MCWP 3-17.3
Final Draft

BREACHING

U.S. Marine Corps

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DEPARTMENT OF THE NAVY
Headquarters United States Marine Corps
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FOREWORD

1. PURPOSE

The purpose of MCWP 3-17.3, Breaching, is to provide commanders at all levels with the fundamentals for conducting breaching operations.

2. SCOPE

Marine Corps Warfighting Publication MCWP 3-17.3, Breaching, is an update of FMFM 13-7, MAGTF Breaching Operations, by the proponent, MCES, Camp Lejeune, NC. This publication is an overview of breaching and the fundamentals a MAGTF or unit commander and his staff can use for planning, organizing, and executing an operation. It provides information on current equipment and capabilities. Also, commanders at all levels assigned a mission to breach an obstacle system will find the necessary information for executing a breaching operation.

3. CERTIFICATION

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

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Distribution

Breaching
Contents

1

Chapter 1

Introduction

1001. CHALLENGE TO MANEUVER

Maneuver warfare is the warfighting philosophy of the Marine Corps. This philosophy seeks to shatter the enemy's cohesion through a series of rapid, violent, and unexpected actions. Speed, surprise, and the selective use of firepower are key elements. Maneuver warfare depends on freedom of movement and seeks to focus efforts on enemy weaknesses and avoid enemy strengths whenever possible.

Mobility is inherent to maneuver warfare. Typically, enemy forces will use obstacles to deny access along selected routes or terrain, hold or force friendly forces to mass within range of enemy weapons systems, or as an economy of force measure in order to free forces for employment elsewhere. The enemy will attempt to use firepower, terrain, vegetation, and manmade obstacles to deny our freedom to maneuver. Because obstacles are relatively inexpensive to construct, quick to emplace, and very effective in delaying, disrupting, and channelizing forward movement, Marine Corps forces can expect to encounter their employment more in the future.

Obstacle breaching allows a force to have continued freedom of movement and restores the capability to wage maneuver warfare. Marine Corps forces will first attempt to bypass enemy emplaced obstacles and collapse the enemy by attacking critical vulnerabilities in his rear. However, bypass may not always be an option. Obstacles that limit maneuver, whether at sea or ashore, must be overcome. In such cases, breaching operations enable further maneuver.

Overcoming Obstacles

An obstacle is any obstruction designed or employed to disrupt, fix, turn, or block the movement of an opposing force, and to impose additional losses in personnel, time, and equipment on the opposition. Obstacles can exist naturally, be manmade, or be a combination of both. Obstacles can include abatis, antitank ditches, blown bridges, built-up areas, rubble from a destroyed building, minefields, rivers, road craters, terrain, and wire. Manmade obstacles can be either tactical or protective. Tactical obstacles limit the attacker's ability to maneuver, particularly mechanized forces, and may or may not be within small arms range. The effectiveness of an obstacle is enhanced considerably when covered by observation and fire. Friendly forces may be exposed to direct or indirect fire as they bypass or breach obstacles. Tactical obstacles are integrated into the defense's scheme of maneuver and fire support plan. Protective obstacles provide close-in protection and are usually placed just outside of hand grenade range. Mines will typically be employed with other manmade obstacles, such as wire and tank ditches, to create complex obstacles. Complex obstacles, those functionally related obstructions composed of multiple parts which together create a mobility dilemma, are often used to reinforce a natural obstacle feature such as a river, dry gap, swamp, or surf zone.

Obstacle breaching is the employment of any means available to break through or secure a passage through an obstacle. Understanding breaching theory is the first step to understanding breaching tactics. All the principles of war and the six warfighting functions apply (see Appendix G). Breaching is conducted by rapidly applying concentrated force at a point, or points, to penetrate the obstacle and rupture the defense. Breaching is a combined-arms effort most often conducted during offensive operations. A breaching operation is not an end in itself, but conducted to support the commander's overall scheme of maneuver. Though the breaching operation enables further tactical action, the force conducting the breach may be designated the main effort until the breach is completed.

The commander's intent must be clearly understood when planning breaching operations, and the main effort must be clearly designated and supported by other units. The commander should plan to shift personnel and equipment consistent with the main effort. The shift of breaching assets is particularly critical when successive breaching operations are anticipated. The commander should also plan for redundancy of breaching assets to allow for losses of personnel and equipment.

Obstacle Clearing

Obstacle clearing is designed to clear or neutralize all mines and obstacles from a route or area. Clearing operations are generally not conducted under fire and typically are carried out by engineers in the combat service support element (CSSE) and explosive ordnance disposal (EOD) personnel.

1002. BREACHING FUNDAMENTALS

The breaching fundamentals are suppress, obscure, secure, reduce, and reconstitute (SOSRR). These fundamentals are the same for all breaches but may vary in degree based on the situation.

Suppress

Suppression is focusing all available fire on enemy personnel, weapons, or equipment that prevents the enemy from prohibitively interfering with friendly forces during breaching operations. It includes the full range of lethal and non-lethal fires from direct and indirect fire weapons, aviation, and electronic warfare. Suppression helps to isolate the breaching site and fix the enemy in position thus providing protection to forces reducing and maneuvering through the obstacles.

Suppression is primarily the responsibility of the Support Force discussed below. However, the Breach Force and the Assault Force also have roles in suppression and will be discussed herein.

Obscure

The most effective obstacles are those covered by fire and observation and must be obscured when breaching. To obscure is to hide or make something not clearly seen or easily distinguishable. While the primary obscuration means is smoke, electronic warfare is also a way

to obscure breaching activities by providing protection from direction finding and jamming. Obstacle reduction efforts should be hidden from enemy observation as much as possible. Consideration is always given to selecting a breaching site where the terrain provides natural concealment from enemy observation.

Obscuring smoke placed on the breaching area and screening smoke placed between the breaching area and the enemy conceals friendly activities, intentions, and obstacle reduction activities. Smoke should be employed across a wide front in order to deceive the enemy as to the actual breach site(s). The use of smoke must be carefully planned to degrade enemy observation and fire without significantly degrading friendly fire and control. This can be particularly challenging in an urban environment.

Secure

The breaching site is secured to prevent the enemy from interfering with the obstacle reduction and exploitation of the Breach Force. A friendly force must control the breaching site, to include enemy listening/observation posts, before it can reduce the obstacle. This is accomplished by suppressive fire and/or physical occupation. Generally, tactical obstacles are secured by fires, protective obstacles are secured by force.

The Support Force is responsible for securing the near-side of the obstacle. The Breach Force must also contain sufficient assets to provide local security against those forces the Support Force cannot sufficiently engage due to terrain or other cover. The Assault Force will attack to clear the far-side of the obstacle in order provide unimpeded progress/passage forward of follow on forces. These roles will be discussed further in this chapter.

Reduce

Reduction is the creation of lanes through a minefield or obstacle to allow passage of the attacking ground force. The number and width of lanes created varies with the situation and type of breaching operation. Lanes must be wide enough to allow a force to rapidly pass through the obstacle and continue the attack. The unit reducing the obstacle marks and reports obstacle and lane locations and conditions to higher headquarters. Lanes are normally handed over to follow-on forces who will further reduce or clear the obstacle when possible and not when under enemy fire. Reduction cannot be accomplished until the breach site(s) have been suppressed, obscured, and secured. Reduction is the responsibility of the Breach Force.

Reconstitution

Upon completion of the breach, the Breaching Task Force will normally have seriously depleted essential Class V and possibly personnel and breaching equipment. The BTF commander is normally faced with two options, reconstitute forces for continued breaching operations or release the elements back to their respective commands. Either of these options presents unique planning considerations. Careful planning for this phase of the breaching operation will minimize the difficulties inherent in their execution. Without reconstitution, the MAGTF normally is not capable of continuing its breaching mission.

If the Breaching Task Force commander expects to continue the momentum of the attack after the assault force secures the far side of the obstacles or obstacle belt, he must quickly reconstitute his forces to continue breaching operations. The MAGTF and Breaching Task Force Commanders must be prepared for multiple complex obstacle belts. The procedures for additional belts are the same as for one obstacle belt. Resupply of critical materiel must be conducted and assets redistributed for future breaching operations. New Support, Breach, and Assault Forces may need to be designated for subsequent obstacles. Breached obstacles are reported to higher headquarters, marked, and normally handed over to follow-on units. Higher headquarters is responsible for disseminating obstacle breach locations throughout the command and to follow-on units.

Resupply of critical class V materials, such as demolitions, additional mine-clearing line charges (MICLICs), smoke, artillery, mortar, and small arms ammunition must be planned. Equipment such as mine detectors, mine rollers and plows need to be readily available to continue forward momentum. The Breaching Task Force Commander, with advice from the Breach Force Commander, anticipates when these assets might be used and develops a plan for rapidly moving them forward in order to resupply units. Commanders must also consider that much of the current breaching equipment (track width mine plows, Mk 155s, ACEs) available to Marine Corps forces will slow the rate of advance of a mechanized unit because their speed of travel is much slower than mechanized forces.

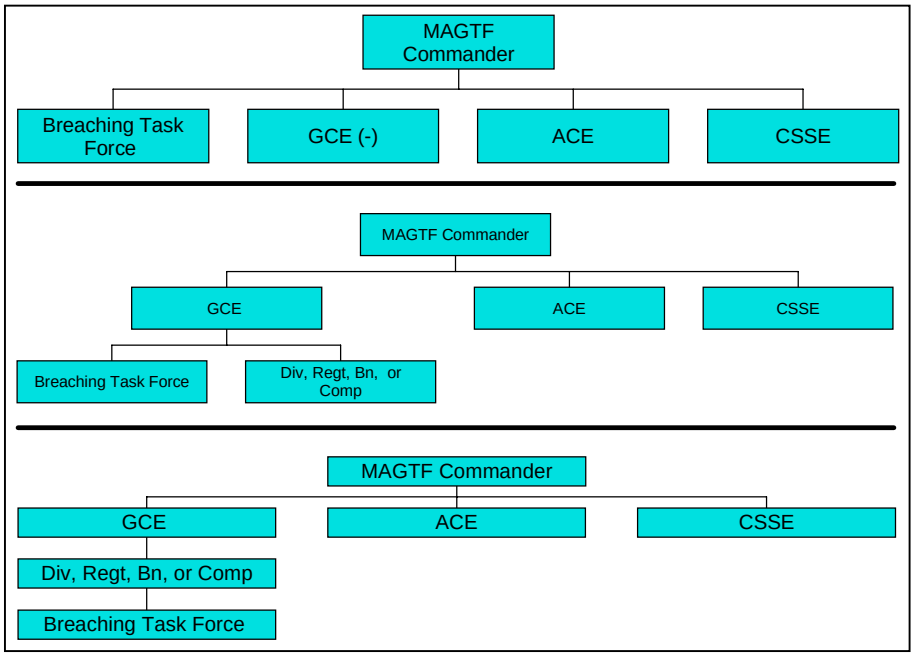
1003. ORGANIZATION FOR BREACHING

The complexity of a breaching operation and the need to breach obstacles to maintain maneuver normally requires a focused effort of personnel and equipment to succeed. The delay to organize a deliberate breach vice a hasty breach will normally be compensated for by a quicker and more effective breach operation. If a hasty breach is used there should still be a focus of effort by elements of the maneuver unit on the fundamentals of breaching. A hasty breach is normally best suited to single belt, lightly or undefended obstacles. Multiple belt or complex obstacles defended by observation and fire should be breached in a deliberate manner. The use of a Breaching Task Force, organized deliberately or hastily, is the normal process to accomplish a breach, regardless of the size of the unit conducting the breach.

Exercising command and control of a breaching operation is just one of the many responsibilities of the MAGTF Commander. For breaching operations ashore, this is best accomplished by creating a Breaching Task Force. Refer to Figure 1-01. The Breaching Task Force can fall under the direct command and control of the MAGTF Commander; this may be desirable for smaller MAGTFs. The Breaching Task Force may fall under the command and control of the Ground Combat Element (GCE) commander as a separate organization created for the specific purpose of breaching. A third option is for the Breaching Task Force to be placed under the command and control of one of the subordinate units of the GCE: division, regiment, battalion, or company. Whichever option is used, the decision should be based upon effective spans of control, METT-T, and maintaining the speed and tempo of operations. The MAGTF Commander may need to

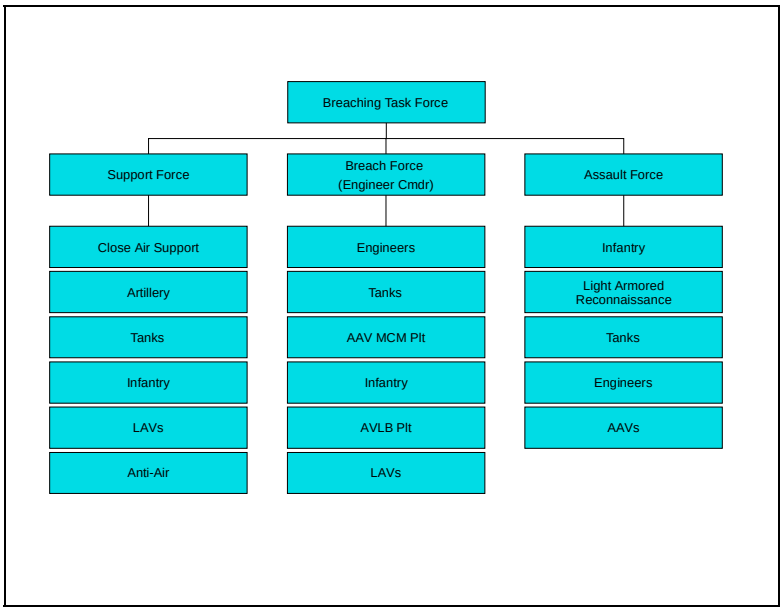
create more than one Breaching Task Force. This determination will be made based on METT-T and the number and location of breach lanes required to accomplish the MAGTF mission.

