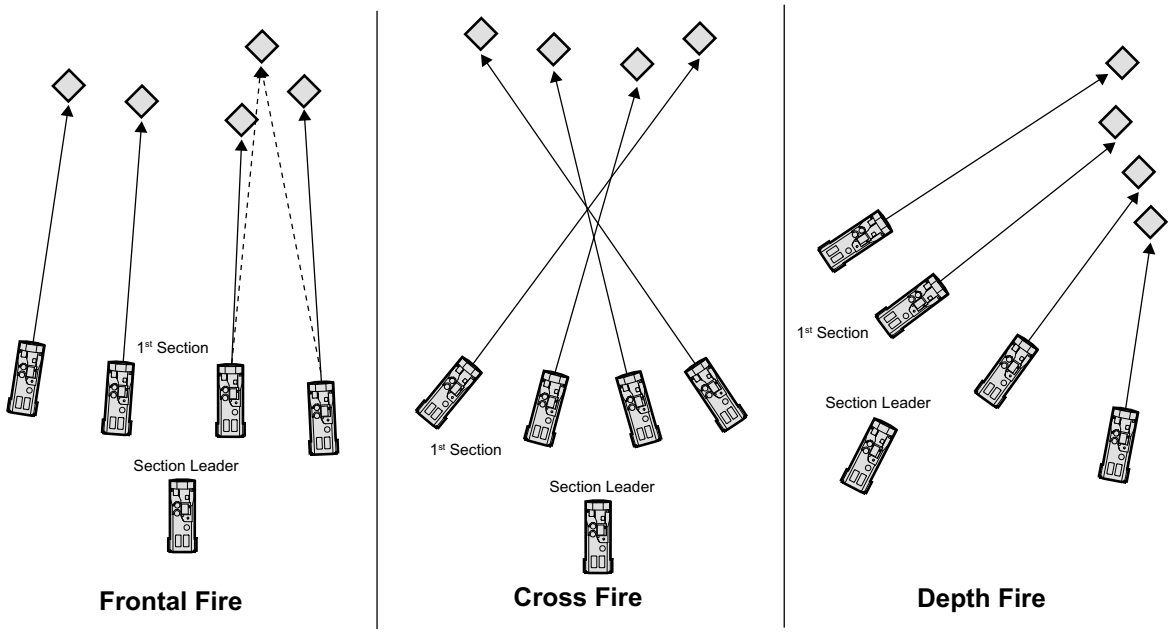



**Figure 4-2. Fire Patterns.**

### Firing Techniques

In addition to employing fire patterns, the ACV section leader might choose one or a combination of three firing techniques to distribute and control direct fires: simultaneous, alternating, and observed.

***Simultaneous Fire.*** Simultaneous fire is the primary firing technique used. It is employed during most offensive engagements when the unit encounters surprise targets. It is also used in most defensive engagements when the enemy array is numerous enough to require multiple engagements by each ACV in the unit. In that case, all ACVs engage simultaneously in their assigned sectors.

***Alternating Fire.*** Alternating fire is used when the ACV unit is in a defensive position or is undetected. Each ACV alternates firing and observing in conjunction with another ACV.

***Target Array .*** Target array enables the leader to distribute fires when the enemy force is concentrated and terrain-based controls are inadequate. Forces create this threat-based distribution measure by superimposing a quadrant pattern on the enemy formation. Crews center the pattern on the enemy formation, with the axis running parallel and perpendicular to the enemy's direction of travel. The target array fire control measure is effective against an enemy with a well-structured organization and standardized doctrine. However, it could prove less effective against an enemy presenting few organized formations or does not follow strict prescribed tactics. Leaders describe quadrants using the quadrants' relative locations: far left/right, near half, left half, and right half.

## URBAN GUNNERY

Although the CROWS offers a greater degree of precision than its predecessor does, the urban environment will pose unique challenges for ACV gunners. Many considerations must be considered to employ the CROWS safely and effectively in support of infantry urban operations.

An ever-present hazard to dismounted personnel is ricochet by both fragments of munitions and material, such as concrete. Concepts such as "troops beyond impact" must be considered while engaging enemy positions in relation to friendly forces. The surface danger zone is a predicted area where a projectile will return to earth either by direct fire or ricochet. This area has specific dimensions that provide a contained area for all fragments resulting from the caliber of weapons fired. Those situated beyond this impact area are at a much higher risk of being hit by ricochet.

The urban environment poses limitations to CROWS' operability. Even in its widest field of view, the CROWS can create a "straw effect" in which the gunner's situational awareness is limited to a narrow field of view. In a complex urban environment, this can limit the ACV gunners' ability to acquire targets quickly. To mitigate this, communication with dismounted infantry can assist the gunner's situational awareness and ability to identify enemy positions. This limitation is only made more difficult in the thermal optics inability to penetrate glass. Rotating between daylight and thermal modes while scanning can mitigate this issue. Following horizontal scan and near-to-far sector search techniques can aid in the gunner efficiently scanning for possible enemy locations. These techniques can be used by vehicles when at a halt or during slow movement and are primarily used in urban terrain or on routes of march. They can be used to identify close threats to the vehicle or small unit such as dismounted threats and improvised explosive devices. Each radiating range band can be assigned different search techniques, tailored to the small unit or crew's mission.

# CHAPTER 5.
# AMPHIBIOUS OPERATIONS

An amphibious operation is, "launched from the sea by an amphibious force to conduct landing force operations within the littorals" (The *DoD Dictionary of Military and Associated Terms*, hereafter referred to as the *DoD Dictionary*). An amphibious operation can be conducted in permissive, semi-permissive, or non-permissive environments; ACVs could be employed to support any of these types of amphibious operations. While the ACV's primary purpose is ship-to-shore movement, its versatile nature as an amphibious vehicle makes it useful in various ways. The ACV family of vehicles' ability to negotiate surf conditions and obstacles, coupled with armor-protected mobility, make the ACVs uniquely suited for amphibious operations.

The ACV unit leader is responsible to the supported unit commander for overseeing the unit's movement and operational activities across maritime and littoral environments, ensuring seamless integration of waterborne operations within the amphibious objective area. The ACV unit leader coordinates with Navy and Marine Corps personnel tasked with planning and executing operations, ensuring the implementation of comprehensive safety measures for launch, recovery, and emergency procedures. This coordination must be conducted with the concurrence of the supported unit commander. To uphold the principles of parallel and concurrent planning, the ACV unit leader actively participates in the amphibious operation's planning process, offering recommendations and expertise. During planning, the ACV unit leader should be co-located with the supported commander and maintain communication with the higher unit throughout the operation's execution.

The commander, amphibious task force controls the ship-to-shore and shore-to-ship movement and surface assault through the Navy control group in accordance with the landing plan and up to the clearance coordination line. The waterborne portion of an amphibious landing is a highly controlled effort involving precise navigation, timing, and coordination by elements of the amphibious task force (ATF).

## PHASES OF MILITARY OPERATION

The phases of an amphibious operation are planning, embarkation, rehearsal, movement, and action.

### Planning

The planning phase of an amphibious operation typically extends from the issuance of an initiating directive that triggers planning for a specific operation and ends with the embarkation of the landing force. However, planning is continuous throughout the amphibious operation. It requires concurrent, parallel, and detailed planning efforts by all participating forces.

### Embarkation

The ACV is usually embarked and transported to the amphibious objective area on the following amphibious warfare ship types capable of conducting wet well operations: dock landing ship (LSD), amphibious transport dock (LPD), amphibious assault ship (multipurpose) (LHD), and general-purpose amphibious assault ship (general purpose) (LHA).

### Rehearsal

A rehearsal is the phase of an amphibious operation in which one or more exercises are conducted by the amphibious force, or elements thereof, under conditions simulating an anticipated amphibious operation. It is executed according to a plan that parallels the plan for the specific operation. Accordingly, participants should include the units that are to take part in the operation.

### Movement

During movement to the amphibious objective area, a maximum effort is made to prepare Marines, machines, and equipment for combat, ensuring readiness through continuous training, equipment maintenance, and rehearsals. This preparation aligns with the AA unit's and supported unit's SOP while integrating intelligence updates, threat assessments, and final coordination to optimize mission effectiveness upon arrival.

### Action

The AA unit focuses primarily on providing an amphibious capability and direct fire support necessary for the surface assault elements to seize the landing force and ATF objectives. The landing force commander's concept of operations determines the nature of the landing. The factors of METT-T determine whether the amphibious landing will be conducted from nearshore or beyond. The nearshore and associated amphibious landing distances varies based on mission requirements and operational constraints. Although the nearshore assault allows for launching ACVs outside the range of direct fire antitank weapons and for a short ship-to-shore transit time, it might require the amphibious ships to operate within the range of enemy weapons (e.g., missiles or mines). When launching ACVs and landing craft outside the range of enemy weapons systems, time, space, logistics, human, and other considerations become more difficult to factor as distance increases.

## TYPES OF AMPHIBIOUS OPERATIONS

### Amphibious Raid

An amphibious raid is, "a type of amphibious operation involving a swift incursion into or the temporary occupation of an objective, followed by a planned withdrawal" (DoD Dictionary). Raids are conducted to—

- Destroy certain targets.
- Harass the enemy by attacking isolated posts, patrols, and headquarters and capturing or killing key personnel.
- Attack the enemy's rear or flank positions in support of other forces engaged with the enemy.
- Obtain information on hydrography, terrain, and the enemy.
- Create a diversion.
- Evacuate individuals or materiel.
- Establish, support, or coordinate unconventional warfare activities.

Raid forces could consist of raid groups, elements, or teams with the capabilities and skills required for the mission. Raid forces should be as small as possible to maximize stealth and speed. The ACV should be used when the mission requirements dictate the need for armor protection, firepower, and mobility. The ACV is also able to extract the raid force back to sea without the assistance of additional landing craft.

### Amphibious Demonstration

An amphibious demonstration involves a show of force conducted to deceive the enemy with the expectation of deluding the enemy into an unfavorable course of action (COA). The effectiveness of a demonstration increases in direct proportion to the degree of realism involved in its execution. Using linear formations and dispersion to best display the formation strength, ACVs present a convincing show of force. The amphibious and mechanized nature of the ACV could influence the enemy to divert forces to deal with the threat, thus generating the desired effect.

### Amphibious Assault

An amphibious assault is launched from the sea by an amphibious force, embarked in ships or crafts, to land the landing force and establish it on a hostile or potentially hostile shore. The unique combination of armor protection, long-range communications, heavy machine guns, off-road mobility, and amphibious capabilities make the ACV the mainstay of surface assault forces conducting amphibious assaults. An amphibious assault requires the swift introduction of sufficient combat power ashore to accomplish objectives.

### Amphibious Withdrawal

An amphibious withdrawal is, "the extraction of forces by sea in ships or craft from a hostile or potentially hostile shore" (*DoD Dictionary*). An amphibious withdrawal can be conducted under enemy pressure, under operational urgency to obtain forces needed elsewhere, or to remove forces whose mission is completed. The armored and amphibious nature of ACVs makes them particularly well-suited for withdrawing forces from hostile shores. Their self-deploying amphibious capability enables them to act as a covering force for other assets withdrawing by landing craft.

### Support to Crisis Response and Other Operations

Amphibious forces support to crisis response and other operations contributes to conflict prevention or crisis mitigation, such as security cooperation, FHA missions, civil support, noncombatant evacuation operations, peace operations, or disaster relief. These operations could involve elements of combat and noncombat operations. Some might take place in conjunction with other types of amphibious operations (e.g., a noncombatant evacuation operation might be the purpose of an amphibious raid) and could require minor adjustments to planning. Other operations, such as an amphibious force providing humanitarian assistance, might require considerable flexibility on the part of the planners. These operations are generally more sensitive to political considerations stemming from the overriding goal to prevent, preempt, or limit potential hostilities. The ACVs have fixed seating and lift capability for extra equipment or additional personnel (e.g., evacuees) have to be balanced against the number of personnel required for the operation.

## NAVAL WARFIGHTING

Amphibious operations are complex tasks by nature; understanding naval shipping capabilities and limitations is imperative to the success of operations. The ACV can engage targets when waterborne; however, this is dependent on environmental conditions and crew proficiency. Naval optics, weapons, sensors, and radar must be understood, integrated, and maximized into the amphibious operation plan. Coordination with the boat control teams from the primary control ship (PCS) CICs and the use of common charts and maps will aid in passing information among units. The AA unit leader located aboard naval shipping should ensure that ship's boat control team evaluator is relaying vital information to the ACV commander during the amphibious maneuver.

The ATF commander will designate PCS personnel for the detailed planning, control, and coordination of the AA unit and other surface-borne connector movement. The primary control officer (PCO) embarks in a PCS assigned to control the movement of the landing craft and amphibious vehicles.

A PCO is assigned for each landing beach and is responsible for providing detailed plans and instructions for conducting ship-to-shore movement across a landing beach while maintaining the current location and status of ships, landing craft, and boats assigned to conduct landings on a specific beach. Further, the PCS personnel will monitor surf and weather conditions and recommend the termination of a landing should conditions warrant. The PCS personnel also maintain the status of debarkation or embarkation, land scheduled waves at the correct beach at the specified time and provide liaison to the surface-borne tactical logistics detachment.

Primary control ship personnel provide support for the PCO and a CIC with a control team to track and control landing craft and ACVs to and from a landing beach. The PCS personnel's responsibilities include maintaining a plot of ships, ACVs, and landing craft within a controlled area while coordinating the movements of on-call waves and nonscheduled units. The PCS coordinates all movements during general offload or backload. The PCS could be assigned a point station or an underway sector in the vicinity of the LOD while providing pertinent information, including navigational vectors, the detection of obstacles or mines, and enemy airborne, surface, or sub-surface threats, either waterborne or landward.

### Nautical Navigation Aids

The ACV crews and units rely upon apparatuses, namely the nautical slide wheel and charts and maps, to conduct planning and execute waterborne maneuvers to ensure timeliness is maintained and adhered to in accordance with the established scheme of maneuver.

***Nautical Slide Wheel.*** A nautical slide wheel provides ACV leaders with a means of calculating time and space distance factors while conducting waterborne planning and during movement. Distance traveled is calculated using a nautical chart or map, which is inputted into the nautical slide wheel on the outer ring in either nautical miles or yards (see Table 5-1). If using a military grid reference system (MGRS) type map, a conversion is required from meters and kilometers to yards or nautical miles.

**Table 5-1. Standard-to-Metric Range Conversion.**

| Standard Distance | Metric Distance |
|---|---|
| 1 yard | 0.91 meters |
| 10 yards | 9.1 meters |
| 100 yards | 91.44 meters |
| 1 nautical mile | 1.85 kilometers |

Once distance is established, the inner circle speed designator on the nautical slide wheel can be adjusted based on rate of march speed given weather variables. For ACV movement, this is likely to be 4 to 5 knots. Once the speed ring is set on the desired speed, the time to travel will be indicated on the inner ring, adjacent to the speed reading. It is highly recommended that speed and distance be forecasted via waypoints; during execution, the ACV commander must continually check their timings, adjust speed, and recalculate movements, if necessary.

***Nautical Charts and Maps.*** Understanding how to read and plot using latitudes, longitudes, and the MGRS map facilitates movement control and understanding control measures when planning and executing amphibious operations. Nautical charts and maps are divided into squares. For nautical charts, each square is associated to a degree, each degree is divided into 60 minutes, and then each minute is divided into 60 seconds. Military maps use the MGRS with squares associated to a distance measurement, which is typically in meters and kilometers, dependent on scale. Charts and maps are read the same way; the only difference is the scale. The ship's amphibious assault direction system has a built-in convertor. The ship's direction system operator should provide all the latitude and longitude conversions for the AA unit prior to executing a mission.

Table 5-2 shows conversion for vehicle power ratings to achieve desired speeds.

**Table 5-2. Vehicle Power Rating Conversions.**

| Distance | Speed (knots) | Time* (mins) |
|---|---|---|
| 2000 Yards (0.987 NM) | 7 | 8.5 |
| | 6 | 10 |
| | 5 | 12 |
| | 4 | 15 |
| 23,292 Yards (11.5 NM) | 7 | 100 |
| | 6 | 118 |
| | 5 | 140 |
| | 4 | 175 |
| *Time is approximate as environmental factors will influence movement.<br>All times are given with ACV at crew load weight. At gross vehicle weight, the ACV would be slightly slower. | | |

### Hydrography

Hydrography, the description and study of bodies of water and their adjacent land areas, is used to interpret sea, surf, and beach conditions related to the employment of ACVs. Many complex factors influence these conditions and have varying effects upon the operation of ACVs. The success or failure of an amphibious landing using ACVs largely depends on the completeness and accuracy of intelligence and upon the AA unit leader's interpretation of that intelligence.

***Sea State.*** Sea state is measured on a scale that categorizes the force of progressively higher seas by wave height. When direct measurement of local wave heights from buoys, direct observation, or other tools, are not available, wind velocity or sea state description are used to estimate the sea state condition number.

Amphibious operations go/no-go criteria are listed in Instruction 3340.3 and will be articulated in the operational tasking amphibious message [OPTASK AMPHIB]. For more information on sea state, refer to MCRP 2-10.3, *Naval Amphibious Surf Manual*.

***Sea Waves.*** Caused by high winds in storm areas, sea waves are usually steep, have a short period, and often crest and break in deep water. Very large sea waves are commonly referred to as whitecaps or combers. Combers affect the speed and maneuverability of the ACV; the driver's visibility will be reduced because of the spray encountered. During splash, the driver's hatch is closed. Typically, the driver's hatch stays closed to prevent ocean spray and water from entering. In these conditions, a magnetic heading device or precision lightweight Global Positioning System (GPS) receiver can be used to maintain course. High seas must be anticipated in the navigation plan, landing formation, and landing schedule.

**Maintain Awareness of Reading Differential**

Prior to operations, crew members should verify and record the difference in magnetic readings when conducting readings from inside the ACV versus when on the ground.

***Swell.*** A swell is characterized by its lack of steepness and longer, rolling period. Depending on their size and orientation to an ACV, moderate to heavy swells can impede the vehicle's speed and maneuverability. Swell conditions must be anticipated in the navigation plan, landing formation, and landing schedule. Heavy swells could also make debarkation from naval shipping more difficult or dangerous. Swells more commonly affect embarked personnel by causing motion sickness (i.e., seasickness) and fatigue. Long waterborne movements in large swells should be avoided, as they reduce the combat effectiveness of embarked assault forces. Swells have the greatest effect upon ACVs once they reach the shore and form breakers.

***Tides.*** Tide variations affect the width of the beach and surf zone; therefore, both the high- and low-tide levels and the tidal range should be known. Tides affect the type of surf, the depth of water over sandbars and reefs, and the effectiveness of underwater obstacles. For example, high tides enable ACVs to more easily overcome sandbars, reefs, and other obstacles; however, because they shorten the surf zone, the percentage of plunging breakers could increase. Conversely, low tides could have the opposite effect by increasing the number of spilling breakers

and failing to provide the necessary water depth for the vehicles to climb over reefs or other underwater obstacles. Extreme highs and lows, which could remain unchanged over the course of several days, can severely affect operations.

***Surf Zone.*** The surf zone is the area of water from the surf line to the beach. The most dangerous portion of an amphibious landing is negotiating the surf zone. The energy of the wave is released at this point, and most landing craft casualties take place in this zone or area. When the wave moves into water shallower than half the wavelength, the wave height will increase and the wavelength decreases, forming breakers. The three types of breakers are spilling, plunging, and surging:

- Spilling. Spilling breakers typically happen on flat, mild, and gentle beach gradients (or slopes), and to a lesser extent on moderate gradients. The crest slides down the face of the wave forming foam and giving a very gradual release of energy over a wide area. This type of breaker is preferred for conducting an amphibious operation.
- Plunging. Plunging breakers take place on moderate to steep gradients. The crest plunges over and into the preceding trough, with a sudden release of energy in a narrow area. This condition is less preferred for conducting an amphibious operation.
- Surging. Surging breakers happen on steep gradients. The backwash is very strong because of the steep slope. The wave builds like a plunging breaker, but the sudden backwash stops the plunging and the breaker explodes onto the beach. Operators of ACVs must be aware of the final gasp of these waves onshore. Since they do not break offshore, they do not lose energy and therefore could run up the beach with force and distance.

### Reefs, Sandbars, and Obstacles

Surf beat and breakers must be considered before ACVs are navigated through reefs, sandbars, and other obstacles. Information needed for ACV operations over reefs or bars should include—

- The nature or type of obstacle.
- The distance offshore or location of the obstacle.
- Slope (seaward).
- Water depth at various tidal stages, or height of the obstacle above water.
- The location of gaps or passages in the sandbar or reef.
- Breaker height.

***Surf Beat.*** Surf beat is the distinct rise and fall of the mean water level within the surf zone. Surf beat can be significant to ACVs approaching submerged obstacles, such as sandbars or reefs. Typically, surf beat is equal to 10 percent of the breaker height. This quick rising and falling, almost a foot at times, can throw an ACV against an obstacle. The damaging effects of surf beat upon a vehicle can be overcome if the tide provides sufficient water depth over the obstacle, or if the sandbar or reef has a soft composition.

***Breakers.*** While approaching sandbars and reefs, additional care should be taken because swells can break violently onto them. Wherever bars or reefs are present, the wave crest will peak as the waves roll over them. The water depth over the sandbar or reef and the wave height determines whether breaking takes place on or near the obstruction. Generally, if the depth is

less than 11/2 times the breaker height, waves will break on the sandbar or reef. For example, a six-foot swell will break on a sandbar or reef unless the water depth over that obstruction is at least nine feet.

***Currents.*** Planners of amphibious landings are most often concerned with the effects of longshore or littoral current; however, offshore seasonal currents can have a greater effect on ACVs. Therefore, the speeds of littoral (i.e., longshore) and offshore currents should be collected and considered when conducting ACV operations.

***Offshore Currents.*** Tidal and offshore currents are found outside the surf zone. Currents in excess of three knots will adversely affect an ACV's navigation and speed.

***Littoral Currents.*** Littoral currents take place within the surf zone and are caused by breaking waves. They flow parallel to the shoreline inside the breaker line and increase with larger breaker angles, beach gradients, and breaker heights. Larger intervals between breakers tend to slow the velocity of littoral currents. For ACV operations, the speeds of both offshore and littoral currents should be determined and factored into plans.

***Gradient.*** Unless it is nearly vertical, gradient tends to have little effect upon ACV performance. Underwater features that are less than 100 inches below the surface with little-to-no slope should be considered an obstacle and avoided. Gradient characteristics that might affect ACV operations include the—

- Depth of the surf zone.
- Number of breakers present.
- Type of breakers encountered.

Steep gradients of more than 1:15 (i.e., more than 7 percent) tend to produce a very high percentage of plunging breakers. Steep beaches generally have short surf zones with one line of breakers present. Moderate gradients of between 1:15 (i.e., 7 percent) and 1:30 (i.e., 3 percent) tend to produce spilling breakers, but often create a mixed percentage of both plunging and spilling breakers. Moderate gradients also produce bars and extend the surf zone, which creates two to four lines of breakers. Mild gradients of greater than 1:30 (i.e., less than 3 percent) tend to produce a very high percentage of spilling breakers. They also produce several bars that greatly extend the surf zone and lines of breakers.

***Beach Composition.*** Beaches are composed of silt, mud, sand, gravel, boulders, rock, coral, or any combination of these. The nature and composition of the beach foreshore, backshore, and hinterland could affect the trafficability for ACVs.

#### Foreshore

The foreshore is the portion of a beach extending from the low water (datum) shoreline to the limit of normal high-water wave wash. Due to the increased gradient and looseness of the material, the most critical area of trafficability on the beach is the foreshore. As the gradient increases to its peak, ACVs can become stuck or mired in the loose bottom material. Coarser materials beyond the surf zone, such as gravel, rocks, or cobblestones, provide poor traction for ACVs beginning

to ground themselves and move out of the water. Since ACVs are not fully grounded at the foreshore, they tend to slip on these coarse materials. The heavier the ACV and the steeper the gradient, the ACV will have less traction.

### Backshore

The backshore is the area of a beach extending from the limit of high-water foam lines to the dunes or the extreme inland limit of the beach. Its composition is usually soft, loose, and dry. Because it generally has a mild gradient, the backshore does not usually present a problem to trafficability; however, ACVs could lose traction if the gradient is steeper.

### Hinterland

The hinterland is the area just past the backshore behind the first line of permanent vegetation. An ACV can encounter trafficability problems in the hinterland if confronted with dunes or cliffs. If these obstacles are too steep, the ACVs might advance only to the backshore.

### Beach Exits

Beach exits allow ACVs to quickly move inland; however, natural or reinforcing obstacles might channel or prevent ACVs from exiting the beach and moving inland. Urban or developed terrain near landing beaches can present a unique set of complications or advantages in an amphibious operation.

## SURVEYS AND REPORTS

The following surveys and reports should be used when planning for an operation involving ACVs:

- Hydrographic surveys.
- SUROB report.
- Modified surf index (MSI).
- Other hydrography products.

### Hydrographic Survey

The purpose of a hydrographic survey is to systematically collect information about the foreshore and nearshore sea approaches to a designated landing beach. Beachmaster unit beach party teams are responsible for completing beach surveys under permissive conditions. Beachmaster personnel are neither trained in nor equipped to conduct hydrographic surveys from the 2-meter curve out to the beginning of the offshore (seaward to the 10-meter charted depth). Navy special warfare or Marine Corps force reconnaissance teams are preferred for conducting hydrographic surveys at contested landing sites. This information is transferred to a hydrographic sketch, which can be used by the combat logistics force to plan the amphibious operation. The survey typically encompasses the nearshore area from the three-fathom line to the water's edge or designated clearance coordination line; the foreshore, backshore, and hinterland for about 100 yards; and the length of the beach as designated by combat logistics force. The hydrographic and beach surveys overlap in that they both cover the foreshore.

### Surf Observation Report

The safety and success of an amphibious landing is largely dependent upon known surf conditions. A SUROB report is an observation of surf conditions disseminated in a prescribed format. It is essential that these reports are accurate and timely. Darkness inhibits the observer's ability to determine critical parameters, such as breaker height, breaker type, or breaker angle. Nighttime observations can be checked by reviewing MSI trends established by the preceding daytime observations. That is, did the last few daytime observations indicate that the MSI was increasing, decreasing, or remained constant? This information, in conjunction with the current meteorological situation, will indicate if any large variations between the daytime and nighttime observations are justified. The operational tasking amphibious [OPTASK AMPHIB] for amphibious operations should provide for the taking and transmission of SUROB reports. For operations involving multiple organizations and in-depth coordination, SUROBs begin well prior to the initial landing. A SUROB is required before or upon the initial landing and follow on SUROB reports must be conducted and submitted every two hours during ACV operations, unless weather or sea states change, or when directed by higher authority. The periodicity of SUROB reports vary with the scope of the exercise and is usually defined in the operation order (OPORD) for the amphibious landing. The approved SUROB format is in MCRP 2-10.3.

### Modified Surf Index

The MSI is a single dimensionless number that provides a relative measure of the conditions likely to be encountered in the surf zone. For the reported or forecasted conditions, the MSI provides a guide for judging the feasibility of landing for each type of landing craft. It is derived from the SUROB report. For operations that encompass the surf zone, keep in mind that the SUROB and MSI only consider the conditions in the surf zone and might greatly differ from what is encountered in the open ocean.

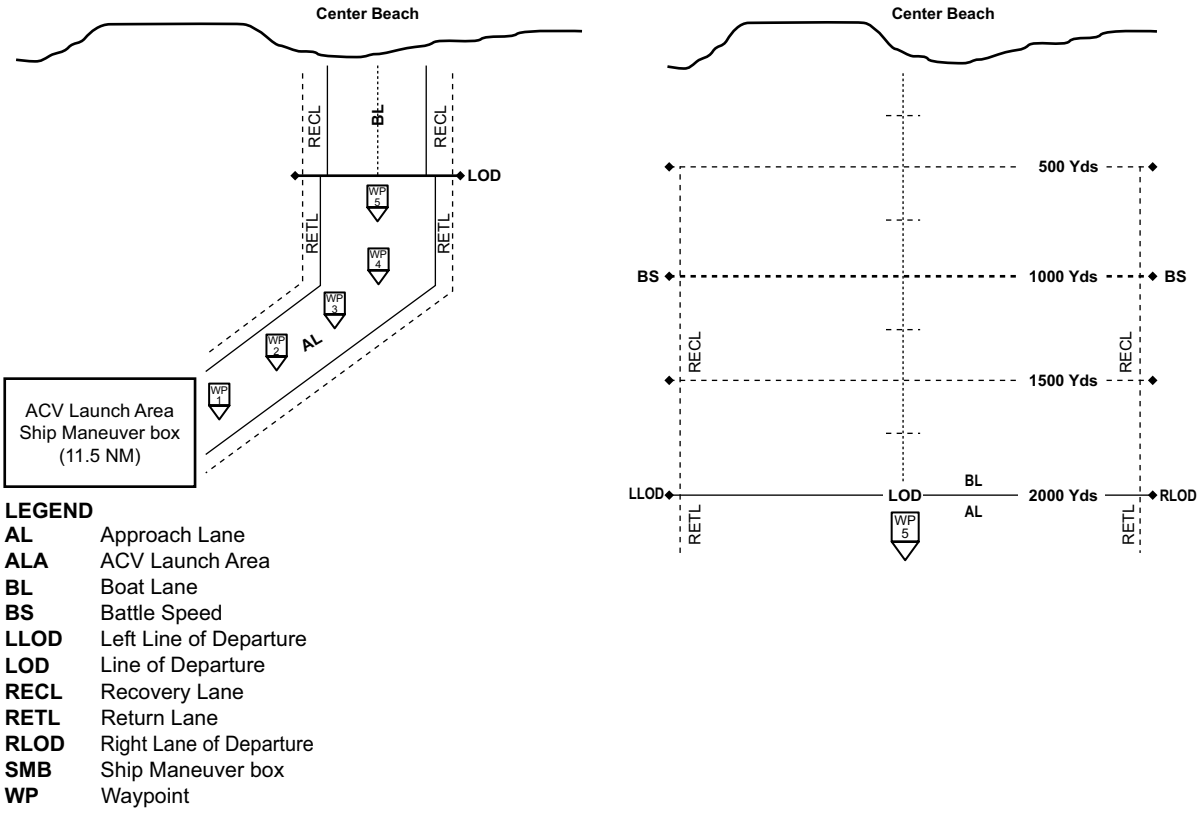
### Other Hydrography Information Sources

Other intelligence sources could include mapping, charting, and geodesic materials, tourist guides and maps, aerial observation and photos, multi-spectral imagery, or other intelligence preparation of the battlespace products.

For detailed information regarding surf forecasting, reports, and general information refer to MCRP 2-10.3.

## SURFACEBORNE TACTICAL CONTROL MEASURES

As with land offensive and defensive operations, when conducting waterborne operations, tactical control measures (TCMs) are used for C2 purposes and for synchronizing the combined Navy-Marine Corps landing plan. Figure 5-1 depicts typical waterborne TCMs.




**LEGEND**

| | |
|---|---|
| **AL** | Approach Lane |
| **ALA** | ACV Launch Area |
| **BL** | Boat Lane |
| **BS** | Battle Speed |
| **LLOD** | Left Line of Departure |
| **LOD** | Line of Departure |
| **RECL** | Recovery Lane |
| **RETL** | Return Lane |
| **RLOD** | Right Lane of Departure |
| **SMB** | Ship Maneuver box |
| **WP** | Waypoint |

**Figure 5-1. Waterborne Tactical Control Measures and Definitions.**

### Boat Lane

A boat lane extends from the LOD to the beach and is transited by landing craft moving ashore. Analysis of METT-T factors relative to the selected landing should be used to determine the width of the boat lanes. The most significant factors affecting lane width include environmental effects, enemy defenses, and the clearance or neutralization of naval mines. The flanks of the boat lane might be marked at the LOD by the ship's safety or the wave guide boat.

### Boat Lane Considerations

The integration of mine counter measures into the overall strategy is the responsibility of the Commander, Amphibious Task Force. The movement of landing craft to and from the launch area to the beach up to the clearance coordination line is controlled by the PCS or secondary control ship, when designated.

### Line of Departure

The LOD is a suitably marked offshore coordinating line to assist landing craft in landing to designated beaches at scheduled times. It marks the seaward end of the boat lane. If multiple beaches are being used in the operation, each landing beach will have an LOD; topographic, hydrographic, and tactical considerations to determine the specific location. If necessary, it can be marked by PCS boats, buoys, or waypoints, but when scheduled waves are launched underway, the LOD can be unmarked. Displacement craft waves are dispatched to the beach from this line. A separate LOD can be provided for ACVs to reduce surface borne transit times. The LOD moves the ACV unit from the approach lane to the boat lane and from Boat Bravo communication frequency to Boat Alpha communication frequency.

### Waypoint
A waypoint [WP] is a predetermined point used to control amphibious movements, tactical maneuver, and orientation. Amphibious combat vehicle units can use waypoints as substitutes for phase lines while within the amphibious approach lane.

### Return Lane
A boat return lane is designated to the left or right of the boat lane to facilitate the return of landing craft or disabled vehicles without interfering with the landing. Any AA units returning to their ships following a turn-away landing also use the boat return lane.

### Ship Maneuver Box
A ship maneuver box is an area where the amphibious ship conducts its launch that has the least probability of detection, as close to its objective as possible, and as simply and rapidly as possible given environmental and water depth considerations.

### Alpha Station
The alpha station is typically 500 yards off the stern of the ship. During embarkation, this is where control transitions from the CIC to Well Deck Control on the Boat Bravo net.

### Approach Lane
The approach lane is an extension of the boat lane from the LOD toward the transport area. It indicates the exact route displacement landing craft use to approach the LOD from the transport area or ship maneuver box. The approach lane can be identified by a marker ship, boat, or buoy. Adjacent approach lanes can be parallel or diverge seaward to provide for early dispersion of assault waves.

## SURFACEBORNE LAUNCH PREPARATION

### Developing the Situation
The UAS provides real time surveillance and gives the landing force the ability to react and adjust to the situation prior to landing. If available, UAS platforms should be launched from the ship's well deck or flight deck prior to surfaceborne movement and can be used to provide reconnaissance to the approach lane, LOD, boat lane, landing beach, and further landward areas (Figure 5-2). The UASs should not travel the planned ACV route and should not be used to mark the center of the landing beach. The systems should be used in a way that provides surveillance of the area without alerting the enemy of their route. Depending on the enemy situation, sea state, and swim distance, an ACV could be required to open hatches while waterborne to control the UAS. If the UAS's launch distance is too far away or launching from the ship and handing off between controllers is not possible, the UAS can be launched from the ACV while waterborne if sea state permits. Considerations for using UASs during amphibious operations include—

- Light time.
- Hand off.
- Recovery.
- Rotation.
- Electromagnetic Signature.

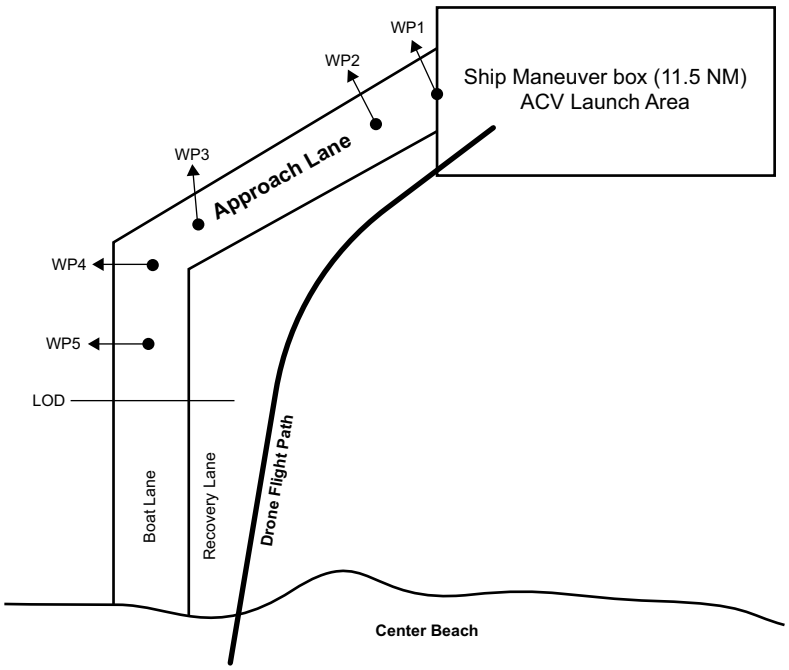



**Figure 5-2. Developing the Situation.**

## SAFETY/WAVE GUIDE BOATS

The Navy and Marine Corps employ small boats as safety/wave guide boats for ACV waterborne operations. Safety/wave guide boats provide AA units the means to transfer personnel from a disabled or sinking ACV during a waterborne emergency and can evacuate personnel to a safe area on ship or ashore. Safety/wave guide boats do not perform emergency functions in the surf zone.

## SHIP-TO-SHORE TIMELINE

The OPORD or PCS intentions message establishes the time for launching and assists in the development of calculated launch times, wave formations, ship-to-shore transit routes, and landing support documentation. Landing serials are published that depict ship-to-shore timeline detailing the exact time each event will be conducted. The first wave touches down on the landing beach at the designated H-hour, with follow-on waves scheduled with time between them to allow previous waves to clear the landing beach. The ACV crews should prepare their vehicles well in advance of the scheduled launch to conduct the required pre-operations checks and personnel embarkation procedures.

The well deck control officer orders the start-up and warm-up of vehicles. The embarked unit leader ensures Marines are embarked on the appropriate ACV in accordance with the landing craft vehicle assignment table. Before the supported unit embarks ACVs, designated naval personnel guide or stage each vehicle into launch positions. After vehicles are set in position, the ACV vehicle commanders supervise the embarkation of assigned personnel.

## DEBARKATION OF ACV FROM NAVAL SHIPPING

To debark ACVs from static or underway amphibious shipping, the ACV commander develops navigational coordinates with the respective ship's personnel. Issuing the warning order and coordinating intelligence and launch information are vital to the success of the operation. At anchor or bear steerageway (ship maintaining course under the most minimal power inputs) launching of ACVs could be required by the hydrographic limitations of the ACV launch area the effects of the ship. A static launch requires a greater launch interval between vehicles. The ACV should enter the water at a speed sufficient to clear the end of the stern gate without striking the rear of the ACV. Standard ship procedures for debarkation can be found in the Instruction 3340.3.

> NOTE: During extended amphibious-movement transit periods, Marines might experience changes in decision-making and reaction times following two to three hours of waterborne motion exposure; the decrease in performance could also be associated to motion sickness symptoms. Decision making during transit should factor in these performance changes when analyzing alternatives for amphibious operations.

An underway launch of ACVs combines the elements of speed and surprise. This technique should be used whenever minimum exposure time is desired for the force protection of naval shipping. The underway launch does not require the congestion of ships anchored in proximity to the LOD. The ACV can be launched in columns at defined intervals.

If an underway launch is planned, the ship's approach to the launch site or launch track should be pre-established. The approach that the ship takes greatly affects the launch and landing of the ACVs. "Launch speed and interval" refers to the speed of the ship in relation to the interval in which ACVs are launched from the well deck. The minimum safe interval between vehicles is five seconds. Table 5-3 provides ACV launch intervals at various ship speeds.

**Table 5-3. Amphibious Combat Vehicle Launch Intervals.**

| Speed of Ship (knots) | 50-Meter Interval (seconds) | 60-Meter Interval | 70-Meter Interval |
|---|---|---|---|
| 0 | 12 | 14 | 16 |
| 2 | 11.2 | 13.1 | 15 |
| 4 | 10.2 | 12.2 | 14 |
| 6 | 9.5 | 11.3 | 13 |
| 8 | 8.9 | 10.5 | 12.2 |
| 10 | 7.5 | 9.5 | 11 |
| 12 | 6.3 | 8.7 | 10.1 |
| 14 | 5.5 | 7.5 | 8.8 |
| 16 | 5 | 6.7 | 7.8 |
| 18 | 5 | 6 | 7 |

The following tactics, techniques, and procedures (TTP) have been used when conducting boost launch from naval shipping:

- Navy "drops" the green flag roughly 5 to 6 seconds before the intended interval. For example, if the AA unit wanted a 70-meter interval and the ship was moving at 4 knots, the AA unit would ask the Navy to drop the green flag at 9 seconds (start boost launch) and then wave it at 14 seconds (launch).
- On command, the vehicle commander order their driver to start the boost launch once the vehicle before them launched. Once the green flag started to wave for them, the next ACV would launch.

Table 5-4 details the safety criteria for ACVs embarking and debarking amphibious ships.

**Table 5-4. Safety Criteria for ACVs Embarking and Debarking Amphibious Ships.**

| | Stern Gate Position | Vent Fans | Ballast | Water Depth at Sill | Maximum Ship Speed |
|---|---|---|---|---|---|
| Debark | 0 to -3 degrees[1] | On[2] | Not Applicable | 6 inches to 1 foot | 21.5 knots |
| Embark | Lowered | On[2] | Steep wedge | 4 to 6 feet[3] | 3 knots[4] |

**Notes:**

[1]LSD, LHD, LPD, and LHA stern gates should be lowered to an angle level with the well deck. If depressed greater than 10 degrees, the stern gates can interfere with ACV's abilities to break free from the ship's wake once launched.

[2]LSD-41 class ships do not have vent fans.

[3]The optimal depth for recovery is approximately 4 feet of water at the sill. Ships should ballast to 8 feet to recover a disabled ACV that is being towed by another ACV or when the ship's positioning or steadying lines will be used.

[4]The maximum speed depends on the speed the ACVs are able to makes and the water's current speed.