Figure 1-01



The Breaching Task Force Commander task-organizes his forces into Support, Breach, and Assault Forces, notionally depicted in figure 1-02. Figure 1-03 depicts the functionality and responsibilities of the forces of the Breaching Task Force.

Figure 1-02



Breaching Organization	Function	Responsibilities
support force	Suppress Obscure Secure	Suppress enemy direct fire covering an obstacle. Control close air support and indirect fire to suppress the enemy. Control obscuring smoke. Protect the breach force on the near side of the obstacle.
breach force	Suppress Secure Reduce	Local suppression, as necessary Provide local security of the breach force. Create and initially mark lanes through the obstacle.
assault force	Suppress Secure	Eliminate the enemy's ability to place direct fire on created lanes.
Breaching Task Force	Reconstitute	Replace personnel, supplies, and equipment for additional breaching or release them to reconstitute with parent commands

Figure 1-03

Support Force

The mission of the support force is to suppress the enemy's ability to interfere with the actions of the breach force. All available assets, including artillery, air, electronic warfare, naval surface fire support (NSFS), and direct fire weapon systems should be used to suppress the enemy. The support force also controls and coordinates smoke for obscuration.

The Breaching Task Force commander must have sufficient supporting arms attached or in direct support and priority of their fires given initially to the support force.

The support force may have reserve breaching and assault assets (line charges, track width mine plows, AVLBs, and armored combat earthmovers) that are intended for use only in the event the breach and assault forces become ineffective and to expedite reconstitution where multiple obstacles must be breached in quick succession.

Breach Force

The mission of the breach force is to create and mark lanes that enable the main attack force to pass through an obstacle to continue the attack. The breach force deploys and begins reducing the obstacle as soon as enemy fire has been suppressed to the point where it does not prevent the breach force from creating lanes. It is a combined-arms force which may include engineers, infantry, tanks, assault amphibious vehicles (AAVs), light armored vehicles (LAVs), and armored vehicle launched bridges (AVLBs). The breach force must be capable of overcoming an enemy counterattack.

Assets are allocated based on the number of lanes required. The breach force must be capable of creating a minimum of two lanes for the main attack force. Two breached lanes per task-organized battalion is highly recommended. For an amphibious breach, a minimum of two lanes per colored beach or littoral penetration site (LPS) is recommended. The rationale for the minimum number of lanes is to rapidly mass combat power on the far side of the breach. Later multiple lanes will be required for two way traffic through the breach. The Breaching Task Force commander should plan for a 50% redundancy in breaching equipment due to expected losses during opposed breaching operations. A 75% or 100% redundancy is ideal. Lanes must be far

enough apart to reduce the effects of enemy fire yet close enough to permit the mutual support and shifting of friendly forces.

The breach force is organized into an engineer reconnaissance team, security team, obstacle reduction team, and a lane marking team. The engineer reconnaissance team verifies intelligence about the obstacles, locates the forward edge of obstacle zones so the rest of the breach force does not inadvertently enter the obstacle, and marks the standoff distance for explosive reduction. The security team provides local security when the breach force cannot be covered by the support force. Infantry, LAVs, tanks, and AAVs should provide security while the engineers are reducing obstacles. The obstacle reduction team physically creates the lanes and proofs the lanes for mines, if required. The lane marking team initially marks the newly created lanes for passage of the assault force, the main attack force, and follow-on forces. The lane marking team is also ready to assume the mission of obstacle reduction if the obstacle reduction team is rendered ineffective.

Once the breach force has reduced the obstacle and the assault force has passed through the lanes, guides will be employed to conduct their handover to follow-on units. At a minimum, lanes must be marked and their locations and conditions reported to higher headquarters and follow-on units.

Breaching actions are the preplanned techniques that a unit will execute on contact with obstacles. They are characterized by reconnaissance, detailed planning, extensive preparation, and explicit rehearsals. Breaching is an enabling tactical action in that it is conducted to support maneuver. Forces encountering obstacles either attempt to bypass or reduce them. A bypass is maneuvering around an obstacle, position, or enemy force to maintain the momentum of advance. Bypassing obstacles must be done with caution to avoid channelizing forces or entering enemy engagement areas. Maneuver elements must try to avoid setting patterns when bypassing obstacles. Enemy forces will study our actions and be prepared for Marine Corps forces to bypass. Bypassing obstacles must be done with caution to avoid danger areas and potential enemy killing zones. Previously unreported obstacles and bypassed enemy forces should be reported to higher headquarters.

After lanes are reduced, proofing may be necessary. Proofing is verifying that a breached lane is free of live mines. This can be accomplished by checking the breached lane with a secondary breaching means other than explosives, such as probing, mine detectors, mine plows, or mine rollers. Proofing is done only when the potential risk of live mines remaining in the lane exceeds the risk of loss to enemy fire while a lane is being proofed.

It is important to remember, obstacle reduction is the physical creation of a lane through or over obstacles. Attempting to force or “bull” through an obstacle is not a breaching operation. It is a desperate course of action undertaken only when a commander must extricate his force from an untenable position within an obstacle when no breaching options are available. Normally, engineers and specialized equipment are required to reduce an obstacle. Obstacle reduction is a primary task of combat engineers during offensive operations.

Assault Force

The mission of the assault force is to destroy or dislodge the enemy on the far side of the obstacle, or in between obstacle belts, in order to allow other combat forces to continue the attack. The assault force normally secures the far side by physical occupation. In situations when the obstacles are protective obstacles of enemy units or in close proximity to enemy protective obstacles, the assault force must be prepared to penetrate the enemy's protective obstacles to gain control of the farside of the obstacle.

The assault force must be of sufficient size to eliminate the enemy and should consist of whatever elements of infantry, light armored vehicles, AAVs, tanks, and engineers necessary to occupy the farside of the obstacle field. This assault force is an element of the Breaching Task Force. It is a separate entity from the attack force of the main body (e.g., the GCE or MAGTF) which is responsible for assaulting the MAGTF objective.

In a deliberate breach, the Assault Force maneuvers as a separate force. If the obstacles are defended by only a small force or when conducting a hasty breach, the Assault Force may be combined with the Breach Force, thus simplifying command and control (C^2). To overcome the defender during an assault, the commander must plan for sufficient combat power to be remaining after sustaining possible losses during the breaching mission. Fire control measures must be coordinated so Support Force and Breach Force fires are lifted and shifted as the assault force maneuvers into the enemy position.

1004. BREACHING IN SUPPORT OF DELIBERATE AND HASTY ATTACKS

Breaching is an enabling tactical operation which may be required to support offensive operations. During a deliberate attack, forces such as engineers and tanks, will be task organized before the attack to best support the concept of operations. In a hasty attack, there may not be available time to task organize assets. Additionally, a unit may not have time to plan a breaching operation in detail but may have to rely on the unit's SOP for immediate action. Regardless of the type of attack, the breaching fundamentals apply when breaching in support of offensive operations.

1005. TYPES OF BREACHING OPERATIONS

Amphibious Breach

An amphibious breach is specifically designed to support amphibious assault by overcoming anti-landing defenses. It is characterized by thorough reconnaissance, detailed planning, extensive preparation and rehearsal, and a buildup of combat power. The amphibious breach is centrally planned and executed. An amphibious breach may be necessary if there are no other suitable landing areas.

Hasty Breach

A hasty breach is the rapid creation of a route through a minefield, barrier, or fortification by any expedient method. A hasty breach is used against a weak defender, when the enemy situation is vague or changes rapidly, or against very simple obstacles. Little or no time may be available in which to plan or prepare for this type of breach, particularly during the conduct phase of an attack, and well-rehearsed, pre-planned standard battle drills must be used. To maintain momentum and take advantage of the enemy situation, the hasty breach is normally conducted with the resources that are immediately available.

Deliberate Breach

A deliberate breach is used against a strong defense or complex obstacle system. It is similar to a deliberate attack, requiring detailed knowledge of both the defense and the obstacle systems. With this knowledge, forces conducting the deliberate breach can develop detailed plans, task organize to accomplish the mission, and execute rehearsals. A deliberate breach is further characterized by a buildup of combat power on the near side of obstacles. The term deliberate breach does not apply to the speed or tempo with which the attack is executed. Deliberate breaching operations require significant planning, coordination, and preparation.

Overt and Clandestine Breaching

Breaches can be conducted either overtly or clandestinely. Overt operations are conducted in the open without concealment. Clandestine operations are conducted in secret or under concealment. Thorough reconnaissance and detailed intelligence assist the commander in determining the best location to breach, concealed routes to the obstacle, and the type of breaching equipment and number of personnel required.

Coordination is of the utmost importance. All forces must know what event triggers the shift from clandestine to overt breaching, without this information they may be prematurely exposed to the enemy or to friendly fire. Because surprise is critical, the key to conducting a breach clandestinely may require delaying suppression of the enemy until the last possible moment (depending on the enemy situation). For example, suppression of the enemy may be delayed until:

- The Breach Force is detected by enemy forces.
- The Breach Force is close to the obstacle and must expose itself in order to reduce the obstacle.
- Lanes are open and the assault force attacks.
- The Breach Force completes lane reduction and detonates charges to clear obstacles, signaling direct and indirect suppressive fire to support the Assault Force.

Clandestine breaching also requires withholding the use of obscuring smoke. Weather and darkness are the best concealment for clandestine operations. Security is achieved through stealth which outweighs the need for speed. Silently eliminating enemy outposts provides additional security, but may give away friendly activity. Obstacle reduction must be conducted as silently as possible by using manual techniques vice mechanical equipment.

1006. INTELLIGENCE

Mission success depends largely on the ability of the commander to "see the battlespace." Intelligence is crucial to this success. Intelligence Preparation of the Battlefield (IPB) is the continuous process of integrating enemy doctrine and tactics with the effects of weather and terrain that allows the commander to evaluate enemy capabilities, vulnerabilities, and probable courses of action.

> "I don't know of a single tool, certainly on the intelligence side, that was of more value to me than the IPB process. It just brings a discipline to the planning process that is invaluable..."
>
> LtGen Walter E. Boomer
> March 1991

Mobility is inherent to maneuver. Engineers must be integrally involved in the IPB for amphibious breaching and breaching operations ashore from the beginning of the planning process. The locations and types of obstacles encountered are an excellent indicator of enemy intentions. For example, changes to camouflage could indicate a recently installed minefield or other obstacles. Rapid mining across an enemy front may indicate a shift to a hasty defense. Surface-laid minefields may indicate that the enemy intends to resume the offensive through the minefields. Antipersonnel (AP) and anti-handling devices may suggest that the enemy intends to remain in a defensive position for more than a few hours.

In any operation where enemy obstacles can interfere with friendly maneuver, obstacle intelligence (OBSTINTEL) becomes a priority intelligence requirement (PIR). Engineers need to provide specific PIRs to the MAGTF staff and other staffs as needed (e.g., GCE, ACE, CSSE). Specific information that is of value for breaching operations include:

- Piles of wooden boxes or other debris
- Fresh trenches
- Changes to vegetation or camouflage
- Location, type, size, and orientation of obstacles (natural and manmade)
- Number, depth, and composition of obstacle belts
- Minefield density and depth
- Types of mines (anti-tank and/or anti-personnel)
- Types of mine fuzes (single or double impulse, tilt-rod, or magnetic)
- How the mines are laid (surface or buried)
- Lanes, gaps and possible bypasses in the vicinity of the obstacle
- Anti-tank ditches, berms, or other above ground structures (gas or oil pipelines)
- Presence of tactical or protective wire
- Location and composition of enemy forces with direct fire on the breach site
- Status of Marine Corps forces maintenance of breaching and proofing equipment

Obtaining OBSTINTEL normally requires extensive collection assets. The ACE may be tasked with identifying enemy fortification and obstacle emplacement activity beyond the Forward Edge of the Battle Area (FEBA). The unmanned aerial vehicles (UAVs) are an excellent source of OBSTINTEL. Forward looking infrared radar (FLIR) on the fixed and rotary wing aircraft can detect changes in surface temperature indicating recent minelaying activity**.** Additional intelligence gathering systems are discussed in appendix E. Reconnaissance units task-organized

with engineers should collect information on likely obstacle locations. Combat patrols should identify obstacles and search for bypasses. Specific collection tasks are detailed in a collection plan which identifies named areas of interest (NAIs) that focus reconnaissance in specific areas on gathering information that confirms or denies the estimated enemy situation.

Engineers engaged in reconnaissance for OBSTINTEL should not reduce obstacles during the reconnaissance. Inadvertent detonation, enemy detection of cut wire or marked lanes, and the time required during such reduction may compromise and defeat the purpose of the reconnaissance mission. It may compromise operational security. Units encountering obstacles should immediately report up the chain of command. Rapidly updating previous OBSTINTEL is a continuous requirement. Engineers involved in OBSINTEL are ideal members of the BTF for subsequent breaching operations.

If the enemy has employed mines, it is critical to determine the minefield composition, forward edge, depth, width, types of mines, and, if possible, the type of mine fuzes used. This information is used to determine which reduction techniques offer the best chance for success and minimize risk to the Breach Force. This may require a reconnaissance patrol, task-organized with engineers, to clandistinely examine mines within the minefield. EOD units can provide information concerning the functioning of enemy mines. Engineers assist in conducting threat evaluation. Based on knowledge of the obstacles, enemy tactics and equipment, and the time available to the enemy, the intelligence officer and engineer officer evaluate enemy obstacle employment capabilities. The engineers can provide valuable information for the Modified, Combined Obstacle Overlay (MCOO), the Doctrinal Template, and the Decision Support Template (DST), when these tools are used during the planning process.

1007. BREACH PLANNING

Effective maneuver warfare planning is based on the recognition that war is intrinsically uncertain and unpredictable. Effective planning seeks not to eliminate uncertainty and risk, but to provide a framework that facilitates effective and focused action in the face of uncertainty and risk. Identifying obstacles and planning for bypass or breaching of obstacles can reduce their impact on the scheme of maneuver. Being able to execute the maneuver as planned reduces the ripple affect of changes to the overall operational plan if the maneuver portion of the plan experiences significant changes.