## TYPES OF LAUNCH

The amphibious ship is at its most vulnerable during launch and recovery due to its inability to make dramatic course and speed changes while ballasted. The ship must execute a rapid launch or risk the ship's force protection measures. Rapid launches should be planned to minimize the ship's exposure to threats.

### Parallel

In a parallel launch, the ship approaches the beach at a 30- to 45-degree angle, turns either left or right parallel to the shore (90 degrees) on or near the LOD, launches the waves in column, and turns to sea. The ACVs maneuver in column until they are parallel with the LOD, where they conduct a flanking movement and enter the boat lane, flank, and begin to move toward the beach (Figure 5-3). This launch exposes the ship broadside to land for a short duration.

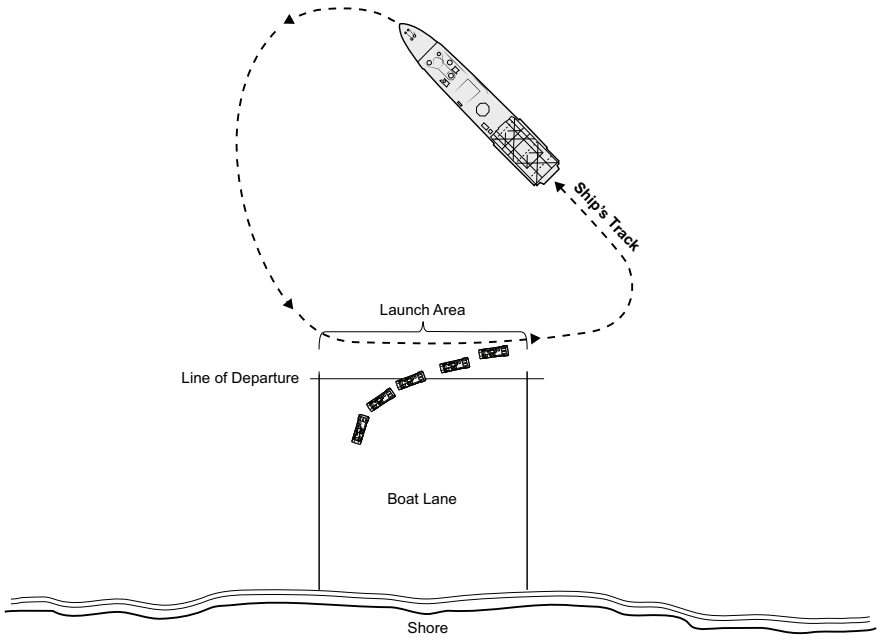



**Figure 5-3. Parallel Launch.**

### Parallel U-Turn

A parallel U-turn combines the parallel launch with the basic turn-away launch. The ship approaches the shore parallel and launches ACVs at the edge of the boat lane. The ship then conducts a U-turn, away from the shore, begins launching the second wave at the opposite edge of the boat lane, and completes the maneuver by turning away from the shore (Figure 5-4).

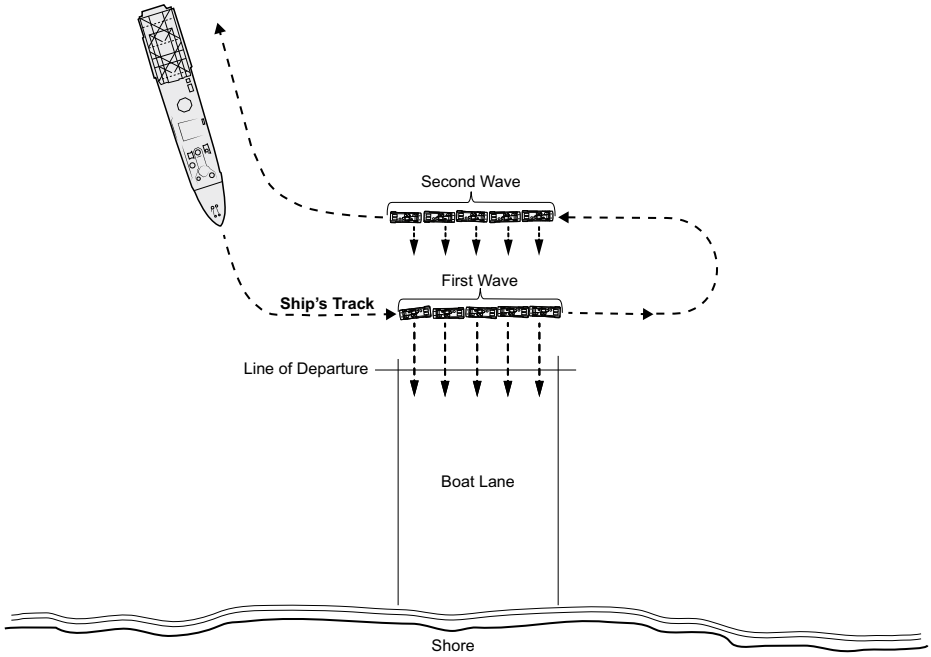



**Figure 5-4. Parallel U-Turn.**

### Turn Away

During a turn away launch, the ship approaches the beach, conducts a U-turn at the LD, and launches ACVs in a column headed directly toward the beach. This pattern minimizes the ship's exposure to the shoreline and launches the wave in column (Figure 5-5).

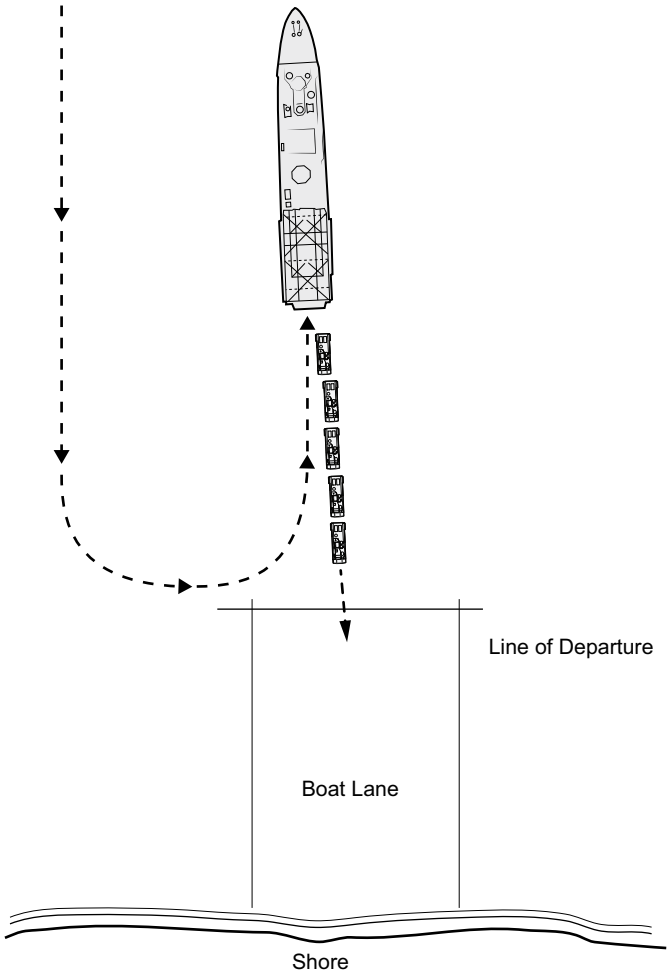



**Figure 5-5. Turn Away Launch.**

### Angled

During an angled launch, the ship approaches the shore at a 45-degree angle and begins to launch ACVs even with the edge of the boat lane. When waterborne, ACVs turn toward the shore and approach the LOD (Figure 5-6).

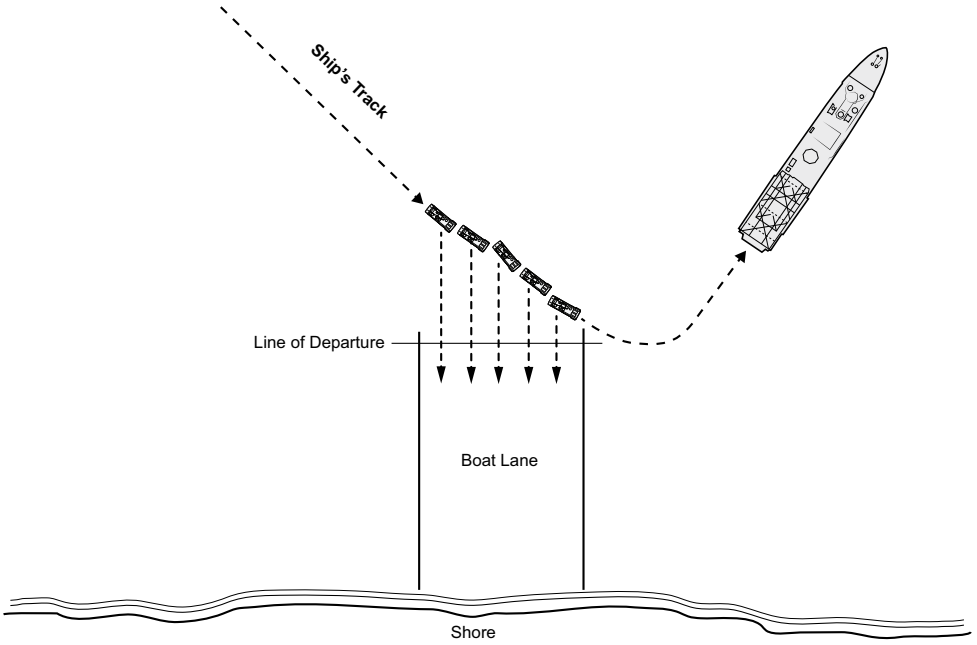



**Figure 5-6. Angled Approach.**

As the ship launches the vehicles closer to the LOD, the vehicles form online and cross the LOD. The ship can then turn away and begin a similar approach on the same boat lane for the second wave (Figure 5-7). The ACVs turn immediately toward the shore and begin movement. This launch track minimizes static time spent maneuvering in the water.

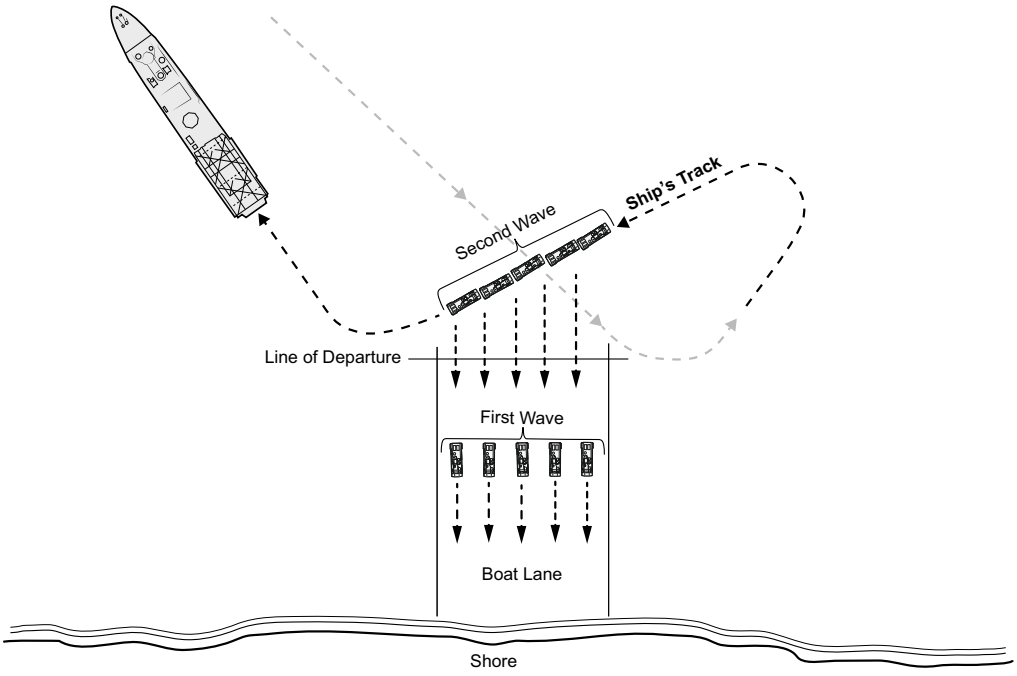



**Figure 5-7. Angled Approach, Second Wave.**

### Angled U-Turn

The angled U-turn combines the turn-away and the angled approach paths. The ship initially conducts an angled launch, executes a tight U-turn, then conducts a parallel launch of the second wave (Figure 5-8).

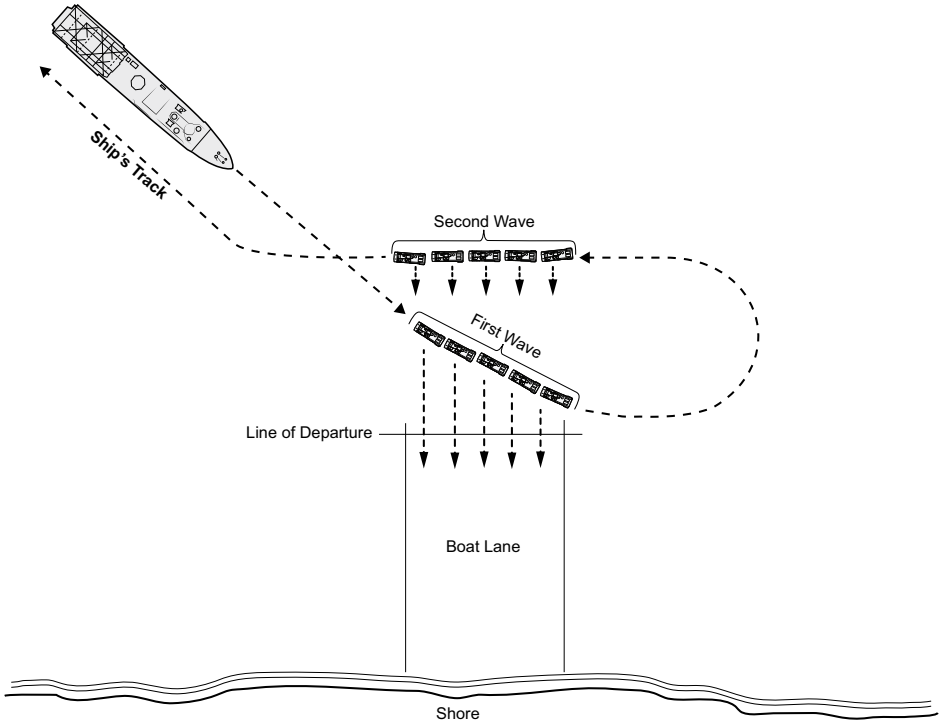



**Figure 5-8. Angled U-Turn.**

### Movement to the Line of Departure

After ACVs have entered the water in column, each wave commander reports to the PCO or PCS via the Boat Bravo network while maneuvering to the LOD. The ACVs maintain dispersion distances to facilitate control during movement.

During over-the-horizon launches, ACVs should travel in column with each wave commander controlling their own rate of approach. As the ACVs approach the LOD, each wave should move to an online formation or as directed by the OPORD in preparation for crossing the LOD. Once Boat Alpha has cleared the wave commander to cross the LOD and transit the boat lane; each wave maneuvers across the LOD by loading from the left flank of the LOD and executing a flanking movement or by using the crows foot method. The primary method of control for vehicles in the water is radio. The first wave then moves to a position just seaward of the LOD.

## LINE OF DEPARTURE

### Crow's Foot Method

The crow's foot method allows the forward movement to be maintained as the ACV unit approaches the boat lane (Figure 5-9). This method slows the overall movement of the unit because the forward ACVs must slow down to allow the rear ACVs to pull forward and get on line.

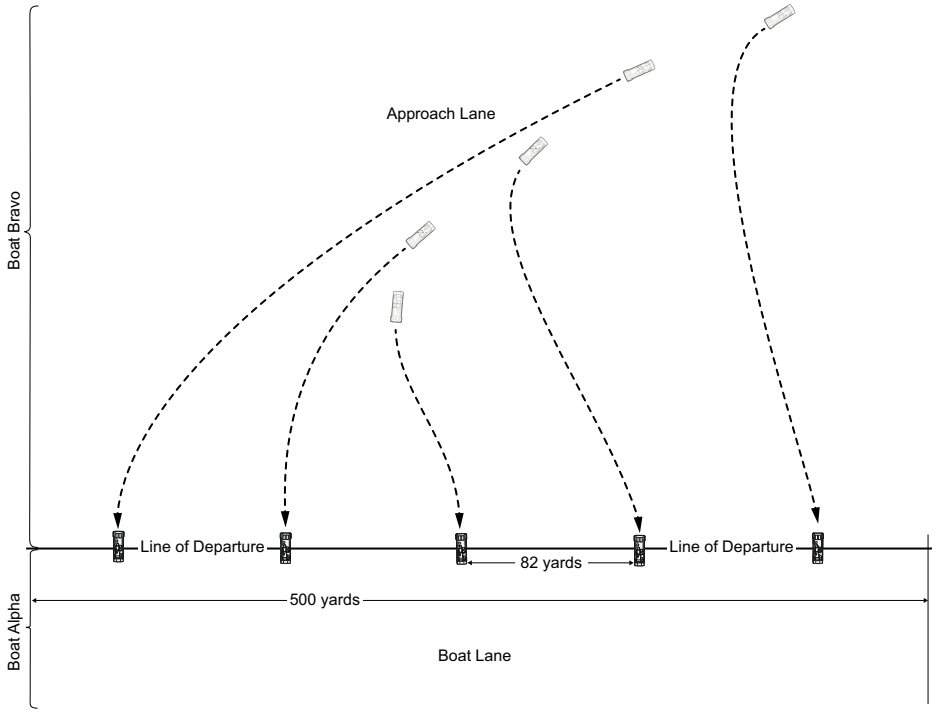



**Figure 5-9. Crow's Foot Method.**

### Flank Method

In the flank method, ACVs will approach the LOD and maneuver to the right or left flank and turn inboard while remaining in column. Once all ACVs are parallel with the LOD, the unit will conduct the applicable flanking movement and on command, cross the LOD into the boat lane (Figure 5-10).

The vehicles' speed afloat will depend on the wave's scheduled progress in the boat lane and environmental factors. Each driver within the wave can set uniform engine revolutions per minute (RPM) to establish and maintain the desired speed. The initial RPM should be set before launch. Battle Speed shall be considered upon crossing the LOD and factored into planning to ensure an "on time" landing as prescribed in the timeline.

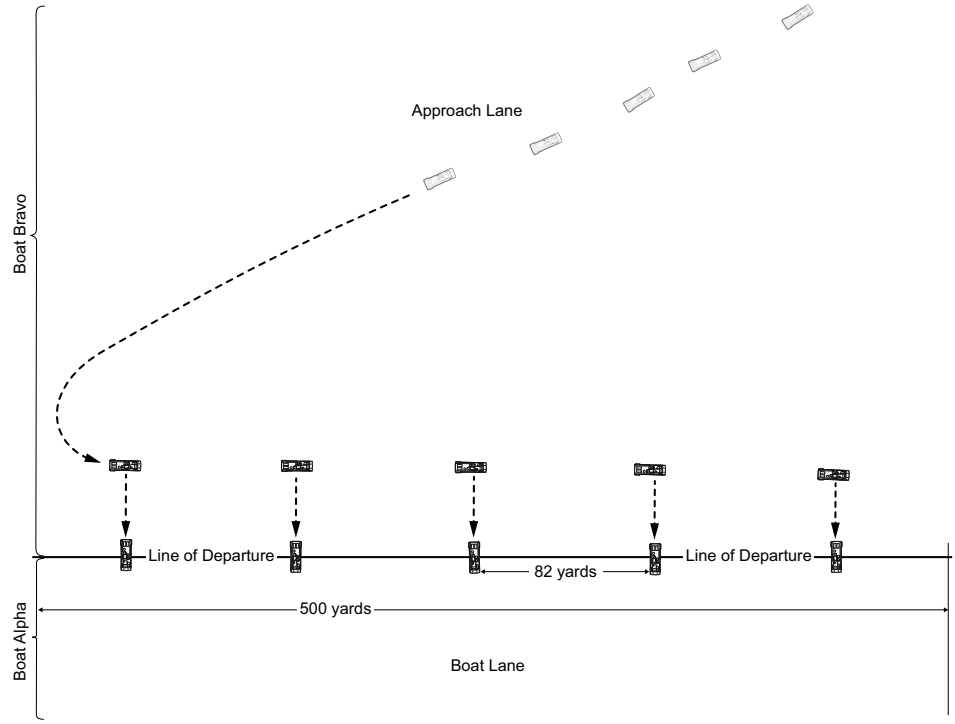



**Figure 5-10. Flank Method.**

## ACTIONS ON THE BEACH

Once a wave lands, the wave commander reports to the boat control group over the Boat Alpha network. If the enemy situation permits, ACVs should continue through the hinterland, to make room for subsequent ACVs or other landing craft and to avoid becoming targets for enemy fires. If ACVs are required to dismount infantry, they should avoid halting without cover. Upon the infantry's debarkation, ACV units should establish a defensive posture, continue to provide direct fires as required, and await further orders. The UASs should reconnoiter the area for threats and to expand the situational awareness of the force on the beach (Figure 5-11).

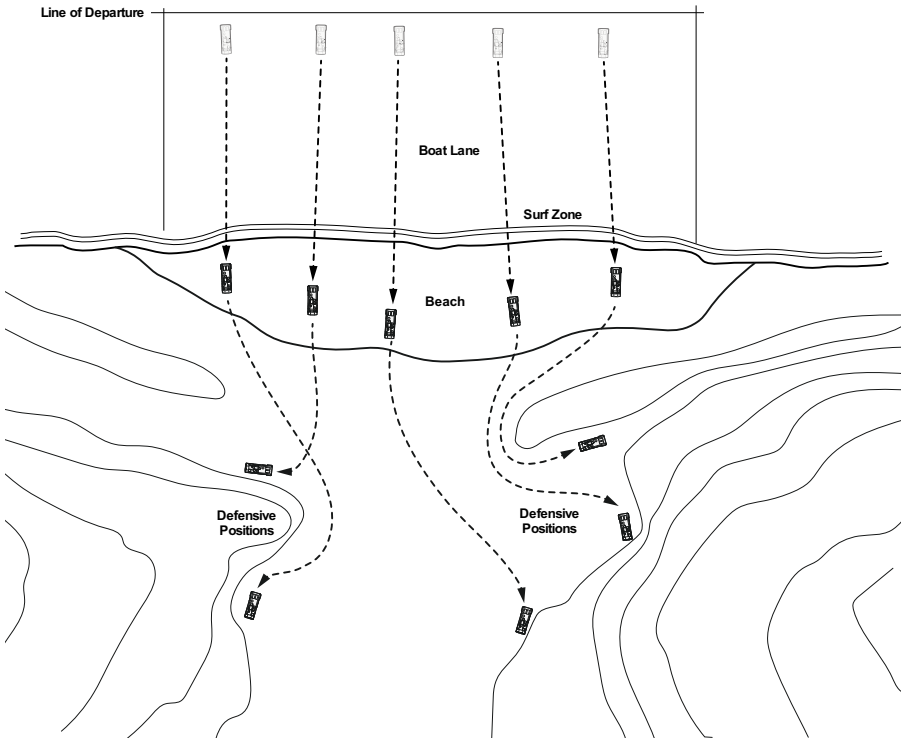



**Figure 5-11. Beach Positions.**

## RE-EMBARKATION

Upon completion of actions ashore, re-embarkation could be required, potentially under pressure from enemy forces. All launches can be conducted at the beach or from an inland coastal water way and are conducted in reverse order from a future, expected launch sequence from naval shipping. The ACV unit enters the water at a launch point on the shore and travels to the planned embarkation point with the ship at sea. Depending on the enemy situation, some preparatory actions or coordination might have to be abridged or omitted altogether. Standard ship procedures for re-embarkation can be found in MCTP 13-10E, *Ship-to-Shore Movement*.

## NON-TACTICAL LAUNCH

The non-tactical launch method can be conducted on-line or in a column formation from a secure beach (Figure 5-12). A splash team leader controls the launch of each vehicle through the designated splash team, using either radio or hand-and-arm signals.

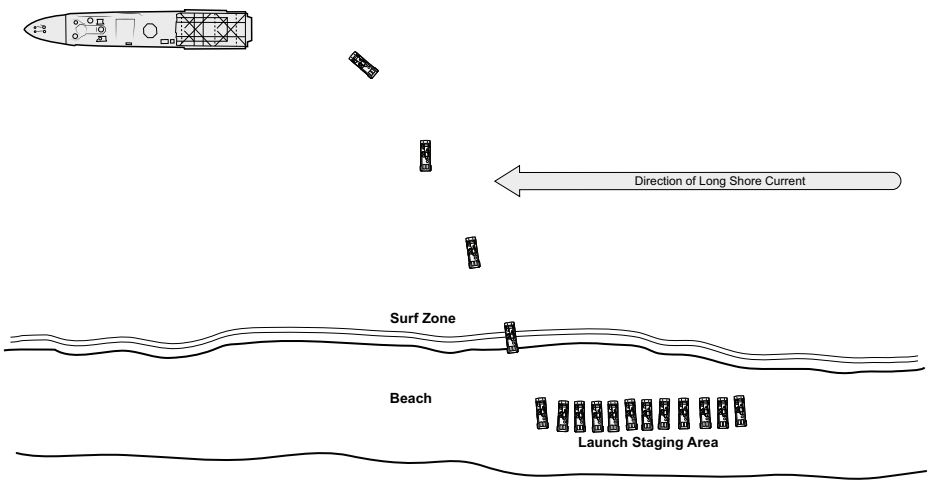



**Figure 5-12. Non-Tactical Launch.**

## TACTICAL LAUNCH

The tactical launch is used when withdrawing from a hostile or potentially hostile shore (Figure 5-13). The ACV units will maintain a security posture prior to launching at the shoreline or at the last covered and concealed position prior to arriving at the shoreline. The ACVs should enter the water as soon as watertight integrity is ascertained. A defensive perimeter is used to provide security. Forming a defensive perimeter spreads the ACV unit over several hundred meters and relies heavily on ACV crews for control and safety. The ACV commander must conduct the same coordination with the ship that is required for a non-tactical launch. Every effort should be made to enter the water as soon as feasible. Training and coordination are required to execute the tactical launch; this launch is simplified when executed by section level.

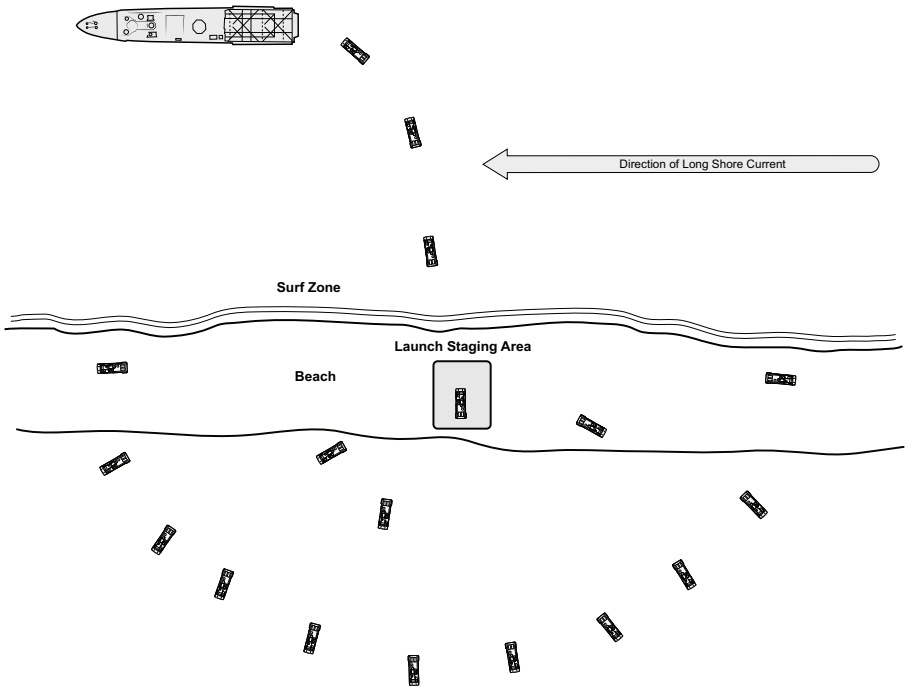



**Figure 5-13. Tactical Launch.**

## IN-STRIDE TACTICAL LAUNCH

The in-stride tactical launch is used when a rapid launch is required. This can happen in a raid where time might be a factor in the enemy situation, or the raid force is attempting not to be decisively engaged. During this launch, all operations checks and ship communications are completed at the last rally point or assembly area. Each ACV vehicle commander must ensure their own ACV is ready for launch and report a status to their respective leadership. Each ACV will continue to the splash point and through the surf zone, without stopping, and proceed to the ship or an offshore assembly area to await recovery (Figure 5-14).

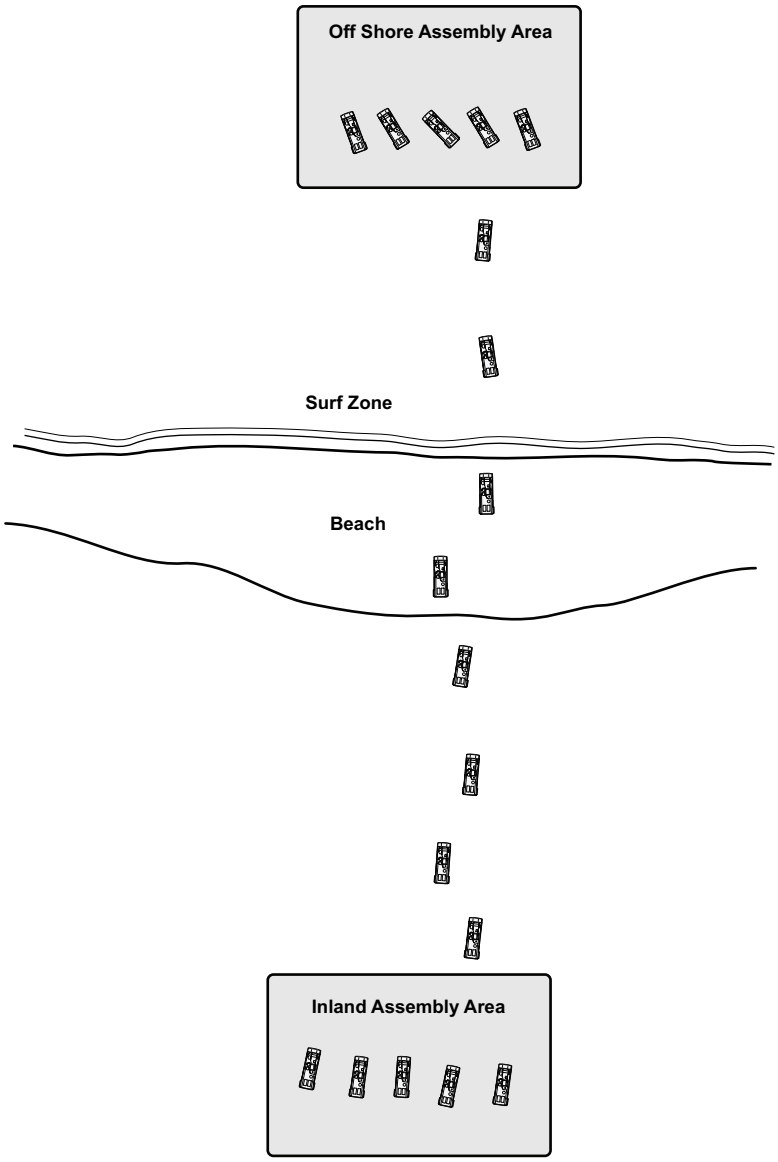



**Figure 5-14. In-Stride Tactical Launch.**

## TYPES OF SHIP RECOVERY

Methods for ACVs to embark amphibious shipping include the following:

- Ship at Anchor. Some considerations with the ship at anchor are the ship's "swing circle" and "drag circle." The swing circle is a circle centered at the position of the anchor that extends the ship's length plus the length of chain let out. A drag circle is a circle centered at the final calculated position of the anchor to where the anchor chain enters the ship (Figure 5-15).
- Ship Lying to or with Bare Steerageway. The screws and rudders are used only to maintain the ship's heading.

- Ship Underway. The ship is maneuvering at speed and changing course headings as desired. An ACV should be recovered by a ship maneuvering at no more than 3 knots to allow ACVs to close with the stern gate. If a disabled ACV is to be recovered into the ship, then it is highly likely that the ship will need to go to bare steerageway to effect recovery.
- Ship Moored Pier Side. The ship is moored to a pier; however, the mooring can be manipulated to ballast the ship for ACV recovery. This is predicated on harbor depth.

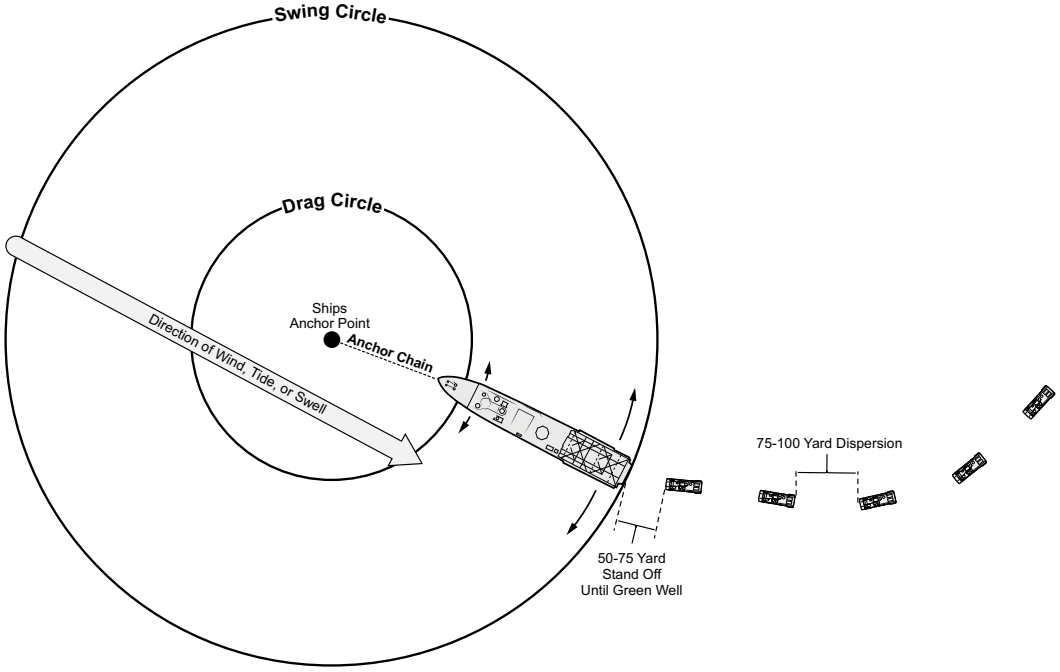



**Figure 5-15. Ship at Anchor Recovery.**

**Under Tow Precaution**

When taking a disabled vehicle under tow, the ACV vehicle commander might need to request for the ship to do an "all stop" to allow the towing and towed vehicles to come in on centerline.

Every effort should be made to launch and recover ACVs while the ship is maneuvering with head or following seas. Beam sea recoveries should be avoided, if feasible, as it will potentially create hazardous conditions within the well deck.

## TYPES OF NAVAL AMPHIBIOUS SHIPS

Amphibious ships are specifically designed to embark, transport, land, and support the landing force. They are capable of being loaded and unloaded by naval personnel without external assistance. There are several types of amphibious ship an ACV may be embarked on. Each ship class has its own characteristics and considerations that must be known before embarking. The main ships that an ACV crew will encounter are the dock landing ship (LSD), the amphibious transport dock (LPD), the multipurpose amphibious assault ship (LHD), and the general LHA.

Ship types and characteristics are provided in Table 5-5. Although close coordination with combat cargo is required for loading and stowage of vehicles, Table 5-5 and Figure 5-16 provide the most up to date information regarding ACVs on naval shipping.

**Table 5-5. Types and Characteristics of Naval Amphibious Ships.**

| Ship Type | Characteristics | Considerations |
|---|---|---|
| LSD | Whidbey Island Class<br>Harpers Ferry Class<br>**Armament:**<br>• Two 25 mm MK 38 machine guns.<br>• Two 20 mm Phalanx CIWS mounts.<br>• Six .50 cal. machine guns.<br>• Two RAM mounts.<br>**Landing/Attack Craft:**<br>Four LCACs or 3 LCUs, or 64 ACVs. | • Shorter dispersion when embarking.<br>• Fits 15 ACVs behind the sea wall.<br>• Should attempt to be forward of the sea wall; however, when configured this way 64 ACVs do not fit. |
| LPD | San Antonio Class<br>**Armament:**<br>• Two Bushmaster II 30 mm close-in guns, fore and aft. Two rolling airframe missile launchers (RAM_, fore and aft.)<br>• Ten .50 cal. machine guns.<br>**Landing/Attack Craft:**<br>• Two LCACs or one LCU.<br>• 15 ACVs. | • Wider dispersion during embarkation to allow for more time to maneuver in the well deck.<br>• Tie antennas down prior to launch and embarkation.<br>• CROWS needs to be level. |
| LHD<br>and LHA | **Armament:**<br>• Two RAM launchers.<br>• Two NATO Sea Sparrow launchers.<br>• Three 20 mm Phalanx CIWS mounts (two on LHD 5-8).<br>• Four .50 cal. machine guns.<br>• Four 25 mm Mk 38 machine guns (LHD 5-8 have three 25 mm Mk 38 machine guns).<br>OR<br>• Two RAM launchers.<br>• Two Phalanx 20 mm CIWS mount.<br>• Three.50 cal. machine guns.<br>• Four 25 mm Mk 38 machine guns. | • The LHD has an enhanced well deck allowing for more storage.<br>• LHDs can carry 40 ACVs in the well deck with another 21 on the vehicle deck.<br>• The LHA-6 and LHA-7 do not feature a well deck and cannot embark amphibious crafts |
| **Legend**<br>CIWS close-in weapon system<br>LCAC landing craft, air cushioned | | |

## AMPHIBIOUS WARFARE SHIP VEHICLE STORAGE

While aboard ship, coordination with the combat cargo officer (CCO) is required for the following:

- Before the initial loading and inspection of vehicles.
- Ammunition handling.
- Gaining permission to test run or move an ACV.
- Gaining permission for refueling.
- Vehicle manifest submission.

Gripping and double gripping ACVs on ship is be conducted in accordance with Technical Manual (TM) 13133A-10/1, *Operator and Operator Maintenance Technical Manual for Amphibious Combat Vehicle, Personnel (ACV-P)*.

### Shipboard Stowage Requirement Increase

A MEU AA company was previously supported by 14-15 amphibious assault vehicles, (generally) embarked aboard a single amphibious warfare ship (AWS). The ACV requires 26 vehicles (~4,700 ft2 footprint increase, equivalent to a MEU artillery battery) to lift a comparable troop requirement. Excepting the LSD41 class, the AA company could be required to split between two AWSs unless surface connectors are removed and ACVs are stowed in the well deck. The following recommendations include safety, launch and recovery, and ammunition magazine elevator access (Figure 5-16):

- LPD17 Class. The main vehicle stow area fits 17 ACVs. Removing surface connectors allows stowage of 15 additional ACVs in the well. Well deck stowage blocks access to the lower vehicle stow area without partial ACV offload. Ventilation systems on LPD28 and newer require testing to confirm supportability of full vehicle compliment.
- LSD49 Class (FY39 End of Service Life). Twelve ACVs can be safely stowed in the vehicle stow area (reduced ACV maneuverability requires an approximately 22-point turn to access some stowage), surging to 17 ACVs with restricted fire lanes and ammunition magazine elevator access. Removing surface connectors allows stowage of 15 additional ACVs in the well. The LHD49 class is the only AWS where ACVs can transit to the flight deck (requiring systems removal and waivers) for gunnery sustainment afloat and defense of the amphibious task force.
- LSD41 Class (FY31 End of Service Life). If no surface connectors are embarked, the full ACV complement (26 vehicles) can embark with space for maintenance and sustainment. Under this configuration, ACV command and control and maintenance can be aggregated on a single AWS.
- LHD1 Class. The upper vehicle stow area is limited to 15 ACVs. The larger well deck affords flexibility for additional ACVs if at least one surface connector is removed.