Plans should be kept simple and easy to understand. The more simple the tasks, the more easily we master them. Generally, the fewer tasks, the more simple the plan. Fewer tasks also simplify the problems with command and control. The commander improves the likelihood of success through proper planning and force preparation. The formation of a BTF with its subelements (i.e., support force, assault force, breach force) allows focusing assets on specific tasks and increases the the speed and chances of success.

The Marine Corps Planning Process (MCPP) establishes procedures for analyzing a mission, developing and analyzing courses of action (COA) against the threat, comparing friendly COAs against the commander's criteria and each other, selecting a COA, and preparing an operation

order for execution. The MCPP provides the commander and the staff a means to organize their planning activities and transmit the plan to subordinates and subordinate commands. Through this process, all levels of command can begin their planning effort with a common understanding of METT-T, commander's intent, and commander's guidance. MCRP allows for integrating a BTF into the operational plan.

Coordination

Breaching operations require detailed coordination among support, breach, and assault forces. Failure to coordinate suppression and obscuration with obstacle reduction and assault can result in rapid, devastating losses of friendly forces.

METT-T

Commanders at all levels should carefully plan breaching operations based on mission, enemy, terrain and weather, troops and support available, time available (METT-T) analysis and force requirements. If information indicates a weak enemy and/or weakly defended obstacle, the commander may elect to employ hasty breaching techniques. If information indicates a strong enemy and/or strongly defended obstacle, the commander should develop a detailed plan to employ deliberate breaching operations. If intelligence indicates multiple complex obstacle belts, commanders must provide clear intent to handle those situations.

Command and Control

Effective C^2 is crucial to integrate the breaching operation with other portions of the operation. This is why the MAGTF Commander creates a Breaching Task Force with subordinate Support, Breach, and Assault Forces. C^2 is integrated into the plan through the use of maneuver control measures and the positioning of key leaders to direct the breach. Since effective suppression is critical during breaching, the Breaching Task Force Commander is usually positioned with the support force. This enables him to personally influence the control of fire and facilitate the necessary coordination between breach and assault forces. The Breaching task force Commander must have the means to control suppressive fire during the breach operation. The use of phase lines and time or event-phased operations prevents congestion in the breach site.

The BTF commander, based on the MAGTF's maneuver plan and intelligence, selects sufficient breach sites (at least two-normally two per battalion) to support the plan. The BTF commander is responsible for the breach area surrounding the breach sites and all maneuver, combat support, and combat service support conducted in this area. It is particularly important to establish the far side boundary of the breach area as a command and control measure.

Other Planning Considerations

At the conclusion of a breaching operation the BTF commander faces several operational concerns:

1. The task force will normally have seriously depleted its stocks of expendable materials and require resupply;

2. There will be equipment and personnel losses that will need replacing and possible recovering from the obstacle field;
3. The task force will be scattered: the support force may still be on the near side of the obstacle site - the breaching force and assault force are on the far side of the obstacle site; if multiple lanes are being breached, elements of the breaching force may still be engaged in breaching operations when the breach assault force passes through or when the main body passes through the completed lane(s); the breach assault force may be scattered over several square kilometers, occuppying numerous terrain features, or engaged with the enemy;
4. The limited number of breaching lane(s) will normally be dedicated to the main body (main assault force) and follow-on support forces, for a period of time, to permit the MAGTF to maneuver in support of the MAGTF's main effort. Rallying the BTF elements and resupply may be impeded, preventing timely reconstitution of the force;
5. The BTF must turnover the breaching site to appropriate follow-on forces.

The BTF commander should rally his force on the far side of the obstacle field to avoid trafficing through the breach lanes in a flow counter to the main body's and a subsequent traverse of the BTF back to the far side. Displacement of the support force to the farside should occur prior to the movement of the mainbody force. The MAGTF and BTF commanders must realize that continued breaching operations without resupply will degrade the BTF to the point of being non-effective. The Breaching Task Force commander will monitor the expenditures of materials and equipment in order to rapidly assess follow-on capabilities. If resupply and replacement is necessary to make the Breaching Task Force mission capable, then it is recommended that the support force obtain their new supplies and equipment prior to passing through the breach and escort the resupply assets for the remainder of the BTF to the rally point. Planning or circumstance may dictate passing through the breach prior to resupply if it is more advantageous to the MAGTF mission. Therefore, the BTF commander should plan to have guides on the near side of the breach to escort resupply and replacement assets to the rally point.

The BTF commander should select a rally site on the far side of the obstacle field that allows for adequate security, permits reorganization of the various elements (support force, breaching force, assault force), resupply, and movement to its assigned position with the main body or next breaching site. This rally point should be far enough from the lanes to permit the main body to cross the breach lane and redisperse into appropriate battle formations without concerns for force mixing or creating high density targets of opportunity for the enemy.

The BTF commander should plan on leaving minimum personnel at the breach site for turnover to appropriate follow-on forces. Area clearance, additional obstacle reduction, and long term management of lanes are <u>not</u> the responsibility of the BTF and assuming any of these responsibilities will degrade the BTF’s ability to accomplish its primary mission of insuring mobility of the MAGTF.

Release of Elements to Reconstitute with Other MAGTF Elements.

At the conclusion of a breaching operation it may be the MAGTF commander's intention to disband the BTF. As seen in Figure 1-01, the BTF will normally be composed of numerous units from within the MAGTF. The BTF commander must plan for an efficient transfer of personnel and equipment back to their respective units. Coordination and planning with other unit commanders is essential for this process. The BTF commander and all other commanders should plan to reintergrate their respective elements on the far side of the breach site. This avoids heavy traffic flow against the grain of the main body's movement and the redundant movement of personnel and equipment back through the breach again later. The only elements of a Breaching Task Force that should return to the near side are those that belong to MAGTF forces that will remain on the near side.

Reverse Planning Sequence

Breach planning is driven by the estimate of the enemy situation and begins by identifying enemy and friendly strengths and weaknesses. Appendix A is a sample breach plan adapted from MCRP 3-17B, *Engineer Forms and Reports*.

The MAGTF Commander should begin with the final result desired in mind, first deciding how to attack the objective to accomplish the mission. This decision enables the Breaching Task Force Commander to organize the Support, Breach, and Assault Forces. Breaching operations should take advantage of surprise whenever possible. Sufficient lanes must be created to rapidly project combat power onto the objective, not just to the far side of the obstacle. Reverse planning allows for actions at obstacles support actions on the objectives. The Breaching Task Force Commander designs a scheme of maneuver for the breaching phase of the operation that achieves adequate suppression, obscuration, and security. The sequence below (figure 1-04) should be used to develop a breaching plan:

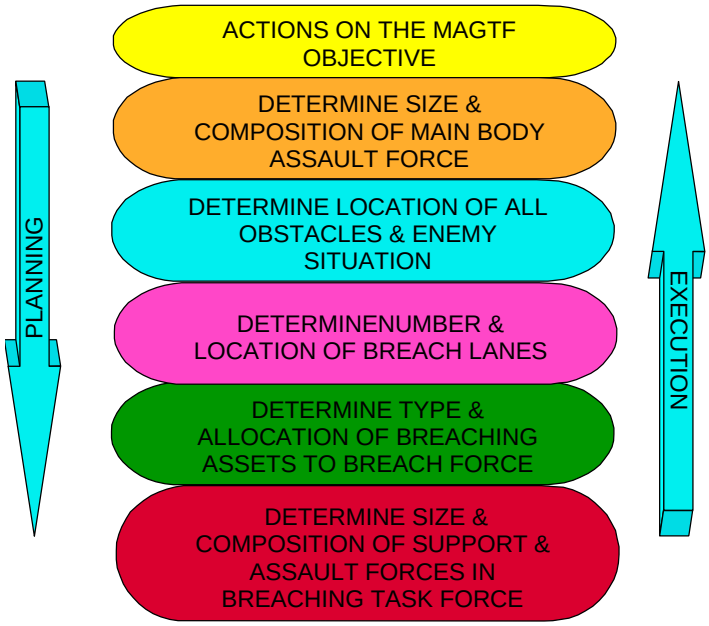


Figure 1-04

Concentration

Combat power should be directed against enemy weakness. If Marine Corps forces cannot find a natural weakness, we create one by isolating a portion of the defending force for attack. The isolated portion is then suppressed to eliminate effective fires on the breach. Smoke, terrain, and suppressive fires are used to assist in isolating the force under attack.

Concentration of assets is required for the Breach Force to open enough lanes through obstacles to permit rapid passage and buildup of friendly forces on the far side. The Breach Force attempts as many simultaneous breaches as are necessary to create at least two successful lanes. The need for massing assets to breach the current obstacle must be balanced against the need for those same assets to breach subsequent obstacles in the case of multiple obstacle belts. A breaching capability must be retained through the final assault of defending positions.

In April 1941, during the German attack on Australian and British forces at Tobruk, Libya, " . . . out of the red sunset a score of Stukas came screaming down to bomb and machine-gun the forward positions. Their ammunition expended, they turned away, to be followed by yet another formation which hurled its bombs on the barbed-wire and the infantry positions . . . Then, as the last Stuka headed for home, its magazines empty, the Germans laid down a deadly barrage of artillery fire on the same positions and, under the cover of dust and growing darkness, the 2nd Machine-Gun Battalion and sappers of the 33rd Panzer Pioneers raced forward to render safe the mines and blast gaps in the wire . . . The men in the forward posts had been so heavily bombed and shelled that they were unable to prevent German penetrations between their widely dispersed posts or to stop them setting up machine-gun nests in their rear." The next day " . . . when the mist cleared, the situation was even worse than had been feared. The Germans had not only established themselves a bridgehead a mile and a half wide, but had overrun seven of the advanced posts . . ."

Anthony Heckstall-Smith, *Tobruk* (New York: W. W. Norton & Company, Inc., 1959) pp. 67–68.

Rehearsal

A well-rehearsed force is vital for successful breaching operations. The complexity of breaching operations makes rehearsals at every level essential to success. A commander must afford subordinates the time to plan how they will execute their assigned missions and to rehearse that plan with their unit. Units should rehearse immediate action breaching drills as well as their support, breach, and assault roles. Rehearsals should focus on the coordination of maneuver among support, breach, and assault forces in order to achieve the SOSRR breaching fundamentals and highlight critical tasks. Appendix F discusses breach training and rehearsal.

The following excerpt demonstrates how breaching fundamentals were successfully implemented in World War II.

STANDARDIZED REHERSALS AND BATTLE DRILLS

Standardized breaching actions or SOPs should be developed and used throughout the MAGTF, particularly in the GCE. A change in the habitual association of combat units and their combat support or combat service support units affects the training proficiency of the MAGTF. To maintain this proficiency, commanders at all levels must conduct rehearsals. There are three levels of rehearsals. Each type of rehearsal reflects an increase in realism. The most effective rehearsals take place on the same type of terrain and obstacles that are expected during an actual mission. However, there is a direct relationship between the amount of breaching rehearsal realism and the amount of time, materials, and manpower required to conduct the rehearsal. Commanders must balance the tradeoffs. The three levels of rehearsals are:

- Talk through
- Walk through
- Run through

Each rehearsal should include a unit's Mission Essential Task List (METL) and the appropriate battle drills are practiced. Examples of obstacle breaching battle drills include:

- Reaction to counterattack
- Transition from hasty breach to deliberate breach
- Deploying the breach force
- Obscuration in a MOUT environment
- Traffic control through breached lanes
- Bypass actions for a blocked breach lane
- Clandestinely breaching obstacles and minefields
- Securing the far side of an obstacle
- Procedures for wounded personnel in minefields
- Non-explosive obstacle reduction
- Employing obstacle bypass triggers
- Breach lane marking
- Transition from clandestine to overt breaching
- Hand over to follow-on forces

♦ Reconsolidation to continue the attack

1008. IMPLICATIONS OF OPERATIONAL MANEUVER FROM THE SEA (OMFTS) AND SHIP TO OBJECTIVE MANEUVER (STOM)

The Operational Concepts of OMFTS and STOM present some unique challenges and will require changes to the tactics, techniques, and procedures we currently use for breaching amphibiously and ashore. Implications to implementing these Concepts include the need for faster equipment both ashore and at sea; developing a hasty amphibious breaching capability; enhanced C^2 procedures and systems that allow commanders to decentralize control while receiving real-time information; balancing the need to penetrate inland a few hundred miles against the ability to resupply materials, equipment, and personnel; and defining the role(s) of helicopter borne forces in an amphibious or ashore breach.

Principles of OMFTS

- Focus on an operational objective.
- Use the sea as maneuver space.
- Generate overwhelming tempo and momentum.
- Pit strength against weakness.
- Emphasize intelligence, deceptions, and flexibility.
- Integrate all organic, joint, and combined assets.

When and where possible OMFTS and STOM have been incorporated into MAGTF Breaching. These Concepts will be fully implemented as technology allows. Emerging technologies and developing command and control systems will radically alter the nature of amphibious operations. Until such time, all levels of the MAGTF must be innovative in using methods, techniques and technology to best support and implement OMFTS and STOM when practical.

OMFTS

Operational Maneuver from the Sea is an Operational Concept with far reaching impact on the Marine Corps and MAGTF Breaching in particular. OMFTS fully supports the Marine Corps long standing philosophy of maneuver warfare; it is the union of maneuver warfare with naval warfare. OMFTS describes rapid maneuver by landing forces from their ships directly to objectives ashore, uninterrupted by topography or hydrography. Naval forces must dispense with previous amphibious methods in which operational phases, pauses and reorganizations imposed delays and inefficiencies upon the momentum of the operation.

Most importantly for MAGTF Breaching, the heart of OMFTS is the maneuver of naval forces at the operational level. OMFTS views the littorals (coastal areas) as a single environment. Uninterrupted rapid movement is required not only from ship to shore, but from ship to objectives which may be miles inlan
d.

We will require a smooth transition from maneuver at sea to maneuver ashore and back. Fundamental changes to command and control are being developed to make this transition seamless. Enhancements to mine reconnaissance, command and control systems, precision navigation and hasty breaching all are critical factors in the transition from sea to land.