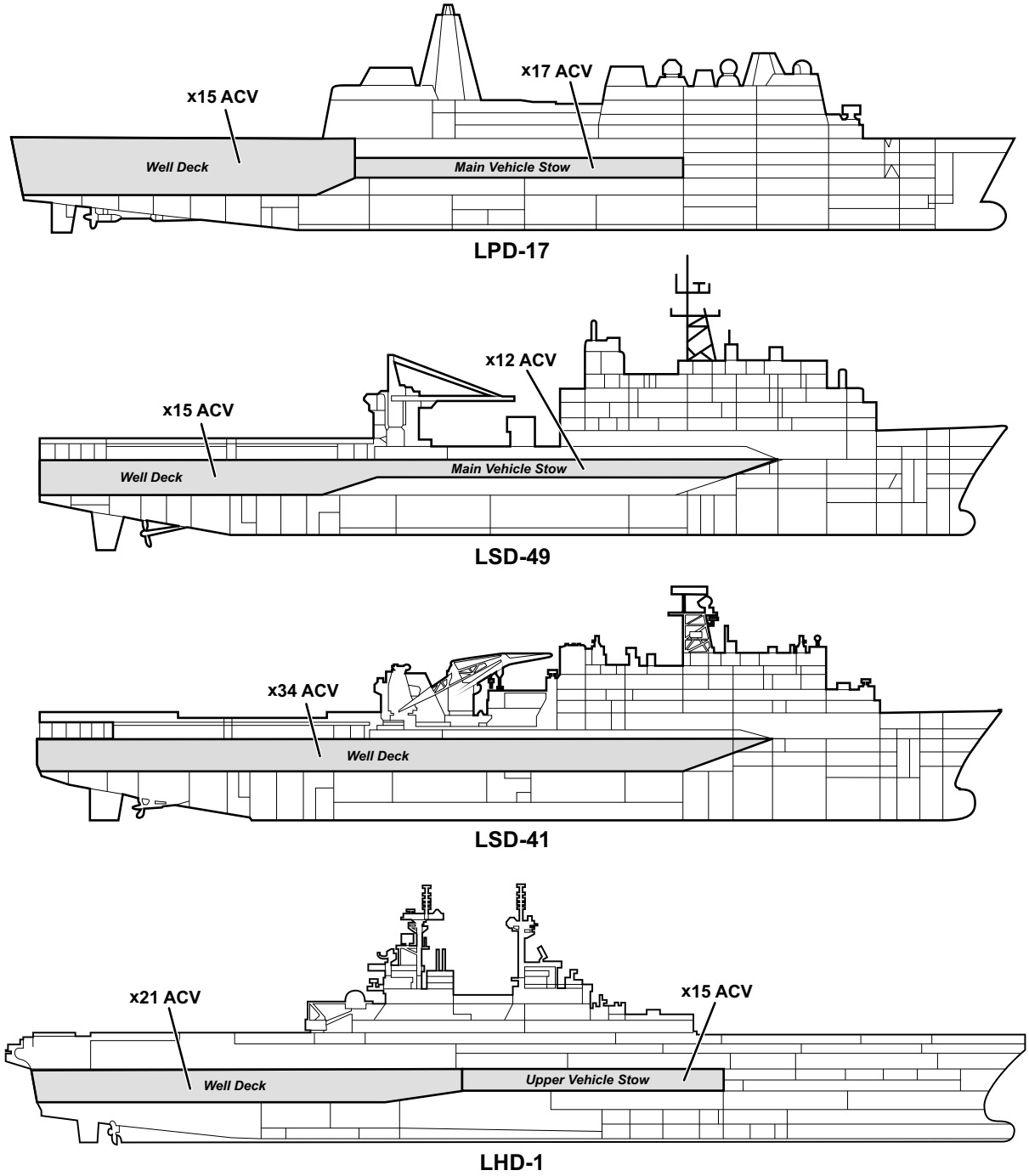



**Figure 5-16. Amphibious Warfare Ship Vehicle Stowage.**

## RIVERINE OPERATIONS

The ACV's unique characteristics allow it to operate in a riverine environment to defeat hostile forces or seize a riverine area. The two types of riverine operations are assault and security.

In an assault operation, the mission is to—

- Locate and destroy hostile forces, installations, and supplies.
- Establish control of water lines of communications.
- Establish control of land areas and population and resources.
- Establish and secure an area for a support area, as required.

In a security operation, the mission is to—

- Protect friendly line of communications.
- Deny hostile forces the use of waterways.
- Collect intelligence information.
- Perform security missions.
- Protect friendly populace centers.

The ACV allows the use of inland waterways as nontraditional avenues of approach. This capability permits surprise, speed, and the ability to mass forces in unexpected locations. When the situation permits, ACV commanders are expected to follow the international rules of the road when ACVs are waterborne in coastal waters, rivers, and bays. Amphibious combat vehicles conducting waterborne operations in navigable waters are subject to the same international rules of the road as powerboats. During assaults, attempt to avoid contact or collision with civilian craft.

Water safety rules and tactical practices include the following:

- When an ACV and a sailboat are approaching in such a direction as to involve risk of collision, the ACV shall avoid the sailboat.
- When an ACV and powered boats are approaching bow to bow, each shall pass on the port side of the other by steering to starboard.
- When two ACVs or powered boats are on crossing courses that involve the risk of collision, the ACV or boat that has the other on its starboard side give way to avoid the other.
- When safe and practical, ACVs in narrow channels keep to the right of the channel.
- During night operations, if the tactical situation permits, ACVs use their external navigation lights or exhibit a searchlight to prevent collisions.
- When employed in reduced visibility conditions, maximize ACV optics, viewing enhancers, and night vision capabilities.
- Forces should attempt to observe all terrain and routes that can affect the river to prevent enemy force from affecting the waterway.

### Navigational Aids

Various channel markers can be found along local waterways. The local rules of the road and regulations should be clarified before launching and conducting operations. The red-right-returning rule applies in most parts of the world; however, in some parts these rules are reversed. Under the red-right-returning rule, vessels moving up-river will keep red channel markers on the right and green markers on the left. When heading out to sea, vessels keep red markers on the left and green markers on the right.

# CHAPTER 6.
# OFFENSIVE OPERATIONS

Offense is the decisive form of war; success in battle is achieved by using offensive actions. Unit leaders must capitalize on opportunities to seize the initiative with offensive action. The purpose of offensive operations is to destroy the enemy and their will to fight. The attacker has the initiative and can concentrate enough combat power at the decisive place to overcome the defender. Only in the offense, can an ACV equipped unit fully exploit the mobility, firepower, and shock action of mechanized forces. Further information can be found in MCWP 3-01.

## FUNDAMENTALS OF OFFENSIVE OPERATIONS

The Marine Corps' warfighting philosophy is offensive in nature. It focuses on the enemy and uses tempo to seize the initiative and degrade the enemy’s ability to resist. To be decisive in offensive operations, the attacking force weights the main effort. The fundamentals of offensive action, which have evolved from the time-proven application of joint warfighting principles, include—

- Orient on the enemy.
- Gain and maintain contact.
- Develop the situation.
- Concentrate superior firepower at the decisive time and place.
- Achieve surprise.
- Exploit known enemy weaknesses.
- Seize and control key terrain.
- Gain and retain the initiative.
- Neutralize the enemy’s ability to react.
- Advance by fire and maneuver.
- Maintain momentum.
- Act quickly.
- Exploit success.
- Be adaptable.
- Be aggressive.
- Provide security for the force.

## OFFENSIVE TASKS

The following sections provide examples on how ACVs could be employed during offensive tasks and how to maximize the assault amphibious unit's capabilities.

### Movement to Contact

Potential Scenario: A Marine BLT is tasked with securing a large coastal area. Intelligence is limited and the enemy's exact location, strength, and intentions are unknown. The battalion commander decides to conduct a movement to contact to develop the situation and establish or regain contact with the enemy. An ACV company is assigned the task of leading the movement to contact along a designated axis.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution:
  - *Advance Guard*. The ACV company acts as the advance guard for the battalion, moving along the designated axis of advance. They maintain a high state of readiness and are prepared to engage the enemy at any time.
  - *Reconnaissance and Security*. The ACV platoons conduct reconnaissance along the axis of advance, using terrain masking, observation posts, and patrols to identify potential enemy positions. They also provide security for the main body, protecting it from ambushes and other threats.
  - *Phased Deployment*. The company deploys in a phased manner, with the lead platoon acting as a scout element, followed by the main body of the company, and a rear security element. This allows the company to maintain momentum while also providing security and reconnaissance.
  - *Contact and Meeting Engagement*. As the lead platoon advances, they encounter an enemy force in a small village. The ACVs immediately engage the enemy with heavy machine guns, initiating a meeting engagement.
  - *Report and Assessment*. The platoon commander reports the contact to the company commander, providing information on the enemy's location, strength, and disposition. The company commander assesses the situation and determines the appropriate course of action.
  - *Decision and Action*. Based on the assessment, the company commander has several options:
  - *Attack*. If the enemy force is small and vulnerable, the company commander might decide to attack and destroy it.
  - *Defend.* If the enemy force is larger than expected, the company commander might decide to establish a defensive position and await reinforcements.

- *Bypass.* If the enemy force is too strong to engage directly, the company commander might decide to bypass it and continue the movement to contact along a different axis.
- *Delay*. The company commander might decide to delay the enemy, slowing their advance and allowing the main body of the battalion to prepare for a more deliberate engagement.

- Follow-on Actions. Regardless of the initial COA, the ACV company continues to develop the situation and establish or regain contact with the enemy. They might conduct further reconnaissance, establish observation posts, or conduct patrols to gather more information.
- Vehicle-specific contributions:
  - *Speed and Mobility*. Allows the ACV company to rapidly move along the axis of advance, conduct off-road movements, and maneuver on a mobilized enemy.
  - *Firepower*. Provides the necessary firepower to engage the enemy upon initial contact and suppress their positions.
  - *Protection*. Offers protection against small arms fire and artillery fragments, allowing the company to operate effectively in a contested environment.
  - *Communications*. Facilitates communication with higher headquarters and other units, enabling coordinated operations.
  - *Amphibious Capability*. Allows the company to conduct amphibious landings and operate in coastal areas.

### Attack

Potential Scenario: A BLT requires control of a strategic crossroads. Intelligence reveals a dug-in enemy company heavily reliant on fixed positions and limited mobility. A swift, decisive breach and exploitation is critical.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution:
  - *Firepower and Communications Preparation*. Upon making contact, the ACVs immediately use their integrated communication systems to relay target data. The CROWS then delivers a high value of fire, systematically eliminating identified bunkers and machine gun nests. Stabilized gun mounts enable accurate fire even while on the move.
  - *Speed and Mobility Breach*. Exploiting terrain masking, two ACV platoons capitalize on their superior speed and maneuverability to rapidly outflank the enemy. The ACVs' off-road capability allow aggressive cross-country movement, avoiding heavily mined roads.
  - *Mounted Domination*. Once the enemy's most dangerous targets are neutralized, the ACVs accelerate, using their firepower to suppress any remaining resistance. The M2 engage targets with accurate, sustained fire, while the MK19 suppress enemy infantry. The rapid advance overwhelms the enemy's ability to react effectively.
  - *Dismount and Consolidation*. Reaching key objectives within the crossroads, the Marines rapidly dismount. The ACVs, now acting as mobile strongpoints, use their

stabilized weapons and advanced sensor suites to provide overwatch and fire support for the dismounted personnel.

- Vehicle-specific contributions:
  - *Amphibious Capability (Indirect)*. Guarantees rapid deployment from ship to shore, projecting combat power without reliance on established ports.
  - *Independent Suspension*. Enables rapid, aggressive movement across broken terrain, avoiding predictable routes.
  - *Stabilized Weapon Systems*. Provides accurate and sustained fire, even while maneuvering, maximizing combat effectiveness.
  - *Reinforced Hull and Armor*. Offers protection against small arms fire and artillery fragments, allowing the ACVs to lead the assault.
  - *Advanced Communications*. Ensures seamless coordination with higher headquarters and other units, enabling precise fire support and maneuver.

### Exploitation

Potential Scenario: A BLT requires control of a strategic crossroads. Intelligence reveals a dug-in enemy company heavily reliant on fixed positions and limited mobility. A swift, decisive breach and exploitation is critical.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Firepower and Communications Preparation*. Upon making contact, the ACVs immediately use their integrated communication systems to relay target data. The CROWS then delivers a high value of fire, systematically eliminating identified bunkers and machine gun nests. Stabilized gun mounts enable accurate fire even while on the move.
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  - *Dismount and Consolidation*. Reaching key objectives within the crossroads, the Marines rapidly dismount. The ACVs, now acting as mobile strongpoints, use stabilized weapons and advanced sensor suites to provide overwatch and fire support for the dismounted personnel.

- Vehicle-specific contributions:
  - *Amphibious Capability (Indirect)*. Guarantees rapid deployment from ship to shore, projecting combat power without reliance on established ports.
  - *Independent Suspension*. Enables rapid, aggressive movement across broken terrain, avoiding predictable routes.
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  - *Reinforced Hull and Armor.* Offers protection against small arms fire and artillery fragments, allowing the ACVs to lead the assault.
  - *Advanced Communications.* Ensures seamless coordination with higher headquarters and other units, enabling precise fire support and maneuver.

**Pursuit**

Potential Scenario: A Marine BLT successfully breaks through an enemy defensive line. The enemy is in full retreat, attempting to escape to regroup and establish a new defensive position. Preventing this is crucial to maintaining the momentum of the offensive.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Reconnaissance and Reporting*. The ACV company, designated as the lead element for the pursuit, immediately establishes contact with the retreating enemy. Using their advanced sensor suites and communication systems, the ACVs relay real-time information regarding enemy composition, direction of movement, and rate of withdrawal to higher headquarters. This information drives subsequent tactical decisions.
  - *Mobile Fire Support*. The ACVs aggressively pursue the fleeing enemy, using their speed and mobility to close the distance. The CROWS systems provide continuous fire support. The M2 .50 caliber machine guns engage enemy vehicles and personnel concentrations, while MK19 grenade launchers suppress enemy infantry and disrupt their formations. The stabilized weapon systems ensure accurate fire even while on the move.
  - *Disruption of Enemy Command and Control*. The ACV platoons target enemy C2 vehicles and communication nodes identified during reconnaissance. The M2 and MK19 suppress these targets, disrupting the enemy's ability to coordinate their retreat and establish a coherent defensive line.
  - *Terrain Denial and Encirclement*. The ACV platoons exploit their off-road capabilities to maneuver around the retreating enemy, seizing key terrain features such as road junctions, bridges, and defiles. This action blocks escape routes and forces the enemy into unfavorable terrain, making them more vulnerable.

- *Infantry Integration and Consolidation*. As the ACVs pin down and disrupt the enemy's retreat, the dismounted Marines rapidly deploy to secure key objectives and engage any remaining pockets of resistance. The ACVs provide overwatch and fire support for the dismounted personnel, ensuring a coordinated and overwhelming assault.

- Vehicle-specific contributions.
  - *Amphibious Capability (Indirect)*. Enables rapid transition from follow-on assault to a continued pursuit without logistical delays, if the enemy retreats towards a coastal area.
  - *Independent Suspension*. Allows for high-speed movement across uneven terrain, maintaining the pace of the pursuit and preventing the enemy from gaining distance.
  - *Stabilized Weapon Systems*. Delivers accurate and sustained fire during the pursuit, maximizing the effectiveness of the M2 and MK19.
  - *Reinforced Hull and Armor*. Offers protection against small arms fire and artillery fragments, allowing the ACVs to close with the enemy and maintain the momentum of the pursuit.
  - *Advanced Communications.* Facilitates seamless communication and coordination between ACV platoons, higher headquarters, and dismounted infantry, enabling a unified and effective pursuit operation.

## FORMS OF MANEUVER

An ACV's amphibious capability, independent suspension, stabilized weapon systems (CROWS with M2 .50 caliber or MK19), reinforced armor, and advanced communications, are versatile assets that facilitate rapid deployment and exploitation of terrain, allowing for quick transitions between operational phases. Their unique combination of capabilities allows commanders to bypass enemy strengths, exploit weaknesses, and achieve decisive results.

### Envelopment

Potential Scenario: A Marine BLT needs to dislodge a well-entrenched enemy company from a key defensive position overlooking a vital supply route. A frontal assault is deemed too costly. An envelopment maneuver is chosen to bypass the enemy's prepared defenses and strike them from an unexpected direction, cutting off their supply route and forcing their withdrawal.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Reconnaissance and Route Selection*. The ACV company conducts a reconnaissance by fire and maneuver, identifying a viable flanking route that minimizes exposure to the enemy's direct fire while maximizing speed and concealment. This route likely involves traversing challenging terrain. The company uses its advanced communication systems to relay real-time intelligence on terrain conditions and potential threats back to the BLT commander.

- *Rapid Maneuver and Terrain Exploitation*. Exploiting their independent suspension and off-road capabilities, the ACV platoons execute a rapid and aggressive maneuver along the selected flanking route. They use terrain masking and cover to avoid detection and maintain momentum. Speed is paramount to achieving surprise and outflanking the enemy.
- *Isolation of the Objective*. As the ACV company approaches the enemy's rear, it establishes a blocking position along the supply route. The ACVs use their mobility and firepower to cut off the enemy's lines of communication and prevent reinforcement or resupply.
- *Firepower and Suppression*. With the enemy now isolated, the ACV platoons unleash a coordinated barrage of fire on their rear positions. The M2 .50 caliber machine guns target enemy vehicles, command posts, and crew-served weapons, while the MK19 grenade launchers suppress enemy infantry and defensive fortifications. The stabilized weapon systems ensure accurate fire even while maneuvering into firing positions.
- *Dismount and Assault*. Once the enemy has been sufficiently weakened and disoriented, the dismounted Marines launch an assault on the enemy's rear. The ACVs provide overwatch and direct fire support, suppressing any remaining resistance and ensuring the success of the infantry assault.

- Vehicle-specific contributions.
  - *Amphibious Capability (Indirect)*. If the envelopment requires crossing a body of water (river, lake, or inlet), the ACVs' amphibious capability allows for a seamless transition and maintains the momentum of the maneuver.
  - *Independent Suspension*. Enables the ACVs to navigate challenging terrain at high speeds, crucial for achieving surprise and outflanking the enemy.
  - *Stabilized Weapon Systems*. Delivers accurate and sustained fire while maneuvering, allowing the ACVs to suppress the enemy and support the infantry assault effectively.
  - *Reinforced Hull and Armor*. Provides protection against small arms fire and artillery fragments, allowing the ACVs to close with the enemy and maintain the momentum of the envelopment.
  - *Advanced Communications*. Ensures seamless coordination between ACV platoons, higher headquarters, and dismounted infantry, enabling a unified and effective envelopment operation.

### Turning Movement

Potential Scenario: A Marine BLT faces a strongly defended enemy position controlling a crucial mountain pass. A direct assault promises heavy casualties. Intelligence suggests a lightly defended route exists that bypasses the pass, threatening the enemy's rear area logistics hub. A turning movement is planned to force the enemy to abandon their fortified position.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACVs each) and a company headquarters element. Each ACV has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.

- Execution.
  - *Reconnaissance and Deception*. The ACV company, acting as the main effort for the turning movement, initiates a reconnaissance along the identified bypass route. At the same time, elements of the BLT conduct feigned attacks towards the main enemy position, drawing their attention and resources. The ACV company uses its advanced communication systems to maintain constant contact with reconnaissance elements and report on route viability, enemy disposition, and potential threats.
  - *Rapid Cross-Country Movement*. Exploiting their independent suspension and off-road capabilities, the ACV platoons execute a high-speed movement along the bypass route. This route is expected to be challenging, potentially involving steep inclines, dense vegetation, or water obstacles. The speed and agility of the ACVs are critical to achieving surprise and outmaneuvering the enemy.
  - *Seizure of Key Terrain in the Enemy Rear*. Upon reaching the enemy's rear area, the ACV company immediately seizes key terrain features such as high ground overlooking the logistics hub, road junctions, and communication centers. This disrupts the enemy's ability to resupply, reinforce, and coordinate their defense.
  - *Disruption and Destruction of Logistics*. The ACVs engage enemy logistical assets with direct fire. The M2 .50 caliber machine guns target supply trucks, fuel depots, and maintenance facilities, while the MK19 grenade launchers suppress enemy personnel and defensive positions. The goal is to cripple the enemy's ability to sustain operations and force them to react to the threat in their rear.
  - *Dismounted Assault and Consolidation*. With the enemy's logistics hub under attack, the dismounted Marines launch an assault to secure the area and eliminate any remaining resistance. The ACVs provide overwatch and direct fire support, using their stabilized weapon systems to suppress enemy fire and protect the advancing infantry. The company consolidates its position, establishing a strongpoint to prevent the enemy from counterattacking and regaining control of the logistics hub.
- Vehicle-specific contributions.
  - *Amphibious Capability (Indirect)*. If the bypass route requires crossing a significant water obstacle to reach the enemy rear, the ACVs' amphibious capability enables a seamless transition and maintains the momentum of the turning movement.
  - *Independent Suspension*. Provides the ability to traverse difficult terrain at high speeds, essential for completing the turning movement before the enemy can react effectively.
  - *Stabilized Weapon Systems*. Delivers accurate and sustained fire while maneuvering, allowing the ACVs to effectively engage and destroy enemy logistical assets.
  - *Reinforced Hull and Armor*. Offers protection against small arms fire and artillery fragments, allowing the ACVs to close with the enemy and maintain the momentum of the turning movement.
  - *Advanced Communications*. Enables seamless coordination between ACV platoons, higher headquarters, and dismounted infantry, ensuring a unified and effective turning movement operation.

### Frontal Attack

Potential Scenario: A Marine BLT requires immediate seizure of a strategic crossroads. Time is critical, and flanking maneuvers are not feasible due to terrain constraints and the enemy's strong defensive perimeter. A frontal attack is deemed necessary, despite the inherent risks. The BLT commander must use overwhelming firepower and shock action to break through enemy defenses.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Suppression and Preparation Fire*. Prior to the main assault, supporting arms (artillery, naval gunfire, air support) deliver a heavy barrage of fire on the enemy's forward positions. This is designed to suppress enemy fire, destroy fortifications, and disrupt their defensive plan. The ACV company uses its advanced communication systems to coordinate with supporting arms and adjust fire as needed.
  - *Mounted Assault Under Fire*. The ACV company initiates a rapid, coordinated assault directly towards the enemy's main line of resistance. The ACVs advance in a wedge formation, maximizing their firepower and minimizing their vulnerability to enemy fire. Speed and aggression are paramount to overwhelming the enemy's defenses.
  - *Direct Fire Suppression*. As the ACVs advance, they unleash a continuous barrage of fire on enemy positions. The M2 .50 caliber machine guns target enemy bunkers, machine gun nests, and anti-tank positions, while the MK19 grenade launchers suppress enemy infantry and create a zone of disruption. The stabilized weapon systems enable accurate fire even while maneuvering across uneven terrain.
  - *Breach and Penetration*. The ACVs identify and exploit any weaknesses in the enemy's defensive line. They focus their firepower on key points, attempting to breach the enemy's perimeter and create an opening for the dismounted infantry to exploit. The reinforced hull and armor of the ACVs provide protection against small arms fire and artillery fragments, allowing them to lead the assault.
  - *Dismounted Assault and Consolidation*. Once the ACVs have created a breach in the enemy's defenses, dismounted Marines rapidly advance to clear the remaining enemy positions and secure the crossroads. The ACVs provide overwatch and direct fire support, suppressing enemy fire and protecting the advancing infantry. The company consolidates its position, establishing a defensive perimeter and preparing for follow-on operations.
- Vehicle-specific contributions.
  - *Amphibious Capability (Indirect)*. Guarantees rapid deployment from ship to shore, minimizing the time between landing and the start of the assault.
  - *Independent Suspension*. Enables rapid and aggressive movement across uneven terrain, maintaining the momentum of the assault despite obstacles and enemy fire.
  - *Stabilized Weapon Systems*. Delivers accurate and sustained fire while maneuvering, allowing the ACVs to effectively suppress enemy positions and support the infantry assault.

- *Reinforced Hull and Armor*. Provides critical protection against enemy fire, allowing the ACVs to close with the enemy and lead the assault.
- *Advanced Communications*. Ensures seamless coordination between ACV platoons, supporting arms, and dismounted infantry, enabling a unified and effective frontal attack.

### Penetration

Potential Scenario: A Marine BLT needs to rapidly secure a strategic crossroads held by a well-entrenched enemy company. Intelligence indicates the enemy's defenses are layered, with a weaker, more dispersed secondary defense line located further back. A penetration is chosen to break through the initial defenses and rapidly exploit the gap, disrupting the enemy's ability to reinforce or counterattack.

Potential ACV company role.

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Reconnaissance and Targeting*. The ACV company conducts aggressive reconnaissance by fire, identifying the weakest point in the enemy's forward defenses. They prioritize targets that pose the greatest threat to the penetration force, such as anti-tank weapons, bunkers, and observation posts. The ACVs use their advanced communication systems to relay target data to supporting arms and higher headquarters.
  - *Initial Breach and Exploitation.* Two ACV platoons, designated as the penetration force, conduct a concentrated assault on the identified weak point. The ACVs use speed and maneuverability to rapidly close with the enemy, while simultaneously delivering a high volume of fire from their CROWS systems. The M2 .50 caliber machine guns neutralize enemy heavy weapons, while the MK19 grenade launchers suppress enemy infantry and create a zone of disruption. The goal is to quickly create a gap in the enemy's defenses.
  - *Rapid Advance to the Secondary Defense Line*. Once the initial defenses are breached, the penetration force accelerates, pushing through the gap and advancing rapidly towards the enemy's secondary defense line. The ACVs maintain constant communication, relaying information on enemy disposition and terrain conditions to the follow-on forces.
  - *Disruption and Degradation of the Secondary Defense*. Upon reaching the secondary defense line, the ACVs engage the enemy with direct fire, disrupting their defensive positions and preventing them from organizing an effective defense. The M2 and MK19 suppress enemy infantry and destroy key defensive assets, such as bunkers and fighting positions. The ACVs exploit any gaps or weaknesses in the secondary defense, maneuvering to outflank and isolate enemy units.
  - *Dismounted Assault and Consolidation*. As the ACVs disrupt the secondary defense, the dismounted Marines rapidly advance to clear the remaining enemy positions and secure the crossroads. The ACVs provide overwatch and direct fire support, suppressing enemy fire and protecting the advancing infantry. The company consolidates its position, establishing a defensive perimeter and preparing for follow-on operations to exploit the penetration.

- Vehicle-specific contributions:
  - *Amphibious Capability (Indirect)*. Ensures rapid deployment from ship to shore, minimizing the time between landing and the start of the penetration operation.
  - *Independent Suspension*. Enables rapid and aggressive movement across uneven terrain, maintaining the momentum of the penetration despite obstacles and enemy fire.
  - *Stabilized Weapon Systems*. Delivers accurate and sustained fire while maneuvering, allowing the ACVs to effectively suppress enemy positions and support the infantry assault.
  - *Reinforced Hull and Armor.* Provides critical protection against enemy fire, allowing the ACVs to close with the enemy and lead the penetration.
  - *Advanced Communications*. Enables seamless coordination between ACV platoons, supporting arms, and dismounted infantry, ensuring a unified and effective penetration operation.

### Attack by Fire

Potential Scenario: A Marine BLT requires control of a strategic crossroads. Intelligence reveals a dug-in enemy company heavily reliant on fixed positions and limited mobility. A swift, decisive action is critical.

Potential ACV company role.

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Firepower and Communications Preparation*. Upon making contact, the ACVs immediately use their integrated communication systems to relay target data. The CROWS then deliver a high volume of fire, systematically eliminating identified bunkers and machine gun nests. Stabilized gun mounts enable accurate fire even while on the move.
  - *Speed and Mobility Assault.* Exploiting terrain masking, two ACV platoons capitalize on their superior speed and maneuverability to rapidly outflank the enemy. The ACVs' off-road capability allow aggressive cross-country movement, avoiding heavily mined roads.
  - *Mounted Domination*. Once the enemy's most dangerous targets are neutralized, the ACVs accelerate, using their firepower to suppress any remaining resistance. The M2 engages targets with accurate, sustained fire, while the MK19 suppress enemy infantry. The rapid advance overwhelms the enemy's ability to react effectively.
  - *Dismount and Consolidation*. Reaching key objectives within the crossroads, the Marines rapidly dismount. The ACVs, now acting as mobile strongpoints, use their stabilized weapons and advanced sensor suites to provide overwatch and fire support for the dismounted personnel.

- Vehicle-specific contributions.
  - *Amphibious Capability (Indirect)*. Guarantees rapid deployment from ship to shore, projecting combat power without reliance on established ports.
  - *Independent Suspension*. Enables rapid, aggressive movement across broken terrain, avoiding predictable routes.
  - *Stabilized Weapon Systems.* Provides accurate and sustained fire, even while maneuvering, maximizing combat effectiveness.
  - *Reinforced Hull and Armor.* Offers protection against small arms fire and artillery fragments, allowing the ACVs to lead the assault.
  - *Advanced Communications*. Ensures seamless coordination with higher headquarters and other units, enabling precise fire support and maneuver.

### Support by Fire

Potential Scenario: A Marine BLT requires control of a strategic crossroads. Intelligence reveals a dug-in enemy company heavily reliant on fixed positions and limited mobility. A swift, decisive breach and exploitation is critical.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either an M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Establish Support Position*. The ACV company moves to a designated support-by-fire position, providing overwatch of the crossroads. The position is selected to maximize fields of fire and provide cover from enemy direct fire.
  - *Firepower and Communications Preparation*. Upon arrival, the ACVs immediately use their integrated communication systems to establish communication with the maneuvering element (the BLT). They relay target data and confirm fire support coordination measures. The CROWS are brought to bear on identified enemy positions.
  - *Suppress Enemy Defenses*. As the BLT begins its assault, the ACVs initiate suppressive fire. The M2 .50 caliber machine guns engage enemy bunkers and machine gun nests, while the MK19 grenade launchers target enemy infantry concentrations and fortified positions. Stabilized gun mounts enable accurate fire, even on uneven terrain. The objective is to neutralize or suppress enemy fire, allowing the BLT to advance.
  - *Sustain Fire Support*. The ACVs continue to provide sustained fire support, adjusting their fire as the BLT advances and identifies new targets. The ACV company maintains constant communication with the BLT, ensuring that fire support is responsive and effective.
  - *Shift Fire*. As the BLT closes with the enemy, the ACVs shift fire to targets beyond the immediate vicinity of the maneuvering element, preventing enemy reinforcements or counterattacks. They continue to provide overwatch and fire support until the area is secured.
  - *Dismount and Consolidation*. Once the crossroads is secured, the Marines dismount and consolidate their positions. The ACVs, acting as mobile strongpoints, use their stabilized weapons and advanced sensor suites to provide overwatch and fire support for the dismounted personnel.

- Vehicle-specific contributions.
  - *Amphibious Capability (Indirect)*. Guarantees rapid deployment from ship to shore, projecting combat power without reliance on established ports.
  - *Independent Suspension*. Enables rapid movement to and from the support-by-fire position, even across broken terrain.
  - *Stabilized Weapon Systems*. Provides accurate and sustained fire, even while maneuvering, maximizing combat effectiveness.
  - *Reinforced Hull and Armor*. Offers protection against small arms fire and artillery fragments, allowing the ACVs to remain in exposed positions to provide effective fire support.
  - *Advanced Communications*. Ensures seamless coordination with higher headquarters and the BLT, enabling precise fire support and maneuver.

### Infiltration

Potential Scenario: A Marine BLT requires control of a strategic crossroads. Intelligence reveals a dug-in enemy company heavily reliant on fixed positions and limited mobility. A swift, decisive action is critical.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either a M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Planning and Reconnaissance*. The ACV company conducts detailed planning, focusing on exploiting gaps in the enemy's defenses and using terrain masking to avoid detection. Reconnaissance elements identify a lightly defended approach route to the crossroads.
  - *Movement to the Infiltration Point*. Under the cover of darkness or limited visibility, the ACV company moves to the designated infiltration point. Strict noise and light discipline are enforced to maintain stealth. Radios remain silent unless absolutely necessary.
  - *Infiltration*. The ACVs move through the identified gap in the enemy's defenses. The independent suspension allows them to traverse difficult terrain, avoiding predictable routes and potential ambushes. Drivers use night vision equipment to maintain situational awareness. The CROWs remain manned and ready to engage any unexpected enemy contact, but the priority is to avoid detection.
  - *Movement to the Objective*. Once inside the enemy's area of operations, the ACV company moves rapidly and aggressively towards the strategic crossroads. They continue to exploit terrain masking and avoid contact whenever possible.
  - *Seize the Crossroads*. Upon reaching the crossroads, the ACVs immediately establish a defensive perimeter. The M2 .50 caliber machine guns and MK19 grenade launchers are oriented on key terrain features and potential enemy approaches. The Marines dismount and prepare to defend the crossroads against enemy counterattacks.
  - *Firepower and Communications Preparation*. The ACVs immediately use their integrated communication systems to relay target data. The CROWS then deliver a high volume of fire, systematically eliminating identified bunkers and machine gun nests. Stabilized gun mounts enable accurate fire even while on the move.

- Vehicle-Specific Contributions.
  - *Amphibious Capability (Indirect)*. Enables deployment to various locations, increasing the options for infiltration routes and avoiding predictable landing zones.
  - *Independent Suspension*. Enables rapid, aggressive movement across broken terrain, avoiding predictable routes and potential ambushes.
  - *Stabilized Weapon Systems*. Provides the ability to quickly and accurately engage enemy forces if contact is unavoidable during the infiltration.
  - *Reinforced Hull and Armor*. Offers protection against small arms fire and artillery fragments, increasing the survivability of the ACVs during the infiltration.
  - *Advanced Communications*. Ensures seamless coordination with higher headquarters and the BLT, enabling timely reporting and requests for support.

### Flank Attack

Potential Scenario: A Marine BLT requires control of a strategic crossroads. Intelligence reveals a dug-in enemy company heavily reliant on fixed positions and limited mobility. A swift, decisive action is critical.

Potential ACV company role:

- Composition. An ACV company, consisting of three platoons (four ACV-Ps each) and a company headquarters platoon. Each ACV-P has a CROWS with either a M2 .50 caliber machine gun or MK19 grenade launcher and advanced communication systems. The infantry provides dismounted combat power.
- Execution.
  - *Reconnaissance and Planning*. The ACV company conducts reconnaissance to identify a suitable flanking route. This route prioritizes terrain that provides cover and concealment and avoids known enemy strongpoints. The plan accounts for the enemy's likely reactions and establishes contingencies for unforeseen circumstances.
  - *Movement to the Flank*. Under the cover of terrain or limited visibility, the ACV company begins its movement to the enemy's flank. Speed and maneuverability are critical to achieving surprise. The independent suspension allows the ACVs to traverse difficult terrain, avoiding predictable routes.
  - *Firepower and Communications Preparation*. As the ACV company approaches the enemy's flank, they establish communication with the main effort (the BLT). Target data is relayed, and fire support coordination measures are confirmed. The CROWS are brought to bear on identified enemy positions.
  - *Initiate the Attack*. Once in position on the enemy's flank, the ACV company initiates the attack. The M2 .50 caliber machine guns and MK19 grenade launchers deliver a high volume of fire, targeting enemy C2 elements, crew-served weapons, and infantry positions.
  - *Exploit the Surprise*. The ACV company aggressively exploits the surprise and momentum of the attack. They continue to advance, using their firepower to suppress any remaining resistance. The rapid advance overwhelms the enemy's ability to react effectively.
  - *Link Up with the Main Effort*. The ACV company links up with the main effort (the BLT) at the crossroads, effectively encircling the enemy. The combined firepower of the ACVs and the BLT overwhelms the remaining enemy resistance.

  - *Dismount and Consolidation*. Reaching key objectives within the crossroads, the Marines rapidly dismount. The ACVs, now acting as mobile strongpoints, use their stabilized weapons and advanced sensor suites to provide overwatch and fire support for the dismounted personnel.
- Vehicle-Specific Contributions.
  - *Amphibious Capability (Indirect)*. Enables deployment to various locations, increasing the options for selecting a flanking route.
  - *Independent Suspension*. Enables rapid, aggressive movement across broken terrain, crucial for a successful flank attack.
  - *Stabilized Weapon Systems*. Provides accurate and sustained fire, even while maneuvering, maximizing combat effectiveness during the attack.
  - *Reinforced Hull and Armor*. Offers protection against small arms fire and artillery fragments, allowing the ACVs to lead the assault on the enemy's flank.
  - *Advanced Communications*. Ensures seamless coordination with higher headquarters and the BLT, enabling precise fire support and maneuver.

## COMMON OFFENSIVE CONTROL MEASURES

The supported infantry commander, in concert with the ACV commander, develops control measures based on their intent, higher headquarters intent, and the desired scheme of maneuver. Tactical control measures facilitate decentralized execution.

## MILITARY OPERATIONS ON URBAN TERRAIN

### Urban Environment Considerations

Conducting MOUT requires a thorough understanding of vehicle employment and infantry integration. (For additional information regarding MOUT, refer to MCRP 12-10B.1, *Military Operations on Urban Terrain*.) The following outlines considerations for operating ACVs on urban terrain:

- Challenges of Urban Terrain. Narrow streets, rubble, and potential for canalization, presents significant challenges to vehicle maneuverability. The multidimensional environment also makes vehicles vulnerable to attacks from above (supersurface), below (subsurface), and the sides. Additionally, battle tracking and UAS employment becomes difficult and complex when adversaries employ similar capabilities. Most UASs operate off line-of-sight and can be easily lost in tall, man-made structures. Unmanned aircraft systems are only effective in exterior areas and are relatively ineffective in the interior and subsurface areas. Only the ACV-P can employ weapons when the vehicle’s crew is closed tightly and securely when artillery or small arms could be expected (commonly referred to as “buttoned up”). All other ACVs cannot employ their machine guns because this requires the crew’s vehicle commander to be exposed.

- Combined Arms Importance. Close coordination between infantry and ACVs is required. The infantry provides protection to armor against enemy infantry ATGM and RPG teams, while armor provides direct fire support against enemy strong points. The inability to provide close infantry support to ACVs risks their isolation and piecemeal destruction.
- Enemy Armor. Foreign militaries have enemy armor designed for urban combat, including vehicles with increased elevation and depression capabilities to target all levels of the urban environment. Examples are the Russian ZSU-23-4 Shilka and the BMPT Terminator.
- Direct Fire Support. The ACV can provide direct fire support to infantry units, targeting enemy positions, strong points, and even entire buildings. However, the limited fields of fire and the vulnerability of armored vehicles in urban terrain require careful planning and close coordination with infantry. Marking the windows and doors prevents friendly fire incidents and allows infantry to direct ACV fires or crews to report visual contacts made to the infantry
- Avenues of Approach. Identifying and securing key avenues of approach for vehicles is key to maintaining freedom of maneuver. However, these routes can become fire lanes for the enemy. Resupply convoys are vulnerable to enemy action, and ACVs and fuel trucks provide a stationary target when conducting refueling. Because of the ACV's height and turning radius, attention should be given to the vehicles' position in relation to mobility obstacles that occur in an urban environment. Hazards such as low hanging power lines and narrow streets can quickly hinder the ACVs mobility, exposing it to exploitation.
- Obstacle Clearance. Heavy equipment is needed for combat service support, resupply, transportation, reconstruction, debris removal, etc.

### Phases of Military Operations on Urban Terrain

The five phases of attack in a MOUT offensive are reconnaissance of the area, isolate, gain a foothold, advance and clearing seize the objective, and consolidate and reorganize.

***Reconnaissance.*** Reconnaissance will be primary tasked to intelligence, surveillance, and reconnaissance assets, but the CROWS magnified optics provide the crews with real time information where forces are attempting to gain a foothold.

***Isolate the Enemy.*** The ACV provides an excellent source of precision firepower and can easily identify targets with the CROWS optics, greatly assisting the attacking forces' ability to isolate a section of the environment and open up an opportunity to seize a foothold. The ACV should keep enemy threat rings from initial blocks of buildings in mind during this phase as a successful enemy anti-armor attack prior to dismount could result in maximum casualties. An ACV attempting to isolate should utilize cover and concealment of natural terrain features to the greatest extent possible.

***Seize a Foothold.*** Mobility, shock, and massed firepower are required to secure a foothold and rupture the defense. The ACV brings all of these elements to the mounted infantry. Proper conditions set can allow an attacking force to quickly gain a foothold using the ACVs speed. However, bringing an ACV within the enemy's threat ring prior to the infantry controlling nearby buildings can be risky. Commanders should mitigate risk with massed suppression or obscuration of nearby buildings to allow the ACVs with the assaulting force a window to close within the threat ring or choose to gain a foothold on foot with ACV fire support.

***Advance and Clearing.*** The ACV can provide direct fire support, reduce enemy strong points, neutralize barricades, and suppress enemy positions. Within built up areas, ACVs could be restricted by limiting elevation or depression required to engage the enemy, and their mobility could be decreased. In addition, because ACVs are vulnerable to attack from elevated positions, they should not advance beyond the lead trace of the infantry clearing through buildings. A clear marking plan helps an ACV crew identify lead trace and ensure the ACV is keeping pace with the infantry. Communication between ACV crews and infantry is key throughout this stage. The ACV should use thermal optics and laser range finders to identify enemy positions early and communicate information to the infantry, building upon their situational awareness.

### Amphibious Combat Vehicle Combat Service Support

Even with restrictions to mobility, ACVs can provide valuable combat support for supported infantry. The ACV's mobility affords the infantry rapid movement across open areas during the seizure of a foothold when covered and concealed routes are not available. Mechanized infantry can provide rapid movement in cleared areas for reserve forces, serve as evacuation platforms for prisoners of war or civilians, and serve as a medical evacuation platform.

### Mechanized Urban Patrol

Urban patrols can be carried out in three different ways: dismounted, mounted (mechanized), or a combination. The advantages or disadvantages for mounted and combination include:

***Mounted Patrols.*** The advantages of mounted patrols include—

- Increased armor protection.
- Ability to carry more firepower and ammunition.
- Speed.
- Organic evacuation capability.

The disadvantages of mounted patrols include—

- Restricted by terrain.
- High profile target.
- Decreased situational awareness.
- Reduced intelligence collection.
- Decreased interaction with local populace.
- Decreased manpower when conducting activities while dismounted.

***Combined.*** A combination of mounted and dismounted forces harnesses the advantages of both methods. While conducting a combined movement, a situation might occur that prevents one method from being employed; however, the disadvantages associated with both must still be addressed.

As in other offensive and defensive operations, TCMs should be used to establish the scheme of maneuver. During an operation, building marking plans should be developed and used. The plan is provided by the S-2. Using the same designations as the infantry ensures accurate coordination.

Civilians can become an impediment to movement and maneuver, hampering movement corridors to and from assembly areas. Civilian vehicular traffic can significantly hinder and complicate movement during certain hours of the day. Civilian presence affects the ability to use fires in support of maneuver.

### Maneuver Within Military Operations on Urban Terrain

Envelopment inside an urban area can be difficult to accomplish. The density of the adversary force and the physical terrain it occupies can make it difficult to find an exposed surface flank. In these cases, it could require a frontal assault to create an assailable flank. Effective employment and increased speed and maneuver are necessary to exploit a situation. Vertical envelopment can assist a ground-mechanized force in achieving their objective when airborne assets are available.

***Turning Point.*** A turning movement typically requires greater depth than other forms of maneuver. The required depth might not be available in an urban area.

***Infiltration.*** Infiltration depends on situational awareness and understanding the urban area, careful selection of objectives, detailed planning, and efficient support and deception. Infiltration can be attempted with small units. A hostile civilian population reduces the prospects for success.

***Penetration.*** Penetration requires surprise and careful planning. Care must be taken to secure the flanks of the penetrating force.

***Frontal Assault.*** Frontal assaults are common and inevitable during urban operations. The ACV units' chances of success in executing this form of maneuver can be greatly enhanced by their ability to apply overwhelming combat power against specific objectives with rapid maneuver and precision fires.

During urban operations, ACVs should be used in such a way that they are protected by the surrounding infantry in and around the terrain. The ACVs should travel behind the front line of the infantry, approximately 200-300 meters behind or more, clearing buildings to lower the risk ambush or close range, direct fire attack. The ACVs should be loaded with ammunition and supplies the infantry can access as needed. This increases dismounted infantry maneuverability by reducing the weight they carry. The ACVs can also be used as a casualty collection and evacuation point during movements prior to evacuation. During phase line battle drills, the ACV remote weapons station (RWS) should increase the effectiveness of the battle drill at the point of entry through the next phase line.

# CHAPTER 7.
# DEFENSIVE OPERATIONS

The defense is designed to defeat an enemy attack, gain time, economize forces, and develop conditions favorable for offensive or stability tasks. Compared to the offense, the defense is generally the least decisive form of war. It can deny success to the enemy, but rarely can it assure victory. The ACV unit leader combines natural and man-made obstacles to canalize the attacking force into engagement areas. Caution should be used when executing a defense purely with ACVs because of a lack of situational awareness that could give the adversary infiltration opportunities.

## BASICS OF THE DEFENSE

There are multiple considerations when conducting defensive operations with ACVs. The size of the ACV makes it imperative to select vehicle battle positions carefully, remaining mindful of fields of fire and cover and concealment. Natural terrain should be used as much as possible to achieve hull defilade. When natural terrain is limited and engineering heavy equipment is available, ACVs should be dug in to ensure maximum cover. Amphibious combat vehicles can maintain silent watch while conducting defensive operations for an extended period.

Silent watch is a TTP used by armored formations. The vehicle's engines are off while the batteries power the radios, optics, and weapon system. Silent watch extends the resupply interval and reduces the risk of detection. Additionally, it allows crew members and dismounts to listen for enemy vehicles, air, or infantry.

Intermittently, the vehicle will need to be started to recharge the batteries to power the radios and CROWS. Conducting a short count at preplanned intervals can mask information, such as unit size to the enemy. Defensive operations are ongoing and require constant vigilance and preparedness. Similar to rotating watch in a fighting hole, ACVs must rotate crew personnel to ensure the CROWS and radios are manned based on the situation.

**Mask Unit Size with Synchronization**

Short counts prevent the enemy from determining how many vehicles are in the AA formation by all engines turning on and off simultaneously. The command is given over the radio or by hand and arm signals.

Amphibious combat vehicles are extremely vulnerable to enemy infiltration when operating in a defensive environment independent of infantry. Small enemy units can utilize cover and concealment to cross the defensive perimeter and inflict casualties. Considering this, ACV units operating in these circumstances should secure the vehicle during times of low light and use a

predetermined challenge and password prior to opening any hatch. If possible, a well-equipped, foot-mobile, roving watch should be deployed as an early detection source as well as to prevent vehicles sabotage by enemy infiltrators.

**Maintain Ambient Light Awareness**

Vehicle commanders should view the vehicle's position with night vision goggles from 50-100 meters away to see if ambient light can be seen through open hatches or periscopes. For the ACV-C, computers and radios should be run on lowered brightness levels at night.

An ACV-equipped unit could be given the task to defend, delay, withdraw, or counterattack; it might defend as part of the higher headquarters main battle area, or conduct autonomous defensive or stability tasks within a small-scale contingency. The ACV unit typically defends in the main battle area against the most likely enemy approach as either the main or a supporting effort. It can also perform defensive security measures or act as the reserve in support of the main battle area. The ACV unit can conduct defensive operations to achieve one or more of the following actions:

- Gain time.
- Counter adversarial actions.
- Disrupt an adversarial offensive operation.
- Increase the adversarial vulnerabilities by forcing them to mass or reinforce.
- Retain key terrain.
- Delay or fix the enemy in one area while friendly forces attack in another direction.
- Attrite enemy forces in depth.
- Reinforce a friendly unit.
- Prepare to resume the offensive.

Defensive fundamentals are described in the following sections.

### Knowledge of the Enemy

A defender's options are dictated, in part, by what the attacker does. Therefore, thorough knowledge of the enemy's capabilities, operational concepts, and habits is essential to a successful defense. A thorough tactical planning process, including a threat analysis, provides valuable information on enemy assembly areas, assault positions, routes, firing positions for supporting arms units, axes of advance, and the area most advantageous for the enemy's main effort. When the defender can accurately anticipate the enemy's actions, they can trap the attacker within the defense and establish conditions for resumption of offensive operations.

### Maneuver

Amphibious combat vehicle units support in depth, taking advantage of terrain and tactical developments, to concentrate, disperse, and occupy positions to bring effective fire on the enemy. This allows the unit leader to take the initiative and mass and concentrate fires when desirable. Maneuver through a combination of movement and fire allows the unit leader to achieve a position of advantage over the enemy.

### Preparation

The ACV commander determines likely enemy avenues of approach, schemes of maneuver, engagement areas, integration of obstacles, unit positioning, and integration of indirect fires. Defensive preparations include—

- Conducting rehearsals to ensure synchronization, including employment of the reserve and counterattack forces.
- Positioning forces in depth.
- Reinforcing terrain with obstacles that support the scheme of maneuver.
- Improving routes between positions in depth.
- Coordinating with assets forward of the security area to gain develop information early.
- Designating a reserve.
- Enacting survivability measures that involve actions against conventional and unconventional threats.

### Concentration of Combat Power

The ACV commander or supported-unit commander might employ vehicles as part of force to reinforce threatened sectors or counterattacks. This concentration helps shape the battlefield. Effects are synchronized in time and space and should be rapid and unexpected to break the enemy's offensive tempo and disrupt the attack. The ACV commander arrays combat power based on their assessment of the intelligence provided and the latest information from reconnaissance in a manner that overwhelms the enemy and provides the greatest impact on their forces while negating the risks to friendly forces. This can occur at a single decisive point or through multiple incursions in depth to achieve disruptive, destructive, and decisive effects upon the enemy's attack.

### Flexibility

The defender gains flexibility by sound preparation and task organization, disposition in depth, retention of reserves, repositions, and effective mission command. The ACV unit's defense often displays rapid, simultaneous, and collaborative planning with flexible execution. Contingency planning permits flexibility, which requires that the unit leader see the battlefield to detect the enemy's scheme of maneuver early. Intelligence collection can determine likely enemy actions, while security elements confirm or deny those actions. The unit leader's plan must be flexible enough to deal with different enemy COAs and should include designating supplementary and alternate positions, planning on-call fire support, and preparing to assume the offense.

### Offensive Actions

Since the offense is the decisive form of combat, every opportunity should be made to take offensive action while defending. The ACV unit can support the launch of spoiling attacks, conduct counterattacks, or launch security patrols to harass, distract, deceive, and damage enemy forces.

### Use of Terrain

The ACV commander takes account of key terrain and visualizes possible enemy avenues of approach. They seek to defend on terrain that maximizes effective fire, cover, concealment, movement, and surprise. Terrain is valuable only if a force gains advantage from its possession or control.

### Local Security

The ACV is vulnerable from dismount attacks on its rear and sides. Platoons and sections should establish mutually supporting positions for ACVs and their dismounted elements for 360-degree local security. In addition to maintaining security for its own elements, the unit can implement local security for other units as directed by higher authorities, such as in the following situations:

- When combined with infantry, the unit is responsible for always maintaining its own security. Each ACV should have a dismounted element for local security. The ACV is vulnerable from dismount attacks on its rear and sides. Platoons and sections should establish mutually supporting positions for ACVs and their dismounted elements for 360-degree local security. In addition to maintaining security for its own elements, the unit can implement local security for other units as directed by higher authorities. The following are examples of situations:
- Providing security for engineers as they emplace or clear obstacles or construct survivability positions.
- Securing an LZ.
- Establishing mounted or dismounted observation posts to maintain surveillance of enemy infiltration and reconnaissance routes.
- Conducting patrols to cover gaps in observation and to clear possible enemy observation posts from surrounding areas.
- Gathering HUMINT.
- Supporting nongovernmental organizations.
- Maintaining supply and logistical operations.

### Mutual Support

Mutual support is achieved when defensive positions are located so that the enemy cannot attack one position without coming under fire from another position. The degree of mutual support depends on the terrain, range of weapons, and visibility. Ideally, the frontage a force must defend is directly related to its ability to provide mutual support between its units. Dispersion can range from half the distance of a weapon system's maximum effective range in open terrain to several hundred meters, depending on terrain and vegetation visibility. To neutralize mutually supporting positions, an attacker must disperse fire away from the main objective, thus weakening the overall attack. The ACV units can employ down to the wingman concept to achieve mutual support.

### Defense in Depth

Simultaneous application of all combat power throughout the area of operation improves the chances for success while minimizing friendly casualties. Quick, violent, and simultaneous action throughout the depth of the unit's area of operations can attrit, confuse, and even degrade an enemy force when they are most exposed and vulnerable (Figure 7-1). This often happens when an enemy extends the lines of their attack and leaves an open flank vulnerable to counterattack. Operations in depth prevent the enemy from gaining momentum in the attack. Alternate and supplementary positions forward or adjacent of primary positions extend depth. Fires are planned throughout the defensive area up to the maximum range of available weapons, optics, and reconnaissance assets. Obstacles in and around critical locations can disrupt the enemy's plan and add depth to the defense.

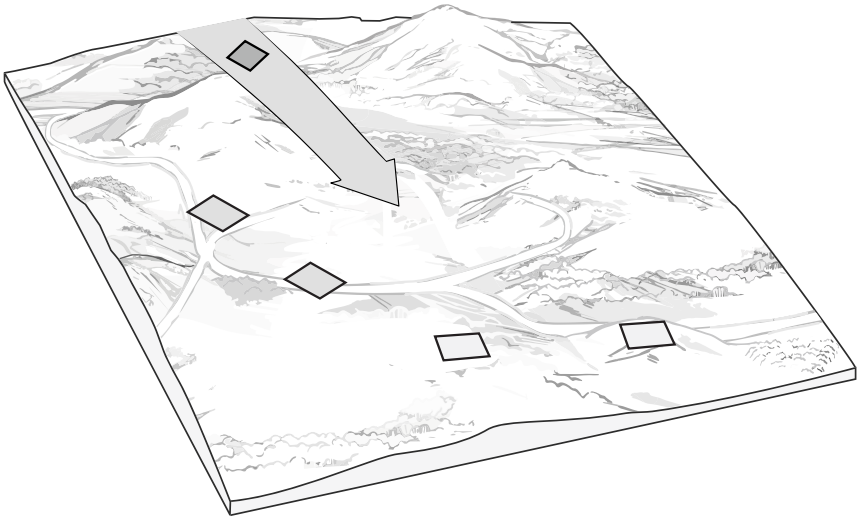


**Figure 7-1. Defense in Depth.**

When conducting a defense in depth, it is necessary to—

- Disrupt the momentum of the attack and prevent a breakthrough.
- Force the enemy into an engagement area.
- Allow the ACV commander time to determine the enemy's main effort and counter it.
- Force the enemy to commit their force before a non-decisive point.
- Disperse the effects of enemy fire.
- Engage the enemy at the earliest opportunity.
- Employ weapons at maximum effective ranges.
- Use blocking positions, obstacles, and supplementary positions throughout the engagement area that are covered by organic weapon systems.
- Plan for decisive use of the least engaged unit and fire support units at the decisive moment in the engagement.

## TYPES OF DEFENSIVE OPERATIONS

The three basic defensive types are area defense, mobile defense, and retrograde. Each of these types contain elements of the others and usually entails both static and dynamic aspects. The ACV unit supports the defense as outlined by the ACV unit leaders' intent, typically aligned to defeat or destroy the enemy threat or to provide firepower at the decisive point of the defense. The ACV unit conducts defensive actions to gain time, retain key terrain, delay or fix an enemy force and enable friendly force actions.

### Area Defense

The area defense is a type of defense in which the bulk of the defending force is disposed in selected tactical localities where the decisive battle is to be fought (Figure 7-2). Principal reliance is placed on the ability of the defending forces to maintain their positions and to control the terrain

between them. The reserve is used to add depth, to block, or restore the battle position by counterattack. The focus of the area defense is on retaining terrain where the bulk of the defending force positions itself in mutually supporting, prepared positions. Units maintain their positions and control the terrain between these positions through direct and indirect fires and maneuver. Shaping actions focus on disrupting and wearing down the enemy as they enter the battlespace. The decisive action is conducted by massing fires, possibly supplemented by a counterattack. The commander uses the reserve to reinforce fires, add depth, block, restore compromised defensive positions, seize the initiative, and destroy enemy forces. Units at all echelons can conduct an area defense. The area defense is the most likely type of defense used to support consolidation and reorganization as well as transitions between offense, defense, and stability.

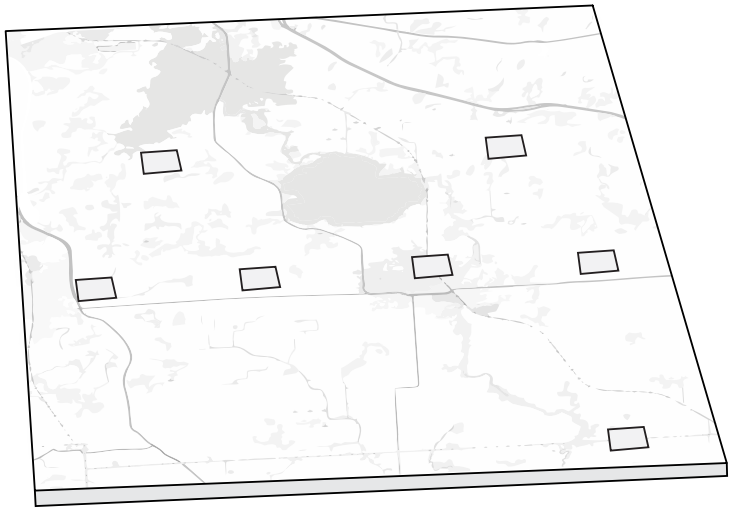


**Figure 7-2. Area Defense.**

### Forms of Defensive Maneuver for an Area Defense

Two forms of defensive maneuver in the area defense are defense in depth and forward defense. The ACV commander could have specific mission requirements that impose constraints, such as time, security, and retention of certain areas that are significant factors in the overall scheme of how the unit will defend and the specific tasks assigned. The defense can consist of either strong points, battle positions, or a combination. Strong points that are located on or covering decisive terrain, are extremely effective in the defense. The ACV unit leader assigns subordinates to positions while developing an integrated defense.

***Defense in Depth.*** Forces defending in depth absorb the momentum of the enemy's attack by forcing the enemy to attack repeatedly through mutually supporting positions in depth. Depth gives fire support assets time to generate effects and affords the defending unit multiple opportunities to concentrate the effects of overwhelming combat power against the attacking enemy. This provides more reaction time for the defending force to respond appropriately to the attack. The commander continually gathers additional information about the attacking enemy's intentions and capabilities between initial contact and the time the enemy commits to a COA. This reduces the risk of the enemy force quickly penetrating the main line of defense along an unexpected direction.

While defending in depth, ACV units can prepare primary, alternate, supplementary, and subsequent fighting positions that can incorporate hot and cold positions that afford cover and concealment. As the attacking enemy force attempts to create a penetration, the unit holds and or shifts from one

position to the next coordinating the combined effects of direct and indirect fire keeping continuous pressure on the advancing enemy. The ACV unit's mobility, firepower, and armor allow options more of a dynamic than a static defense. A defense in depth is conducted when—

- The mission is not restrictive and allows the unit leader to fight throughout the depth of the battlefield.
- The terrain does not favor defensive positions in multiple areas.
- The defensible area is deep compared to its width, and there is significant depth available.
- The cover and concealment on or near the forward edge of the battle area is limited.
- The offensive force has several times the combat power of the defender.

***Forward Defense.*** Forward defense prevents enemy penetration of the defense (Figure 7-3). Because of its lack of depth, a forward defense is the least preferred. The ACV unit deploys most of its combat power into forward positions near the forward edge of the battle area. The unit leader fights to retain forward positions and can conduct counterattacks against enemy penetrations or destroy enemy forces in forward engagement areas. Often, counterattacks are planned forward of the forward edge of the battle area to defeat the enemy. An ACV unit leader might choose to conduct a forward defense when the terrain in the area of operations has natural obstacles that favor the defending force, natural battle positions and engagement areas, and limited cover and concealment in rear areas.

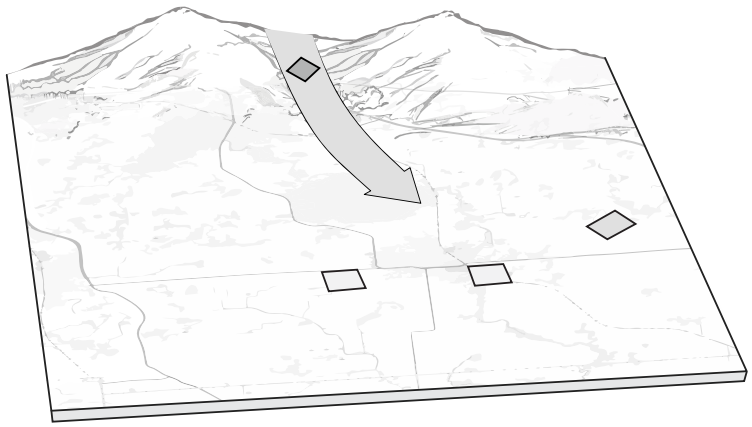


**Figure 7-3. Forward Defense.**

### Mobile Defense

The mobile defense is a type of defense that uses maneuver and fires with terrain to seize the initiative from the enemy (Figure 7-4). The mobile defense destroys the attacking enemy through maneuver and offensive action. It also defeats the enemy by allowing enemy forces to advance to a point where they are exposed to a decisive counterattack by the reserve. It requires an area of operations of considerable depth to allow supporting efforts the time and space to disrupt, canalize, attrite, and fix the enemy force for destruction by the main effort. The area of operations must provide maneuver space for the counterattack force to identify and attack at the point of decision. Regiments and larger formations typically execute mobile defenses.

The AA unit, as part of a larger force, is ideal for being the maneuver element that can orient on and maneuver with the enemy. Mobile defense advantages include the following:

- Committing minimum forces to fixed locations.
- Positioning maximum combat power to attack the enemy attempts to overcome that part of the force in fixed locations.
- Taking advantage of terrain in depth, obstacles, and mines, while employing firepower and maneuver to wrest the initiative from the attacker.
- Employing a strong counterattack force to strike the enemy at its most vulnerable time and place.
- Using reconnaissance and surveillance assets to track the enemy, identifying critical enemy nodes, such as command and control, radar, logistic trains, and indirect fire support elements.

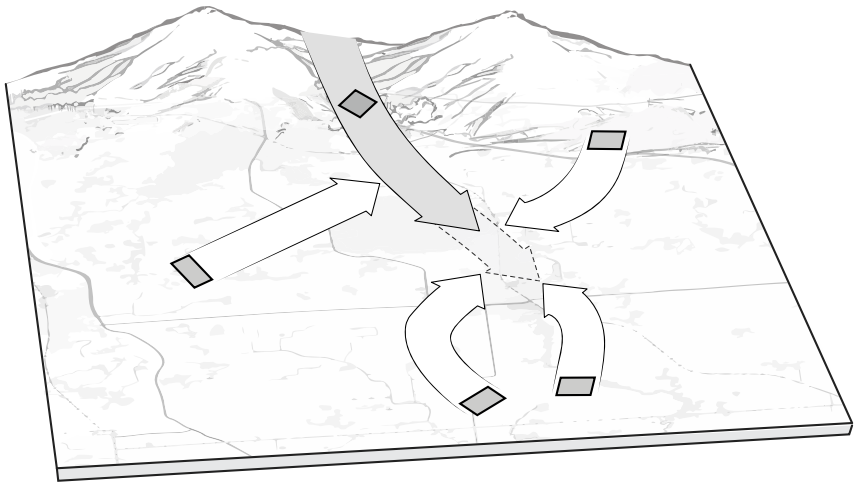


**Figure 7-4. Mobile Defense.**

### Retrograde

The retrograde is a type of defensive operation that consists of any movement or maneuver of a command to the rear, or away from the enemy. The enemy might force these operations, or a commander might execute them voluntarily. The higher commander of the force executing the retrograde must approve the retrograde operation before its initiation in either case. The retrograde is a transitional operation; it is not conducted in isolation. It is part of a larger scheme of maneuver designed to regain the initiative and defeat the enemy. There are five forms of retrograde: delay, withdrawal, retirement, denial, and stay-behind. Retrogrades allow forces to—

- Disengage from operations.
- Gain time without fighting a decisive engagement.
- Draw the enemy into an unfavorable situation or extend lines of communication.
- Preserve the force or avoid combat under undesirable conditions.
- Reposition forces to more favorable locations.
- Position the force for use elsewhere in other missions.
- Simplify sustainment support of the force by shortening lines of communication.
- Position the force where it can safely conduct reconstitution.
- Adjust the defensive scheme, such as to secure more favorable terrain.
- Deceive the enemy.

The three retrograde tasks are delay, withdrawal, and retirement. In each task, a force moves to the rear using combinations of combat formations and marches. The ACV unit leader can use all three tasks singularly or in combination with other offensive or defensive tasks.

***Delay.*** Delay is an operation in which a force under pressure trades space for time by slowing down the enemy's momentum and inflicting maximum damage without becoming decisively engaged. A plan involving a delaying action implies a planned withdrawal will be executed. Their long-range weapons and mobility make mechanized units ideally suited for this mission because they can slow or attrite the enemy's advancement, gaining time for the forces conducting the delay. The ACVs within a mechanized force might also be retained in a reserve to extricate forces that become decisively engaged or to counterattack. Delays are conducted—

- To allow other friendly forces to establish a defense.
- To cover a withdrawing force.
- To protect a friendly force's flank.
- To allow other forces to counterattack.
- When the force's strength is insufficient to defend or attack.
- To reduce the enemy's offensive capability by inflicting casualties.
- To gain time by forcing the enemy to deploy.
- To determine the strength and location of the enemy's main effort.
- When the enemy intent is not clear and the commander desires intelligence.
- To provide early warning for main battle area forces.

There are two methods of delaying: delaying from alternate positions and delaying from subsequent positions. In either technique, it is crucial that the delaying force maintains contact with the enemy between delay positions.

***Delay from Alternate Positions.*** A delay from alternate positions involves two or more units in a single sector occupying delaying positions in depth (Figure 7-5). As the first unit engages the enemy, the second occupies the next position in depth and prepares to assume responsibility. The first force disengages and passes by the second. It then prepares to re-engage the enemy from a position in greater depth, while the second force takes up the fight. Delaying from alternate positions is useful on particularly dangerous avenues of approach because it offers greater security than delaying from successive positions. However, it requires more forces and continuous maneuver coordination. Additionally, there is a risk of losing contact with the enemy between delay positions.

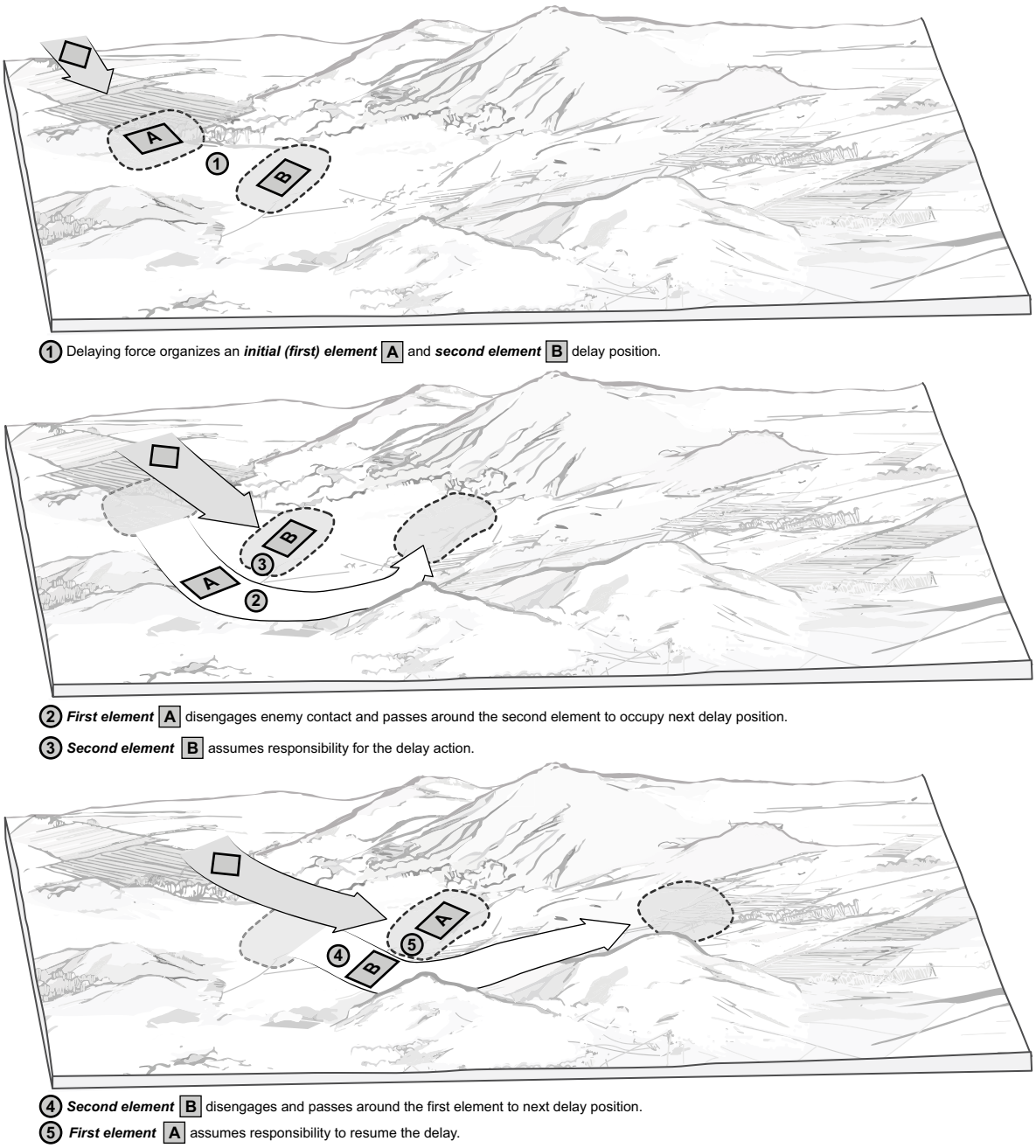



**Figure 7-5. Delay from Alternate Positions.**

***Delay from Subsequent Positions.*** A delay from subsequent positions is suitable when the sector is so wide that available forces cannot occupy more than a single tier of positions (Figure 7-6). Delaying units are positioned forward in a single echelon. Maneuver units delay continuously on and between positions throughout their sectors. As a result, this method is simpler to coordinate than a delay from alternate positions. However, delaying from subsequent positions is easier for the enemy to penetrate than a delay from alternate positions because the force has less depth and less time to occupy subsequent positions. To facilitate the rapid occupation of positions, units typically perform reconnaissance on subsequent positions before

occupation and post guides on one or two subsequent positions. In restrictive terrain, where infantry conducts the primary action, successive positions can be close together; in more open terrain, delay positions are often farther apart.

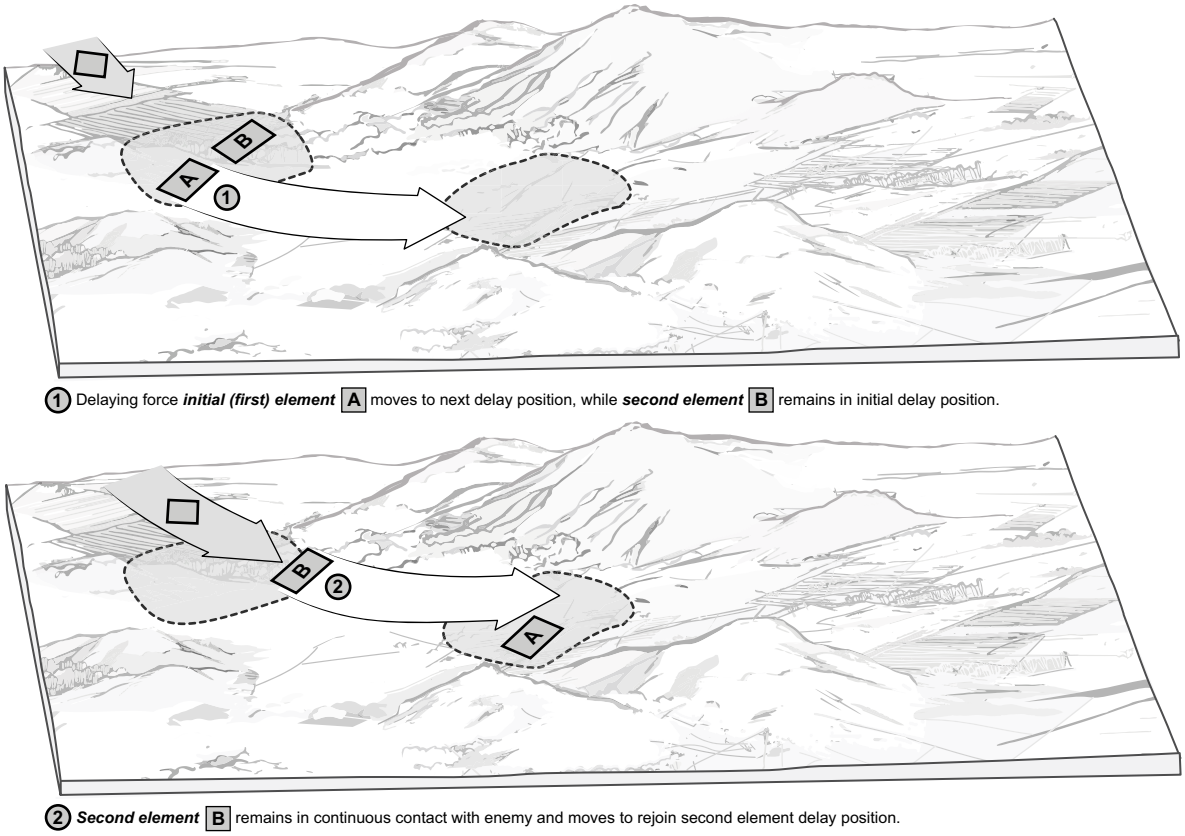



**Figure 7-6. Delay from Subsequent Positions.**

***Withdrawal.*** A withdrawal is a planned retrograde operation in which a force in contact disengages from an enemy force and moves in a direction away from the enemy. Withdrawals can be assisted or unassisted and might or might not take place under enemy contact. Ideally, a withdrawal is made without the enemy's knowledge or before they can prevent or disrupt it. A withdrawal is conducted—

- When a force is in danger of being defeated and does not desire a decisive engagement.
- To avoid battle under unfavorable conditions.
- To draw the enemy into terrain or a position that facilitates friendly offensive action.
- To allow for the repositioning or redeployment of the force for employment elsewhere.

The two forms of withdrawal are under enemy pressure and without enemy pressure. Regardless of the type, the planning considerations are the same and should always be made for withdrawal under enemy pressure. The ACV commander should anticipate enemy interference by fires, direct pressure, and envelopment. If the enemy interferes, security forces delay as the main body moves to the rear. If the enemy does not interfere, security forces disengage and withdraw on order. The more closely a unit is engaged with the enemy, the more difficult it is to withdraw. In any withdrawal, the ACV commander should attempt to deceive the enemy about their intent to

withdraw. Emphasis is placed on speed and surprise. Withdrawing during periods of reduced visibility facilitates disengagement from the enemy and conceals movement to a degree; however, such conditions could make control more difficult. The ACV's speed and armored-protected mobility make it suitable to support a withdrawal.

***Retirement.*** Retirement is a form of retrograde in which a force out of contact moves away from the enemy. A retiring unit organizes for combat but does not anticipate interference by enemy forces. Typically, another unit's security force covers the movement of one formation as the unit conducts a retirement. However, mobile enemy forces, unconventional forces, air strikes, air assaults, or long-range fires might attempt to interdict the retiring unit. The ACV commander must plan for enemy actions and organize the unit to fight in self-defense. They must also plan to conduct a retirement operation to reposition forces for future operations. Units conduct retirements as tactical road marches where security, control, and speed are the most important considerations.

Units are retired to—

- Position forces for other missions.
- Adjust the defensive scheme.
- Prepare to assist the delays and withdrawals of other units.
- Deceive the enemy.

## COMMON DEFENSIVE CONTROL MEASURES

### Battle Positions

Battle position types include primary, alternate, supplementary and subsequent positions (Figure 7-7):

- Primary Position. The best available position for ACVs to accomplish the assigned mission; these positions are the first to be occupied.
- Alternate Positions. Positions that are pre-located so that ACVs can continue to accomplish the assigned mission when the primary position becomes untenable or unsuited. These are usually located behind the primary positions.
- Supplementary Positions. Positions that are prepared to guard against attack from directions other than those from which the main attack is expected, such as the flanks. A supplementary position is a secondary position and does not cover the same sector of fire as the primary and alternate positions.
- Subsequent Positions. Positions that an ACV can move to during the course of the battle. A defending unit can have a series of subsequent positions. Subsequent positions can also have primary, alternate, and supplementary positions associated with them.

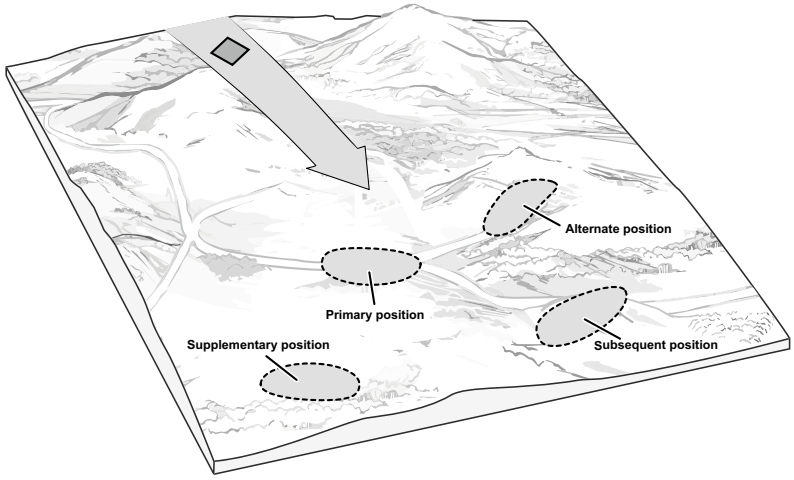



**Figure 7-7. Battle Positions.**

***Occupation of the Position.*** The ACV unit uses occupation methods to facilitate control while occupying a position. There are three common techniques for an ACV unit to occupy a position:

- Crow's Foot. A crow's foot technique (Figure 7-8) utilizes a release point to move ACVs into position while maintaining vehicle orientation in the direction of the enemy. The advantage of the crow's foot is the forward security posture that each element maintains during occupation, allowing for immediate reaction to premature enemy contact. However, due to multiple release points, this technique is difficult to control and demands that subordinates know the exact location of all release points. Using guides and marked release points can increase control when using this method.

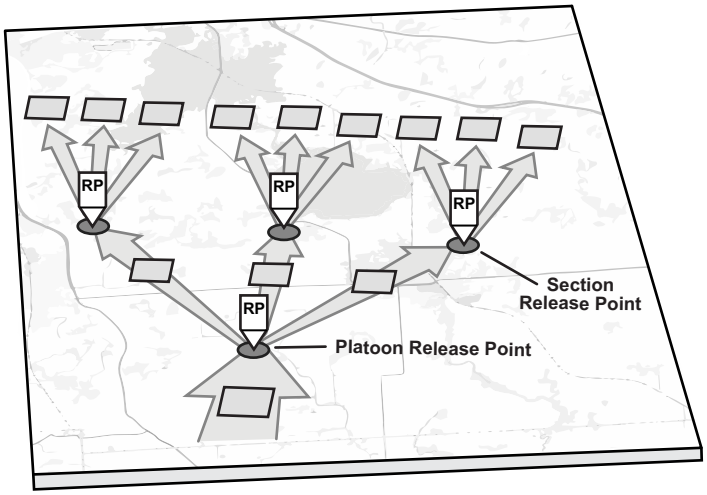



**Figure 7-8. Crow's Foot Technique.**

- Bent L. The bent L technique (Figure 7-9) allows the unit to remain centrally located throughout the occupation of the position. Utilizing an anchor point, ACVs move in column to the location of primary positions, then turn perpendicular to the direction of enemy approach and move into position. This technique increases the direct control to the ACV unit leader. However, the unit is more vulnerable to attack until all elements have reached their positions.

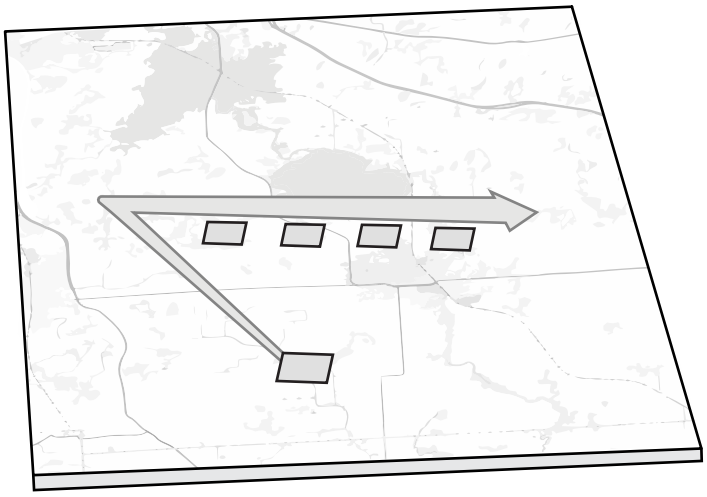


**Figure 7-9. Bent-L Technique.**

- Combination. The combination technique (see Figure 7-10) uses a hybrid of the crow's foot and bent L techniques to achieve a balance between control and security. Release points are identified until a certain point where the units move into position using the bent L.

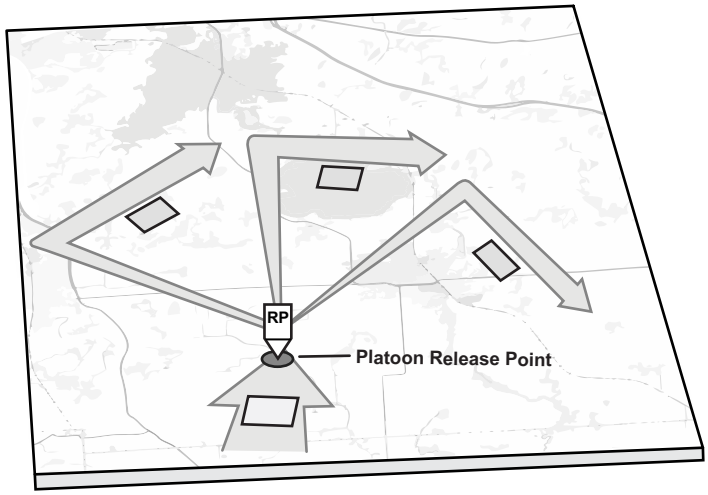



**Figure 7-10. Combination Technique.**

***Stake Positions.*** If a vehicle position is to be reoccupied, it should be staked before moving the vehicle. One stake is placed in front of the vehicle, centered on the driver's station and just touching the hull. The stake should be long enough for the driver to see it when in position. The other stake is placed to the left of the vehicle and aligned with the hub on the second wheel. The stakes should be placed close to the vehicle with only enough clearance to move the vehicle into position. The stakes should be driven firmly into the ground. Engineer tape or luminous tape can be placed on the friendly side of the stakes so that the driver can see them. Rocks or other designators familiar to the ACV driver can be placed at each of the front two corners of the vehicle to assist in reoccupation if the stakes are lost. Directional chemlights (chemlights with tape that only provide a small amount of light compared to 360 degrees of light) should be used at night in conjunction with engineer stakes or natural markers.

### Sectors of Fire

The ACV commander establishes sectors of fire to translate the engagement area into manageable portions for subordinate elements. Sectors of fire should overlap to avoid gaps in coverage and are assigned based on the tasks given to subordinates in the operations order. The unit's main effort should be the assigned sector of fire, which will enable it to accomplish the assigned mission while the supporting efforts assist in facilitating the main effort. Once forces are distributed, they must be assigned sectors of fire down to the individual ACVs. The ACVs should be emplaced based on corresponding weapon systems and crew proficiency.