STOM

Ship-To-Objective Maneuver is the tactical implementation of OMFTS. STOM is a radical departure from the traditional linear approach to amphibious operations. Historically, ship-to-shore movement required an "operational pause" once the landing forces reached the shore to establish a beachhead. This is counter to the philosophy of maneuver warfare. Utilizing STOM, landing forces will maneuver from over-the-horizon progressing with speed and flexibility of maneuver, achieving tactical surprise that denies the enemy reaction time.

Marines will continue to operate from the assault ships of the U.S. Navy to perform forcible entry missions. The landing force assembly areas will be on ship. Maneuver and the shift from amphibious task force control to landing force control will occur at or before the line of departure (LOD) approximately 25 nautical miles off shore. Commanders of landing force subordinate units will independently navigate across the ocean surface to penetrate the enemy at specific littoral penetration points of their choosing -- based upon the changing tactical situation, up-to-date information, and commander's intent -- just as they would if attacking on land. Any pre-assault preparations not performed clandestinely prior to the amphibious assault will be conducted "in stride."

STOM presents special challenges for mine countermeasures operations. The existing deliberate sequence of mine countermeasures actions will be streamlined to a rapid in-stride capability at sea and on land. Elements of the landing force may be required to conduct mine and obstacle breaching from deep water, through shallow water, very shallow water, the surf zone and on to objectives located well inland. The landing force cannot be constrained by a requirement to attack along traditionally prescribed lanes. Elements of the landing force must possess the freedom to maneuver at will, both at sea and on the land, either avoiding mines and obstacles or conducting hasty breaching operations.

Current methods of marking approaches to the beach must be refined and improved to fully implement STOM. The use of the Breach Lane Navigation System (BLNS) is not practical for use by landing force commanders zigzag maneuvering to the beach. Current use of anchored buoys and strobe lights is a slow process and exposes to the enemy the exact routes Navy/Marine Corps forces will take to the beach. While not totally immune to shifting currents and winds, landing craft and AAVs can use GPS and Enhanced Position Location Reporting System (EPLRS) to navigate successfully to the shore. The lead vehicles clearing the approach lanes to the beach can provide grid coordinates to CATF and CLF. These coordinates would be rapidly distributed to all landing craft, allowing them to maneuver and zigzag through a possible maze of obstacles approaching the beach. These techniques must be refined and rehearsed.

See Appendix E for information on new equipment and systems for breaching and to support OMFTS/STOM operations.

Chapter 2

Amphibious Breach

2001. Purpose

An amphibious breach is specifically designed to overcome anti-landing defenses to conduct an amphibious assault. Units conduct an amphibious breach when no other landing areas are suitable for the landing force (LF). Bypassing an integrated landing defense is preferred over conducting an amphibious breach whenever possible; however, the commander must always consider whether a bypass would produce additional risks.

The amphibious breach is characterized by thorough reconnaissance and IPB, detailed planning, extensive preparation and rehearsal, and a buildup of combat power -- coordination and teamwork are essential. One or more subordinate units are specifically tasked to perform the role of support, breach, and assault forces. The amphibious breach is planned at the naval expeditionary force (NEF) level and usually involves a MAGTF with a GCE force of regimental or division size. Integration of mine countermeasure (MCM) operations into the overall strategy of an amphibious operation is the responsibility of the Commander, Amphibious Task Force (CATF) and the Commander, Landing Force (CLF). CATF has primary responsibility for MCM operations conducted to the high water mark/initial craft landing site (HWM/ICLS), and CLF has primary responsibility for countermine operations from the ICLS inland. The ICLS is defined as on the beach proper. The ICLS is the first place an LCAC can offload cargo and equipment and may extend slightly beyond the HWM.

2002. The Amphibious Breach Environment

The Navy/ Marine Corps concept for over-the-horizon (OTH) operations and STOM emphasizes maneuver, deception, and speed and flexibility, both at sea and ashore. Surprise is extremely important to OTH operations. Breaching obstacles from the surf zone and inland is a very difficult task that requires extensive coordination between the CATF and the CLF. Tidal range, shifting water currents, coral heads, rocks and other natural or manmade obstacles which affect landing craft must be taken into account. Naval mines also pose a significant threat to an ATF. Understanding the environment that an amphibious task force (ATF) faces is the first step in planning for any type of amphibious breach.

Water Depths

To ease C^2 for MCM, zones have been established according to water depth. The zones are—

♦ The deep water (DW) zone is for depths more than 200 feet. Mines likely found here are moored mines either contact or influence activated. Only floating obstacles present a challenge to maneuver here.

♦ The shallow water (SW) zone covers the 40-to 200-foot area. Moored contact mines and bottom or moored single and multiple influence mines will be found here. Obstacles are less likely here.
♦ The very shallow water (VSW) zone is between 10 and 40 feet deep. Mines found in this zone may include bottom or moored contact mines, bottom or moored single influence mines, bottom multiple influence mines, and ground tilt rod mines. Some obstacles may also be found here.
♦ The surf zone (SZ) from the high water mark out to a water depth of 10 feet . The mines that might be found here include bottom contact mines, bottom influence mines, bottom pressure plate mines, ground tilt rod mines, moored contact, moored influence, and anti-invasion mines. Mines mixed with obstacles can complicate the mine clearance problem.

Water depth and bottom conditions are key factors. Water depths that increase rapidly with distance from the beach limit the use and effectiveness of most bottom mines. Significant tidal streams cause mines to roll or become buried and increase the difficulty of sweeping moored mines. Large tidal variations expose mines and other obstacles in potential ICLSs and SZs, making these areas more difficult to mine. Strong underwater currents can shift sand which can both bury or uncover mines and obstacles, and cause “sand bars” several meters from the shore forcing landing craft out of the water sooner than desired. AAV’s generally will have no trouble moving across sand. Mud or swampy conditions may cause mobility challenges for AAV’s.

Naval Mines

The various types and characteristics of mines include the following:

♦ Moored. A buoyant naval mine held below the surface by a mooring attached to a anchor on the bottom.
♦ Bottom. A naval mine which remains on the seabed.
♦ Drifting. A naval mine which is free to drift with the current.
♦ Rising. A naval mine which is released from the bottom by an influence or a timing device to attack a target.

Naval mines can be activated by contact or influence. Mines detonated by physical contact including chemical contact, tilt rod (commonly found in the SZ), trip wire, or pressure plate. Influence mines are actuated by the effect from a target (ship, landing craft, or AAV) on some physical condition in the vicinity of the mine, or on radiation emanating from the mine. This includes acoustic, magnetic, pressure, seismic, and underwater hydrodynamic pressure. High densities of mines on the bottom complicate amphibious breaching operations.

Mine Countermeasures

MCM are all methods for preventing or reducing damage or danger from mines. Proactive MCM prevents the enemy from laying mines. Passive MCM includes all measures taken to minimize the mine threat without attacking the mine itself. Active MCM includes physically clearing mines from an area. This is accomplished by minehunting or minesweeping. Just as in landmine

warfare, an ATF maneuvering through an area suspected of being mined should locate, mark, and neutralize mines.

Minehunting is the employment of sensor and neutralization systems, whether air, surface, or subsurface, to locate and dispose of individual mines. Minehunting is conducted to eliminate mines in a known field when sweeping is not feasible or desirable, or to verify the presence or absence of mines in a given area. A variety of equipment is available for minehunting (see Appendix B).

Minesweeping is the clearing of mines using either mechanical, explosive, or influence sweep equipment. Mechanical sweeping removes, disturbs, or otherwise neutralizes the mine; explosive sweeping causes sympathetic detonations in, damages, or displaces the mine; and influence sweeping produces either the acoustic and/or magnetic influence required to detonate the mine. Minesweeping can be conducted by helicopter and surface ships (see Appendix B).

2003. Applying Breaching Fundamentals

The support, breach, and assault forces for an amphibious breaching operation are given specific objectives and detailed control measures for the attack against the obstacle system.

Suppress

Suppression must be effective against enemy fire since the breach force may be exposed for a lengthy period of time. Until a force is established ashore, artillery support will not be available. OAS and NSFS support the breach by suppressing enemy positions capable of interfering with the breach or assault force. As soon as possible, friendly artillery is established ashore to help suppress the enemy.

Suppression may begin with electronic warfare and air attacks against enemy command and control centers, radars, or other target acquisition assets. Chokepoints for possible enemy counterattacks should be plotted before the operation during detailed fire support and obstacle planning. The support force should maneuver into the best overwatch position to provide suppression for the breach force. This may require ships to move close inland to provide direct suppressive fire on the enemy.

A helicopter borne assault force may be utilized to land in areas beyond the obstacle in order to engage enemy forces. If the helicopter borne assault force successfully eliminates the position, it also eliminates direct fires on the breaching element. If the helicopter borne assault does not succeed in eliminating the position, it still fixes the enemy and reduces the enemy's ability to fire on the breaching element.

Obscure

The availability of smoke for amphibious breach forces is limited. Both OAS and NSFS can provide WP to mask movement. The use of WP will depend upon the need for other types of fire support. Until artillery and mortars are established ashore, the use of smoke may be limited.

Natural limited-visibility conditions such as darkness, fog, or inclement weather should be exploited when possible.

Secure

OAS and NSFS is required to isolate and secure the breaching site while lanes are being reduced. A helicopter borne assault force may be able to bypass beach obstacles, engage enemy forces, and establish blocking positions. However, a helicopter borne force will not have sufficient assets to engage in a prolonged enemy counterattack.

Reduce

In order to diminish the enemy's capability to deliver concentrated fire on one site, several lanes should be reduced simultaneously. A minimum of two breached lanes per colored beach or littoral penetration site (LPS's) is recommended. Definitive numbers of breached lanes are determined by CATF and CLF when analyzing the threat, available equipment, and the mission. Lanes must be wide enough to allow for ingress and egress of landing craft and permit landing craft to land ground breaching assets. The greater the number of breached lanes, the sooner forces can land. It is essential that lanes be quickly marked and widened to allow a rapid buildup of combat power ashore.

Both the Amphibious and Ashore Breach Forces are massed for reduction efforts. A variety of reduction techniques should be used to guarantee success and continue forward momentum. Within the Amphibious Breach Force there may be Navy EOD, MCM detachments, minesweepers, and NSW teams. The Ashore Breach Force should have multiple breaching assets such as AAV mounted MK 154s, tanks with mine plows, ACEs, hand-held mine detectors, and explosives. A likely amphibious breach scenario would include surface minesweepers, airborne minesweepers, landing craft air cushions (LCACs) equipped with SABRE/DET, and MK 154 mine clearance systems are used in conjunction with each other in order to create a breached lane from the shallow water zone through the initial craft landing site (ICLS). Explosively breached lanes should be proofed when the risk of live mines exceeds the risk of loss due to enemy fire.

Reconstitute

Reconstitution of an Amphibious Breach Force is slightly more complicated than reconstitution of forces ashore. Materials, equipment and personnel must come from amphibious shipping miles off the coast. This requires the use of limited helicopters or landing craft. The need to reconstitute must be weighed by the CATF and CLF. Careful planning for this phase of the breaching operation will minimize the difficulties inherent in their execution. Without reconstitution, the ATF and/or MAGTF normally is not capable of continuing its breaching mission.

2004. Amphibious Assault Sequence

The general sequence for conducting any amphibious assault is planning, embarkation, rehearsal, movement, and assault to accomplish the mission. Consideration for amphibious breaching should be given in each stage of the sequence.

2005. Planning and Task Organization

Planning. Special planning relationships are observed during the planning phase. These planning relationships are designed to permit both naval and LF considerations are adequately factored into decisions made concerning the conduct of the amphibious operation. CATF is responsible for the preparation of the overall plan for the amphibious operation. The CATF coordinates planning. However, the CATF and CLF are coequal in planning matters and decisions. All decisions must be reached on a basis of common understanding of the mission, objectives, and procedures and on a free exchange of information. Any differences between commanders that cannot be resolved are referred to their common superior in the operational chain of command.

Planning should begin with an estimate of the situation. Developing the collection plan is a joint effort between the N-2 and G-2, with reconnaissance efforts concentrating on confirming enemy locations and OBSTINTEL. The N-2 should concentrate on obstacles from the sea to the ICLS while the G-2 concentrates on obstacles from the ICLS inland. COAs are developed using estimates of the enemy situation and capabilities. A scheme of maneuver for each COA is developed and briefed to both the CATF and the CLF.

The breach force will consist of both an Amphibious Breach Force and an Ashore Breach Force. The Amphibious and Ashore Breach Forces should complement each other to provide for continuous forward momentum of the amphibious forces from the shallow water through the surf zone and inland.

After a COA is selected, assets are allocated to the Breach, Assault, and Support Forces to enable them to accomplish their assigned tasks. Fire control must be planned in detail using simple and well-understood control measures. Specific breaching tasks must be assigned to both the naval and ashore breach forces. Plans should include details for the staging and movement of follow-on forces and equipment. Task organization should be adjusted as more details of the defense and obstacle system are uncovered.

The breaching tenet of mass drives the task organization for the amphibious breach. The Breach Force should have the bulk of breaching assets and be tailored to counter the specific types of obstacles determined through IPB. Assault forces can be massed into helicopter borne and/or surface assault forces. CAS and NSFS should be massed in the support force to provide necessary suppression. The scheme of maneuver must be coordinated with the Support, Breach, and Assault Forces.

Prepositioned supplies located on floating dumps or prestaged aboard ship are used for resupply of the LF early in the ship-to-shore movement. These supplies are available on-call for immediate delivery to units ashore via landing craft or helicopter transport. These supplies should be tailored to meet the demands required of an amphibious breach.