When heavy machine guns are used from the CROWS, orient an element or weapon system, to the closest TRP using clock direction, cardinal direction, tracer on target, or infrared laser pointer. When time is short or reference points are too few to assign a sector of fire, the leader assigns a primary direction of fire instead of a TRP. Once sectors of fire are designated, range cards are created to document key terrain features, facilitating accurate and rapid target engagement. When using a CROWS, which provides a directional firing solution from the vehicle, a magnetic azimuth should be included on the range card. This ensures a seamless transition between battle positions.

### Principal Directions of Fire

The MK19 40 mm and M2 .50 caliber can be assigned principal directions of fire (PDF) to cover likely enemy avenues of approach. This will be dependent on the terrain, dimensions of the engagement area, desired effects on the enemy, and ultimately the size, shape type, and range of targets entering the engagement area. An example of desired weapons assigned a PDF would be an engagement area that spans approximately 2,000 meters, where one can accurately engage with a M2 .50 caliber, and with immediate target effects. An alternative example would be a wide-open engagement area only 700 meters to the front, where Marines can engage with MK19 40 mm at group targets with a relatively short munition flight-time delay to gauge target effects. Additional machine gun employment and capabilities information is in MCTP 3-10C.

## DEFENSIVE METHODS

Defensive methods include sectors, battle positions, strong points, linear, perimeter, and reverse slope methods. Each method presents opportunities and obstacles, which vary with ACV unit composition; a unit's size could render some methods unachievable. Defensive methods are discussed in the following sections.

### Sector Defense

Assigning defensive sectors to subordinate units provides them with the maximum latitude to accomplish assigned tasks (Figure 7-11). The mobility and firepower of ACVs maximize options to the ACV unit leaders executing a sector defense. Within the sector, the unit leader of a mechanized force can assign subordinate sectors, battle positions, strong points, or a combination of these. This method of defense is typically conducted when—

- Avenues of approach are not easily defined.
- Dominating terrain is not available.
- The area of operations is wide or large.
- Mutual support is not easily achieved.
- The unit leader's ability to control is degraded.

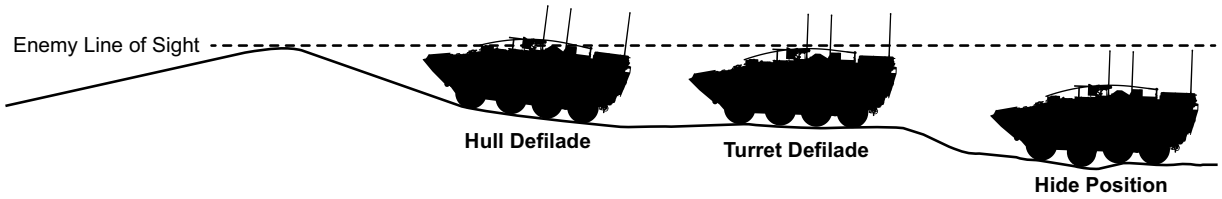



**Figure 7-11. Sector Defense.**

### Strong Point Defense

A strong point defensive is conducted when the retention of terrain is indefinitely required or when the defending force is isolated for periods of time by enemy action. This defense typically requires external or adjacent assets such as engineers to be successful. A strong point is usually fortified and is often designed to defeat enemy attacks at an isolated location. Located on a terrain feature that is critical to the overall defense, a strong point is intended for permanent or extended occupation. While the defense is static, it requires built-in flexibility using direct and indirect fire plans and properly constructed positions. The ACVs can be used in static positions or as a mobile reserve. Ideally, the reserve should attack the enemy's flank, isolate the penetration force, and seal the gap in the position. This action should be rehearsed and synchronized with the fire support and obstacle plan over the main enemy avenue of approach to determine the most probable penetration points.

> NOTE: If infantry is positioned in front of ACVs, the ACV commander must ensure that the infantry establishes a route back to the ACVs that does not inhibit the CROWS fields of fire. When conditions permit, security patrols using ACVs can remain outside the defensive perimeter to provide early warning and to delay or confuse the enemy. Once these mobile assets are inside the strong point, the mission becomes holding the defensive perimeter against the enemy. Interlocking direct fires must be planned over the entire strong point along with counterattack by fire positions and external direct fire control measures.

### Battle Position Defense

A battle position defense requires the mechanized force to occupy a general location where it can block an avenue of approach, fire into an assigned area, retain key terrain, or perform other tasks (Figure 7-12). Amphibious combat vehicle unit leaders establish battle positions when—

- Avenues of approach are well defined and the enemy can be canalized.
- Key terrain dominates the avenues of approach.
- The area of operations is narrow or small.
- Mutual support is achievable.

A mechanized force defending in a battle position can be deployed with its supported infantry mounted, infantry and ACVs in the same battle position, or infantry and ACVs in separate battle positions.

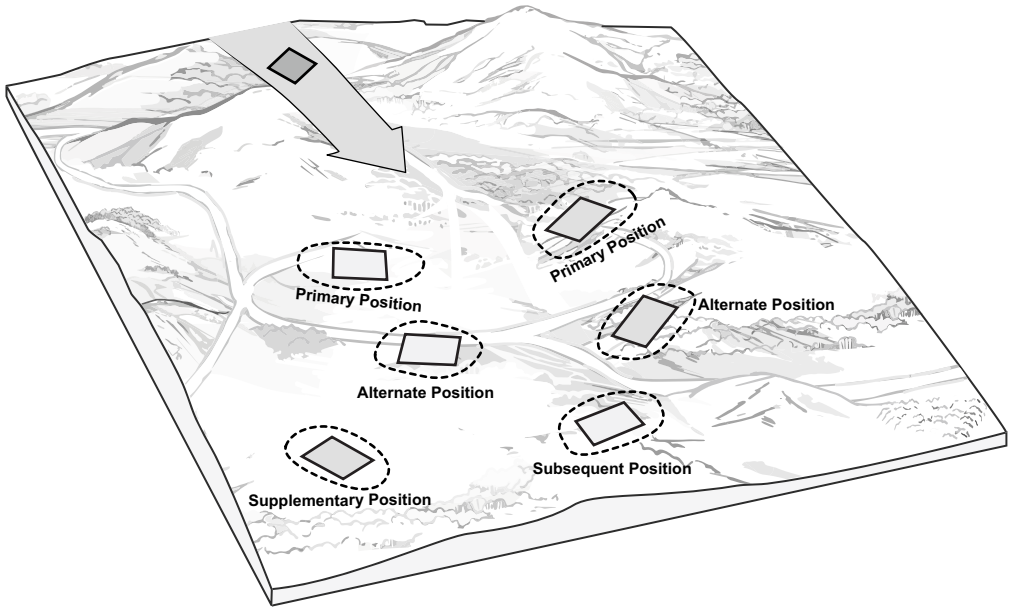



**Figure 7-12. Battle Position Defense.**

### Linear Defense

Linear defense is characterized by strong mutual support between forward units, limited depth, and minimal flexibility with maximum units forward and a small reserve (Figure 7-13). This type of defense maintains a large concentration of firepower to the front. The linear defense is employed when defending a wide area and is a suitable variation for larger sized units. The main concern when fighting a linear defense is the lack of flexibility and the difficulty of both seizing the initiative and seeking out enemy weaknesses. When the enemy has a mobility advantage, a linear defense entails accepting extreme risk. Obstacles, indirect fires, and contingency plans are critical to this maneuver due to the exposed nature of the units' flanks. Anticipation of how the enemy reacts when it encounters the linear obstacles requires detailed analysis and understanding.

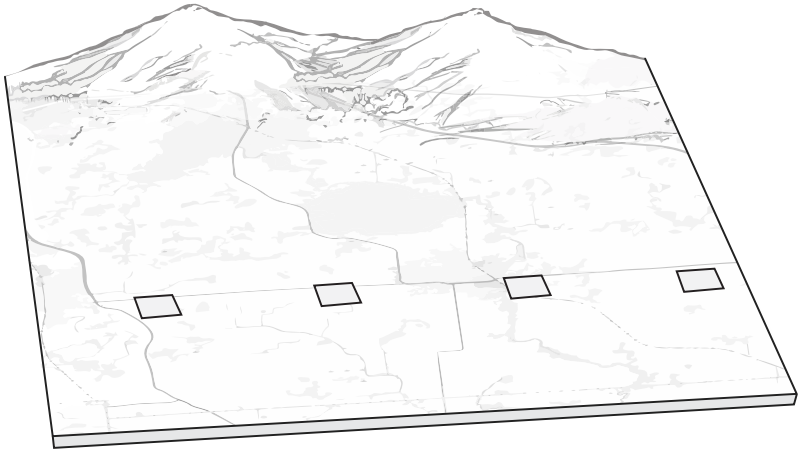


**Figure 7-13. Linear Defense.**

Identifying enemy COAs allows the ACV commander to complete an effective linear defense and mass effective fires on the enemy force. Linear defensive techniques include—

- Employing supported infantry to allow greater fire power.
- Keeping a reserve force ready to deploy to the decisive point to engage the enemy.
- Assigning areas that allow the ability to engage with maximum effective weapon ranges.
- Emplacing obstacles to canalize the enemy into engagement zones.
- Maintaining an early warning scouting element if feasible.

### Perimeter Defense

Perimeter defense is designed to defeat attacks from any direction (Figure 7-14). Most of the force forms the perimeter and a reserve is established to provide depth. The perimeter consists of a series of mutually supporting positions that take advantage of the observation and fields of fire afforded by dominating terrain. With the ACV's mobility, the unit can employ a perimeter defense in most terrain. The ACV commander will plan to respond to the widest possible range of enemy actions when positioning forces, weapons emplacement, direct and indirect fire integration, and reserve employment. The ACV commander can be called upon to execute a perimeter defense under various conditions, such as when—

- Conducting a security halt.
- Securing itself against attacks in an urban area. Defense in urban areas relies heavily on infantry integration.
- Holding critical terrain in areas where the defense is not tied to adjacent units.
- It has been bypassed and isolated by the enemy and must defend in place.
- Occupying an independent assembly area or reserve position.
- Beginning preparations of a strong point.
- Directed to concentrate fires on two or more adjacent avenues of approach.

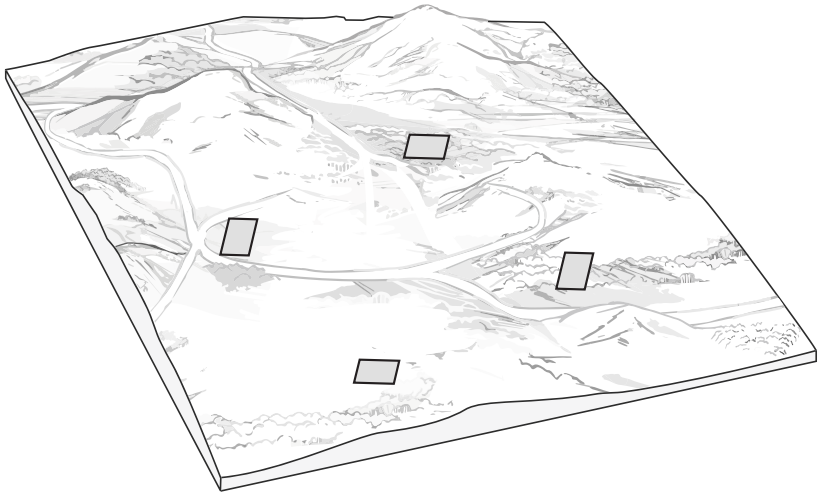


**Figure 7-14. Perimeter Defense.**

An ACV commander should consider the following while in a perimeter defense:

- Placing security as far out as possible, maximizing the use of optics and sensors.
- Positioning vehicles in protected positions, concentrating fires on avenues of approach and related engagement areas.
- Retention of key terrain.
- Maintaining a reserve.
- Location of the reserve and criteria to deploy them.
- Sustainment operations and sustainment security.

Planning for a perimeter defense can be deliberate or hasty. The longer the duration, the more robust the perimeter should be. An example of a long-term perimeter defense is a combat outpost that requires barriers, structures, additional communication assets, and engineer support. Hasty perimeter defense can be established during security halts by forming a perimeter with ACVs. The ACV commander places their longest-range weapon system so as to maximize effective range and engagement areas. Adjustments in the perimeter are constant to ensure security. Subordinate leaders will continuously check, inspect, and update the perimeter defense plan.

### Reverse Slope Defense

A reverse slope defense (Figure 7-15) is organized on the part of a slope that is masked by the topographical crest from enemy direct fire and observation. The defender can deliver surprise fires on the enemy once they cross the crest of the forward slope or when significant enemy forces are exposed on the reverse slope. In such a defense, the defending unit is deployed on terrain that is masked from enemy direct fire and ground observation by the crest of a hill. Likely, maximum effective weapon ranges are not employable due to the close proximity to enemy forces as they crest the slope. Reverse slope defense is used when—

- Enemy fire makes the forward slope untenable.
- The weapons systems on the vehicles cannot depress enough to engage the enemy.
- Lack of cover or concealment on the forward slope makes it untenable.
- The forward slope has been lost or has not yet been gained.
- The forward slope is exposed to enemy direct-fire weapons fired from beyond the effective range of the defender's weapons. Moving to the reverse slope removes the attacker's standoff advantage.
- The terrain on the reverse slope provides better fields of fire than the forward slope.
- The defender avoids creating a dangerous salient or reentrant in friendly lines.
- Surprising and deceiving the enemy as to the true location of the defensive position.

When executing a reverse slope defense, the ACV commander establishes—

- A fire support plan to prevent the enemy's occupation and use of the crest of the hill or forward slope.
- Coordination with reconnaissance elements on the forward slope to provide observation across the entire front and security to the main battle positions.
- A counterattack plan that specifies measures necessary to clear the crest or to regain it from the enemy.

The forward edge of the position should be within small arms range of the crest. It should be far enough from the crest that fields of fire allow the defender time to place well-aimed fire on the enemy before they can engage friendly positions.

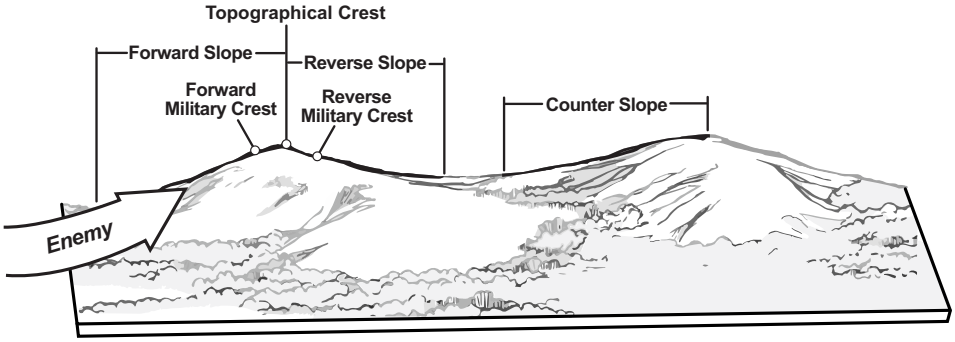



**Figure 7-15. Reverse Slope Defense.**

### Infantry Mounted Defense

Infantry mounted defense is used when the battle position is occupied temporarily, and the unit might be required to relocate quickly. This method simplifies the control and coordination between the infantry leadership and supporting ACV unit and improves the unit's ability to react and move quickly; however, the unit has less firepower than it would have if the infantry were dismounted. This deployment method is typically used when—

- Enough firepower can be employed from ACVs.
- Increased local security or observation is not needed.
- A short notice move is required.
- There is a significant indirect fire threat.

### Infantry Dismounted and ACVs on the Same Battle Position

When the infantry and ACV unit deploy on the same battle position, either the decentralized or the centralized control method is used. Using the decentralized method, some or all of the infantry dismount under the control of their leadership, who also retains cognizance of their respective ACV. This method is used when dismounted infantry forces temporarily occupy a battle position while being ready to displace in ACVs.

The centralized method of control is used when the mechanized unit must occupy a battle position and be prepared to repel an attack. The infantry dismounts and positions themselves away from the ACVs. The mechanized unit commander controls the ACVs through the ACV commander.

This method is effective when the battle position has multiple avenues of approach with both long and short-range fields of fire. Centralized control enables each ACV and infantry element to be positioned on terrain suited to their capabilities.

The infantry is usually positioned in close terrain that limits vehicle movement and firing positions. The ACVs take up positions on terrain that offer maneuver while maximizing fields of fire. The ACVs can be positioned forward of, on the flanks of, or behind the infantry. The positions of both ACVs and dismounted infantry must be such that it allows the infantry to remount rapidly. To do this, the ACV commander plans linkup points with corresponding routes where the ACV elements can rejoin the infantry units. Javelin teams and mortar teams, able to engage targets up to 2500 meters and 3490 meters respectively, should be integrated into the AA fire plan. Javelin teams can quickly return to the vehicles. The 60 mm mortars, depending on how much ammunition was offloaded, could take time to carry all components and ammunition back to the vehicle.

### Infantry and ACVs on Separate Battle Positions

Infantry and ACVs on separate battle positions are used when the supported mechanized commander requires dismounted infantry in one location and ACVs in another. The ACV commander controls fires and maneuver, as required, per the mechanized commander. The ACV and infantry units could be separated if the infantry is occupying positions in heavily wooded or rugged terrain where ACVs cannot maneuver; the ACVs might be located in a concealed position near the infantry or assigned to another battle position in suitable terrain.

## SEQUENCE OF THE DEFENSE, PLANNING AND PREPARATION PHASE

### Estimate of the Situation

Defensive operations begin with the tactical planning process, including a detailed estimate of the situation that facilitates situational awareness. Conceptual understanding of the desired end state drives defensive analysis, including a detailed engagement area, integrating direct fires, and obstacles, to maximize the effects of our fires against the enemy. The ACV unit leader will envision the defensive battle, facilitating the synchronization of all assets during the fight. Thought must be given to the way in which the battle will take place, as well as the ways in which engagement criteria for all weapon systems will be tied to specific tactical control measures and enemy dispositions. Integrating the effects of fires, coupled with synchronizing the timing of the engagement, allows the ACV unit leader to dictate the terms of the defensive battle.

### Developing an Engagement Area

The engagement area is the location where the ACV commander, in accordance with the established scheme of maneuver, intends to destroy an enemy force using the massed fires of all available weapons and supporting assets. The engagement area location is based on thorough estimate of the situation and leaders' reconnaissance. The engagement area facilitates focus, mass and concentration, as well as economy of force in areas outside of it. The success of the engagement with the enemy depends on how effectively the integration is of the obstacle plan, indirect fire plan, and direct fire plan and the terrain in the engagement area. Engagement areas are developed by taking the following steps and measures:

1. Identify all Likely Enemy Avenues of Approach. Additionally, choose a specific one through terrain analysis, map reconnaissance, and leader's reconnaissance. The ACV commander must identify key aspects of terrain that can be used by the enemy to gain a position of advantage (Figure 7-16).

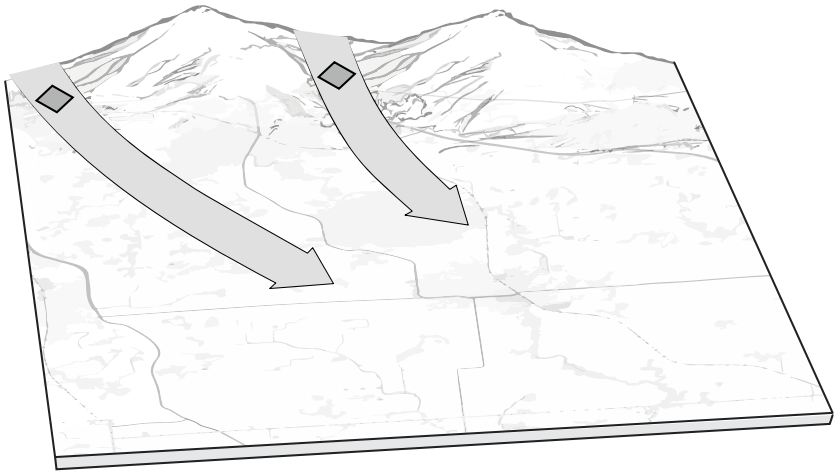


**Figure 7-16. Identify Likely Enemy Avenues of Approach.**

2. Determine Likely Enemy COAs. Identify ways in which the enemy can use the terrain along the respective routes to their advantage to accomplish their overall goals (Figure 7-17). The enemy's composition and doctrinal methodologies require consideration.

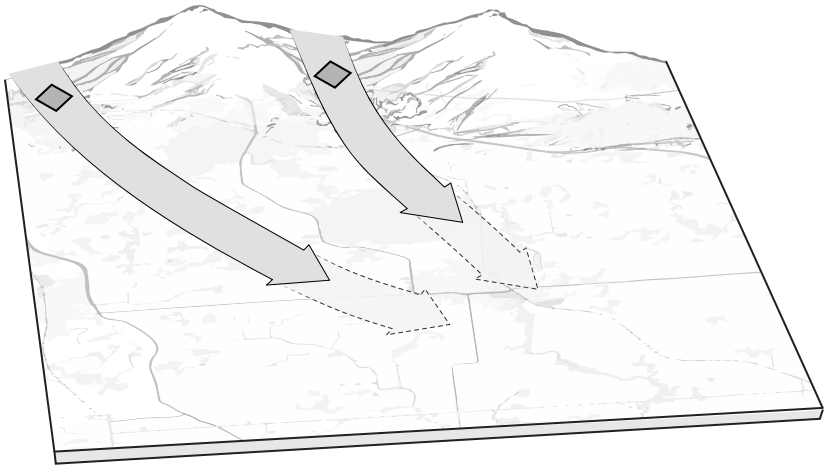


**Figure 7-17. Determine Likely Enemy Courses of Action.**

Analysis enables the platoon commander to look at the advantages and disadvantages associated with each possible enemy COA. The following questions are additional considerations:

- How will the enemy use reconnaissance elements?
- How will the enemy attempt to infiltrate?
- How does the enemy plan on using fires to support maneuver?
- How does the enemy plan on negotiating our obstacle plan?
- What is the enemy's rate of movement?
- How will the enemy react to our scheme of maneuver?
- How does the enemy plan on using terrain to their advantage?

3. Determine Where to Destroy the Enemy. The engagement area's location can be determined once the enemy's most likely COA is developed. The mechanized force commander visualizes the enemy's approach and engagement, allowing them to select

the location that allows for the most advantageous use of terrain. Once the engagement area is defined, tactical control measures will assist in executing the direct and indirect fire plans (Figure 7-18). Identifying sectors of fire, TRPs, and trigger lines can facilitate control and distribution of fires in the defense to maximize weapons effectiveness.

4. Plan and Integrate Obstacles. The ACV commander must understand obstacle effects to ensure all obstacles are fully integrated with the defensive plan. Obstacles and fires manipulate the enemy in a way that supports the ACV commander's intent and scheme of maneuver. The four tactical obstacle effects are described in the Table 7-1.

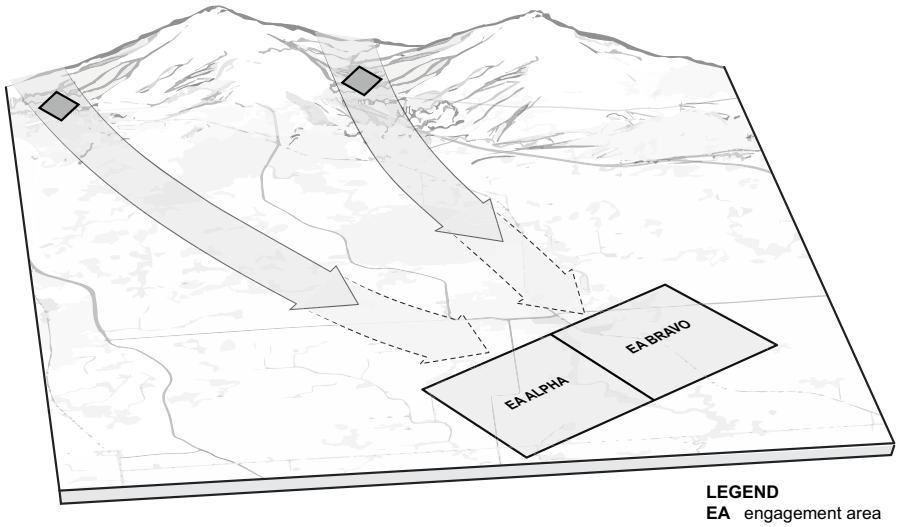
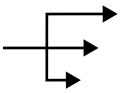
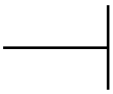



**Figure 7-18. Determine Where to Destroy Enemy.**

Obstacle effects drive integration and multiply the effects of firepower within the engagement area, focus weapons employment, and focus the obstacle effort. During planning, the commander should focus on determining which obstacle effects are desired at specific locations on the battlefield, not on specific obstacle construction. Obstacles must consider counterattack plans. The obstacle plan seeks to limit the enemy's ability to maneuver within the engagement area; obstacle plans should not inhibit friendly schemes of maneuver.

**Table 7-1. Tactical Obstacle Effects.**

| Application | Description | Purpose | Fires and Obstacle Must | Obstacle Characteristics |
|---|---|---|---|---|
| **Disrupt**  | The arrow indicates the direction of the enemy's advance.<br>The length of the arrows indicates where the enemy is slowed or allowed to pass. | Breakup enemy formations.<br>Interrupt the enemy's timetable and command and control.<br>Cause premature commitment of breach assets.<br>Causes the enemy to piecemeal their attack. | Cause the enemy to deploy early.<br>Slow part of their formation while allowing part to advance unimpeded. | Does not require extensive resources.<br>Difficult to detect at long range. |
| **Turn**  | The heel of the arrow is the anchor point.<br>The direction of the arrow indicates the desired direction of the turn. | Forces the enemy to move in the direction desired by the friendly commander. | Prevent the enemy from bypassing or breaching the obstacle belt.<br>Maintain pressure on the enemy force throughout the turn.<br>Mass direct and indirect fires at the anchor point of the turn. | Tie into impassable terrain at the anchor point.<br>Consist of obstacles in depth.<br>Provide a subtle orientation relative to the enemy's approach. |
| **Fix**  | The arrow indicates the direction of enemy advance.<br>The irregular part of the arrow indicates where obstacles slow the enemy advance. | Slow an attacker within an area so they can be destroyed.<br>Generate the time necessary for the friendly forces to disengage. | Cause the enemy to deploy into an attack formation before reaching obstacles.<br>Allow the enemy to advance slowly into an EA or AO.<br>Make the enemy fight in multiple directions once they are in the EA or AO. | Arrayed in depth.<br>Span the entire width of the avenue of approach.<br>Must not make the terrain appear impenetrable. |
| **Block**  | The vertical line indicates the limit of enemy advance and where the obstacle ties into severely restricted terrain.<br>The horizontal line shows the depth of the obstacle effort. | Stop an attacker along a specific avenue of approach.<br>Prevent an attacker from passing through an AO or EA.<br>Stop the enemy from using an avenue of approach and force them to use another avenue of approach. | Prevent the enemy from bypassing or penetrating through the belt.<br>Stop the enemy's advance.<br>Destroy all enemy breach efforts. | Must tie into impassible terrain.<br>Consistent of complex obstacles.<br>Defeat the enemy's mounted and dismounted breaching effort. |
| Drection of enemy attack  | | | | |
| **Legend**<br>AO area of operations<br>EA engagement area | | | | |

5. Emplace ACVs. The ACVs must be emplaced to maximize their capabilities and weapon's effects, as well as the terrain's effects on weapons employment. The exact location of ACVs and their corresponding weapons are determined based on maximizing the weapons effects in the engagement area. Sectors of fire with corresponding control measures should be defined that incorporate a signal plan (radio, pyro, voice, etc.), TRPs, and trigger lines. Additionally, alternate and supplementary positions and sectors of fire should be developed as time permits.

6. Plan and Integrate Indirect Fires. In the defense, units use the fires warfighting function to neutralize, suppress, or destroy enemy forces; to delay or disrupt the enemy's ability to execute a given COA; and to enhance the effects of massed direct fires. Fires and information activities support the commander's decisive and shaping actions.

   The AA units, working with closely with the supported unit, meticulously plan and integrate indirect fires to maximize their effectiveness in defensive operations. This integration begins during the initial planning stages, ensuring synchronization with air-delivered fires, direct fires, and the overall defensive scheme of maneuver. The goal is to shape the battle, disrupt the enemy's COA, and amplify the impact of direct fire engagements. To achieve this, ACV units ensure all elements within the fire support chain, from joint fire observers to naval gunfire liaison officers, has a thorough understanding of the commander's intent and the defensive scheme of maneuver. Fire support assets are strategically distributed throughout the area of operations, closely linked with redundant target acquisition assets, such as UAS and ground reconnaissance. Permissive fire support control measures are implemented as close as possible to friendly positions to facilitate rapid engagement. Crucially, high-payoff and high-value targets, along with their engagement priorities, are identified and prioritized through the lens of the single battle construct, enabling the unit to target critical enemy assets, reserves, and follow-on forces throughout the battlespace. This integrated approach allows the ACV unit to generate effects across the entire enemy force simultaneously, contributing to the defender's main effort and ultimately defeating the attacker's objectives.

   As a mechanized infantry unit, fire support teams can use the ACVs to observe the engagement areas, and coordinate with the firing agencies directly. The ACVs provide Javelin and mortar teams the mobility to displace quickly. For detailed descriptions on fire support coordination (refer to MCTP 3-10F, *Fire Support Coordination in the Ground Combat Element*).

7. Conduct Engagement Area Rehearsal. Rehearsals are imperative to a planned defense. All ACVs and personnel must understand the TRPs associated with their sectors and the trigger lines that initiate their fires. Properly integrating and synchronizing the fire plan ensures that the maximum effect of all weapon systems and obstacles is applied to the enemy in the engagement area. This can be accomplished using a terrain model or rehearsal of concepts drills during the planning and preparation phase.

For more information on this topic, see MCWP 3-01, *Offensive and Defensive Tactics*.

## PREPARATIONS FOR THE DEFENSE

When not engaged in offensive operations, the ACV unit leader initiates preparations for the defense, including establishing positions, obstacle planning and construction, and logistics. Defenses can be conducted deliberately or hastily, depending on the preparation time available.

A unit typically employs a deliberately organized defense when it is out of contact with the enemy or when contact with the enemy is not imminent and time for organization is available. A deliberate defense includes fortifications, strong points, extensive use of obstacles, and fully integrated fires. The ACV commander uses the time to make a detailed reconnaissance of the sector, select terrain to defend, and decide the best deployment of forces.

A hastily organized defense is typically organized while in contact with the enemy or when contact with the enemy is imminent and time for organization is limited. Reconnaissance of the sector may or may not be detailed and the defense can be assumed directly from the current position of units. Depending on the situation, the ACV commander might initiate a hasty attack to seize terrain suitable to defend. Employing a security force helps delay the enemy while deploying the bulk of the force to more suitable defensive terrain. A hasty defense is improved continuously as the situation and time permits; eventually it becomes a deliberate defense.

## DECISIVE CONTACT

All ACV unit actions must be focused toward defeating an enemy attack. Actions during decisive contact with the enemy are discussed in the following sections.

### Gain and Maintain Enemy Contact

Gaining and maintaining contact with the enemy despite their efforts to destroy friendly reconnaissance elements is vital. As the enemy's attack begins, the ACV unit leader must confirm the committed enemy unit's positions and capabilities, determine the enemy's intent and direction of attack, and gain time to react. An ACV unit accomplishes this by patrolling efforts forward of the engagement area. The ACV unit leader must determine which COA the enemy is committed to.

### Disrupt the Enemy

After making enemy contact, ACV units seek to disrupt the enemy's plan and their ability to control their forces or employ supporting arms. Ideally, the results of these shaping operations should force a disorganized enemy, whose ability to synchronize its elements has been degraded, to conduct a movement to contact against prepared defenses. Actions during this contact should force the enemy into avenues of approach that lead them into the engagement area, destroy the enemy's cohesion, and disrupt tempo. Properly planned long-range defensive fires and the forward elements of the obstacle plan help to facilitate this. Timing and sequencing of actions is imperative; the enemy cannot be allowed to recover from their efforts prior to the decisive point in the engagement area.

### Fix the Enemy

Options for enemy maneuver must be limited; plans should constrain the enemy into a specific COA, control movements, or fix the enemy in a given location using obstacles and fires. Integrated plans ensure the enemy is slowed or stopped in the engagement area at the exact time and place where the effects of all the unit's fires are maximized.

### Maneuver

Once the enemy has committed forces to a given COA, all fires must be massed in the engagement area. Keeping an offensive mindset, the unit's least engaged unit can move to supplementary positions to protect a flank or conduct a counterattack into the engagement area to destroy the enemy. Obstacle plans must maximize friendly force's ability to maneuver with support from available fires assets.

### Finishing

Once the enemy has committed their forces in the engagement area, timing is critical. The ACV unit leader must capitalize on the enemy's decisions by quickly and violently destroying them in the engagement area. Fire coordination and deconfliction, through planning, shifting, and ceasing fires, is vital to ensuring weapons effects are maximized on the enemy. Once the enemy is destroyed, the ACV unit leader either continues the attack or moves into consolidation or reorganization.

## CONSOLIDATION AND REORGANIZATION

Post-contact with enemy forces, the ACV unit conducts consolidation and reorganization. Re-establishing security is the first priority. Sectors of fire must be confirmed for validity or adjusted based on an updated estimate of the situation. In addition, a security posture must be maintained and the repositioning of ACVs might be required. Resupply or redistribution of ammunition must transpire while it is determined if the defensive plan is still tenable with the available resources. Casualties and enemy prisoners of war must be moved quickly to higher echelons if feasible.

Effective consolidation and reorganization ensure that the unit remains at the highest possible level of readiness at all times while preparing to receive follow-on tasking. If appropriate and feasible, the ACV unit leader can decide to exploit a weakened, disorganized, and disoriented enemy following contact by conducting a counterattack or a pursuit.

## TRANSITION TO THE OFFENSE

An ACV unit can transition from the defense to the offense and execute a counterattack to destroy exposed enemy elements and free decisively engaged friendly elements. The counterattack element must rapidly maneuver before the enemy can bring follow-on forces forward to influence the fight or transition into a defensive posture. The counterattack is typically conducted forward of friendly positions and tactical obstacles and executed by a reserve force that is designated to exploit an enemy weakness.

## DIRECT FIRE PLANNING

A defense's strength lies in the proper use of time during preparation to ensure effective use of terrain and maximizing weapons effects in the engagement area. Direct fire planning should assist in effectively distributing and integrating fires at all levels.

### Weapon Employment Considerations

The ACV commander must ensure that all weapon systems are being employed to maximize their effectiveness within their respective capabilities. For example, MK19 40 mm should be used to cover dead space within the unit's sectors of fire, while a combination of MK19 40 mm and M2 .50 caliber, are assigned to likely enemy avenues of approach within the sector. Many factors contribute to employment considerations, such as size, shape, type of target, as well as the most casualty-producing weapon system oriented down likely enemy avenues of approach.

### Target Precedence

When engagement criteria are met simultaneously by multiple targets, target precedence determines the order in which targets should be engaged. Each ACV is given target precedence in accordance with its capabilities. Target precedence maximizes weapons effects that quickly disrupt the enemy's scheme of maneuver. While engagement criteria establishes when units areto engage, target precedence establish which units will engage. The following are target precedence considerations:

- Weapon to target match; ACV-Ps engage anti-tank weapons, crew-served weapon positions, and enemy personnel.
- Individual small arms and crew-served weapons fire at unarmored antitank weapons and exposed enemy personnel.
- Antitank weapons fire at armored vehicles and fortified positions.
- Artillery and mortars fire to suppress enemy fires, destroy exposed vehicles, kill exposed personnel, and conceal friendly movement with smoke.
- Air defense weapons fire at enemy aircraft.

## OFFENSIVE PLANNING IN THE DEFENSE

In the defense, the mechanized force commander must actively seek opportunities for offensive action. Plans should be flexible in the defense, maintaining the ability to react to the enemy's scheme of maneuver. Flexibility in the defense is accomplished in several ways.

### Least Engaged Unit

The least engaged unit—

- Facilitates flexibility to incorporate offensive action in the scheme of maneuver once the enemy is committed in the engagement area.
- Is under minimal enemy influence when the engagement begins based on their placement in the unit's position.
- Can move to supplementary positions to protect flanks, or conduct a counterattack based on the commander's plan.

While plans can hypothesize a least engaged unit, such a unit cannot be tasked in an OPORD. The enemy determines which element is the least engaged unit in the defense. During the planning phase, the mechanized force commander must develop an employment plan for the least engaged unit and ensure that all subordinates know their respective responsibilities should they become the least engaged unit.

## DISENGAGEMENT CRITERIA

Disengagement criteria define triggers for planned withdrawal, passage of lines, or reconnaissance handover between units. The conditions and parameters set out in displacement criteria integrate the commander's intent with tactical feasibility as either event, time, or threat driven:

- Event driven:
  - Priority intelligence requirements being met (ammunition expenditure, enemy BDA, loss of friendly vehicles, etc.).
  - Threat contact not expected in the area.
  - Observed named areas of interest or avenues of approach denied to the enemy.
- Time driven.
- Threat driven is when enemy forces overmatch the AA force.

### Displacement Planning

Displacement planning allows flexibility and tactical agility in the defense. Displace ACVs to avoid being fixed or decisively engaged by the enemy. The overarching factor in a displacement is to maintain the mobility advantage over the enemy. Planning for displacement includes:

- The enemy situation.
- Disengagement criteria.
- Availability of direct fire suppression that can support disengagement by suppressing or disrupting the enemy.
- Availability of cover and concealment, indirect fires, and obscurants to help disengagement.
- Obstacle integration, including situational obstacles.
- Positioning of forces on terrain that provides an advantage to the disengaging elements.
- Identifying displacement routes and times when disengagement or displacement will happen.

## SECURITY PLAN

Security must be maintained at all times when conducting operations. The security plan not only ensures that the ACV unit is ready for when the enemy attacks, it also facilitates the offensive actions from the defense. Several aspects that assist in conducting successful defensive operations include the following:

- Alert Status. The alert status determines what percentage of the unit is manning weapons in their primary positions. An ACV unit should never go below 25 percent security at any time.

Upon occupation, the ACV unit should remain at 100 percent security until the unit leader begins prioritizing work. The alert status is driven by the likelihood of enemy attack, which in turn facilitates the accomplishment of the rest of the defensive plan.

- Stand-To. The stand-to status is used when all ACVs are manned and ready to defend. All movement is kept to a minimum. Brevity codes must be developed to signal stand-to, ensuring a timely transition from priorities of work to stand-to. The ACV unit leader can take the unit to stand-to any time when it is determined the unit is vulnerable to enemy observation or attack, or at pre-determined times.
- Listening Post and Observation Post. Listening and observation posts are locations from which to observe enemy movement, report to the unit leader, or call for and adjust indirect fire on enemy units. The posts add depth to the defense and inform the estimate of the situation with regard to specific enemy COAs. The location of these posts must be deconflicted with the friendly direct and indirect fire plans and all personnel must have detailed knowledge of contingencies when enemy contact is made. Listening and observation posts are usually used to confirm or deny the enemy's approach along pre-determined routes. Close coordination between the ACVs and infantry is required to ensure all dead zones are covered, listening and observation posts are marked on range cards, radio checks are conducted and ensuring exit and entry into friendly lines procedures are understood.
- Patrols. A patrol is a detachment of forces sent out for the purpose of gathering information or carrying out destructive, harassing, mopping-up, or security missions. Patrols provide timely information on the enemy while denying the enemy the ability to gather information on the unit's position. Units can investigate areas of interest, emplace listening and observation posts, and conduct economy of force operations forward of and to the flanks of the engagement area. Patrols are typically used on routes and areas other than those thought to be used by the enemy. Patrolling efforts add depth to the defensive and assist in maintaining the initiative. Close coordination between the ACVs and infantry is required to ensure ACV crew members understand the patrol route, radio checks are conducted and ensuring exit and entry into friendly lines procedures are understood.

## PRIORITIES OF WORK, TIMELINE, AND CONCURRENT PLANNING

The mechanized force must capitalize on preparation time. When planning, thought must be given to an enemy's most likely COA, and the likelihood that time will be of the essence. It is imperative the ACV unit leader prioritizes, and, if need be, reprioritizes work as situations develop (Figure 7-19). Priorities of work for ACV units include the following:

- Post security.
- Plan and develop fire control measures (sectors, TRP orientations, engagement areas, etc.). Ensure vehicle range cards are made and then integrated with the unit fire plan.
- Designate Alternate Positions. Ensure ability to engage the primary avenue of approach.
- Designate Supplementary Positions. Ensure ability to engage the secondary avenue of approach.
- Designate Hide Positions. Can be dug in if needed; ensure resources and time are available.
- Achieve Mutual Support or Concentration of Fires. Integrate all available weapon systems.

- Dig primary fighting positions for anticipated conditions if engineer equipment is available.
- Emplace obstacles.
- Clear fields of fire.
- Establish coordination or contact points.
- Emplace wire for communications, if possible.
- Pre-Stock or Dig in Ammunition and Other Supplies. Ensure batteries are recharged, and petroleum and ammunition are replenished.
- Designate Listening and Observation Posts. Ensure crew members know obstacle plans if ACVs are used for patrols.
- Mark and Prepare Routes. Coordinate with engineers to plan routes if possible.
- Rehearse Movement to and from Positions. The ACVs maneuver to firing positions during all visibility conditions without ground guides.
- Use back briefs to ensure all aspects of the defense are understood.
- Install Chemical Agent Detectors. Prepare appropriate mission-oriented protective posture.
- Install Intrusion-Sensing Devices. Ensure friendly vehicles do not set off devices.
- Install camouflage and concealment measures continuously.

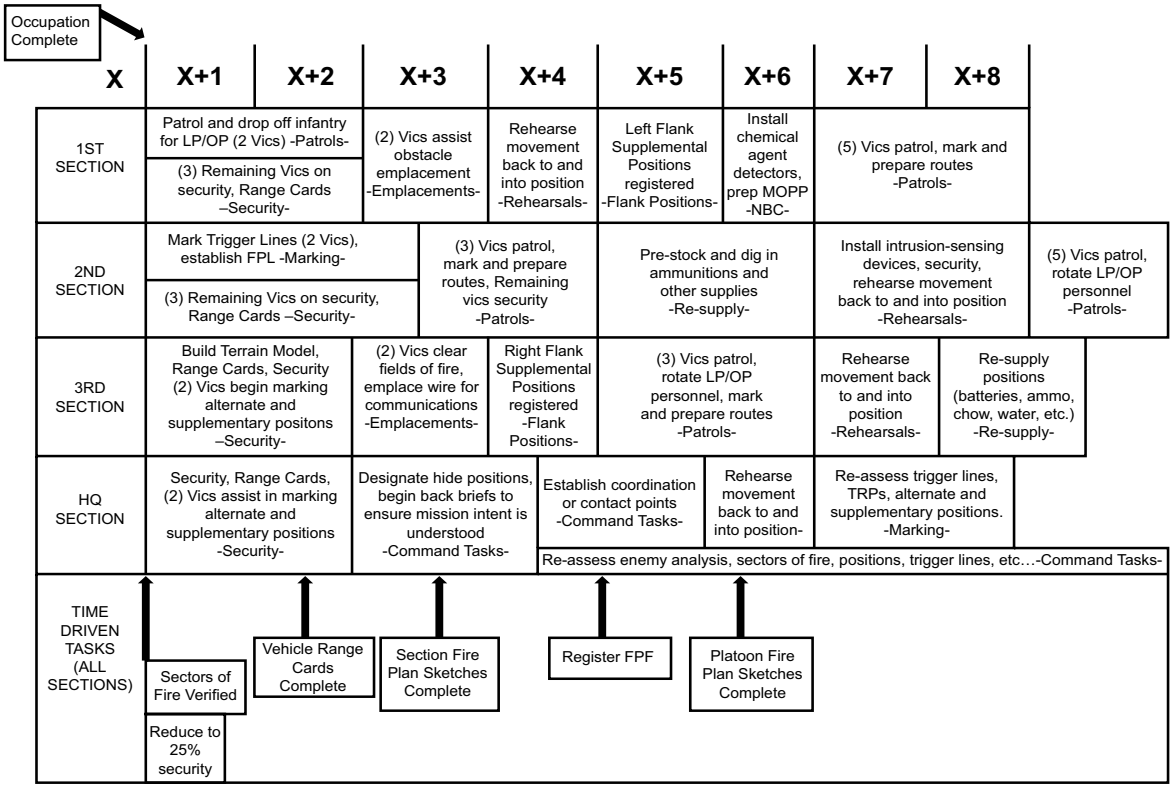


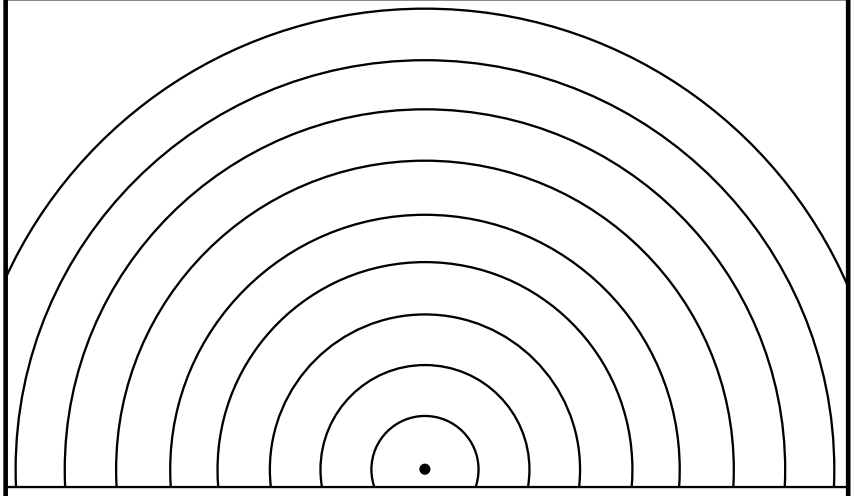

**Figure 7-19. Example of ACV Priorities of Work: Troop-to-Task Matrix.**

### Range Cards

A range card is a rough sketch that serves as a record of firing data and a document that can be used for defensive fire planning (Figure 7-20). Whether the ACV assumes a static or a defensive position, ACV crews immediately prepare a range card for primary positions and a partial range card for alternate or supplementary positions. Each ACV makes a range card in duplicate using the available standard range card (DA FORM 5517). One copy is completed for the first echelon of leadership responsible for preparing a fire plan sketch. The other copy stays with the ACV. The gunner uses the card to recall the data to fire at predetermined targets and as an aid in estimating ranges to targets. When developing a range card, the gunner should include as much information as necessary for another gunner to man the weapons system. Revisions and improvements are made on the range card when necessary. Each crew member should understand and know the location of the range card. The range card has spaces to enter the vehicle's tactical number, section, and platoon. It also provides space to enter the supported unit, grid location for the ACV, and the magnetic azimuth for the ACV's orientation. These cards are clearly marked indicating primary, alternate, or supplementary positions.

**STANDARD RANGE CARD**

| VEH _____<br>PLT _____<br>CO _____ | May be used for types of direct fire weapons. | MAGNETIC NORTH |
|---|---|---|



**DATA SECTION**

| POSITION IDENTIFICATION | | | DATE | | |
|---|---|---|---|---|---|
| WEAPON | | | EACH CIRCLE EQUALS _____ METERS | | |
| NO. | DIRECTION/ DEFLECTION | ELEVATION | RANGE | AMMO | DESCRIPTION |
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REMARKS:

**Figure 7-20. Standard Range Card.**

### Fire Plan Sketch

A fire plan sketch is a to-scale, graphic representation of the defensive position that is used to visualize and coordinate effects into the engagement area and to prevent gaps in fires. Completed range cards are used to shape the fire plan sketches. The section leader prepares two fire plan sketches, giving one to the platoon commander for approval and maintaining a copy for reference. The fire plan sketch is created from the data compiled from the individual range cards from each ACV within the section. The platoon commander receives the section fire plan sketches, then compiles the data from every section to make the overall graphic representation of the platoon defensive position. When this is completed, it is duplicated and submitted to the supported unit commander for approval. If supporting an infantry unit, the ACV unit's fire plan sketch will be integrated with the infantry's fire plan. Figure 7-21 is an example of a fire plan sketch.

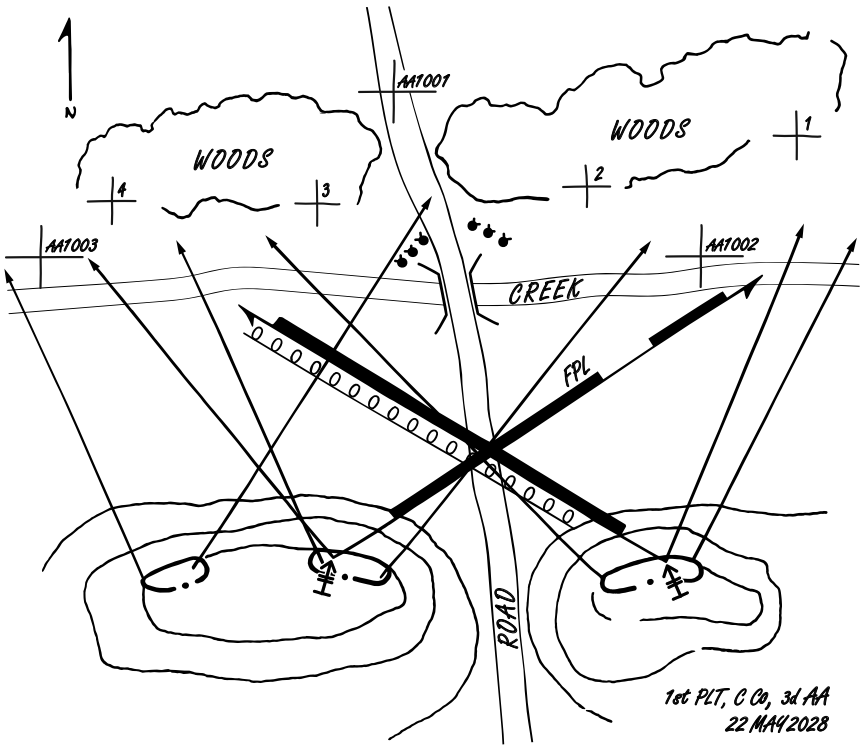



**Figure 7-21. Example of a Fire Plan Sketch.**

### Rehearsals

Seizing fleeting opportunities requires seamless transitions by the ACV unit between executing the priorities of work, conducting stand-to procedures, and adjusting the scheme of maneuver based on enemy activity. Rehearsals facilitate seamless transitions by ensuring that all ACV crews involved know exactly what to do and are able to accomplish specified and implied tasks without continued, direct tasking by unit leaders. Rehearsals can continue following occupation, concurrent with priorities of work, to ensure that the unit is prepared for decisive enemy contact when it comes. Rehearsals must be prioritized with respect to the enemy.

### Logistics Planning in the Defense

Defense is labor- and resource-intensive; thought must be given to logistical support required to support defensive plans. Unit leaders must plan for the ways in which resources will be moved between positions. Some areas that require logistic analysis in support of a defensive plan include class-specific resupply for personnel and vehicles, position construction, obstacle construction, and survivability.

# CHAPTER 8.
# RECONNAISSANCE AND SECURITY OPERATIONS

Reconnaissance and security operations are not typically tasked to an AA unit. However, AA units need to be able to provide trafficability requirements to the unit conducting collections (light armored reconnaissance, reconnaissance battalion, etc.). Additionally, AA units can be tasked to a larger force conducting security operations.

## RECONNAISSANCE

Reconnaissance is a mission to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy, civilian populace, terrain, or environmental conditions. Information gathered feeds planning methodologies so that friendly forces can rapidly maneuver while preserving combat power. The ACVs can conduct mounted reconnaissance or reconnaissance by fire. Whether the ACV unit is conducting reconnaissance as part of the mission or receiving information through intelligence channels, reconnaissance is important during all phases of an operation.

### Forms of Reconnaissance

The five forms of reconnaissance are zone, area, route, reconnaissance in force, and special reconnaissance:

- Route Reconnaissance. A directed effort to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route. The route can be a road, highway, trail, mobility corridor, avenue of approach, or axis of advance. While the ACV can maneuver over various terrain, route reconnaissance is conducted for follow on forces.
- Zone Reconnaissance. A directed effort to obtain detailed information on all routes, obstacles, terrain, and enemy forces in a zone defined by boundaries.
- Area Reconnaissance. Obtaining detailed information about the terrain or enemy activity in a prescribed area.
- Reconnaissance in Force. A deliberate combat operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information.

### Reconnaissance Methods

The four methods of reconnaissance are mounted, reconnaissance by fire, dismounted, and aerial (manned and unmanned). Although the ACV platoon is equipped to conduct mounted and reconnaissance by fire, it is also capable of executing dismounted reconnaissance (refer to FM 3-98, *Reconnaissance and Security Operations* for more information).

***Mounted Reconnaissance.*** Mounted reconnaissance facilitates rapid tempo and should take advantage of standoff capabilities provided by surveillance and weapon systems to observe and engage from greater distances. Supported infantry and ACV commanders consider mounted reconnaissance when—

- Distances require mounted movement.
- Time is limited.
- Stealth and security are not primary concerns.
- Detailed information is not required, or the mounted method affords the same level of detail as the dismounted method.
- The nature of the reconnaissance objective allows vehicles to approach.
- Enemy location is known.

The ACVs provide a unique amphibious and off-road capability that can move long distances with embarked infantry. If the terrain allows, ACVs can get positive identification at 2000 meters plus using the thermal optics. The CROW with M2 is able to engage targets at 1800 meters. When using Javelin teams, mechanized units can engage targets out to 2500 meters. While stealth is not a primary concern, ACV crews should ensure the use of micro terrain to maximize cover from enemy fires.

***Reconnaissance by Fire.*** Reconnaissance by fire is a technique in which a unit fires on a suspected enemy position to cause the enemy forces to disclose their presence by movement or return fire. The goal is to cause the enemy to react and give away their position or willingness to fight. The ACV commander can be directed to execute a reconnaissance by fire when enemy contact is expected, or when contact has occurred, but the enemy situation is vague. The ACV unit conducts tactical movement, occupying successive overwatch positions until it contacts the enemy or reaches the objective. The ACV commander can designate target reference points at each overwatch position. Indirect fires might be requested and employed on likely enemy locations to cause the enemy force to return direct fire or to compromise its positions during movement. The ACV commander directs the ACVs to fire into targeted areas. Individual ACVs and sections not designated to reconnoiter by fire observe the effects of the firing ACVs and engage enemy forces as they are identified. The ACV unit focuses fires on key terrain that dominates danger areas, on built-up areas that dominate the surrounding terrain, and on wooded areas not yet cleared.

***Dismounted Reconnaissance.*** Dismounted reconnaissance is the most time-consuming method used by ground and air units but permits the most detailed information collection about the enemy, terrain, civil considerations, and infrastructure. It is less likely that an ACV platoon will conduct a lengthy dismounted reconnaissance mission, though the ACV commander might use a Marine

(often embarked infantry) to clear an inter-visibility line, move into a listening or observation post, or ground guide the ACV to advantageous or battle positions. Leaders consider using dismounted reconnaissance when—

- Stealth is required or security is the primary concern.
- Time is available.
- Detailed information is required.
- The reconnaissance objective is a stationary threat, fixed site, or terrain feature.
- Vehicles cannot move through an area because of terrain or threat.
- Terrain creates a 'visual dead space' that prevents optics or sensors from being used.

***Aerial Reconnaissance.*** Aerial reconnaissance conducted by manned or unmanned aviation assets serves as a link between sensors and mounted or dismounted reconnaissance. Complex terrain, adverse weather, enemy air defense systems, and deception or countermeasures degrade the effectiveness of aerial reconnaissance. Although the typical ACV platoon is not outfitted with a UAS platform, infantry companies can support with internal assets or request aerial reconnaissance from higher headquarters. Leaders consider aerial reconnaissance when—

- Weather permits.
- Time is extremely limited or information is required quickly.
- Ground reconnaissance elements are not available.
- The objective is at an extended range.
- Verifying a target.
- Enemy locations are known and extremely dangerous (high risk) to ground assets or are vague but identified as high risk to ground assets.
- Terrain is complex and weather conditions are favorable.

Group 1 and Group 2 UAS requires lift and a power source for charging, both of which the ACV can provide. There will be a trade-off between personnel carry capability and UAS assets. A UAS should be launched and recovered from behind terrain features to prevent the enemy from detecting the point of origin. In addition to conducting reconnaissance, a UAS can aid in local security for combat trains and resupply points.

### Engineering Reconnaissance

While ACV crew members are not required to conduct engineering reconnaissance tasks, it is important to ensure roads, bridges, and terrain are trafficable. Trafficability assessments in the planning process help determine risk to the mission by planning routes that minimize the chances of getting mired and minimize damage to suspension components. Ideally, reconnaissance assets have identified routes, or engineers are on hand to make assessments.

### Slopes

The ACV has a maximum slope of 60 percent and a maximum side slope of 30 percent. The rise or fall of the ground is known as slope or gradient. When conducting a wet gap crossing, the desired slope is 25 percent or less on dry, hard terrain (refer to MCTP 3-34A, *Combined Arms Mobility*).

The following are the two methods used to determine ground slopes:

- The map method uses the contour lines on a map to determine the rise in elevation and the horizontal ground distance. With that information, use the formula:

  Rise in elevation (m) ÷ horizontal ground distance (m) x 100 = slope percent

  750 m (rise in elevation) ÷ 3000 m (horizontal ground distance) x100 = 25 percent

- A second method uses a protractor with a weighted string. With the zero on the protractor pointed down, hold the device parallel to the slope face. The weighted string will provide the degrees of the slope. Convert the degrees to slope.

**Table 8-1. Degree-to-Slope Conversion.**

| Degrees | Slope |
|---|---|
| 45° | 100 percent |
| 31° | 60 percent |
| 22° | 40 percent |
| 16° | 30 percent |
| 11° | 20 percent |

### Wet Gap Limitations

Crossing points need to be clear of sand bars or other obstacles that are shallower than 100 inches. When there is no weight on the suspension, it drops approximately 10 inches. A steep or abrupt incline could prevent the wheels from gaining traction.

Units will measure the speed of a river using the same method as determining the speed of the littoral current during SUROBS.

The ACV will likely be pushed downstream, depending on the speed of the current. Additionally, the current can hinder the vehicle's speed if it attempts to swim upstream.

### Bridge Reconnaissance

Bridge reconnaissance must be conducted by qualified personnel such as engineers. However, NATO bridges have markings that can be used to determine if the bridge can handle the ACV's size and weight. A NATO marking depict the mobility load classification, not the vehicle's gross net weight.

### Size Limitations

The ACV-P, without the antennas, is 136" tall and 137" wide. Antennas do have a flexible base, but care should be taken to prevent the base from bending excessively or abruptly. Exposed power lines, typical in underdeveloped and dilapidated urban environments, create safety hazards to both the crew and vehicle.

### Vehicle Cone Index

The vehicle cone indicates whether a given vehicle can negotiate the given soil condition for a given number of passes (TM 3-34.48-2, *Theater of Operations: Roads, Airfields, and Heliports–Airfield and Heliport Design*). Assessments will be made before a unit's arrival, or specially trained engineers, if available, can test as needed. The ACV-P's vehicle cone index is 33.

# CHAPTER 9.
# INFANTRY INTEGRATION

The AA units can move independently, but their capability is maximized when integrated with infantry and enablers. In addition to tactically moving personnel across various terrains and providing heavy machine guns and 30 mm cannon fire with optics from a mobile platform, ACVs can carry weapons systems such as Javelins and mortars into the battlespace and help build battlefield information by projecting a UAS deeper in contested areas. Ultimately, infantry integration increases survivability and lethality for the vehicle and infantry.

## VISUAL AND WEAPONS DEAD SPACE

Weapon dead space is the area in which the ACV cannot engage due to the elevation and depression limitations of vehicle weapon systems.

Urban areas magnify weapon dead space, with ACVs unable to fire their weapons at close targets. The ACVs cannot engage elevated targets in the immediate vicinity, such as enemies on rooftops.

Visual dead space is the blind spot that is not observable because of the limitations of periscope or situational awareness monitors. Visual dead space increases during CBRN or indirect fire engagements.

## REAR FLANK SECURITY AND AIR SECURITY

Based on the mission and enemy situation, the responsibilities of an air sentry, flank, or rear security will fall on the embarked Marines, who must provide 360-degree security of the vehicle. These responsibilities will be situationally dependent and may or may not be needed simultaneously.

If ACVs have hatches open for personnel to conduct rear flank and air security, Marines must be vigilant regarding overhead UAS activity and close hatches as needed. The purpose is to provide flank and rear security when contact is imminent or when traveling in an area where the enemy presence is unknown.

> NOTE: A vehicle's position within a formation will dictate the sectors of fire from the hatches (weapons safety).

### Surveillance Mode

In surveillance mode, the weapon is elevated approximately 15 degrees above the LOS. The control grip is used to observe objects without pointing a threating weapon. If the CROWS is armed, surveillance mode is not available.

Surveillance mode allows crews to provide local security for a vehicle in the distance, minimizing the need for infantry to conduct rear security.

## DISMOUNT DRILLS

Embarked personnel and the vehicle are the most vulnerable when personnel are dismounting the ACV. Commands should be rehearsed and so embarked Marines understand follow-on actions when dismounting. Each embarked unit should develop and facilitate seating plans and drills. The infantry unit leader will give the command to Marines to "prepare for dismount, left," (or right/center/front). Infantrymen serving as rear sentry or air sentry remain standing in the open hatch to provide overwatch for dismounts. This allows for integrated fires from the ACV as the squad bounds or moves towards an object or enemy.

If the dismount takes place under fire, the ACV will suppress or engage high value threat targets to protect the dismounting Marines.

The METT-T dictates dismount drills. Below is an example of a dismount drill in open terrain with the enemy threat to the vehicle at 12 o'clock. Personnel dismount to the vehicle's left, right, or both sides. Dismounted personnel would establish their internal base of fire. If the unit is in contact during dismount, crews use the eight principles of machine gun employment using the mnemonic PICMDEEP (pairs, interlocking fires, coordination of fires, mutual support, and defilade) and conduct the following steps:

1. Two embarked Marines will use the troop hatches to achieve an over watch position for the dismounting drill.

2. The ramp is lowered and infantry will dismount two at a time, moving to the position closest to the vehicle.

3. Air sentries will close the troop hatches before dismounting the vehicle. Once set, dismounts signal the ACV (by radio or hand and arm) that they are ready to begin bounding. The ACV fires should be directed to the prosecution of high threat targets.

Mounting the vehicle is the reverse, with the rear sentries entering the vehicle first to provide overwatch. The senior embarked leader is responsible for confirming accountability and relaying to the vehicle commander.

The elements of METT-T assist in selecting formations for ACVs and dismounted infantry. The squad leader employs dismounts and the ACV in a formation suitable to the mission. As squad leaders combine ACV and infantry elements into one formation, it is their responsibility to ensure that proper communication and fire control measures are employed to maximize lethality and prevent friendly fire incidents. After selecting the formation, the squad leader determines whether to lead with an ACV, infantry, or a combination of the two (Figure 9-1). Depending on the tactical situation, the default technique is to lead with the dismounted squad. A squad leader can also select to keep part of the squad mounted in the ACV to provide air sentries and scan from a higher vantage point.

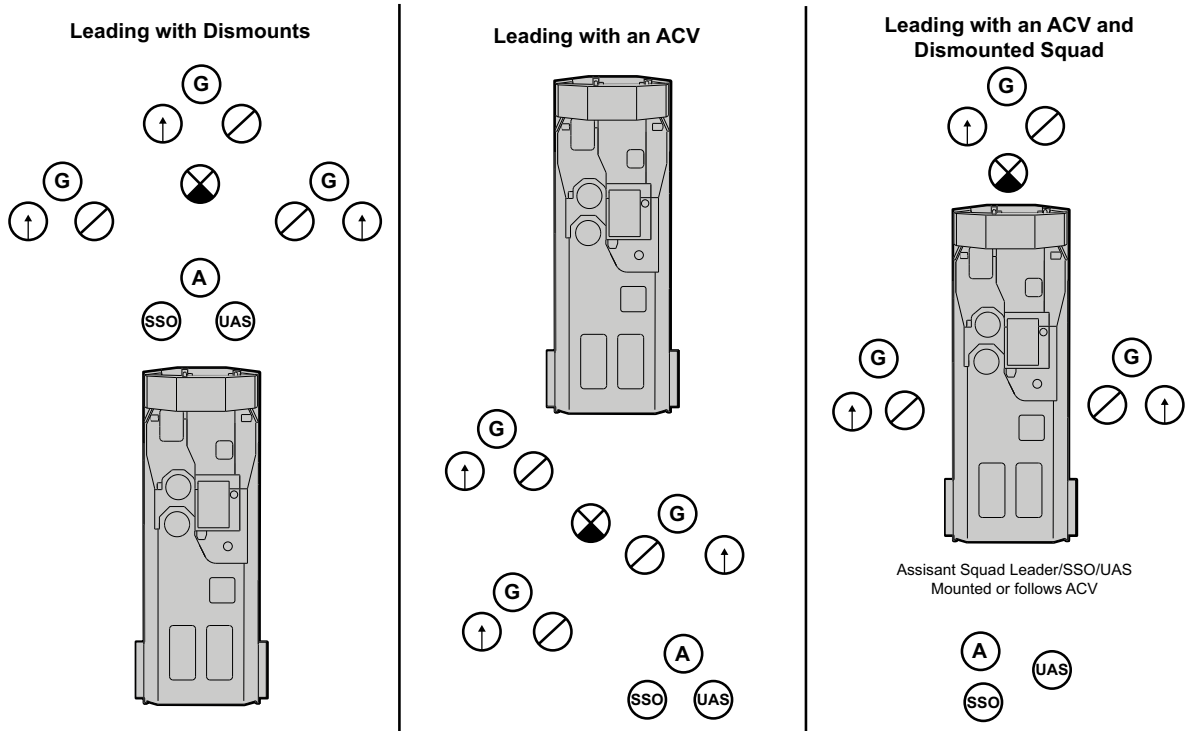



**Figure 9-1. Troop Dismount Configurations.**

## DIRECTING FIRES

The ACV supports dismounts by providing immediate precision fires. Supported elements require training to direct fires in relation to the supporting vehicle. All engagements are initialed in a fire command. The use of the fire command mnemonic ADDRAC (alert, direction, description, range, assignment, and commands) provides the necessary information to alert the ACV. The most common method used to locate targets is the clock method, with the vehicle being the center of the clock oriented to the 12 o'clock and distance estimates from the vehicle—the vehicle commander then issues a fire command to the crew. Ideally, the vehicle is in defilade and then, utilizing cover and concealment, the vehicle can move forward to a firing position to engage targets with minimum exposure to enemy observation or fire.

## COMMUNICATIONS

The unit SOP needs to include either the dismounts maintaining the ACV platoon network or the ACVs monitoring the infantry network. Ensuring both ACV crew members and the supported unit understand vehicle call signs, dismounted call signs, and radio etiquette facilitates infantry directing fires or vehicle movements. Further information is found in Chapter 2.

## 5S AND 25S

To limit the effects of mines and improvised explosive devices (IEDs), embarked personnel need to assist the vehicle crew in clearing the area for threats. This becomes particularly important at intersections and threat areas where the enemy is active. The following actions ensure the safety and security of the ACV.

1. The ACV slows down to allow the crew to scan the area, covering near, middle, and far ground. The crew will continue to scan while the personnel dismount to clear the immediate area.
2. The unit leader will command “5s and 25s.” The rear sentries will open the rear hatch and observe the vehicle's rear to confirm that the ground there is free of disturbances, wires, or signs of suspect items. The crew can use the rear camera to help observe the ground.
3. Once clear, one dismount will exit the vehicle using the rear hatch, closing the hatch behind him. The dismount will scan under the vehicle and along the wheels, inboard left and right, to ensure there are no suspect items or disturbances.
4. The dismount will move 5 meters out from the back of the vehicle and clears in a clockwise direction, clearing a 5m radius of the vehicle along the left side, looking for any threats or signs of IEDs, mines, etc., and halting at the 12 o’clock position. At this point, the second dismount will exit and clear the right-side wheels before moving 5 meters to the back of the vehicle.
5. The second dismount then clears a 5-meter radius in a counterclockwise direction. The first dismount concurrently moves out 25 meters at the 12 o’clock and then continues clearing back to 6 o’clock in a counterclockwise direction. The dismounts must maintain a position directly opposite the other dismount to avoid both being injured in a single detonation of a device. When the first dismount returns to the 6 o’clock, they will post at the vehicle's rear.
6. When the second dismount is at the 12 o’clock position, they will move out to 25 meters and conduct a clockwise clearance back to the 6 o’clock position, posting at the rear of the vehicle. Once both dismounts have completed the scan and are at the back of the vehicle, the ACV crew will be informed that the area is clear.

## SECURITY HALTS

During short-duration halts, rear sentries should continue to perform rear area and air security responsibilities.

During long-duration halts, the unit leader and vehicle commander should consider dismounting infantrymen to cover dead space and provide local security for the flanks and rear of the vehicle. If listening or observation posts are established or patrols are conducted, contact procedures, linkup points (or rally points) should be briefed.

Plans must be made for primary and alternate linkup or rally points when conducting dismounted operations. If ACVs are required to displace quickly due to indirect fires, pre-planned rally points that have been briefed require minimal coordination during the displacement.

## DANGER AREAS

The term danger area refers to any area on the route where the terrain could expose the unit to enemy observation, fire, or both. If possible, the unit leader should plan to avoid danger areas. When the unit must cross a danger area, it does so as quickly and as carefully as possible. During planning, the leader designates near-side and far-side rally points.

During planning, the AA unit leader conducts thorough map reconnaissance to identify danger areas where enemy forces might have cover, concealment, or observation advantages. Establishing go/no-go criteria is crucial for operational success. Here's how it works:

Go criteria (areas where movement is feasible):

- Adequate Cover and Concealment. Locations providing enough natural or man-made protection.
- Limited Enemy Observation. Areas where enemy surveillance is obstructed or ineffective.
- Accessible Routes. Terrain that allows maneuverability without excessive risk.
- Supporting Fire Options. Positions where friendly forces can provide suppressive fire.

No-Go criteria (areas too risky to traverse):

- High Enemy Visibility. Locations under direct enemy observation, such as open terrain.
- Potential Ambush Points. Chokepoints, narrow paths, or areas where enemy forces can stage attacks.
- Restricted Terrain. Muddy, swampy, or heavily vegetated areas that impede vehicle or personnel movement.
- Confirmed Enemy Presence. Locations known to be occupied or patrolled by adversary forces.

The unit leader should carefully evaluate maps, satellite imagery, and intelligence reports to determine criteria before conducting live reconnaissance. This process helps shape movement plans, enhances survivability, and ensures combat effectiveness.

These danger areas are likely points of enemy contact due to the AA unit's inherent vulnerabilities while maneuvering the operational environment. Examples of danger areas include—

- Open areas.
- Wooded areas.
- Roads, trails, and rail lines.
- Urban areas.
- Minefields and obstacles.
- Streams.

Danger area crossings happen when terrain or obstacles limit maneuver. For example, a stream with steep slopes that forces a formation to cross.

Areas of interest include:

- Choke Point. The choke point must be physically inspected for any items that could be used to delay the crossing, (e.g., explosives, trip wires, disruption to the earth, damage to the support beams and support integrity).
- Route Into and Out of the Danger Area. The route must be physically inspected for any item that could be used to delay the crossing.
- First Bend on the Far Side. It must be checked for any enemy or enemy signs (e.g. pre-designated firing positions, track or tire marks, wires leading into or from).
- Alternate Crossing Points. Units should always try to find an alternate crossing of danger areas. All alternate crossing points need to be cleared in the same manner as the primary crossing.

Danger area considerations include:

- Enemy. Including likely position, intentions, and previous TTP.
- Type and Size of Crossing Point. Minor or major.
- Priority of time or priority of task.
- Support Elements Available. Indirect or aviation assets. Using UAS or air reconnaissance to clear terrain that can affect the choke point of fires or observation increases survivability.
- Level of Clearance. Full mine search, visual inspection, etc.
- Dismounts available to conduct the clearance.

The level of complexity increases with terrain and enemy TTP. Examples include terrain that can affect the crossing by observation or direct fire, enemy effects on the forces waiting to cross, and consolidation after the crossing.

Sequence of danger area crossing:

1. The leader issues quick orders, Marines dismount and patrol toward the crossing point, stopping short, and securing the near side of the crossing point. Unit sets near side security, flank, and rear security element positions ensuring 360-degree security.
2. Upon stopping, the Marines scan for any signs before moving forward.
3. The crossing point is quickly crossed by a team that then reconnoiters and secures the far side.
4. When the leader is sure the far side is secure, the vehicles are called forward scanning for deep threats.
5. Once the formation is through the crossing point, Marines mount back onto the vehicle.

Blind corners are often found in urban areas or areas with restrictive terrain (Figure 9-2). The situation dictates whether a mounted drill is appropriate or if a UAS can be used. Blind corners can require a change in formation, such as a wedge formation turning into an echelon or a change in the dispersion, with dispersion closing to ensure crews are mutually supporting.

An example of infantry conducting a blind corner drill for ACVs is as follows:

- Marines move out far enough from the restrictive terrain that the enemy will not be alerted to their presence.
- Immediate action drills and control measures need to be clearly defined prior to conducting the clearance.
- Time allocated for the mission.

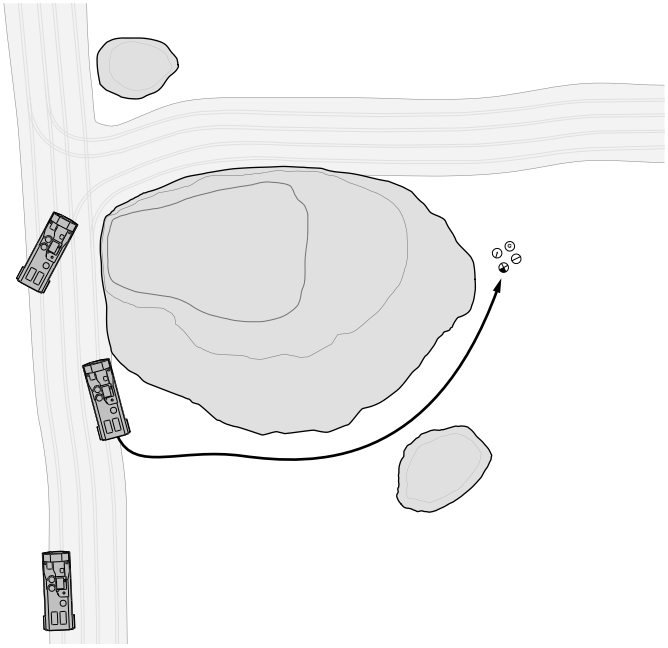


**Figure 9-2. Blind Corner Drill.**

Intervisibility lines are rolling terrain that prevents observation past the terrain line. Ideally, the vehicle stops in turret defilade, to prevent the enemy from observing. Dismounts will move up to the intervisibility line to clear beyond the line using optics. Dismounts report to the vehicle commander what is observed, any dead space, and potentially direct fires. Dismounts will then call the vehicle to a hull-defilade, which allows the weapon system to observe the area while keeping the ACV hull covered from enemy fires.

## UNMANNED AIRCRAFT SYSTEMS EMPLOYMENT CONSIDERATIONS

Unmanned aircraft systems can enable a unit's reach while simultaneously offering protection, early warning threats, and security from observation or fires. Currently, there is no dedicated vehicle for UAS storage and transportation. Infantry can transport the Group 2 UAS Stalker suite in an ACV. When stored inside the ACV-P, the Pelican cases will require approximately four seats, while Group 1 UAS Pelican cases will take approximately two seats. Each ACV has a QP-1800 convertor system allowing UAS operators to charge batteries.

A UAS can assist in clearing danger areas, and a Group 2 UAS can provide long-duration aerial reconnaissance for the scheme of maneuver.

A departing and returning UAS should be planned like a patrol leaving and returning to friendly lines. Understanding departure and arrival times prevents confusion about whether a friendly or enemy UAS is on station.

## ACVS IN SUPPORT OF INFANTRY OFFENSIVE OPERATIONS

Offensive tasks for ACVs will likely include support by fire, attack by fire, or engaging high value targets, keeping in mind the following:

- Using vehicle thermal sight systems to engage targets in limited visibility conditions that typically accompany urban fighting environments.
- Using the stabilized turret's ability to assist in uncovering targets and engaging them at near or extended ranges, providing additional firepower for maneuvering infantry.
- The M2 50 caliber in the CROWS has the accuracy of a precision weapon, and gunners will be required to shift across a targets frontage if suppression is required

# CHAPTER 10.
# FORCE PROTECTION

Force protection measures are those taken to preserve the force's potential so that it can be applied at the appropriate time and place. It includes measures the force takes to remain viable by protecting itself from the effects of enemy and adversary activities and natural occurrences. Force protection safeguards friendly centers of gravity and protects, conceals, reduces, or eliminates friendly critical vulnerabilities (see MCWP 3-01).

## SURVIVABILITY

Every Marine should take a methodical approach to layering protective measures to increase survivability. Adhering to a layered approach can wholly or partially mitigate a potential threat. This approach is referred to as the survivability "onion" (Figure 10-1). Ground forces should use the survivability onion approach against ground and UAS threats, as well as fixed and rotary wing aircraft threats.

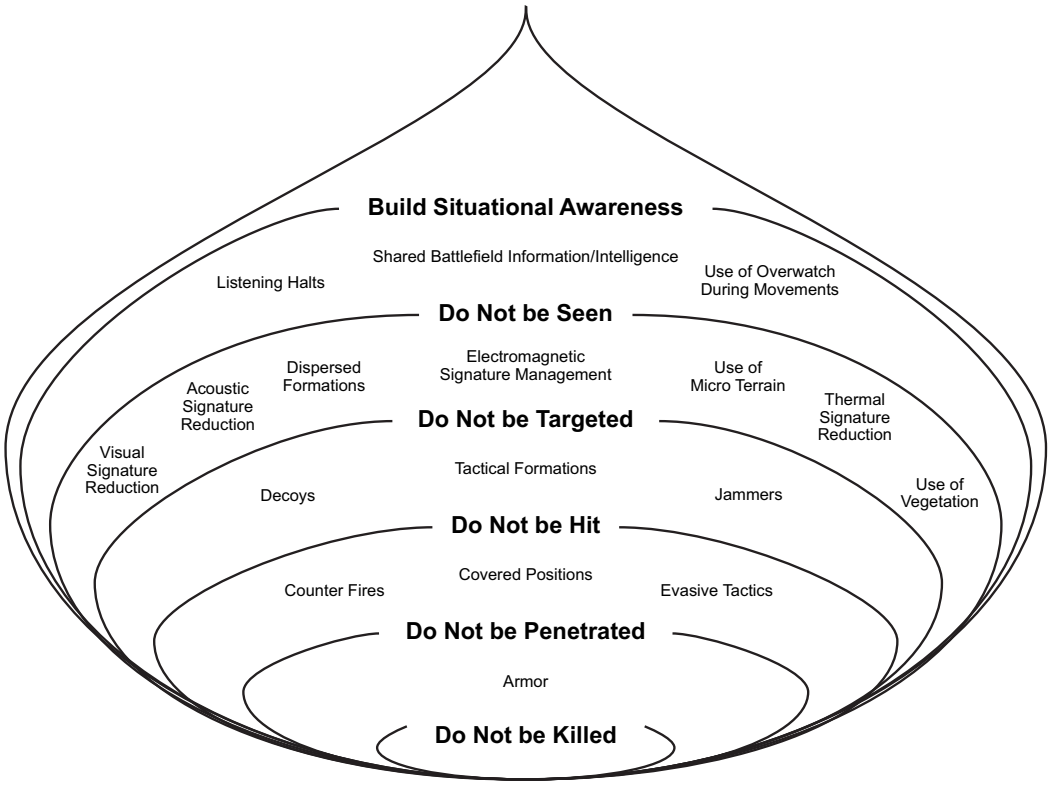



**Figure 10-1. Survivability "Onion."**

### Build Situation Awareness

***Shared Information and Intelligence.*** Information is raw data being reported to higher headquarters from ground units. Intelligence is data that has been analyzed and pushed down to the units. Reporting and battle tracking across the battlespace is important for units to understand threats not only in their area of operations but adjacent areas.

The ACV joint battle command platform (JBCP) is an excellent tool to maintain awareness when units report information on the system. The JBCP settings can only be set to receive updates and not transmit positions. When possible, crews should set the JBCPs to this setting. The idea is to continually build situational awareness of the battlefield without releasing an identifiable electronic signature.

Additional feeds, such as reports from the UAS, should be pushed across assets. Maneuver formations that work with a UAS and various sensors facilitate intelligence gathering and target acquisition.

Reporting of a UAS should be reported across the formation.

Negative reporting, which states areas that cannot be observed due to vegetation, mist, etc., are equally important for building situational awareness.

Embarked infantry benefit from each ACV-P having a JBCP to help build their situational awareness through reporting, using the zoom feature to draw sketch maps of areas of interest, and sending reports or graphics on both JBCP or other long-range communication assets.

***Listening Halts.***Embarked Marines should designate air sentries. Air sentries observe the sky and listen for the buzz of a UAS every time the engine stops. If ACVs are operating without embarked personnel, they should turn off the engine after each bound to give the vehicle commander the opportunity to conduct a listening drill.

### Don't be Seen

***Visual Signature Management–Vehicle Camouflage.***Vehicle camouflage combined with micro-terrain and natural concealment allows large vehicles to blend into the environment. Camouflage considerations include the following:

- Windshields, mirrors, and light clusters require special attention to stop any reflections.
- A UAS, combined with current artificial intelligence, searches for hard angles, straight lines, and highlights, informs the UAS operator. Camouflage netting combined with burlap strips and local vegetation break up a vehicle's profile and help cover a vehicle's heat signature.
- Camouflage netting large enough to allow a stand-off between the net and the vehicle has inadvertently prevented sUAS from getting close enough to avoid certain explosives damaging armored vehicles, as the UAS gets tangled in the netting.

Ideally, camouflage is always attached to the ACV. This improves survivability when there is no time to deliberately set out camouflage netting.

***Visual Signature Management–Night Operations.***Leadership needs to inspect vehicles through NVGs to check for ambient light in battle positions or prior to night movements.

Marines will use the steps below to minimize ambient light:

1. Light escapes through the periscopes. Ensure velcro periscope covers are in place when periscopes are not in use.

2. Turn down the illumination setting on the Keypad Display-400.

3. Turn down the light on the Blue Force Tracker screen.

4. In high-threat environments, disconnect the headlights and taillights to prevent accidental illumination.

5. If a GPS or defense advanced GPS receiver or is required, the vehicle commander should get the grid from the gunner or lower themselves into the vehicle before checking grids.

6. When receiving orders in person, company and platoon leadership, vehicle commanders, etc., should conduct briefs inside a vehicle with closed hatches if they are using lights.