Early, detailed requirements should be provided by the CATF to the MCM Commander (discussed later in this chapter) to facilitate planning. MCM considerations include the size of the amphibious objective area (AOA) in comparison to the available MCM assets, slow MCM ship transit times to the AOA, the rate of MCM operations required to meet established deadlines, and requirements to protect MCM operations against hostile threats. Enemy observation of friendly MCM operations may compromise tactical surprise. In addition to conventional MCM forces, Marine mammal systems (MMS) may be used to locate and mark buried or partially buried mines in the SW and VSW zones. NSW forces have the mission to locate, destroy, and/or neutralize enemy barriers, obstacles, or minefields placed in the shallow water.

Task Organization. The LF is organized to quickly reduce obstacles to speed the movement of the amphibious assault force towards the ATF objective. The LF is organized for obstacle reduction much like it is for breaching operations ashore as depicted in figure 2-01.

♦ **Support Force**. The Support Force is responsible for eliminating the enemy's ability to interfere with breaching operations. This involves NSFS, CAS, OAS, and ECM.

♦**Breach Force**. The Breach Force actually creates and marks the lanes ashore to allow assaulting forces to maneuver to the ATF objective.

♦**Assault Force**. The Assault Force is to destroy or dislodge the enemy on the far side of the obstacle, or in between obstacle belts, in order to allow combat forces to continue the attack. Fire support coordination is critical since the Support and Breach Forces are firing on the enemy while the Assault Force is maneuvering to destroy the enemy. The Assault Force must be of sufficient size to eliminate the enemy.

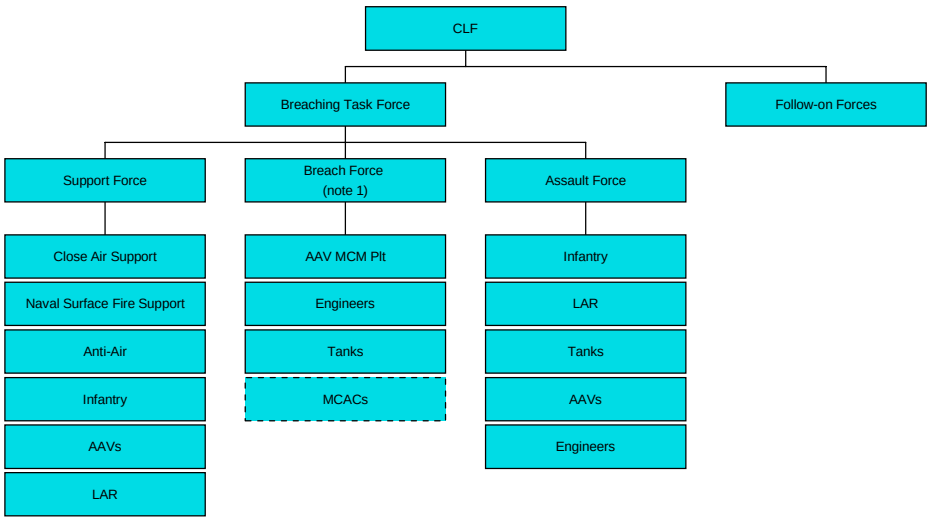


Figure 2-01

2006. Command and Control

The CATF is overall responsible for command and control of all amphibious operations. When an amphibious assault requires breaching operations, he coordinates the development of the breaching plan with CLF and the MCM commander. Both the Amphibious Breach Force and the Ashore Breach Force should be controlled by a single Amphibious Breach Force Commander in order to adhere to the principle of unity of command. CATF organizes the forces as detailed above. The CATF has four commanders (i.e., MCM commander, PCO, CLF, and LFSP commander) and a Breach Force Advisor to coordinate the ATF breaching effort.

MCM Commander. The MCM Commander has the majority of MCM assets under his control. The MCM Commander is responsible for mine clearance from the sea through the VSW. MCM Commander coordinates the overall MCM effort with other ATF forces through the CATF. The MCM Commander will brief the CATF on possible courses of action to prevent, limit, or eliminate the impact of enemy mining on the mission objective. MCM forces include:

Airborne Mine Countermeasures (AMCM), aircraft which conduct mine clearance from deep water into the VSW as depicted in Appendix B.

Surface Mine Countermeasures (SMCM), specially designed surface ships which conduct mine clearance in deep and shallow water as depicted in Appendix B.

Underwater Mine Countermeasures (UMCM), include Navy EOD and other joint or combined underwater demolition forces responsible for mine identification, location, and neutralization in deep water, SW, and VSW. NSW and Marine Recon can augment UMCM forces for limited mine locating and identification in the VSW to the HWM.

Primary Control Officer (PCO). The PCO controls all landing craft and is responsible for movement of all landing craft to the beach. The PCO is also dual hatted as the Amphibious Breach Force Commander (ABFC). The PCO/ABFC conducts breaching from the SZ to the ICLS with assigned appropriate assets to accomplish breaching. The PCO/ABFC will be assigned a Breach Force Advisor (BFA) as detailed below.

Because of short-term deficiencies, CLF *may* have to provide personnel to assist the ABFC in reducing obstacles from the SZ to the ICLS. Combat Service Support (CSS) Obstacle Clearing Detachments (OCDs) may temporarily work for the ABFC until the Landing Force Shore Party Commander arrives ashore. If such situation arise, these relationships will be clearly established by CATF and CLF in the operation order based on mission, threat, and MCM equipment available. Near-term production of the Shallow Water Assault Breaching System/ Distributed Explosive Technology (SABRE/DET) will give the ABFC the capability to breach mines all the way to the ICLS.

CLF. The CLF task organizes the LF to begin breaching at the high water mark/ICLS and continue the assault towards the ATF objectives. CLF temporarily may have to provide personnel to assist MCM forces in clearing efforts in the SZ and ICLS as described above.

Landing Forces Shore Party Commander (LFSP). The LFSP Commander is subordinate to the CLF and assumes responsibility for beach clearance operations upon arrival on the beach. The LFSP Commander coordinates beach and ICLS mine clearance during rapid follow-on operations. The LFSP expands lanes already created, creates additional lanes to increase the throughput of the LF supplies and equipment, and expands the craft landing zones (CLZs) for LCAC operations. The LFSP is augmented by Navy and Marine Corps EOD, Naval Beachmaster Unit (BMU), and others as required. CLF, working through the CSSE commander, and LFSP must carefully plan, equip, and task organize to conduct obstacle clearing if CLZs are at great distances beyond the HWM. The LFSP continues beach clearance operations until relieved by the CSSE.

Breach Force Advisor. The Breach Force Advisor is provided by the CLF, typically the CSS engineer or GCE engineer, to be collocated with the PCO/ABFC. The Breach Force Advisor advises the ABFC and CATF on all breaching matters, assists in the preparation and coordination of the breaching plan to support the ATF mission, and organizes close coordination with the LF for handover of the breaching and proofing efforts from the Navy to the Marines.

2007. Supporting Operations

Supporting operations are those operations conducted by forces other than those assigned to the ATF. They are ordered by higher authority at the request of the CATF, and normally are conducted outside the area for which the CATF is responsible at the time of their execution. Supporting operations conducted in the AOA will be coordinated with the CATF. Supporting operations include—

- Military deception.
- Isolation of the landing area by the conduct of interdiction.
- Operations designed to assist in gaining or maintaining air, ground, or naval superiority in the landing area.
- Operations to gather information, including hydrographic surveys and clandestine reconnaissance.
- Special operations designed to disrupt, delay, or confuse the enemy.
- MCM conducted in the vicinity of the intended landing area(s) before the establishment of the AOA.

An advance force is a temporary organization within an ATF that is usually dissolved when the main body of the ATF arrives in the AOA. An advance force may be tasked with conducting the above supporting operations. The extent of enemy defenses, obstacles, and the need for surprise must all be taken into account when deciding to employ an advance force.

Special Operations Forces may conduct raids to cripple or destroy opposition force mine storage sites and mine stocks. NSW forces conduct beach reconnaissance in advance of an amphibious landing to determine whether a mine threat is present. When mines are encountered, the NSW force is responsible for mine clearance in the VSW and SZ. NSW effectively conducted military

deception for 8 hours using demolition to simulate pre-assault operations, naval gunfire, and explosive obstacle removal on a beach at the start of Operation DESERT STORM.

2008. Marking the Amphibious Breach Lanes

Marking amphibious breach lanes is not as simple as marking breach lanes ashore. Movement from ship-to-shore is affected by winds, sea swells, tides, shifting currents, bottom conditions, and (however remotely) sea ice. These factors do not always allow amphibious forces to move toward the beach in a straight line, however, straight lanes are the goal. STOM also allows commanders of landing force subordinate units to independently navigate across the ocean surface to littoral penetration points of their choosing just as they would if attacking on land. Therefore, reliance upon amphibious breach lane marking systems which necessitate straight line movement on water is impractical. While not totally immune to shifting currents and winds, landing craft and AAVs can use GPS, EPLRS, or other emerging technology to navigate successfully to the shore. Landing forces can maneuver through a possible maze of obstacles following grid coordinates to the beach. These techniques must be refined and rehearsed in order to more fully implement STOM. Physical marking measures include floating buoys or strobe lights tethered to the sea bottom employed by SMCM or LCACs, and the Breach Lane Navigation System (BLNS) employed by NSW or BMU.

2009. Embarkation

Ashore breaching assets must be combat loaded so that they can be off loaded in the first waves of an assault. Assets may be rearranged based on lessons learned from the rehearsal or changes in intelligence. Once forces are underway however, it can be very difficult to rearrange assets.

2010. Rehearsal

Rehearsals are designed to test the adequacy of plans, the combat readiness of the force, and timing and coordination of detailed operations. Communications must be tested and personnel at all levels must be familiar with the plan. The rehearsal site should be similar to the actual area (sea and land) and obstacle(s) to be breached. A force should rehearse under the same conditions expected during the actual engagement, including battlefield obscuration, darkness, and inclement weather. Several contingency plans should also be rehearsed, including possible enemy counterattacks. If intelligence updates become available after the last possible rehearsal, this data must be passed immediately to the affected force elements, especially the Breach Force.

Realistic rehearsals should integrate MCM operations working together in same water space with the amphibious forces. Live demolition for all MCM players (including NSW, Navy EOD, Marine Recon, and combat engineers) instills appreciation of the gravity of the mine threat and demonstrates the importance of MCM tactics and operations. Realistic rehearsals will refine techniques and procedures and enable the CATF and the CLF to integrate all the tools available to the ATF into a power projection force capable of overcoming integrated antilanding defenses.

2011. Movement

The ATF should move to the AOA organized for the amphibious breach. If the ATF or an advance force encounter water obstacles en route, mine countermeasures are used. This may alter the route to the AOA.

2012. Assault

OAS and NSFS are used to suppress the enemy and cover deployment of the breach and assault forces. The Support Force executes planned targets on enemy positions. WP is adjusted to obscure the breaching site. The Breach Force begin maneuver once suppression and smoke are effective. CATF and CLF will resolve reconfiguration of LCAC tactical loads for ship-to-shore or mine clearance missions. The number of LCACs converted for breaching/clearance use is determined by CATF based on CLF and MCM commander's recommendations. Timing is critical, since a high volume of suppressing fire and obscuration can only be sustained for a short duration.

As we proceed with full implementation of STOM, CLF and subordinate landing craft commanders will have the flexibility to independently maneuver from the ships to the shore and beyond. This creates special challenges for marking and breaching operations. CATF and CLF must be in close communications and have precise coordination for the safety and success of the LF.

If a helicopterborne assault force is used in conjunction with a surface borne assault force, the helicopterborne force must be reinforced as soon as possible. CATF and CLF must know the progress of the breach in order to decisively commit the balance of the force through the reduced lanes and build up combat power ashore. CLF informs CATF of LF requirements for units, materials, and supplies during the latter stages of the assault and specifies when they will be required.

The CLF has task-organized elements in the assault waves to conduct breaches through the beach zones and ICLSs, as required. These task-organized assault forces enable rapid securing of ICLSs, their approaches, and routes out of the ICLSs for the assault elements. CLF may have to provide AAVs with Mk 154s to assist Navy MCM forces in clearing seaward approaches (SZ and beach) to ICLSs, although development of SABRE/DET may eliminate this need. Once ashore, CLF elements conduct counter obstacle operations.

The MCM Commander has tactical control of all forces conducting MCM operations seaward of the SZ during the amphibious assault. He provides coordination of effort to establish SZ breaching, ingress, and egress route alignment. He maintains flexible MCM forces and shifts assets and breach points as necessary to exploit the situation and/or change in the plan of attack. The MCM Commander must provide continuous mine clearance advisories to the CATF to minimize loss to mines.

The SZ is a transition area from sea to ashore breaching where the Amphibious Breach Force Commander uses all means to reduce obstacles. Depending on the equipment available, size of the SZ, hydrography, threat, the transition of control for continued breaching will be operation order specific, as determined by CATF and CLF. When SABRE/DET are fully operational on

LCACs, the Navy will be fully capable of conducting clearing and breaching operations through to the ICLS.

The LFSP commander immediately assumes responsibility for rapid clearance of mines/obstacles upon arrival at the beach using LF engineers, Navy and Marine Corps EOD, and other supporting elements, as required. The LFSP Commander coordinates beach and ICLS mine clearance during rapid follow-on clearance, mine and obstacle clearance from the area the assault force has already breached. The LFSP conducts obstacle reduction operations to expand initial breaches and clear additional lanes required to increase throughput of equipment and supplies to support the MAGTF. The LFSP conducts obstacle clearing operations until relieved by the CSSE. The LFSP is responsible for salvage operations and traffic control in the surf zone and in the beach area.

After passage through the lanes, the landing force continues its mission. The obstacle system acts as a chokepoint and danger area even after defenses have been overcome. Lane marking is improved as soon as possible. Additional lanes are constructed to speed the passage of follow-on forces and existing lanes should be widened. Eventually, obstacles are cleared to eliminate the chokepoint.