7. Command and control vehicles leak significant ambient light due to the number of computers and radios on the inside; top hatches either need to be closed, covered by camouflage netting, or covered with a tarp.

***Visual Signature Management–Track Management.***An ACV create tracks in various environments, creating trails that reveal the direction of travel and the number of vehicles in a formation. Crews need to consider the following environments and the effects the ACVs have on them:

- Heavily Trafficked Areas. When following existing tracks in a non-IED or mined environment, do not cut corners short despite the ACVs' off-road capability; instead, follow the civilian traffic tracks. When traveling in rural areas, if possible, follow man-made terrain features such as plowed fields and fence lines. New trails must blend into the background pattern, following hedges, areas of stone or rock, gullies and streambeds, under trees, and along the edge of grassland and scrub.
- Heavy Ground Vegetation. Crews should avoid bright green grass when traveling in heavily vegetated areas. Bright green grass indicates water-saturated ground underneath. Wheeled vehicles are susceptible to getting mired in these areas and will leave detectable ruts.
- Sand. Driving on sand and rocky soil is preferred over soft sand. Crews should follow terrain features, such as washes. Avoid driving over brush and scrub.
- Snow. Because the crew cannot see micro terrain under the snow, it would be safer to follow established roads and improved trails in heavy snow.

When a unit is setting into a formation, such as a coil in heavy vegetation, it is recommended to go into a column formation several kilometers away from the tentative location. Moving in a column minimizes the number of tracks leading to the position. The unit can conduct a “fish-hook” route

into the area. Fish-hook routes are designed to lead enemy formations past the formation and make them susceptible to observation and fire to their flanks. Crews should remain mounted for a designated time to observe and listen for enemy activity.

***Use of Micro-terrain.*** Micro-terrain features are topographic structures relevant to the situation (such as a depression deep enough to provide hull defilade) but not significant enough to affect the resolution of terrain data. Vehicles should maximize all available terrain features, including micro-terrain.

***Thermal Signature Management.*** Enemy weapon systems can have various night-capable optics. Wheels require special attention to cover their heat signature, and camouflage netting requires space from vehicle hot spots to prevent heat transfer into the netting. Crews can drape camouflage netting over the wheels, but tires typically rip netting off during movement. Extra vegetation should be added to the engine and wheel areas, when possible, to break up the heat signature.

***Acoustic Signature Management.*** In addition to downshifting as needed to prevent the engine from over-revving, PMCS is critical to preventing mechanical sounds, such as a squeaky hinge, while in defense.

For the ACV-C conducting COC operations, helmets should be always worn while receiving reports, and speakers should be kept to the lowest setting possible.

Vehicle-mounted gear must be strapped down to prevent unintentional noises from gear shifting.

***Dispersed Formations.*** Dispersed formations prevent the formations from being easily targeted by indirect fires. Terrain and the enemy threats will dictate the dispersion. In open terrain with an unlikely threat, dispersion can be half the distance of the weapon system or half the distance of the ability to observe, whichever is greater. If enemy contact is imminent, dispersion could decrease, allowing the AA unit to conduct immediate action and battle drills. Consider what the enemy's weapons can do if the AA unit is detected; if the main threat is enemy indirect fire, dispersion minimizes the chances of the IDF being effective.

***Electromagnetic Signature Management.*** Commanders and their staff must assume that the enemy can monitor all transmissions in the battlespace, leveraging available voice and data systems to flood the battlespace and complicate targeting. In addition, they should use friendly sensor arrays to conduct their own force monitoring—what one's unit looks like in the spectrum—and couple it with a model of a thinking enemy to determine EMCON conditions. Such self-understanding will contribute to effectively using PACE plans. This will help minimize the potential to shift off the unit's PACE plan when jammed and become further exposed. Refer to Chapter 2 for PACE plan examples and US Navy EMCON conditions.

An electromagnetic signature is an electromagnetic energy radiated by personnel, equipment, or vehicles that could provide a means of recognition and identification. Understanding a mechanized unit will not likely have a zero signature, leadership must know how much electromagnetic energy their unit is omitting. The following are electromagnetic considerations and practices:

- Hand and arm signals and flags usage should be maximized.
- ACV dispersion necessitates voice and data communications.

- ACV radio settings must be acquired for transmission.
- Designate certain key leaders to operate communication equipment only.
- Maximize voice communication within ACVs without intercommunication use.
- Determine information to be sent by data or voice to preempt extended communications.

### Don't be Targeted

***Decoys.*** Decoys are deceptive devices used during military operations to draw an enemy away from a more critical target.

Vehicle decoys can be made using camouflage netting hung in a vehicle's rough shape and dimensions, and extra camouflage net poles or antennas can be used to replicate a C2 vehicle.

Infantry listening and observation post decoys can be set up independently or with a vehicle decoy to make an armored formation appear. Infantry decoys using hand warmers add a thermal signature, and battlefield litter, such as a pyro-parachute, can be used to draw attention due to its movement.

Decoys should encourage enemy movement across the friendly unit's engagement area and encourage firing to reveal enemy positions.

### Don't be Hit

***Counter Fires.*** ACV: Vehicles in overwatch positions should be ready to engage targets that reveal their position when they fire.

As part of a BLT, units should request counter-battery radar and fire.

***Evasive Tactics.*** Unit SOPs should include evasive maneuver drills.

### Missile Drill

The missiles' probability of hits drops when the targeted vehicle is moving at speed and increase distance from the launcher to the first covered area. Refer to ATP 3-21.71, *Mechanized Infantry Platoon and Squad* for additional information. Consider the following during a missile drill:

- Any unit member gives the warning when a ATGM signature is identified, missile, direction (left, right, front, or flank).
- The vehicle commander receiving or observing fire, sends a contact report to alert the other vehicles.
- When moving, vehicle commander directs driver to a covered and concealed position as follows:
  - If the distance to cover is 50 meters or less, the driver moves in a straight line to a covered and concealed position.
  - If the distance to cover is greater than 50 meters, the driver takes evasive action while moving to a covered and concealed position as follows:
    - At varying speeds, zigzags, and changes direction frequently.
    - Locates and destroy the ATGM position with HMGs or 30 mm. Use one or a combination of the weapons systems.

If indirect fire is in support, request fires to suppress the suspected enemy position.

### Enemy Indirect Fire Drill

When an AA unit receives indirect fire, units will perform the Enemy Indirect Fire drill. Refer to 19-SQD-D0403, *React to Indirect Fire While Mounted*.

1. A unit member observes or hears rounds impact near the formation and announces "incoming" over the radio.
    a. Identifies the distance and direction of the indirect fire.
    b. Provides a description of the incoming round or personnel, if possible.
2. Crew perform the following actions:
    a. Any exposed crew members or embarked Marines drop into the vehicle and secure hatches, using the periscopes or optics to observe terrain, incoming rounds, and enemy forces.
    b. Driver moves vehicles from danger area as directed.
    c. Vehicle commanders report vehicle status and maintains situational awareness.
3. Vehicles in immediate danger—
    a. Increase vehicle speed to move out of or away from the impact area.
    b. Maintain communication with other vehicles and inform leadership of movement status (alternate routes, vehicle damages, etc.).
4. Vehicles not in immediate danger—
    a. Move past the impact area and disperse vehicles.
    b. Increase situational awareness and establish security.
5. The AA unit leader announces a distance and direction for the rally point. Unit leader notifies higher of initial contact and status.
6. Vehicle commanders notify the platoon commander of personnel and vehicle damage. Platoon commanders notify the AA company commander and infantry company commander.
7. Elements provide support to evacuate disabled personnel, if applicable.
8. Unit moves to rally point and establishes security.
9. First aid is administered, as required.
10. Leadership will conduct personnel and equipment accountability, damage assessment, recover equipment (if applicable), and submit SPOTREP to higher headquarters.

### React to Air Attack Drill

When an AA unit identifies enemy fixed wing, rotary wing, or UAS, units will perform the React to Air Attack While Mounted drill:

1. A unit member identifies an enemy aircraft and alerts the unit with a contact report containing the following elements:

a. Contact.

b. Enemy aircraft.

c. Cardinal direction (specify north, south, east, or west).

2. The unit leader analyzes the situation and determines whether the enemy aircraft is either a passive threat or an active threat:

   a. If the enemy aircraft is a passive threat, the AA unit leader will order passive air defense measures when the platoon is not in the target of the enemy aircraft.

   b. If the enemy aircraft is an active threat, the PL will order active air defense measures when the platoon is the target of the enemy aircraft.

3. The AA unit executes passive air defense measures as necessary and on order of the AA unit leader, the platoon moves to covered and concealed positions, maintaining a minimum of 100 meters between ACVs and halts.

   NOTE: The primary intent of initiating fire is to force enemy aircraft to take self-defense measures that will alter their attack profile and reduce their effectiveness. The AA unit leader can use a burst of tracers to designate an aim point for the platoon machine gun antiaircraft fires. Volume is the key to effectiveness of these fires; ACVs throw up a "wall of steel" through which the enemy aircraft must fly. The AA unit leader can also direct some ACVs to engage enemy high-performance aircraft with machine guns.

4. The platoon executes active air defense measures as necessary:

   a. The platoon initiate's fire.

   b. The unit creates a nonlinear target by moving as fast as possible at a 45-degree angle away from the path of flight and toward the attacking aircraft. The platoon maintains an interval of at least 100 meters between ACVs:

      (1) The unit move quickly to covered and concealed positions and freeze their movement for at least 60 seconds after the last flight of enemy aircraft has passed.

      (2) The unit remain in covered and concealed positions as required.

      (3) The platoon scans for follow-on enemy aircraft.

5 The AA unit leader reports the situation to the company as necessary.

Refer to ATP 3-21.71, *Mechanized Infantry Platoon and Squad* for additional information.

### Don't be Penetrated

***Armor.*** The ACV's armor does not offer tank-like protection against ATGMs or tank rounds. Leadership should utilize understanding the enemy's weapons, weapon ranges, and penetration capability during the planning process.

### Don't be Killed

***Evacuation Drills.*** Once the vehicle has received a mobility kill the unit's priority is casualties. Each unit should develop drills for self-evacuation and crew evacuation. While embarked personnel should be easy to evacuate, the driver, gunner, and vehicle commander might need assistance, especially if crew members are unconscious. Emphasis should be on crew survival rather than the vehicle.

## ANTI-AIR

Air defense is the responsibility of all Marines. In addition to the passive techniques above, the following methods take an active approach to air defense.

### Air Defense Postures

Alert status is represented as follows:

- WHITE**.** Attacks not expected. Use passive air defense measures.
- YELLOW. Attacks expected. Warn personnel and position weapons systems commensurate with air threat, ground threat, and current mission.
- RED. Attack is imminent or in progress. Man all weapons and be prepared to engage.

Convoy defense measures include:

- Disperse and seek cover and or concealment.
- Travel during times of inclement weather.
- Use routes that offer natural concealment.
- Use air sentries (additional task for embarked personnel)
- If a convoy comes under attack or air attack is imminent, the convoy should continue to move.
- Air sentries need to alert all personnel as to direction and location of attacking aircraft.
- Signal air attack both over the radio and by a continuous long blast on the horn.
- Engage targets as required.
- As soon as possible, unit will halt in a covered position to recover all assets from disabled vehicles.

The unit commander will send a contact report as flash precedence to higher headquarters.

### Engagement Procedures

When air defense units augment AA units, the following should be considered:

- During the planning process, the commander should provide the following guidance for air defense:
  - Task, purpose, and priority.
  - Address each air defense system available.

  - Establish air defense priorities for each phase of the operation using criticality, vulnerability, recoverability, and threat.
- Specific guidance should include:
  - Where to mass, where to accept risks.
  - Use of air defense systems in the ground role.
  - Allocation of air defense assets (direct and general support).
  - Special missions such as Avenger ambush.

### Air Defense Employment

Air defense employment considerations are as follows:

- Offense:
  - Identify likely air avenues of approach and engagement areas.
  - Establish air defense priorities (maneuver units, command and control, etc.)
  - Integrate air defense into the scheme of maneuver.
  - Monitor airspace command and control.
- Conduct active and passive air defense.
- Monitor and disseminate early warning.
- Defense:
  - Identify likely air avenues of approach and engagement areas.
  - Establish air defense priorities (counterattack force; protection of Class III/IV/V supplies, etc.).
- Area vs point defense.
- Dedicate part of survivability to air defense assets.
- Monitor airspace command and control.
- Conduct passive and active air defense.
- Monitor and disseminate early warning.

## COUNTER-UNMANNED AIRCRAFT SYSTEM

Currently, there is little in the Marine Corps arsenal to defeat a UAS. However, use the same steps for antiaircraft for enemy UAS.

A UAS with explosives can be detonated when on the ground. Both Ukrainian and Russian TTP include allowing troops to move close to a downed UAS before remote detonating. In the event of a downed UAS, remember the “5 Cs” used with IEDs (confirm, clear, call, cordon, and control):

- Confirm. Should be done from a safe distance whenever possible, maximizing the use of optics to verify the item is a UAS.
- Clear. All personnel should be 300 meters or further away.

- Call. Headquarters using the IED or UXO report format.
- Cordon. The 300- meter danger area and set up an incident control point for follow-on agencies.
- Control. The area inside the cordon to ensure only authorized access.

The METT-T needs to be used to determine the risk of having hatches opened for situation awareness and security against UAS dropped munitions.

## CHEMICAL, BIOLOGICAL, RADIATION, AND NUCLEAR DEFENSE

The AA units employ chemical, biological, radiation, and nuclear (CBRN) defense measures to decrease the negative impact of enemy CBRN warfare on operations. Units attain and maintain the capability to—

- Protect personnel, equipment, and supplies from CBRN hazards.
- Recognize and report CBRN hazards.
- Detect and identify specific CBRN hazards.
- Perform CBRN reconnaissance.
- Decontaminate personnel and equipment.

Mission oriented protective posture (MOPP) level is shown in Table 10-1. Threat conditions and immediate action drills are shown in Table 10-2.

**Table 10-1. MOPP Conditions.**

| Equipment | MOPP Ready | MOPP-0 | MOPP-1 | MOPP-2 | MOPP-3 | MOPP-4 | Mask only |
|---|---|---|---|---|---|---|---|
| Mask | Carried | Carried | Carried | Carried | Worn | Worn | Worn |
| Suit | W/in 2 hrs | Readily available | Worn | Worn | Worn | Worn | Readily available |
| Boots | W/in 2 hrs | Readily available | Readily available | Worn | Worn | Worn | Readily available |
| Gloves | W/in 2 hrs | Readily available | Readily available | Readily available | Readily available | Worn | Readily available |

W/in – can be issued within.
Readily available – within arm's reach.
Gloves – carried in right cargo pocket of MOPP suit while in MOPP 1-3.
Decon kit – carried in mask carrier at all times when issued.
M9 tape – In MOPP level 1-4, M9 tape will be worn on right upper arm, left wrist, and right lower leg.
ZAP card – placed in left breast pocket when in MOPP 1-4.
Plate carrier – worn under MOPP blouse.
Canteens need to be kept full and tightly capped at all times.

**Table 10-2. Threat Conditions and Immediate Actions.**

| Type of Hazard | Visual | Audible | Immediate Action |
|---|---|---|---|
| CBRN attack expected (30 min - 2hr) | None | CBRN Yellow | 1. MOPP 2<br>2. Fill all canteens (airtight) |
| CBRN attack imminent w/in 30 min | None | CBRN Red | 1. MOPP 4<br>2. Disperse and obtain over-head cover |
| Suspected attack or attack in progress | Standard hand and arm signal | GAS | 1. Mask and button up vehicles.<br>2. Continue mission. |

Additional information regarding CBRN operations can be found in MCTP 10-10E, *MAGTF Nuclear, Biological, and Chemical Defense Operations*.

# CHAPTER 11.
# LOGISTICS

The ACV requires logistics sustainment to operate organically and when supporting embarked personnel. For the ACV unit, logistics refers to the science of planning and affecting the development, deployment, and sustainability of the ACV resources. Logistics sustainment generates and sustains combat power; sustainment conceptualization and implementation must be integrated into every phase of planning for ACV unit operations. Sustainability is the ability to maintain the necessary level and duration of operational activity to achieve objectives by providing for and maintaining levels of ready forces, material, and consumables necessary to support the effort.

The ACV unit leaders ensure logistics are integral to the planning process and the allocation of resources. Effective logistics operations are the result of a thorough analysis and problem framing to identify the capabilities required to accomplish the mission. Logistics planning is an ongoing iterative process from the receipt of the mission until all objectives are achieved and all forces are returned to home station. The ACV maintains an inherent logistics capacity to support resupply, casualty evacuation, and reinforcement operations.

Key to logistics is in close liaison with the supported unit's S-4, and if needed, the combat logistics battalion (CLB). Regular resupply can be forecasted and planned for during extended operations.

## PLANNING THRESHOLDS

The ACV footprint is approximately 344 square feet with a weight of 70,000 lb., which creates a ground pressure of 204 pounds per square foot (PSF).

The ICODES (i.e., integrated computerized deployment system) weight limits for the different classes of ships and areas are as follows:

- LHD Class–600 PSF in both areas. False beach safe working load is 140,000 lbs.
- LHA Class–N/A.
- LPD 17 Class–626 PSF in all three areas. False beach safe working load is 160,000 lbs.
- LSD 41 Class–500 PSF in entire well deck.
- LSD 49 Class–500 PSF in well deck and 300 PSF in vehicle stowage areas fore and aft. False beach safe working load is 140,000 lbs.

### Logistics Planning Matrix

The logistics planning matrix is provided in Table 11-1.

Fuel consumption planning chart for water and ground operations. Operations in the water or on the ground consume fuel at different rates.

The running total per vehicle over a four-day mission profile (beginning with a 12 NM swim) is:

- Assault Amphibious Vehicle: 224.82 Gal (used by the end of a four-day mission)
- ACV: 146.21 Gal (used by the end of a four-day mission)
- The ACV can travel approximately 153 miles on land following a 12 NM swim.

Fuel consumption (using F-24 fuel):

- Land (dynamic): 1.66 MPG at gross vehicle weight (GVW)
- Land (static): 1.25 Gal/Hr
- Water: 0.31 MPG at GVW
- Speed: 5.48 MPH (4.76 KTS)
- Engine Speed: 2197 RPMs
- Consumption: 17.4 Gal/Hr at 0.31 MPG
- Range 43 miles (37366 NM)

Fuel consumption for a 12 NM ship-to-shore swim (w/assumptions):

- 12 NM = 13.8094 miles
- Pre-launch: 0.5 Hr idle time in well deck = (0.5 Hr)*(1.25 Gal/Hr) = 0.62 Gal
- Get into formation: 0.25 mile swim = (0.25)* (1.25 Gal/Hr) = 0.806 Gal
- 12 NM swim = (13.8094 miles)/(0.31 MPG) = 44.5 Gal
- Total consumption = 0.625 Gal + 0.806 Gal + 44.5 Gal = 45.931 = 45.9 Gal
- Gallons remaining for land travel after 12 NM swim = 138 Gal – 45.9 Gal = 92.1 Gal
- Distance traveled over the Operational Mode Summary/Mission Profile after 12 NM swim = (1.66 MPG)*(92.1 Gal) = 152.886 Gal

**Table 11-1. Logistics Planning Matrix.**

| Provision | One ACV Carries | Considerations | 2 Vehicle Section | Considerations | 4 Vehicle Platoon | Considerations |
|---|---|---|---|---|---|---|
| Engine oil 10W/40 | One 5-gallon oil jug per ACV. | Engine takes 10.5 gallons wet. | An average section carries two 5-gallon jugs. | 10 gallons should be readily available for 1st echelon maintenance use for flushing and changing oil. | 20 gallons carried in jugs in the platoon. | 10.5 gallons per ACV is used during annual/ semiannual maint., 100 gallons should be ready/on hand. |
| Coolant 50/ 50 | One 5-gallon jug per ACV. | Coolant system carries 28 gallons (14 gallons of water and 14 gallons of coolant). | An average section carries two 5-gallon jugs. | 20 gallons should be ready to refill coolant on the move. ACVs can also use water or 60/40 mix. | 20 gallons carried in jugs in the platoon. | 14 gallons per ACV annual/semiannual maintenance. 100 gallons should be ready/on hand. |
| Hydro/Trans fluid TES 295 | One 5-gallon jug. | Transmission system carries 13.5 gallons/hydro system carries 31.7 gallons. | An average section carries 10 gallons of hydro in jugs. | 50 gallons should be ready to refill hydro on the move. | 20 gallons carried in jugs in the platoon. | 13.5 gallons used during annual/ semiannual maintenance; 50 gallons should be ready/on hand. |
| Fuel | 146 gallons per ACV in the fuel cells. | 435 miles per-tank at 35 MPH/6 knots for 7 hours. | 292 gallons to refuel ACVs from empty. | Gallons needed to refuel ACVs: At three quarters tank = 36.5; at half = 73; at one fourth=109.5. | 584 gallons to refuel ACVs from empty. | 292 gallons needed to refuel a platoon from half. |
| DOT 4 Brake fluid | Two cans per ACV section. | Brake fluid system requires 4.2 quarts. | Four cans carried in section. | U/I is quart, 2 quarts per ACV, 2 gallons on standby. | 8 cans per platoon. | 5 gallons on standby. |
| 75W/90 Gear oil | 12.4 gallons of 75W/90 gear oil needed for ACV systems. | Transfer case 6.4 gal/gearbox 4 gal per ACV, Wheel hub oil 2 gallons per ACV. | An average section carries 20 four gallons. | Gearbox and t-case are easily contaminated in the water if crew does not work central tire inflation system/fording mode correctly. | 8 gallons carried in jugs for the platoon. | 10 gallons on standby located with the combat trains. |
| Grease AMS3052 AeroShell 33 | 1 tube per ACV. | N/A | 2 tubes per section. | N/A | 4 tubes carried in grease guns. | 5 tubes on standby. |
| Power Steering Chevron ATF MD-3 | 2 gallons carried per ACV section. | Power steering system requires 4 gallons. | 20 gallons required for power steering system. | 5 gallons on standby. | Six 5-gallon jugs carried in the platoon. | 5 gallons on standby. |
| DOS | 2 DOS Per ACV. | Limited load time and space in ACV. | N/A | N/A | N/A | N/A |
| Ammunition | 400 rounds of .50 cal loaded in CROWS/96 rounds of MK19 loaded in CROWS | Stowed .50 cal 400/ MK19 96. | .50 cal 2,000 rounds/MK19 480 rounds. | Any additional ammunition will have to be carried externally. | .50 cal 7,200/ MK19 1,728 | Any additional ammunition will have to be carried externally. |
| Other | Common needs: wire brushes, CLP, rags, tie downs, hazmat supplies (dry sweep, absorption mats, used hazmat containers). | Common needs: bolts, batteries, straps. | Common needs/ field needs, HAZMAT supplies (dry sweep, absorption mats, used HAZMAT containers). | Common needs: chem sticks, wire harness, sea pack for CROWS. | Common needs: field needs. | Common needs: tires (typically loaded on the AAR-7 and PltSgt vehicle), HAZMAT supplies (dry sweep, absorption mats, used HAZMAT containers). |

**Legend**

| | |
|---|---|
| cal | caliber |
| DOS | days of supply |
| PltSgt | platoon sergeant |

### Replenishment Methods

The service station and tailgate issue methods are the two most common methods used to replenish ACV units.

### Service Station Method

When using the service station method, ACVs (Figure 11-1)—

- Enter the resupply point following a one-way traffic flow.
- Requiring immediate unit-level or higher maintenance stop in the maintenance holding area before conducting resupply.
- Complete resupply and move to the holding area where pre-combat inspections are completed.
- Pull out of their positions in rotation, resupply, and return to their positions.

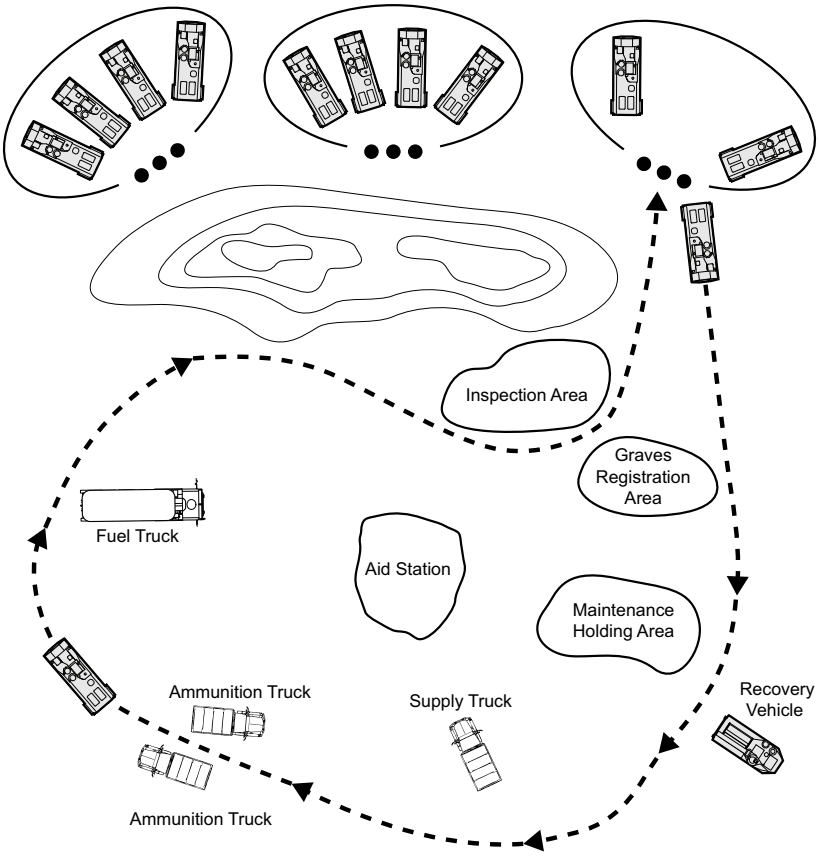



**Figure 11-1. Service Station Issue Method.**

### Tailgate Method

In the tailgate method, the ACV unit remains in a defensive posture while logistics equipment and personnel deliver classes of supply (Figure 11-2). The tailgate method takes longer than the service station method and places the supply vehicles at greater risk.

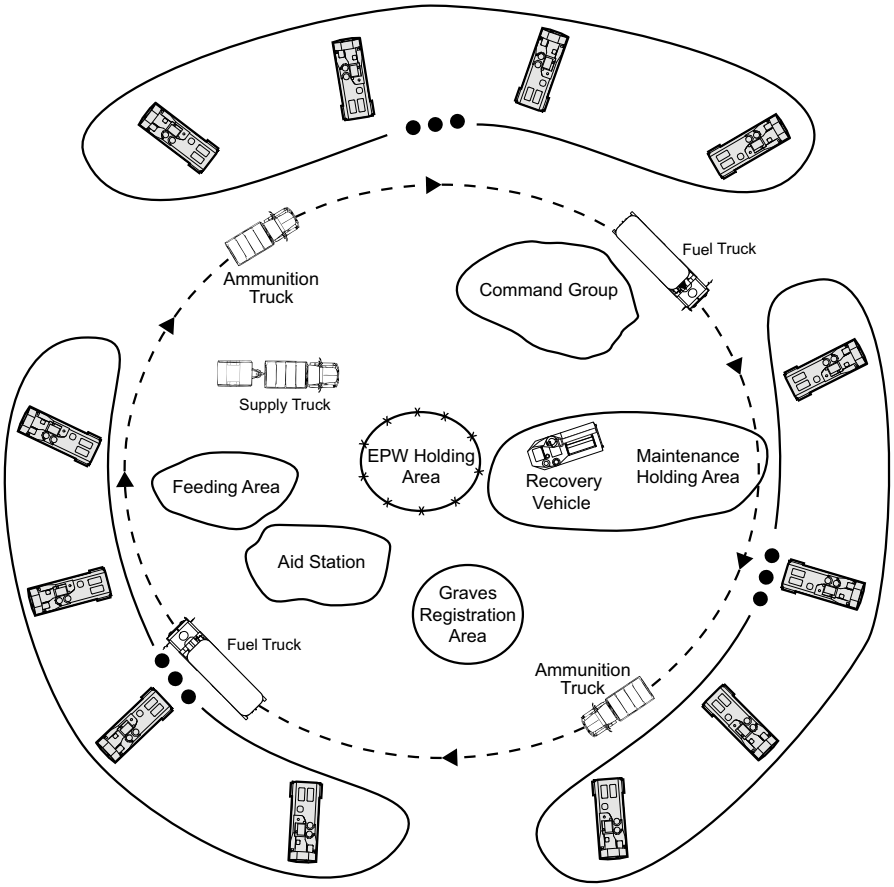



**Figure 11-2. Tailgate Issue Method.**

The following TTP are used to speed the resupply process and increase security.

Prior to resupply—

- Individual sources of water are filled.
- Water in water jugs are consolidated, empty water jugs are co-located.
- All trash is co-located.

During the resupply—

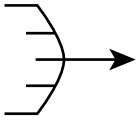
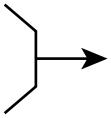
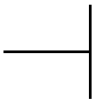
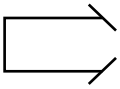
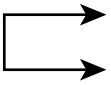
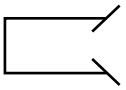
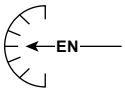
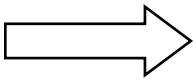
- If using the service station method, resupply vehicles should be located facing the fastest egress route.
- Minimal personnel dismount the vehicle.
- The senior enlisted picks up all mail, medical supplies, and maintenance supplies to be separated at a later time.

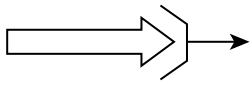
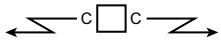
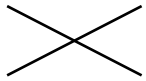
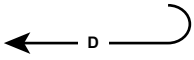
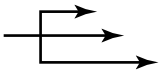
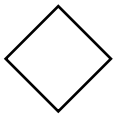
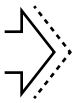
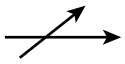
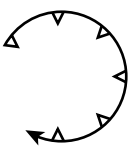
Post resupply (if using the service station method, this will be at a location separate from the resupply site) water jugs, MREs, etc. will be properly stored.

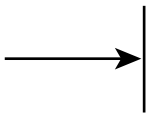
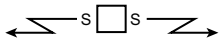
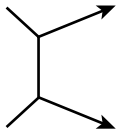
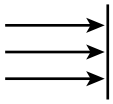
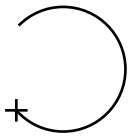
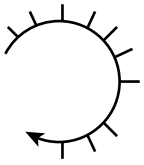
## AIR TRANSPORTABILITY

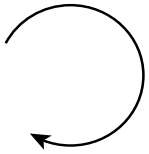
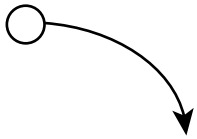
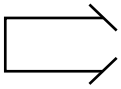
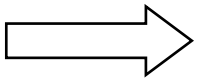
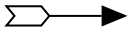
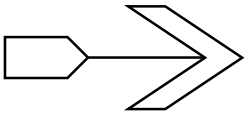
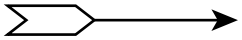
Two ACVs at aircraft transport weight are air transportable aboard C-5 and C-17 military aircraft. The ACV can be reduced to and restored from aircraft transport configuration in 60 minutes or less by the vehicles crew relying only upon on-board tools and equipment.

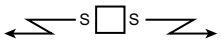
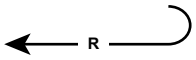
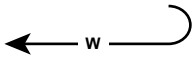
# APPENDIX A.
# TACTICAL TASK DESIGNATORS

| Enemy Oriented Tasks | | |
|---|---|---|
| **Task** | **Description** | **Symbol** |
| Ambush | A surprise attack by fire from a concealed position on a moving or temporary halted enemy. |  |
| Attack | An offensive operation of coordinated movement supported by fire, conducted to defeat, destroy, neutralize, or capture the enemy. | N/A |
| Attack by Fire | Fires (direct or indirect) to destroy the enemy from a distance. Normally used when a mission does not require or support occupation of the objective. This task is normally given to the supporting effort and as counter attack option for a reverse in the defense. The commander must specify intent of fire (destroy, fix, neutralize, suppress). |  |
| Block | To deny enemy access to a given area or to prevent enemy advance in a given direction or assembly area. It may be for a specified time and units may have to retain terrain. |  |
| Breach | To break through or secure a passage through natural or man-made obstacles. |  |
| Bypass | To maneuver around an obstacle, position, or enemy force to maintain the momentum of advance. Unreported obstacles or bypassed enemy are reported up. |  |
| Canalize | The use of existing or reinforcing obstacles or fires to restrict enemy operations in a narrow zone. |  |
| Contain | To stop, hold, or surround enemy forces or to keep the enemy in a given area to prevent their withdrawal. |  |
| Counterattack | Attack by part or all of a defending force against an enemy attacking force, for such specific purposes as regaining ground lost or cutting off or destroying enemy advance units, and with the general objective of denying to the enemy the attainment of the enemy's purpose in attacking. In sustained defensive operations, it is undertaken to restore the battle position and is directed at limited objectives. |  (Dotted) |

| Task | Description | Symbol |
|---|---|---|
| Counterattack by fire | Attack by part or all of a defending force against an enemy attacking force, for such specific purposes as regaining ground lost or cutting off or destroying enemy advance units, and with the general objective of denying to the enemy the attainment of the enemy's purpose in attacking. In sustained defensive operations, it is undertaken to restore the battle position and is directed at limited objectives. |  (Dotted) |
| Cover | Offensive or defensive actions to protect the force. |   |
| Defeat | To disrupt or nullify the enemy commander's plan and overcome their will to fight, thus making him/her unwilling or unable to pursue their adopted courses of action and yield to friendly commander's will. | N/A |
| Destroy | Physically rendering an enemy force combat-ineffective unless reconstituted. |  (2 dotted lines) |
| Delay | A form of retrograde in which a force under pressure trades space for time by slowing the enemy's momentum and inflicting maximum damage on the enemy without, in principle, becoming decisively engaged. |   |
| Disrupt | To integrate fires and obstacles to break apart an enemy's formation and tempo, interrupt their timetable, cause premature commitment, or piecemeal forces. |  |
| Exploit | Take full advantage of success in battle and follow up on initial gains. Designed to disorganize the enemy in-depth. |  |
| Feint | An offensive action involving contact with the enemy to deceive him/her about the location or time of actual main offensive action. |  |
| Fix | To prevent the enemy from moving any part of their forces either from a specific location or for a specific period of time by holding or surrounding them to prevent withdrawal. |  |
| Guard | To protect the main force by fighting to gain time, while observing and reporting information. |   |
| Interdict | An action to divert, disrupt, delay, or destroy the enemy's surface military potential before it can be used effectively against friendly forces. |  |
| Isolate | To seal off an enemy from their sources of support, to deny freedom of movement, and prevent contact with other forces. |  |

| Task | Description | Symbol |
|---|---|---|
| Neutralize | To render the enemy or their resources ineffective or unusable. |  (one dotted line) |
| Penetrate | A form of maneuver in which an attacking force seeks to rupture enemy defenses on a narrow front to disrupt the defensive system. |  |
| Protect | To prevent observation, engagement, or interference with a force or location. | N/A |
| Reconnoiter | To obtain by visual observation or other methods, information about activities and resources of an enemy. | N/A |
| Rupture | To create a gap in enemy defensive positions quickly. | N/A |
| Screen | To observe, identify, and report information, and fight in self-protection. |   |
| Support by Fire | Where a force engages the enemy by direct fire to support a maneuvering force using overmatch or by establishing a base of fire. The supporting force does not capture enemy or terrain. (Usually given as occupy SBF and ask is fix, suppress, etc.) |  |
| **Terrain Oriented Tasks** | | |
| **Task** | **Description** | **Symbol** |
| Clear | The removal of enemy forces and elimination of organized resistance in an assigned zone, area, or location by destroying, capturing, or forcing the withdrawal of enemy forces that could interfere with the unit's ability to accomplish its mission. |  |
| Control | To maintain physical influence by occupation or range of weapon systems over the activities or access to a defined area. | N/A |
| Occupy | To move onto an objective, key terrain, or other man-made or natural terrain without opposition, and control the entire area. |  |
| Reconnoiter | To secure data about the meteorological, hydrographic, or geographic characteristics of a particular area. | N/A |
| Retain | To occupy and hold a terrain feature and ensure it is free of enemy occupation or use. |  |

| Task | Description | Symbol |
|---|---|---|
| Secure | To gain possession of a position or a terrain feature, with or without force and to prevent its destruction or loss to enemy action. The attacking force may or may not have to physically occupy the area. |  |
| Seize | To clear a designated area and gain control of it. |  |
| **Friendly Oriented Tasks** | | |
| **Task** | **Description** | **Symbol** |
| Breach | To break through or secure a passage through a natural or friendly obstacle. |  |
| Counter | All measures taken to prevent hostile observation of a force, an area, or a place. |  (Dotted) |
| Disengage | To break contact with the enemy and move to a point where the enemy cannot observe nor engage the unit by direct fire. | N/A |
| Displace | To leave one position and take another. Forces may be displaced laterally to concentrate combat power in threatened areas. | N/A |
| Exfiltrate | The removal of personnel or units from areas under enemy control. | N/A |
| Follow | The order of movement of combat, combat support, and combat service support forces in a given combat operation. |  |
| Follow and Assume | An operation in which a committed force follows a force conducting an offensive operation and is prepared to continue the mission of the force it is following when that force is fixed, attrited, or otherwise unable to continue. Such a force is not a reserve but is committed to accomplish specific tasks. |  |
| Follow and Support | A committed force that follows and supports mission accomplishment of a force conducting an offensive operation. Not a reserve, but is committed to destroying bypassed units, relieve in place any direct pressure, or encircling force that is halted to contain an enemy, block enemy reinforcements; secure lines of communication, guard enemy prisoners of war, key areas, and installations; secure key terrain; and control refugees. |  |
| Link Up | A meeting of friendly ground forces. |   |

| Task | Description | Symbol |
|---|---|---|
| Screen | 1. A security element whose primary task is to observe, identify, and report information, and only fight in self-protection.<br>2. A form of security operation that primarily provides early warning to the protected force. |  |
| Retirement | An operation in which a force out of contact moves away from the enemy. |  |
| Withdrawal | A planned retrograde operation in which a force in contact disengages from an enemy force and moves in a direction away from the enemy. |  |

# APPENDIX B.
# THREAT WEAPONS CAPABILITIES

**Table B-1. Threat Weapons Capabilities.**

| Small Arms & Recoilless Guns | | |
|---|---|---|
| **Caliber** | **Model** | **Effective Range** |
| 5.45mm | AK-74 | 400m |
| 7.62mm | AKM | 300m |
| 7.62 mm LMG | RPK (Bipod) | 800m |
| 7.62 mm MG | PK | 1000m |
| 40 mm AT Launcher | RPG-7V | 300m-500m |
| 73 mm RCL (Airborne) | SPG-9 | 800-1000m |
| 30 mm Grenade/Lhr | AGS-17 | 600m+ |
| **Anti-Tank Weapons** | | |
| **Model** | **Range** | **Control** |
| AT-2 Swatter | 500-3000m+ | RG |
| AT-3 Sagger | 500-3000m+ | WG |
| AT-4 Spigot | 2500 | WG |
| AT-5 Spandrel | 4000 (max) | WG |
| AT-6 Spiral | 5000m | RG |
| AT-8 Songster | 4000m | WG |
| AT-9 Ataka | 6000m | WG |
| AT-10 Stabber | 5500m | LG |
| AT-11 Sniper | 5000m | LG |
| AT-14 Kornet | 5500 | LG |
| AT-X-15 (can penetrate 1000 mm of reactive armor) | 6000m | RG or LG |
| 100 mm AT Gun | 2000m | Optic Guided |

| APCs/Reconnaissance Vehicles | | | |
|---|---|---|---|
| **Model** | **Main Gun/Range** | **Secondary** | **AT Weapon** |
| BMP-1 | 73mm/1300m | 7.62 mm MG | AT-3 Sagger |
| BMP-2 | 30mm/4000m | | AT-5 |
| BMP-3 | 100mm/1500m | 30 mm (cannon coax) | AT-10 |
| BTR-60 | 14.5mm/2000m | 7.62 mm MG | |
| BTR-70 | 14.5mm/2000m | 7.62 mm MG | |
| BTR-80 | 14.5mm/2000m | 7.62 mm MG | |
| MTLB | 7.62 mm MG | | |
| BRDM-2 | 14.5mm/2000m | 7.62 mm MG | |
| BMD-1 | 73mm/1300m | 7.62 mm MG | Sagger |

**Table B-1. Threat Weapons Capabilities. (Continued).**

| Artillery | | |
|---|---|---|
| **Weapon** | **Range** | **Bursting Area** |
| 105 mm How. (T) | 11,000m | 30mx20m |
| 155 mm How. (T) M114a2 | 14,600m/19,800mRAP | 50mx30m |
| 155 mm How. (T) M198 | 22,000m/30,000mRAP | 50mx30m |
| 155 mm How. (T) M777 | 24,700m/30km RAP/40km GPS guided | |
| MLRS | 69 km | |
| Mortar | | |
| Weapons | Range | Bursting Area |
| 81mm | HE – 4,500m | 30m x 20m |
| | WP – 4,500m | 15m x 10m |
| 60mm | HE – 1,900m (Old round) | 20m x 10m |
| | HE – 3,500m (New round) | |
| | Wp – 1,600m | 15m x 15m |
| Naval Gunfire | | |
| Weapons | Range | Bursting Area |
| 5”/38 | 16,000m | 50m x 30m |
| 5”/54 | 23,000m | 50m x30m |

| Illumination | | | |
|---|---|---|---|
| **Tube Type** | **Range** | **Burn Time (Seconds)** | **Diameter of Area** |
| 60mm | 1,000m | 30 | 500m |
| 81mm | 2,100m | 60 | 500m |
| 105mm | 11,000m | 60 | 500m |
| 155mm | 14,600m | 60 | 500m |
| 5”(NGF) | 16,000m/23,000m | 45 | 500m |

| Miscellaneous | |
|---|---|
| **Weapon** | **Range** |
| TOW (anti-tank) | 3,750m |
| M203 (40 mm Grenade) | 350m |
| MK153 SMAW | 400m |
| AT-4 | 250m |
| Javelin | 2,500m |

# APPENDIX C.
# WARFIGHTING FUNCTIONS

The purpose of the warfighting functions is to help commanders exercise command and control, accomplish missions, and achieve training objectives.