Chapter 3

Hasty Breach

3001. PURPOSE

Hasty breaching is the rapid creation of a route through a minefield, barrier, or fortification by any expedient method. Hasty breaches are conducted on the move by elements subordinate to the MAGTF, generally the maneuver unit commander. The maneuver unit commander does not reorganize, but uses organic personnel and equipment available at the time. A hasty breach maintains the momentum of the attack by denying the enemy time to mass forces at the breach sites. Units organize for a hasty breach when --

- The enemy obstacle situation is unclear.
- The enemy defense is so weak that MAGTF organic forces can conduct the breach without added support.
- Conducting movement to contact.
- Conducting exploitation or pursuit.
- Conducting hasty attacks.
- Conducting passage of lines.
- The enemy use of family of scatterable mines (FASCAM) is likely.

The hasty breach is usually controlled by the maneuver unit commander and enables a MAGTF to seize and maintain the initiative through simple, decentralized, independent breaching operations conducted under the responsive command and control of subordinate commanders. The actual breach is usually conducted at the company level. The maneuver unit commander tasks units with secondary missions to be support, breach, and assault forces. the maneuver unit commander is also responsible for coordinating the SOSRR breaching fundamentals through detailed breach planning and/or well-rehearsed immediate action drills. The commander planning for a hasty breach must also plan for a transition to a deliberate breach should an hasty breach fail. The deliberate breach, discussed in Chapter 4, will usually require a new task organization. An unclear enemy situation (including obstacle locations) makes it necessary that several lead units be capable of conducting independent breaching operations.

3002. APPLYING BREACHING FUNDAMENTALS

Suppress

The key to any successful breach is quick and accurate suppression. The Support Force should be organized with sufficient assets on hand or on call to rapidly suppress both direct and indirect enemy fire. The unit designated as the Support Force must be able to quickly establish a base of fire from a movement to contact or hasty attack. Priority of fire should be to the Support Force, then on order shift to the Breach Force. In a movement to contact, the lead unit should be the Support Force with the next unit serving as the Breach Force following close behind. As obstacles are encountered, the Support Force suppresses the enemy while the Breach Force moves forward to

reduce the obstacle. After obstacles have been reduced, priority of indirect fire shifts to the Assault Force as it passes through the breached lanes in order to continue the attack. When maneuvering in a bounding or traveling overwatch, priority of fire shifts to the forward or bounding units.

Obscure

Commanders should consider the cover and concealment that an axis of advance offers in a movement to contact. Artillery and mortars are the primary sources of obscuring smoke. MCWP 3-16.6, *Supporting Arms Observer, Spotter, and Controller*, contains additional information. CAS and NSFS can provide white phosphorus (WP) smoke which creates a rapid smoke buildup, but produces effects of limited duration. Tanks, AAVs, and LAVs have smoke grenade launchers and may have the ability to self-generate smoke depending on the type of fuel they are using. However, these systems were designed for self-defense and should not be considered as a primary source of obscuration smoke.

The maneuver unit commander allocates smoke targets and the fire support coordination center (FSCC) plans smoke targets to be executed on call. Smoke targets are fired simultaneously with suppressive fire so that the smoke builds before the breach and assault forces move forward.

Secure

Security for the hasty breach is primarily achieved through speed and effective supporting fire. Securing the far side by force slows momentum, strains C^2, and may be an indication that the obstacle cannot be breached quickly. When the enemy situation is unclear, task organization is driven by the Support Force requirement to suppress the enemy while the Breach Force reduces the obstacle. However, when the size of the enemy force is known, force allocation is determined by the size of force required to assault the enemy positions.

Reduce

A mechanized battalion task force should have a minimum of two lanes separated by at least 250 meters, or as terrain dictates, to pass through an obstacle for an hasty breach. Each lane should be wide enough to accommodate the largest vehicle. Breaching assets are integrated into the attack formation to provide the lead unit(s) (breach force), with an immediate breaching capability. Breaching assets are placed with those units tasked with obstacle reduction should the situation arise.

Reconstitution

Upon completion of a hasty breach, the attacking force will normally return to the original attack formation. Resupply of depleted Class V, personnel, and possibly breaching equipment should be planned by the maneuver unit commander. Without reconstitution, the MAGTF may not be capable of continuing its attack mission.

3003. PLANNING AND TASK ORGANIZATION

PREPARING

The GCE is first organized for the attack mission. The maneuver unit commander and staff anticipate which units are most likely to encounter obstacles while executing the scheme of maneuver. The task organization is then modified where needed to provide sufficient breaching forces and equipment to support a hasty breach in support of the MAGTF's scheme of maneuver. The GCE Engineer officer recommends a task organization of engineers and equipment to create enough lanes for the GCE. Breaching equipment is allocated to the units designated. Priority of engineer force allocation goes to the units most likely to execute a breach. The engineers prepare their equipment and conduct combined-arms breaching rehearsals with the supported units during mission preparations.

Because the exact location and nature of threat forces and obstacles may not be known, engineers and breaching assets must be distributed carefully to allow the GCE to maneuver quickly while maintaining a breaching capability. When available, additional breaching assets are also maintained separately from the breach force giving the maneuver unit commander additional options to shift breaching assets where they are needed. It also allows the maneuver unit commander to quickly mass forces for transition to a deliberate breach. The engineer commander moves with the Breach Force.

The success of the hasty breach depends on the ability of maneuver units to quickly transition into Support, Breach, and Assault Forces upon contact with the enemy and/or obstacles. Units should train extensively to quickly and efficiently change combat formations from hasty attack to hasty breaching while on the move. Combined arms rehearsals are essential to make the transition seamless. While circumstance or unit SOP may not provide for a transition to a structured BTF organization all of the missions undertaken by a BTF must be executed by elements of the unit conducting the hasty breach. The transition to a deliberate breach must be practiced and discussed. Training will be discussed in detail in Appendix F.

The maneuver unit commander should maintain a reserve for breaching which should be committed if the primary breach force is unable to penetrate the obstacle or momentum is slowed beyond acceptable risk. This mobility reserve is also used to concentrate breaching assets in case transition to a deliberate breach is required.

OBSTINTEL

The ability of the force to collect timely and accurate reconnaissance both before and during the attack has tremendous impact on the success of the hasty breach. Early detection of obstacles is essential to maintaining momentum and to the timely commitment of breaching assets. Engineers should be attached to the reconnaissance units to gather detailed information on obstacle locations, composition, and orientation as discussed in Chapter 1. OBSTINTEL on the number, depth, and obstacle make-up of obstacle belts is very important in the planning and organization of the Breaching Task Force, especially for the hasty breach. Multiple complex obstacle belts require additional Class V, and may require additional personnel and equipment.

EXECUTING

The maneuver unit commander has two roles in a hasty breach: first, to insure that the maneuver/breaching force receives the planned priority of fire and smoke; second, to insure that the additional combat power and breaching assets are positioned for immediate transition to a deliberate breach. The maneuver unit commander closely monitors the breaching effort to decisively commit the force to a deliberate breach, if necessary, with minimal loss in momentum.

Execution of the hasty breach is conducted at the GCE subordinate commander level. When executing the hasty breach because the situation is unclear, the Support, Breach, and Assault Force Commanders achieve coordination by executing well-rehearsed actions at obstacles.

Approach. The GCE crosses the line of departure at the prescribed time organized for a hasty or deliberate attack. Reconnaissance precedes the GCE formation to the objective with sufficient distance to allow the transition from attack to hasty breaching formations.

The maneuver force moves in the best formation for the known or suspected enemy situation. The lead unit normally becomes the Support Force should obstacles be encountered. The second unit in the formation generally becomes the Breach Force if required. Those units providing flank security would become the Assault Force.

The reconnaissance element immediately reports enemy obstacles to the maneuver unit commander. If the obstacles are weak or lightly defended, the commander directs the change of formation from attack to hasty breaching. If the obstacles are complex or heavily defended, the maneuver unit commander should inform the MAGTF Commander and prepare for a deliberate breach as discussed in Chapter 4.

The GCE reconnaissance element will identify potential bypasses. They verify the leading edge of the obstacle, conduct a hasty reconnaissance, and identify potential breach lane locations prior to the arrival of the balance of the attacking force.

Deployment. Taking advantage of available cover and concealment, the Support Force initiates on call indirect fires from supporting artillery, NSFS, and CAS as required. The maneuver unit commander will use supporting arms to suppress enemy direct fire. When possible, the Support Force will position itself to the flanks where fields of fire will allow continuous suppression of enemy forces covering the obstacle without endangering friendly forces and allowing the passage of the Breach and Assault Forces.

The Engineer Reconnaissance Team of the Breach Force approaches to detect the forward edge of the obstacle and confirm the intelligence gathered on the nature of the obstacles. The Engineer Reconnaissance Team places the standoff marker for explosive breaching or marks the leading edge of the obstacle. The Engineer Reconnaissance Team briefs the maneuver unit commander on the following information:

- Extent and limit of minefields
- The sequence of obstacles
- The depth of obstacle belts

- Enemy weapon systems/positions over watching the obstacle

This coordination takes place while the main body of the GCE is located beyond the range of enemy direct fire. The maneuver unit commander makes a final decision for a hasty or deliberate breach.

Breach. When the maneuver unit commander decides to conduct a hasty breach, the Breach Force moves into position to begin obstacle reduction as the Support Force continues suppression of known or suspected enemy positions on the far side of the obstacle. The Breach Force establishes local security using the Security Team as needed. Breach Forces must be prepared for a counterattack.

Obstacle Reduction Teams mechanically, explosively, or manually reduce obstacles. Their placement in the formation coincides so that different reduction techniques correctly align with the different obstacles in the sequence they will be encountered. Explosive reduction is accomplished with Mk 154 Mine Clearance Launcher (3 shot - AAV mounted) or the Mk 155 Mine Clearance System (trailer mounted); and proofed by TWMPs (see Appendix C). Nonexplosive obstacles will be reduced by using ACEs, demolition charges, and manual means. Primary method of spanning tank ditches is the use of the AVLB. The alternate method will be to fill in the ditch using the ACE or by placing pipe fascines in the ditch. All equipment is described in Appendices C, D, and E.

If breaching explosively, an M1 tank with TWMP moves to the 60 meter standoff marker previously placed by the Engineer Reconnaissance Team. An AAV with M154 or tandem M155s moves in place directly behind the tank in order to shoot the line charge over the tank. Concurrently, the Lane Marking Team will emplace the near approach marker approximately 200m from the lane entrance. At about this time, the Support Force will establish the far recognition marker as detailed in Chapter 6.

When ready, and directed by the Breach Force Commander, the AAV fires the line charge over the tank creating a breach 90 meters long in front of the tank. Obscuration fires should be maximized at this time. After the successful detonation, the tank engages its mine plow moving forward 30 meters into the furrow of the previously detonated MICLIC in order for additional line charge shots. This is repeated until the depth of the minefield is breached as determined by the Engineer Reconnaissance Team. If a lane becomes blocked by a vehicle, breaching forces must either bypass that vehicle, diverted forces to another lane, or clear the lane for further maneuver. There is no turning around in an obstacle system.

The tank and AAV will be followed closely by two tanks with TWMPs to proof the lane. The plows will be offset from the lead tank in order to proof the lane in one pass, establishing a force on the far side of the lane as early as possible.

If there is a tank ditch after the minefield in the complex obstacle, the tank and AAV will move to the side of the lane allowing an ACE or AVLB team to move down the lane in order to breach the ditch. This is where reconnaissance is vital. In order to configure the Obstacle Reduction

Team correctly you must know the sequence of the obstacles within the system. If the tank ditch is first, the ACEs must lead with the tank and AAV following.

The Lane Marking Team follows the proofing team beginning the initial lane marking as the ACEs or AVLB breach the tank ditch.

Communication is vital to the success and momentum of the hasty breach. Primary communication normally is by radio**,** however, in order to keep everyone situationally aware Breach Force SOP signals should be developed for: indicating the entrance to the breach, the breach is nearly complete allowing the Assault Force to begin to move forward to the breach, when the breach is complete, and if the lane is blocked.

When the proofing is complete, the tanks and AAVs will push through the breach setting up a hasty defense on the enemy side of the breach. In this position they are extremely vulnerable.

Assault

As the initial marking is underway the Assault Force should be entering the breach. The Assault Force moves through the breach, attacks the enemy and seizes objectives on the far side that allow follow-on units to pass through the breach. It is essential that the Assault Force be prepared to exploit the breach immediately. The Assault Force is likely to encounter protective obstacles including various types of wire, tanglefoot, and camouflaged pits. The Assault Force should be equipped with wire cutters, bangalore torpedoes, antipersonnel obstacle breaching system (APOBS), or other expedient means to penetrate these protective obstacles and maintain the momentum of the assault. The Assault Force should be through the breach before intermediate marking is complete. A signal for their movement should be coordinated between the breach force and assault force.

The Support Force continues to direct fires as the Assault Force penetrates the breach, the series of suppressing fires should be repeated. The Support Force must be prepared to exploit success by pursuit, or continue the mission of the Assault Force.

Handover and Reconstitution

The Assault Force should be followed closely by the follow-on forces from the CSSE, however they must take care not to interrupt the flow of the Assault Force at any time on its way to the breach. This can cause a loss of momentum on the part of the assault force and cause the attack to fail. If subsequent obstacle systems are anticipated or encountered, a battle handover to follow-on forces allows the Breach Force to continue the assault. Follow-on forces will improve the lane and possibly create additional lanes including return lanes for casualty evacuation and resupply. These forces may also clear the entire obstacle system.

The Breach Force quickly reorganizes, resupplies with additional Class V, and prepares to continue breaching further obstacles in support of the main attack. The Breach Force can post guides at entrance to lane in preparation of turn over to follow-on forces.

Chapter 4

Deliberate Breach

4001. PURPOSE

The deliberate breach, in support of a deliberate attack, is specifically designed to cross a strong enemy and/or well-defended obstacle. Units may also conduct a deliberate breach when a hasty breach fails. The deliberate breach is characterized by thorough reconnaissance, detailed planning, extensive preparation and rehearsal, and massing of combat power. The deliberate breach is usually planned at the MAGTF level and involves a GCE force of regimental or division size. One or more subordinate units are specifically tasked to perform the role of support, breach, and assault forces. Deliberate breaches can be overt or clandestine in nature.

4002. APPLYING BREACHING FUNDAMENTALS

Unlike the hasty breaching operation, the support, breach, and assault forces for a deliberate breaching operation are given specific objectives and detailed control measures. The force does not have to disperse the support, breach, and assault functions between two or three units to compensate for the a lack of detailed obstacle information during movement.

Suppress

A deliberate breach usually requires more firepower than an hasty breach. Suppression must be effective against both direct and indirect enemy fire since the Breach Force may be exposed for a lengthy period of time. A deliberate breach is preceded by NSFS, electronic warfare, extensive air and artillery fire on enemy forces protecting the obstacle and the enemy artillery capable of firing on the breaching location. This allows forward ground units within the support force to move into over watch positions from which to provide direct suppressive fire on the enemy. The MAGTF Commander must weight the potential, even likely, collateral damage to buildings when considering suppression in an urban environment.

Obscure

Obscuration reduces the effectiveness of enemy direct and indirect fires. Artillery and mortars are the primary sources of obscuring smoke. CAS and NSFS can provide WP smoke which creates a rapid smoke buildup, but produce effects of limited duration. Obscuration may also be achieved through the use of smoke pots and smoke grenades. Tanks, AAVs, and LAVs have smoke grenade launchers and may be able to self-generate smoke for self-defense, but must not be relied on to supply all obscuration. Natural limited-visibility conditions, such as darkness, rain, or fog, should be exploited when possible. Obscuration is particularly important for complex obstacle breaches where the Breach Force may be exposed for an extended time. Training with smoke support is important since smoke can obscure friendly observation and target acquisition, and degrade command and control.

The Breaching task force Commander allocates smoke targets and the FSCC plans smoke targets to be executed on order. The commander must consider the allocation of artillery and mortar assets as smoke competes against high explosive dual purpose (HEDP) rounds for use against the enemy. Smoke targets are fired simultaneously with suppressive fire so that the smoke builds before the breach and assault forces move forward. Smoke is targeted and adjusted to obscure the breach without degrading direct-fire target acquisition by the support forces. The Breach Force Commander must be able to adjust the smoke if necessary.

Terrain features mask Marine Corps force movement very effectively. As with all maneuver forces, cover, concealment, trafficability and rate of advance must be considered when choosing the axis of advance. Obscuration is difficult in a MOUT environment where the enemy can be all around Marine Corps forces in tall buildings or in sewers.

Secure

Securing the breaching site during a deliberate breaching operation is more complex than for an hasty breach. The defending position will be stronger, reduction may take longer, and there is a strong possibility of a counterattack. The Breaching task force Commander, with the advise of the engineer, should estimate the time required to complete the breach and ensure that Marine Corps forces are deployed in time to defeat a counterattack. Detailed and repeated rehearsals produce the most accurate estimates.

The breaching site must be isolated from enemy interference. Artillery, air, NSFS, mortars, and direct fire are used to isolate the breaching site. Air or artillery delivered FASCAM and other situational obstacles can be used to protect exposed flanks against enemy counterattack. Chokepoints along likely enemy avenues of approach are plotted before the operation during detailed fire support and obstacle planning. Reconnaissance assets are tasked to verify the route a counterattack force is traveling.

The Breach Force secures the obstacle breaching site by physical occupation. Forces are positioned to defeat local counterattacks and local security is provided for lane-reduction operations and advancing forces. Assaulting remaining enemy positions covering the breaching site can provide security from counterattacks during lengthy deliberate breaching operations. An infantry assault can be launched once footpaths are cleared through the obstacle. However, this requires careful consideration since the obstacle objective may be to separate infantry from mechanized assets. The Assault Force can establish blocking positions against counterattacks. Additional forces may be positioned on the flanks of a breaching site.

Reduce

Obstacle reduction is normally the mission of an engineer unit with armor and infantry support. In order to diminish the enemy's capability to deliver concentrated fire on one site, the Breach Force should attempt to reduce multiple lanes simultaneously. A variety of reduction equipment such as MICLICs, mine plows, mine rollers, and manual techniques such as probing, hand-held mine detectors, and hand emplaced explosives should be used to guarantee success.

The number of lanes the Breach Force prepares is determined by METT-T. The Breach Force must be capable of creating a minimum of two lanes for an assaulting task-organized regiment. Two breached lanes per task-organized battalion is highly desired. The greater the number of breached lanes, theoretically the quicker friendly forces can pass through the obstacles. The Breaching Task Force Commander must carefully consider creating multiple simultaneous breaches with the benefits of massing breach assets at a select few points.

The Breach Force deploys in a formation configured to breach specific obstacles. Reducing mined and/or boobytrapped obstacles may require using slow, manual-reduction techniques. An engineer platoon is normally necessary to manually breach each lane. Cleared lanes are marked and pairs of guides are left to hand them over to advance elements of follow-on units. With rapidly advancing forces, pairs of lane guides left behind could be separated from their units for some time. Procedures for the lane guides return to their unit must be spelled out in detail.

Reconstitution

Because forces are task organized specifically for a deliberate breach, the Breaching task force and MAGTF Commanders must decide whether to reconstitute forces for continued breaching operations or release the elements back to their respective commands. Either of these options presents unique planning considerations for commanders. Reconstitution must take place quickly so as not to lose the momentum of the attack. IPB and intelligence updates will help determine whether to reconstitute or release.

4003. PLANNING AND TASK ORGANIZATION

Planning a deliberate breaching operation begins with the command and engineer estimates. The MAGTF staff uses IPB to develop COAs. The engineer develops a scheme of engineer operations for each COA and recommends whether an hasty or deliberate breaching operation is necessary.

Assets are carefully allocated to the Breach, Assault, and Support Forces to ensure that they can accomplish their assigned tasks. For example, the Breach Force is tailored with the breaching assets required to counter specific types of obstacles. The Support Force is task-organized with the direct and indirect fire systems necessary to provide suppression, and the Assault Force contains the type of force (mechanized or footmobile) required to seize the farside objectives. If the MAGTF's or GCE's main objective is within the breach area, the Assault Force should be manned and equipped to seize the objective and handle protective obstacles. Engineers and breaching assets should be allocated to handle unforeseen circumstances. The commander should expect a 50% loss of assets. Redundancy of breaching equipment and breaching organizations is essential!

Concentration of Force

Achieving concentration of force is accomplished by hitting the enemy from multiple directions and by narrowing attack zones to concentrate the attacking force against a smaller defending

element. Enemy vulnerabilities are identified so that the force can use combined arms and maneuver against that weakness. A portion of the enemy is isolated to achieve superior combat power at the breach site. Forces maneuver to create sufficient suppression and security for the breach to be successful.

Economy of Force

When the attack requires breaching two or more complex obstacle systems, sufficient breaching assets must be retained to reduce subsequent obstacles. The Breaching Task Force Commander should not commit all breaching resources against the first obstacle system unless he is willing to deplete the capability to breach subsequent obstacles.

Coordination

Suppression and obscuration must be coordinated with obstacle reduction and assault. This is achieved by a clear understanding of the commander's intent, effective C^2, reverse planning, and a well-rehearsed force. The commander believes seizing a particular objective to be decisive. This is the point from which reverse planning of battalion actions on the objective begins. The commander visualizes seizing the initial foothold into the enemy's defense. Seizing that foothold becomes the focus of breach planning. The number and location of breaching lanes is driven the maneuver to that objective. The commander now plans how the breach force must maneuver during the breaching phase of the attack to reduce the obstacle. CAS, artillery, mortar, and supporting fire are planned for both the breach and the attack on the objectives. The CSSE prepares to move additional breaching assets forward to the Breaching Task Force. Reverse planning continues to drive the maneuver formation to ensure that forces are in the correct relative positions to accomplish their breaching roles and actions on the objective. Lastly, the commander uses phase lines for command and control and target reference points (TRPs) on obvious terrain features to orient, focus, and shift suppressive fire.

4004. PREPARING

The task organization should be adjusted as more details of the defense and obstacle system are uncovered. This information is also used during combined-arms breaching rehearsals. If updates become available after the last possible rehearsal, this data must be passed immediately to the affected force elements, especially the breach force.

Rehearsals

Rehearsals should be meticulously planned and managed. The G-3/S-3 should allocate time for each unit to perform combined-arms rehearsals. Rehearsals should include a leader and key personnel walk through as well as individual rehearsals by the support, breach, and assault forces. Where possible, the force rehearses the operation under the same conditions expected during the actual engagement, including battlefield obscuration, darkness, and inclement weather. The rehearsal site should be similar to the actual terrain and contain similar obstacles to be

breached. Several contingency plans should also be rehearsed, including possible enemy counterattacks.

Reconnaissance

The success of a deliberate breaching operation depends heavily on thorough IPB. The scheme of maneuver is based on known and estimated enemy positions and obstacles. NAIs are developed to confirm or deny the enemy situation. The G-2/S-2 develops the collection plan, with reconnaissance efforts concentrating on confirming enemy locations and obstintel. Information is used to refine the task organization of Support, Breach, and Assault Forces and the scheme of maneuver. For example, if reconnaissance indicates that a possible breaching site is heavily covered by tanks, the support force task organization may be tank-heavy. Since the use of FASCAM is effective for reseeding breaches and reinforcing existing obstacles, particular emphasis is placed on determining enemy FASCAM capability. The MAGTF and Breaching Task Force Commanders conducting a deliberate breach should expect and must be prepared for multiple complex obstacle belts. Thorough reconnaissance should detect the number, depth, and composition of obstacle belts. Deliberate breaching of multiple complex obstacle belts require additional Class V, and probably additional personnel and equipment.

4005. EXECUTING

Approach. The Breaching Task Force crosses the line of departure at the prescribed time organized for a deliberate breach. Reconnaissance precedes the Breaching Task Force formation to the objective. The presence of a complex obstacle system between friendly forces and the enemy does not preclude enemy contact prior to reaching that barrier. The reconnaissance element is to prevent unexpected contact, perform zone reconnaissance and, within their capability, verify intelligence information.

The Task Force moves in the best formation for the known or suspected enemy situation. The Support Force leads the Breaching Task Force formation during the movement to the obstacle system as in figure 4-01. The Support Force should lead the Breach Force by a distance appropriate to the situation as established by METT-T. The Assault Force provides flank security. The Breach Force, command element, and logistical trains, are in the protected center.

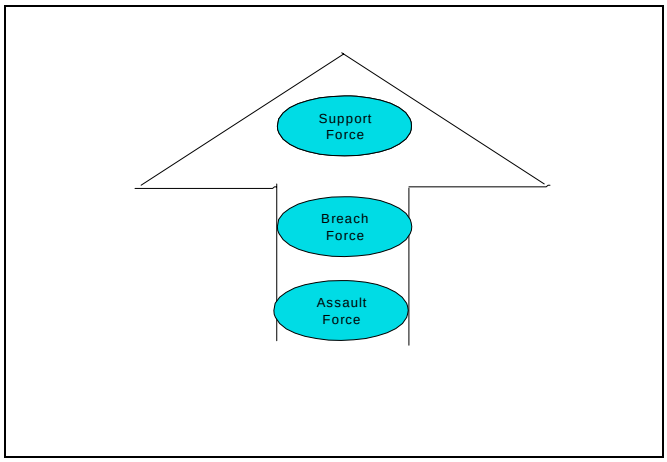


Figure 4-01

The Engineer Reconnaissance Team of the Breach Force will move forward with the Support Force as the Breaching Task Force nears the obstacles. The reconnaissance team verifies the leading edge of the obstacle, conduct a hasty final reconnaissance, and establish the breach lane locations selected in the plan.

When preparing for breaching minefields, track width mine rollers (TWMRs) or track width mine plows (TWMPs) moving with the Support Force will limit speed. TWMRs weight about ten tons. M1A1 tanks with attached TWMRs move at a speed of 7-8 mph. If significant distance will be covered during the approach march, the TWMRs can be carried on a truck-tractor & semi-trailer transporter until the Support Force is relatively close to the complex obstacle. The Support Force will halt and the TWMRs will then be mounted on the M1A1 tanks in fairly quickly.

Deployment. The Support Force will make initial contact. If covered and concealed approaches to the complex obstacle system are available, the Support Force will take advantage of that cover and concealment. However, most obstacles will provide the defender with excellent fields of fire where direct fire weapon systems can engage at maximum range. When breaching overtly, the movement of vehicles will likely be under enemy observation and may receive enemy defensive fires before effective fire can be returned. The Breaching Task Force's fire support plan will use supporting arms to suppress enemy direct fire weapon systems before that initial contact.

At a predetermined phase line, scheduled indirect fires from supporting artillery, NSFS, and CAS will be initiated by the Support Force. Continuous indirect fires allow the Support Force to close within their weapons ranges. At this range, the Support Force should be able to effectively return enemy fires.

After destroying the direct fire weapon systems, the Support Force will continue to close with the obstacle to suppress known or suspected enemy positions on the far side of the obstacle. The Support Force takes up positions that leave the way clear for the breach and assault forces, yet

allows its own mission to be accomplished. When possible, the Support Force will position itself to the flanks where fields of fire will allow continuous suppression of enemy forces covering the obstacle without endangering friendly forces. The Support Force is tasked to provide terminal control for CAS and NSFS during the breaching operation.

As the Support Force approaches the complex obstacle system, they assume over watch positions. The Engineer Reconnaissance Team takes the lead of the formation, detects the forward edge of the complex obstacle, confirms the intelligence gathered on the nature of the obstacles, and the primary and alternate locations for breach lanes as shown in figure 4-02. The apparent depth of each obstacle belt may be determined by using the fire control systems on the LAV and the laser range finder on the M1A1 tank. The Engineer Reconnaissance Team briefs the Breach Force Commander on the following information:

- Confirmation or recommended changes to breach lane sites
- Extent and limit of minefields
- Confirmation of the nature of the obstacles
- The sequence of obstacles
- The depth of obstacle belts
- Friendly positions
- Enemy weapon systems/positions over watching the obstacle

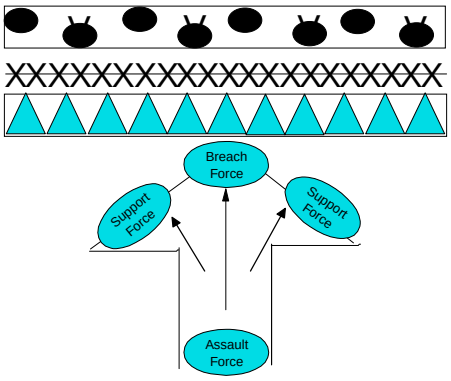


Figure 4-02

This coordination takes place while the main body of the Breach Force is located beyond the range of direct enemy fire. The Breach Force Commander may make a last minute adjustment to different reduction techniques based on the sequence in which obstacles will be encountered.