The AA community, primarily composed of Marines using ACVs, plays a significant role in several warfighting functions. The following contributions are vital for projecting power ashore during amphibious operations and supporting subsequent land operations:

- Maneuver:
  - Primary Role. The ACV facilitates ship-to-shore movement, providing the initial maneuver element to secure a beachhead. The ACV is capable of transporting personnel, equipment, and supplies from amphibious shipping to inland objectives.
  - Mobility. The ACV offers a unique combination of waterborne and land mobility. They traverse surf zones and navigate inland terrain, enabling rapid and direct assault capabilities.
- Fires:
  - Supporting Fires. The ACV equips assaulting infantry with direct fire support via .50 caliber machine guns and 40mm grenade launchers. This fire support is crucial during the initial assault, suppressing enemy positions and enabling infantry to close with and destroy the enemy.
  - Suppression. The ACV's firepower suppresses enemy defenses, allowing infantry to maneuver and close with an objective.
  - Direct Fires. The ACV-30 provides infantry with an immediate, precision direct fire system, enabling engagement of targets beyond .50 caliber range and penetration limitations.
- Intelligence:
  - Reconnaissance. While not their primary role, ACVs contribute to reconnaissance efforts. Crews observe enemy positions with magnified optics and report observations to higher headquarters, providing a mobile platform for gathering information about the terrain and enemy activity.
- Logistics:
  - Resupply. The ACV transports essential supplies, such as ammunition, water, and medical supplies, from the beachhead to forward positions. This is particularly important in the early stages of an amphibious operation when other logistical support is limited.
  - Casualty Evacuation. The ACV evacuates casualties from the battlefield to medical facilities. Their ability to traverse difficult terrain makes them valuable assets for casualty evacuation.

- Command and Control:
  - Communication. The ACV-P is equipped with power-amplified 4x VRC-114(V)2 radio mounts capable of integrating PRC-117Gs, amplifying communications, and transmitting HF, VHF, UHF, and SATCOM when equipped with appropriate antennas. The VC can use VHF and intercom, and the TC can use all communication methods. The ACV-C offers additional enhanced communications.
  - Situational Awareness. The ACV crews provide vital reports on the battlefield situation, enhancing situational awareness for commanders.
- Protection:
  - Force Protection. The ACV provides armored protection for transported personnel, shielding them from small arms fire, artillery fragments, and other battlefield threats.
  - Vehicle Survivability. While not heavily armored, ACVs offer a degree of protection that allows them to operate in contested environments, particularly against small arms, mines, mines, and improvised explosive devices.
- Information. While the AA unit's primary focus is not directly on the information warfighting function, they support and interact within the following functions:
  - Physical Security of Communication Assets. The AA units secure and protect communication nodes and infrastructure during amphibious landings and subsequent operations ashore. This directly protects physical assets that enable information warfare by preventing enemy disruption or exploitation of communication networks.
  - Counter-Reconnaissance and Deception. Commanders can use ACV movements and actions as part of a larger deception plan to mislead the enemy about the true intentions of the amphibious force. This implements military deception, a key aspect of information warfare. Their presence and patrols deter enemy reconnaissance, hindering the enemy's ability to gather information about friendly forces.
  - Influence. The presence of ACVs ashore, especially during humanitarian assistance or disaster relief operations, positively influences the local population. This shapes the information environment and builds trust.
  - Support to Civil-Military Operations. The AA units transport and secure civil-military operations teams, which play a crucial role in information dissemination and engagement with the local population.

The AA community is a critical component of amphibious operations, enabling the rapid projection of combat power ashore. Their contributions to maneuver, fires, logistics, intelligence, command and control, protection, and information are essential for the success of amphibious assaults and subsequent land operations.

The specific role of AA units varies depending on the mission and the environment. However, their core function remains the same; to provide a mobile, armored platform for transporting personnel and equipment from ship to shore and supporting operations ashore.

# APPENDIX D.
# MAINTENANCE CONCEPTS AND PLANNING CONSIDERATIONS

The modern battlefield demands a flexible, responsive maintenance system focused on rapidly returning systems to operational status as close as possible to the point of failure or damage. This necessitates a forward presence in the Division rear. During large-scale operations, this requires echeloning maintenance capabilities throughout the Division area of operations. For additional information refer to ATP 4-90, *Brigade Support*.

## FIELD-LEVEL MAINTENANCE

Field-level maintenance is conducted on or near the unit, focusing on repairing it and returning it to the user. It employs component replacement or repair and is executed as far forward as possible.

### Maintenance during Offensive Operations

Offensive operations involve greater movement and maneuver than other operations. This puts greater mechanical stress on vehicles and increases their exposure to enemy action, leading to a higher number of non-mission capable systems. As the areas of operation extends forward, maintenance becomes more challenging because of the distance between where equipment becomes inoperable and where it is needed in the fight. Moving non-operational vehicles forward encumbers the maneuver commander and further reduces combat power. Maintenance planning should anticipate echeloning requirements based on the unfolding events of the operation. While a change from one form of attack to another (e.g., from an attack to a pursuit) does not require a major shift in logistics plans and procedures, the priorities and requirements for maintenance support might change. Maintenance planning tasks in the offense include plans for—

- Extended lines of communication and the impact on class IX distribution and recovery.
- Maintenance collection points in depth to facilitate fixing forward while minimizing demands upon recovery assets.
- Shift maintenance priorities in support of the decisive operation and main effort by phases on the operation, which requires anticipating requirements 24-72 hours prior to need.

An important task for maintenance planners during offensive operations is to identify maintenance collections points (MCPs). Planners, in agreement with S-4 and S-3, develop graphics that depict MCPs throughout the depth of the different axis of advance. During offensive operations, the MCP are located as far forward as possible. A fixed site MCP is a designated location where maintenance personnel can collect necessary materials, tools, and equipment to perform maintenance tasks.

Temporary MCPs provide a quick consolidation point for damaged equipment, hasty repairs, or to perform battle damage assessment and repair. They should also be planned with phase lines. As forces progress, temporary MCPs should move forward to best support the unit. Recovery assets typically evacuate only non-mission capable equipment from a temporary MCP.

### Maintenance during Defensive Operations

Maintenance considerations for defensive operations include—

- Maintenance support to friendly forces in the security area.
- Maintenance support to friendly forces in the main battle area.
- Operation readiness rates of low-density systems.

Maintenance collections points in defensive operations are usually positioned behind the main battle area as far as possible to protect against detection by enemy reconnaissance and fires. Dispersion in the MCP is even more important than in the offensive operations because the location is static and maintenance takes a longer time, which make it easier for enemy forces to locate it. Collocating the MCP and other maintenance assets with the trains eases the burden for defensive tasks enabling more maintenance personnel to concentrate on repair operations.

Consideration must be given to moving equipment to an MCP for repair. Moving equipment rearward exposes it and the mechanics to enemy fire, so should be done during periods of low visibility in a methodical manner. This requires a plan that encompasses guides, routes, and timings. If conditions warrant, consider field maintenance team repair equipment within the main battle area and unit battle position. Maintainers are prepared to transition from the defense to offensive operations with little to no notice.

# APPENDIX E.
# RIVER CROSSING CONSIDERATIONS

For AA units, river crossings are at the heart of wet gap crossing and riverine operations. River crossings are also strikingly similar to amphibious operations. However, there are certain considerations AA unit leaders need to be award of when advising their supported unit commanders. The objective is to conduct a safe and efficient river crossing to overcome the limiting effects posed by obstacles while maintaining momentum. For AA unit leaders to effectively advise commanders, it is imperative that the AA unit leader recognize optimal crossing conditions to ensure a safe and successful river crossing.

## SITE ANALYSIS

The site analysis is the starting point for determining feasibility. The following information is provided to aid the AA unit leader in making informed decisions regarding a river crossing.

The selection of entry and exit sites is of great importance. The goal is to choose a crossing site that offers the ACV the ability to rapidly enter the water, swim the width of the river, and exit the opposite bank safely. The following considerations provide the basis for crossing site selection:

- Bank Preparation Time:
  - Describe the height, slope, and stability of the bank.
  - List the amount of time and effort to overcome significant natural and enemy-emplaced obstacles.
  - Include day, night, or reduced-visibility constraints.
- River Conditions:
  - Specify the width, depth, velocity, and bottom conditions of the river, as appropriate.
  - Include variations or unique factors (such as sandbars, turbulence, or water depth at the bank).
- Vegetation:
  - List areas suitable for work sites and assembly areas.
  - List areas available for cover and concealment.
- Full Crossing Rate:
  - Describe foot, wheeled and track movement.
  - Describe capabilities on roads, trails, and cross-country.
  - Describe the maximum crossing rate for fording, swimming, or rafting.
  - Include the overall assessment of the crossing site's potential.

### Current Velocity

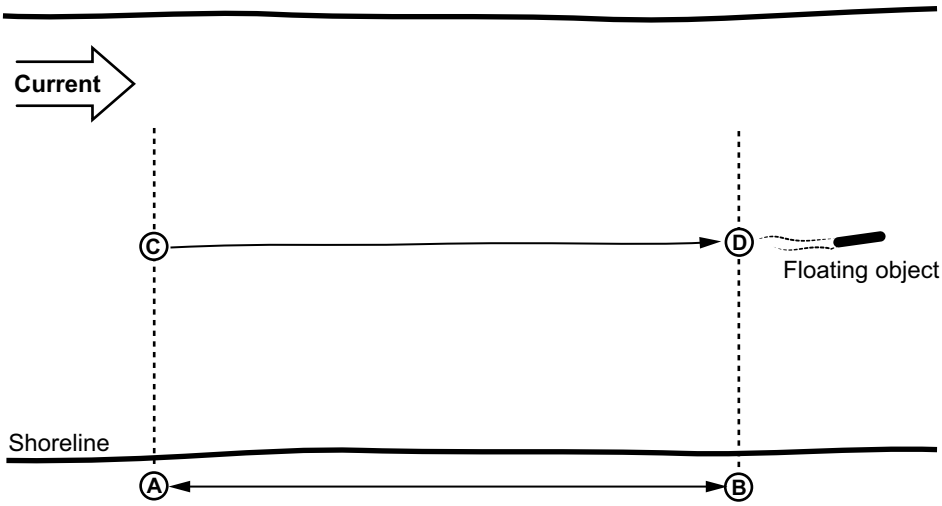
Determining the river current's velocity is critical to an effective and safe crossing. Comparing the desired maximum current velocity of 1.5 meters per second with a familiar unit of measure may help in estimating the current's velocity. The quick-time march rate in close order drill of 120 steps per minute with a 30-inch (i.e. 76-centimeter) step equates to 1.5 meters per second. Other examples include:

5 feet per second.

3.5 miles per hour.

5.5 kilometers per hour.

River current speed is determined in a similar manner to current speed when conducting a SUROBS report. A reasonable estimate involves measuring a distance along the riverbank and noting the time a floating object takes to travel the same distance. Dividing the distance by the time provides the river current's velocity. Figure E-1 depicts the graphical representation of the actions performed.




***Step 1***
Measure from point **A** to **B**.

***Step 2***
Throw a floating object upstream of starting point **C.**

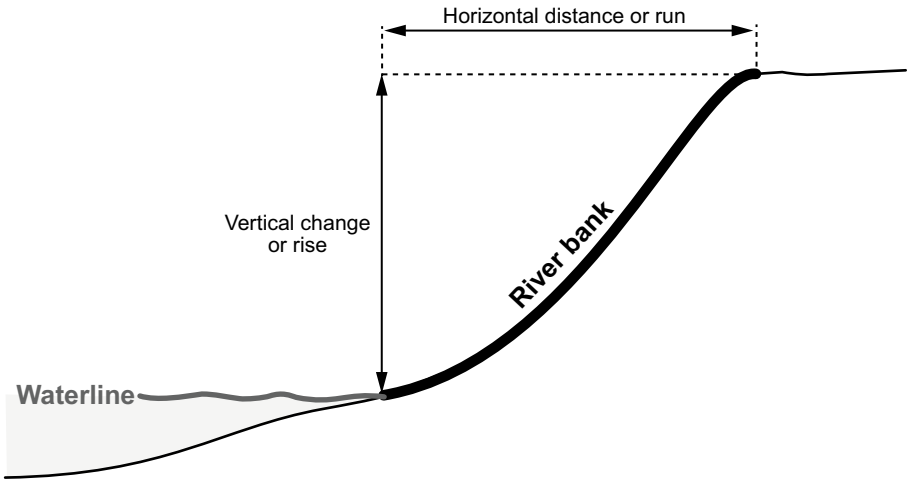
***Step 3***
Record the time the object floats from C to D.

$$\textbf{Current} = \frac{\text{Distance } \textbf{AB} \text{ (meters)}}{\text{Time } \textbf{CD} \text{ (seconds)}}$$

**Figure E-1. Measuring Current Velocity.**

### Determining Slopes and Degrees

The slope of the bank and its composition must be considered when assessing river conditions. Slopes are generally expressed as a percentage, which is indicative of the elevation change (i.e., rise or fall) over a horizontal distance. Figure E-2 provides the formula to determine slope.




***Formula:***
The rise divided by the run multiplied by 100 equals the percent of the slope.

(% slope = rise/run x 100)

**NOTE**
All measurements must be in the same unit of measure (meters or feet).

**Figure E-2. Slope Calculation Formula.**

There are three methods associated with determine slope percentage.

***Clinometer.*** This device measures the slope angle; however, it is not organic to the AA community.

***Maps.*** The map method is the preferred method for determining slope percentage because it is most accurate. The following steps should be applied when employing this method (Figure E-3):

Step 1. Measure horizontal distance along the desired path.

Step 2. Determine the distance in elevation between the starting point and ending point.

Step 3. Ensure the same unit of measurement (i.e., rise) by the distance (i.e., run).

Step 4. Divide the elevation (i.e., rise) by the distance (i.e., run).

Step 5. Multiply the result by 100.

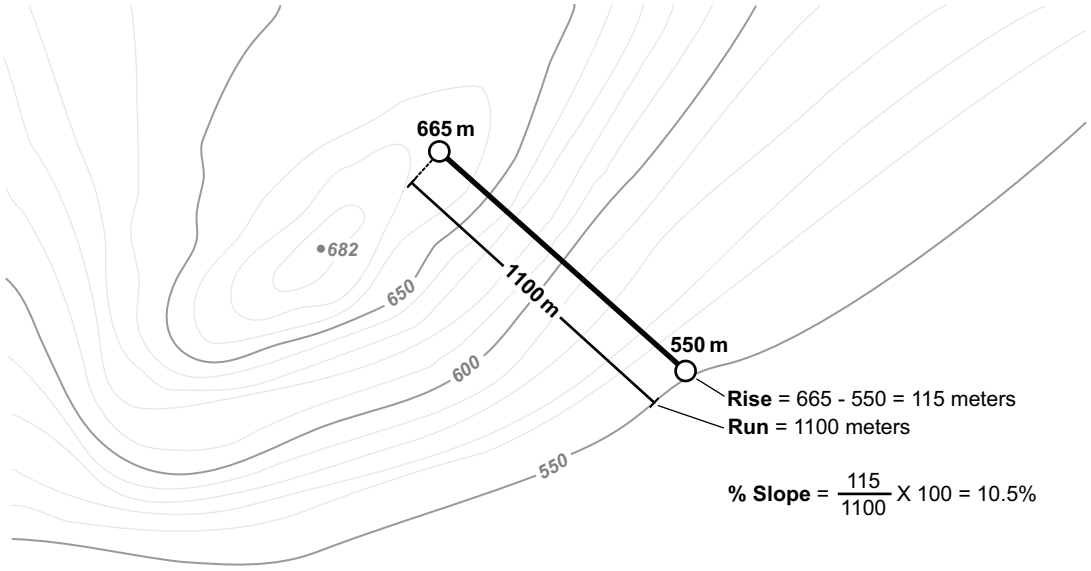



**Figure E-3. Terrain Slope Calculation.**

***Line of Sight and Pace.*** This method uses eye-level height above ground (usually from 1.5 to 1.75 meters) and the length of standard pace (usually 0.75 meter). The following steps should be completed for the line of sight and pace method:

Step 1. While standing at the bottom of the slope, a spot should be kept on the slope while the eyes are kept level.

Step 2. The distance should be paced.

Step 3. The procedures are repeated at each spot.

Step 4. The vertical and horizontal distances are added separately to provide the total rise and run.

NOTE: A slope may be expressed in degrees; however, this is not common because the relationships are complex. Table E-1 lists the relationships of degrees and slope percentages.

**Table E-1. Slope-to-Degree Conversion.**

| Slope Percent | Degrees |
|---|---|
| 100 | 45 |
| 60 | 31 |
| 40 | 22 |
| 20 | 11 |

### Measuring Width

When measuring a gap's width, a map study can be used. The following steps are a field-expedient means of measuring gap width with a compass:

Step 1. While standing at the river's edge, note the magnetic azimuth by citing a point on the opposite side.

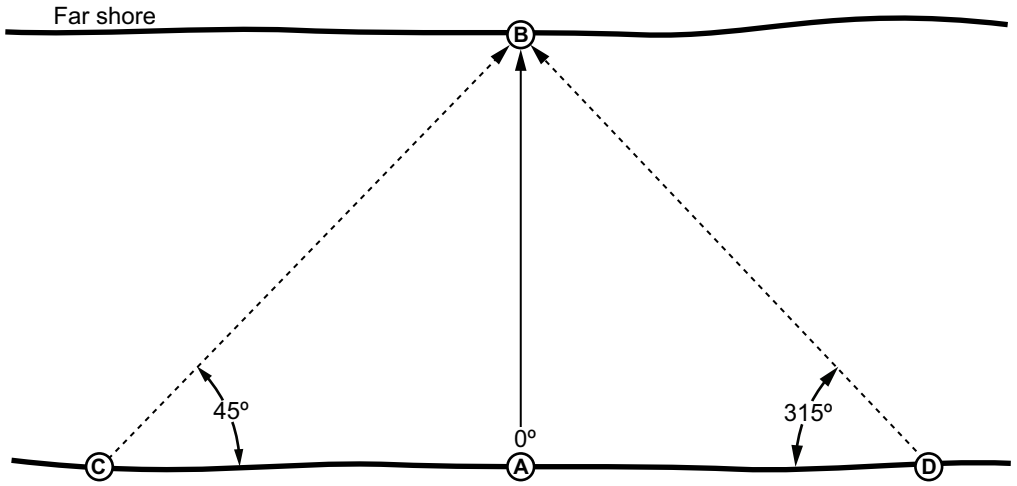
Step 2. Move laterally up or down the edge of the river (upstream or downstream) until the azimuth reading to the fixed point on the opposite side is 45 degrees different than the original reading.

Step 3. The distance from the original point to the final point of observation is equal to the river's width (Figure E-4).

Step 4. Compass citing from point **A** to **B** reads 0º azimuth.

Step 5. Move left from point **A**, stopping when point **B** is at a 45º degree azimuth, this is point **C**.
*Or*
Move right from point **A**, stopping when point **B** is at a 315º degree azimuth this is point **D**.

Step 6. Measure from point **A** to **C** or **A** to **D**, this equals the distance between point **A** to **B** (the rivers width).




***Step 1***
Compass citing from point **A** to **B** reads 0º azimuth.

***Step 2***
Move left from point **A,** stopping when point **B** is at a 45º degree azimuth, this is point **C**.
*or*
Move right from point **A,** stopping when point **B** is at a 315º degree azimuth, this is point **D**.

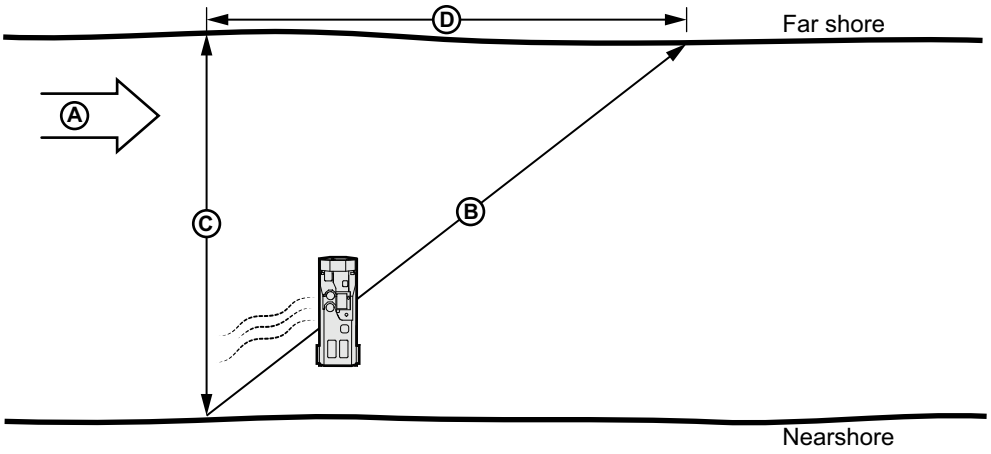
***Step 3***
Measure from point **A** to **C** or **A** to **D,** this equals the distance between point **A** to **B** (the rivers width).

**Figure E-4. River Width Calculation.**

### Amphibious Drift

A river current causes all surface craft to drift downstream. Each type of craft has a different formula for calculating downstream drift. ACVs drift more than powered boats; the latter have a greater capability to negate the effect of the current's velocity by applying more power.

Amphibious vehicles are generally limited to current velocity of 1.5 to 2 meters per second.




$$\frac{\text{Current Velocity (A)}}{\text{Crossing Speed (B)}} \text{ X River Width (C) = Downstream Drift (D)}$$

**NOTE**
All measurements must be in the same unit of measure (meters or feet).

**Figure E-5. Amphibious Drift.**

### Current Compensation

When crossing with amphibious vehicles it is necessary and generally possible to compensate for the effect of the current. There are three techniques that ACVs employ:

- Downstream sideslip.
- Constant aim point.
- Constant heading.

These techniques do not ensure the ACV can cross a body of water. It is imperative that the unit leader understands that the techniques are tools in aiding the decision-making process.

***Downstream Sideslip.*** Entry is usually made upstream of the desired exit point. The vehicle is aligned (aimed) straight across the river, creating a head-on orientation that is perpendicular to the exit bank. However, the current produces a sideslip, or downstream movement, (Figure E-6). This technique requires operator training to make the continual adjustment necessary to reach the objective point on the exit bank.

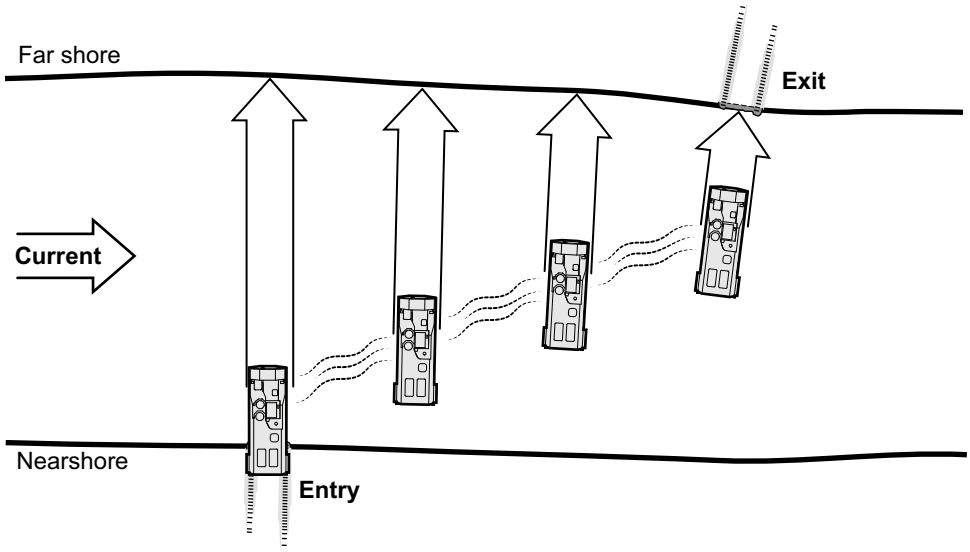



**Figure E-6. Downstream Sideslip**

***Constant Aim Point.*** If the operator continues to aim the vehicles at the desired exit point, the orientation of the craft at the exit point will approximate an upstream heading. The craft's path makes an arc in proportion to the current's velocity (Figure E-7).

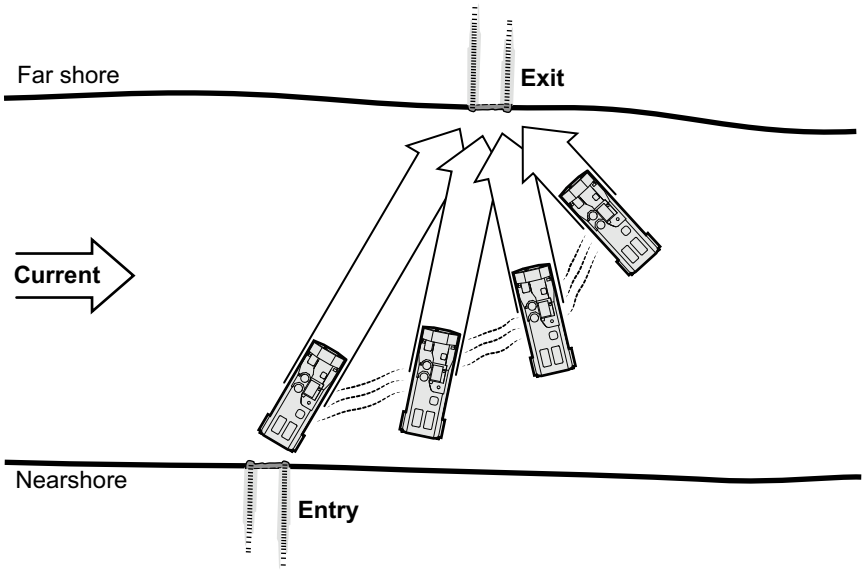



**Figure E-7. Constant Aim Point.**

***Constant Heading.*** Exiting at a point directly across from the entry point requires an upstream heading to compensate for the current's velocity (Figure E-8). In all three examples, the craft's speed relative to the current's velocity is constant; assuming the engine RPM (or paddling rate) remains constant. The terrain conditions may restrict the location of entry and/or exit locations. The enemy's situation may also require alternate techniques. For example, when aiming at the downstream exit point, the craft moves at a greater speed relative to the banks after entry than it does as it nears the exit due to the current's velocity. This technique may be favored when the enemy has better observation of the entry bank than the exit bank. An ACV moving fast and at a changing rate is more difficult to engage effectively.

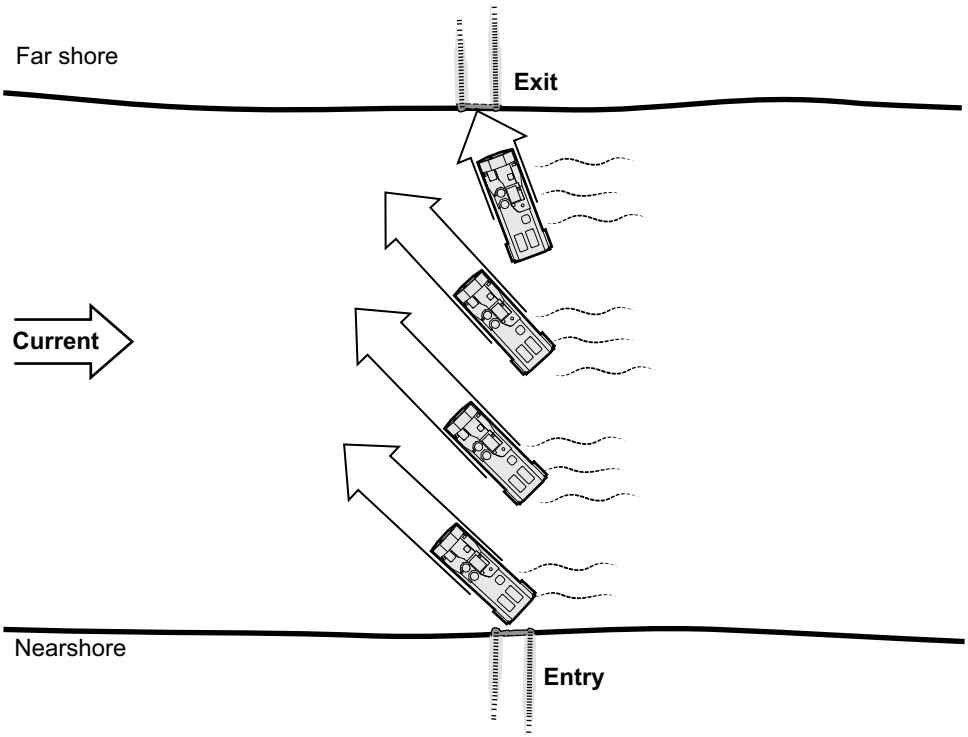



**Figure E-8. Constant Heading.**

# GLOSSARY

## Section I: Abbreviations and Acronyms

| | |
|---|---|
| **AA** | assault amphibian |
| **AAV** | assault amphibious vehicle |
| **ACV** | amphibious combat vehicle |
| **ACV-30** | Amphibious Combat Vehicle – 30mm |
| **ACV-C** | Amphibious Combat Vehicle – Command and Control |
| **ACV-P** | Amphibious Combat Vehicle – Personnel Carrier |
| **ADCON** | administrative control |
| **AGL** | above ground level |
| **AO** | area of operations |
| **AP** | armor piercing |
| **ASLT** | assault position |
| **ATF** | amphibious task force |
| **ATK** | attack position |
| **BLOS** | beyond line-of-sight |
| **BLT** | battalion landing team |
| **BOT** | burst on target |
| **C2** | command and control |
| **CEE** | combat essential equipment |
| **CIC** | combat information center |
| **CIWS** | close in weapon system |
| **CKP** | check point |
| **CLS** | combat lifesaver |
| **CLW** | crew loaded weight |
| **COA** | course of action |
| **CROWS** | Commonly Remote Operated Weapons System |
| **CTIS** | central tire inflation system |
| **CVRJ** | crew vehicle receiver jammer |
| **CW** | curb weight |
| **DIDEA** | detect, identify, decide, engage, and assess |
| **DVR** | driver |

| | |
|---|---|
| **EA** | engagement area |
| **EELS** | emergency egress lighting system |
| **EMS** | electro-magnetic signature |
| **FHA** | foreign humanitarian assistance |
| **FPL** | final protective lines |
| **Ft** | feet |
| **GCE** | ground emergency element |
| **GCV** | gross combat vehicle |
| **GPS** | global positioning system |
| **HF** | high frequency |
| **ICODES** | integrated computerized deployment system |
| **IED** | improvised explosive device |
| **JBCP** | joint battle command platform |
| **KIAS** | knots indicated air speed |
| **LCAC** | landing craft air cushioned |
| **LD** | line of departure |
| **LF** | landing force |
| **LHA** | landing helicopter assault |
| **LHD** | landing helicopter dock |
| **LLOD** | left flank of the line of departure |
| **LOA** | limit of advance |
| **LOD** | line of departure (amphibious) |
| **LOS** | line of sight |
| **LP** | listening post |
| **LPD** | landing platform dock |
| **LSD** | landing ship dock |
| **MACO** | marshaling area coordination officer |
| **MAGTF** | Marine Air Ground Task Force |
| **MCP** | maintenance collections point |
| **METT-T** | mission, enemy, terrain, troops and time |
| **MGRS** | military grid reference system |
| **MOUT** | military operations in urban terrain |
| **MSI** | modified surf index |

| | |
|---|---|
| **MSL** | mean sea level |
| **MUOS** | mobile user objective system |
| **NATO** | North American Treaty Organization |
| **OBJ** | objective |
| **OPORD** | operation order |
| **PCO** | primary control officer |
| **PCS** | primary control ship |
| **PD** | point of departure |
| **PDF** | principle direction of fire |
| **PL** | phase line |
| **PLD** | probable line of deployment |
| **PSF** | pounds per square foot |
| **REO** | rear egress operators |
| **RLY** | rally point |
| **RP** | release point |
| **RPM** | revolutions per minute |
| **S-2** | intelligence office |
| **SBF** | support by fire |
| **SDZ** | surface danger zone |
| **SEAOPS** | safe engineering and operations |
| **SL-3** | stock list level-3 |
| **SOP** | standing operating procedure |
| **SUROB** | surf observation |
| **TCM** | tactical control measure |
| **TRP** | target reference point |
| **TTP** | tactics, techniques, and procedures |
| **UA** | unmanned aircraft |
| **UAS** | unmanned aircraft system |
| **UHF** | ultra-high frequency |
| **ULCANS** | ultra-light weight vehicle camouflage netting |
| **VHF** | very high frequency |
| **VMK** | vehicle medical kit |
| **WP** | way point |

## Section II. Terms and Definitions

**advance guard**
The advance guard is a detachment sent ahead of the main force to ensure their uninterrupted advance; to protect the main body against surprise; to facilitate the advance by removing obstacles and repairing roads and bridges; and to cover the deployment of the main body if it is committed to action. Being far easier to resource, and less mission specific, units frequently use advanced guards to support the main body in all types of movement—even administrative. (MCWP 3-01)

**amphibious demonstration**
A type of amphibious operation conducted for the purpose of deceiving the enemy by a show of force with the expectation of deluding the enemy into following an unfavorable course of action. (DoD Dictionary)

**amphibious operation**
A military operation launched from the sea by an amphibious force to conduct landing force operations within the littorals. (DoD Dictionary)

**attack**
Unconventional, unexpected, innovative, or disproportional means used to gain advantage over an adversary. (USMC Dictionary)

**attack by fire**
Fires (direct and indirect) in the physical domains and/or through the information environment to engage the enemy from a distance to destroy, fix, neutralize, or suppress. (USMC Dictionary)

**boat lane**
A lane for amphibious assault landing craft, which extends from the line of departure to the beach. (DoD Dictionary)

**central control officer**
The officer, embarked in the central control ship, designated by the amphibious task force commander for the overall coordination of the waterborne ship-to-shore movement. Also called CCO. (DoD Dictionary)

**counterattack**
An attack by part or all of a defending force against an enemy attacking force, for such specific purposes as regaining ground lost or cutting off or destroying enemy advance units, and with the general objective of denying to the enemy the attainment of the enemy's purpose in attacking. In sustained defensive operations, it is undertaken to restore the battle position and is directed at limited objectives. (USMC Dictionary)

**cross-attachment**
The exchange of subordinate units between units for a temporary period. (USMC Dictionary)

**envelopment**
An offensive maneuver in which the main attacking force passes around or over the enemy's principal defensive positions to secure objectives to the enemy's rear. (Part 1 of a 2-part definition.) (USMC Dictionary)

**exploitation**
(See DoD Dictionary, part 3 for core definition. Marine Corps amplification follows.) An offensive operation, following a successful attack, designed to disorganize the enemy in depth and extend the initial success of the attack by preventing the enemy from disengaging, withdrawing, and reestablishing an effective defense. (USMC Dictionary)

**frontal attack**
An offensive maneuver in which the main action is directed against the front of the enemy forces. (USMC Dictionary)

**H-hour**
In amphibious operations, the time the first landing craft or amphibious vehicle of the waterborne wave lands or is scheduled to land on the beach and, in some cases, the commencement of countermine breaching operations. (Part 2 of a 2-part definition.) (DoD Dictionary)

**infiltration**
The movement through or into an area or territory occupied by either friendly or enemy troops or organizations. The movement is made, either by small groups or by individuals at extended or irregular intervals. When used in connection with the enemy, it implies that contact is avoided. (Part 1 of a 2-part definition.) (USMC Dictionary)

**landing beach**
That portion of a shoreline required for the landing of an amphibious force. (DoD Dictionary)

**line of departure**
In amphibious operations, a suitably marked offshore coordinating line, which is located at the seaward end of a boat lane, to assist in the landing of landing craft and amphibious vehicles on designated beaches at the scheduled times. Also called LOD. (Part 2 of a 2-part definition.) (DoD Dictionary)

**penetration**
A form of maneuver in which an attacking force seeks to rupture enemy defenses on a narrow front to disrupt the defensive system. (Part 1 of a 2-part definition.) (USMC Dictionary)

**pursuit**
An offensive operation designed to catch or cut off a hostile force attempting to escape, with the aim of destroying it. (USMC Dictionary)

**reconnaissance in force**
A deliberate attack made to obtain information and to locate and test enemy dispositions, strengths, and reactions. It is used when knowledge of the enemy is vague and there is insufficient time or resources to develop the situation. (Part 1 of a 2-part definition.) (USMC Dictionary)

**riverine operations**
Operations conducted by forces organized to cope with the unique characteristics of a riverine area and/or to achieve or maintain control of the riverine area. (DoD Dictionary)

**sea state**
A scale that categorizes the force of progressively higher seas by wave height. (DoD Dictionary)

**spoiling attack**
A tactical maneuver employed to seriously impair a hostile attack while the enemy is in the process of forming or assembling for an attack. A spoiling attack is usually an offensive action conducted in the defense. (USMC Dictionary)

**support by fire**
To engage the enemy by direct fire to support a maneuvering force using overwatch or by establishing a base of fire. The supporting force does not capture enemy forces or terrain. (USMC Dictionary)

**surf line**
The point offshore where waves and swells are affected by the underwater surface and become breakers. (DoD Dictionary)

**turning movement**
A variation of the envelopment in which the attacking force passes around or over the enemy's principal defensive positions to secure objectives deep in the enemy's rear to force the enemy to abandon his position or divert major forces to meet the threat. (DoD Dictionary)

## Section III. Nomenclature

| | |
|---|---|
| **AAV-R7** | Assault Amphibious Vehicle–Recovery |
| **ACV-C** | Amphibious Combat Vehicle–Command and Control |
| **ACV-P** | Amphibious Combat Vehicle–Personnel |
| **ACV-R30** | Amphibious Combat Vehicle–30mm |
| **BMP** | [Russia-made] Infantry Fighting Vehicle |
| **BMD** | [Russia-made] Airborne Combat Vehicle |
| **BTR** | [Russia-made] Armored Transport Vehicle |
| **BRDM** | [Russia-made] Armored Reconnaissance Vehicle |
| **M2** | Machine Gun, Caliber.50: M2A1 w/Fixed Headspace and Timing |
| **MK19** | Machine Gun, 40mm, MK19 MOD 3 |
| **M153 CROWS** | Common Remotely Operated Weapon System |
| **ZSUs** | [Russia-made] Self-Propelled Anti-Aircraft System |

# REFERENCES AND RELATED PUBLICATIONS

## Joint Issuances

Joint Publications (JPs)

| | |
|---|---|
| 1 Vol 1 | Operations |
| 1 Vol 2 | The Joint Force |
| 3-85 | Joint Electronic Spectrum Operations |
| 3-09.3 | Joint Fire Support |

Miscellaneous

DoD Dictionary of Military and Associated Terms

## Navy Issuances

| | |
|---|---|
| 3340.3G | Wet Well Operations Manual |

Miscellaneous

Naval Post Graduate Thesis – Why the Survivability Onion Should Include Reliability, Availability, and Maintainability, dated Sept 2013

## Marine Corps Issuances

Marine Corps Warfighting Publications (MCWPs)

| | |
|---|---|
| 3-01 | Offensive and Defensive Tactics |
| 3-30 | Marine Air-Ground Task Force Command and Control |

Marine Corps Tactical Publications (MCTPs)

| | |
|---|---|
| 3-01C | Machine Gun and Machine Gun Gunnery |
| 3-10C | Employment of Assault Amphibious Vehicles |
| 3-34A | Combined Arms Mobility |
| 10-10E | MAGTF Nuclear, Biological, and Chemical Defense Operations |
| 13-10E | Ship-to-Shore Movement |

Marine Corps Reference Publications (MCRPs)

| | |
|---|---|
| 2-10.3 | Naval Amphibious Surf Manual |
| 3-10D.1 | Light Armored Vehicle-25 Gunnery and Employment |
| 3-30B.3 | Tac Radios |

Technical Manuals

13133A-10/2 Operator and Operator Maintenance Manual for Amphibious Combat Vehicle, Personnel (ACV-P)

Miscellaneous

Marine Corps Supplement to the DoD Dictionary of Military and Associated Terms

## Army Issuances

Army Techniques Publication (ATPs)

3-21.11 Stryker Brigade Combat Team Infantry Rifle Company

3-21.71 Mechanized Infantry Platoon and Squad

06-02.53 Techniques for Tactical Radio Operations

Field Manual (FM)

3-0 Operations

3-98 Reconnaissance and Security Operations

Technical Manual

3-34.48-2 Theater of Operations: Roads, Airfields, and Heliports – Airfield and Heliport Design

Training Circulars (TC)

Miscellaneous

ARMY TASK: 19-SQD-D0403React to Indirect Fire While Mounted

Naval Post Graduate Thesis – Why the Survivability Onion Should Include Reliability, Availability, and Maintainability, dated Sept 2013