The Assault Force remains outside the reach of enemy direct fire and, if possible, beyond enemy observation at the last terrain feature in front of the complex obstacle system.

Breach. Normally, the far side of an obstacle must be secured prior to its reduction. Because of the nature of a complex obstacle, it is not likely that the far side of each belt in the complex obstacle can be physically seized prior to its reduction. In addition to organic direct fire weapons, the Breach Force relies on the Support Force to provide over watch support as needed

to secure by fire the far side of each obstacle belt. The complex obstacle may contain berms or natural terrain features that may, at some point, prevent over watching fires from the Support Force from covering the movement of the Breach Force. When the Breach Force reaches a point when they will no longer be covered by over watching fires, the Breach Force Commander may clear and proof battle positions in the midst of the complex obstacle system so that part of the Support Force may displace forward. Such a displacement may be necessary to maintain direct fire suppression on enemy positions that are in defilade.

After coordination with the Support Force commander, the Breach Force Commander passes around or through the over watching positions of the Support Force to begin the breach, depicted in figure 4-03. Obscuration fires should be maximized at this time. Artillery priority targets and priority of fires should be assigned to the Breach Force. The Breach Force Commander coordinates with the Support Force for over watching fires to support the breaching operation. The Breach Force Security Team provides security as needed while the Obstacle Reduction Teams pass through the obstacles.

The objective of breaching operations is to establish safe lanes to the far side of the complex obstacle. A minimum of two lanes are created per regiment, although two lanes per battalion is ideal. The minimum distance between lanes normally is a minimum of 250-300 meters, depending upon METT-T. The Obstacle Reduction Teams must be properly oriented on the breach azimuth.

The Obstacle Reduction Teams will most likely be contending with a minefield and will contain TWMPs discussed in Appendix C. TWMPs create a furrow in the ground through the complex obstacle system marking the lane in this fashion. The Lane Marking Team installs entrance markers to mark the lane and as detailed in Chapter 6.

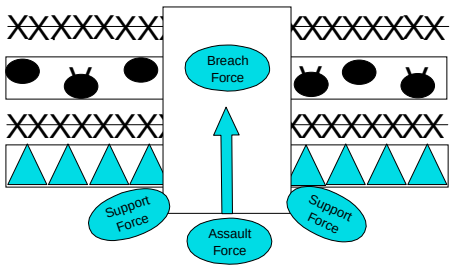


Figure 4-03

Obstacle Reduction Teams mechanically, explosively, or manually reduce obstacles. Their placement in the formation coincides so that different reduction techniques correctly align with the different obstacles in the sequence they will be encountered. Explosive reduction is accomplished with Mk 154 Mine Clearance Launcher (3 shot - AAV mounted) or the Mk 155 Mine Clearance System (trailer mounted); and proofed by TWMPs using the offset proofing method. Non explosive obstacles will be reduced by using ACEs, demolition charges, and

manual means. Primary method of spanning tank ditches is the use of the AVLB. The alternate method will be to fill in the ditch using the ACE or by placing pipe fascines in the ditch. All equipment is described in Appendices C, D and E.

Once vehicles enter the breach lane there is no turning around or movement in reverse. All traffic on the breach lane is one way. If a vehicle cannot move forward it will move off of the breach lane to the side so that it can be bypassed by following vehicles.

Obstacle Reduction Team progress is reported up the chain of command.

The Engineer Reconnaissance Team should remain at the lane entrance as guides for each lane and to keep the entrance to that lane clearly marked. The entrance lane guide is responsible for traffic control on that lane and maintains communication with the Breach Force commander. The lane guide prevents vehicles from entering the lane before proper proofing and initial marking efforts are complete. The lane guide emplaces nearside final approach and entrance funnel markers to mark the lane. The lane will be marked by means of a standard marking system explained in Chapter 6.

When the Breach Force is committed, the Support Force continues to provide over watching direct fire support as requested by the Breach Force Commander. The Support Force will expend large quantities of Class V during the deployment and breach stages of the operation.

Once the Breach Force has reached the far side of the complex obstacle, it allows the deployment of units of the Assault Force as they exit the breach lanes and assume combat formations.

The Obstacle Reduction Team exiting on each lane will remain at the lane exit and act as terminal lane guide for that lane. They should emplace an exit marker to enable the Assault Force to determine when its units can deploy into combat formations. Lane exits are marked by means of a standard marking system detailed in Chapter 6. The terminal lane guide is also responsible for traffic control and is in radio contact with the entrance lane guides and the Breach Force Commander.

Assault. Once one or more lanes are cleared, proofed, marked and covered by over watching fires of the Breach Force and/or the Support Force, the Assault Force is committed. The Breaching Task Force commander must weigh the risks of proofing and marking lanes against the tempo and speed required in committing the Assault Force. The conditions and situation may require committing the assault Force prior to proofing and marking lanes. The Breach Force quickly moves out of the way to over watch positions, allowing the Assault Force to move rapidly through the obstacle in the lanes created by the Breach Force as depicted in figure 4-04. The Assault Force will expand the secured area on the far side of the complex obstacle system or will seize deeper objectives on the far side of the obstacle. The Support Force shifts suppressive fires as necessary to enable Assault Force units to attack enemy positions. Shifting of fires must be closely coordinated to prevent fratricide.

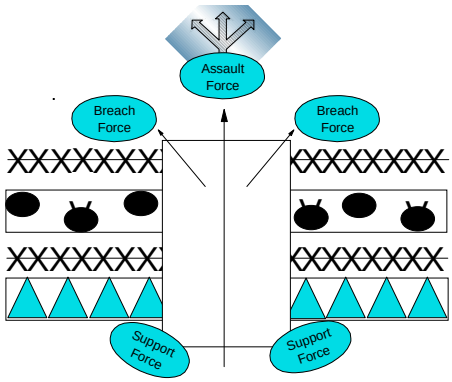


Figure 4-04

Vehicles rapidly move through the breach lanes in single file. Formation after leaving the breached lane will depend on the subsequent scheme of maneuver. Enemy defenses will likely require the Assault Force to fight through extensive protective obstacles and fortifications covered by interlocking small arms fires and close-range anti-armor weapons. The Assault Force should be equipped with wire cutters, bangalore torpedoes, APOBS, shoulder-launched multipurpose assault weapons (SMAWs), ladders, boards, or other expedient means to penetrate these protective obstacles and maintain the momentum of the assault. Engineers can manually or explosively create footpaths through protective obstacles and reduce fortifications. Engineer squads can split into demolition teams and move with infantry. This gives the infantry, which may be clearing a trench line, a dedicated force to neutralize booby traps and destroy enemy fortifications and equipment. The Assault Force must take advantage of protective terrain or employ obscuration from supporting arms to accomplish this reorganization.

After the Assault Force has passed through the breach site, vehicles from the Lane Marking Team take over duty as lane guides. Once the far side has been expanded and enough terrain has been secured on the far side, the Support Force displaces to the far side of the complex obstacle system At the far side of the breach site, the Engineer Reconnaissance Team will reconstitute itself and continue to maneuver with the Support Force. If another obstacle belt or obstacle complex is expected or encountered, the Support Force can conduct a forward passage of lines with the Assault Force and the whole process would be repeated.

Handover and Consolidation. During the handover and consolidation phase:

- Casualties will be evacuated.
- Resupply will be accomplished.
- Forces will be reorganized.
- Disabled equipment will be recovered.
- Responsibility for the breach site transfers to follow-on forces (military police are normally the primary traffic controllers).

The breach site remains an attractive target for counterattack or interdiction fires. Consequently, combat power on the far side of the obstacle must be expanded as quickly as possible, but not at the expense of adequate security and proper tactical dispersion.

Control of movement on both sides of the lanes will remain a critical command function until all units have traversed the lanes and follow-on units have assumed responsibility for the zone of action.

Upon arrival, the Lane Marking Team begins improving the lanes and marking the avenues of approach to and from the lanes including the intermediate lane markings as described in Chapter 6. They also mark the limits of minefields to prevent the inadvertent entry of friendly forces. Other immediate missions include the control of traffic in the lane and staging areas as well as the evacuation of equipment and personnel casualties. Depending on operational tempo, lane guides could remain at the lanes to perform traffic control duties until relieved by follow-on forces.

The Breaching Task Force Commander retains control of the breach site and the lanes until, upon mutual agreement, traffic control and supervision of the breach site is shifted to higher headquarters or follow-on forces. After control of the breach site has shifted, expanding the lanes to facilitate two-way travel should be an early priority. The follow-on forces will conduct final marking, improve the existing lanes, and create additional lanes as required.

Chapter 5

Breaching Considerations in Expeditionary Environments

5001. Introduction

The diverse environments in which Marine Forces are deployed can cause challenges to the MAGTF commander. Cold weather, jungles, deserts, mountains, nuclear and biological and chemical threats, and built up areas, will impede the movement of a force just as quickly as a well entrenched enemy. Marine Corps forces can expect that conflicts in the twenty-first century will be fought incorporating these natural and man made obstacles to attempt to impede our movement on the battlefield. In fact it is conceivable that the commander could face several of these impeding conditions during offensive operations.

5002. COLD WEATHER OPERATIONS

During the winter, low temperatures, snow and ice will impede both mechanized and foot mobile breaches. The following considerations must be kept in mind when planning for breach operations:

- Extreme cold and its impact on personnel, equipment mobility and survivability.
- Artillery smoke canisters, smoke pots, and smoke grenades in loose snow have a tendency to bury themselves in the snow and their effectiveness may be reduced because of the melting snow.
- Snow exaggerates contrasts and makes camouflage essential.
- Surfaced laid mines will become concealed by falling snow and all mines shift with time due to temperature changes.
- Frozen or semi-frozen ground makes probing impossible or extremely difficult.
- Reduced effect of explosives due to the dampening effect of snow.

5003. JUNGLE OPERATIONS

Jungles present formidable obstacles that will impede virtually any breaching operations. Mechanized mobility other than movement on road networks is effected. The thick foliage and rugged terrain of most jungles limit the deployment of breaching equipment and fields of fire. The following are planning considerations for jungle breaching operations:

- Thick vegetation and rugged terrain will impede the use of mechanized and wheeled vehicles causing disruption in breaching operations.
- Any mechanized movement will more then likely encounter both conventional and improvised mines. Therefore rehearsal of hasty breaching is a prerequisite.
- Heavy use of both infantry and heliborne operations should take precedence over mechanized operations due to limited visibility, rugged terrain and thick foliage.
- Enemy mine employment should be expected on roads and trails consisting of both conventional and improvised mines.
- The jungle canopy interferes with the use of demolitions, including the MICLIC.

- Dense foliage impedes the detection of mines and obstacles.

5004. DESERT OPERATIONS

Successful desert operations require adaptation to the environment and to the limitations its terrain and climate impose. Arid regions make up about one-third of the earth's land surface. Combat breaching is a critical tactic in this type environment. Commanders at all levels should consider the following when planning for desert operations.

Weather

Extreme conditions normally will prevail. Temperatures will fluctuate as much as 72 degrees between day and night. It is not uncommon to experience 120^0 F during the day and down to 50^0 F at night. Additionally winds can achieve velocities of near hurricane force. Dust and sand blown by these winds make life intolerable, maintenance very difficult, and restrict visibility to a few meters. The MICLIC could be ineffective in these conditions as the winds could prevent a straight shot. The physical demands of breaching operations on personnel make acclimatization and proper hydration essential.

Camouflage

Deserts offer little natural concealment or means for camouflage. Obstacles will be easily detected, especially from the air. Lack of concealment affords the enemy increased visibility of any breaching forces as well. Therefore, breaching operations in a desert environment generally relate to increased exposure to enemy observation and fires. While ravines and washes provide excellent cover and concealment, they quickly become flood zones during the rainy season.

5005. MOUNTAIN OPERATIONS

The mountain environment is in favor of the defender. Commanders must be cognizant of the following physical characteristics that influence mountain breaching operations:

- Rugged peaks, steep ridges, deep ravines, and valleys assist the enemy in channelizing breach forces and limit mechanized maneuver for breaching operations.
- Rapidly changing weather may assist in obscuration, but impede mobility.
- Abundant natural cover and concealment helps both friendly and enemy forces.
- Dominating mountains generally permit excellent long range observation when not hampered by low hanging clouds.
- The need for bridging assets typically is increased.

5006. NUCLEAR, BIOLOGICAL, AND CHEMICAL

DESERT STORM is an example of breaching operations in a probable chemical environment. Commanders must be prepared to conduct breaching operations in NBC environments.

Commanders should consider the following when planning breaching operations in a suspected chemical environment.

Marines conducting breaching operations in protective chemical equipment will tire quickly and require increased time to accomplish tasks. Training to perform breaching operations while wearing protective equipment increases the stamina of breach force personnel.

Extreme Climates and Terrain

> Whether or not gas will be employed in future wars is a matter of conjecture, but the effect is so deadly to the unprepared that we can never afford to neglect the question.
>
> General John J. Pershing
> US Army

Cold Weather Operations

Most chemical agents remain hazardous in the cold. Breaching may stir up agents in areas previously contaminated with persistent agents. A nuclear burst will interfere with breach force mobility by breaking up ice cover or causing quick thaws.

Jungle Operations

NBC warfare adds a new dimension to the difficulty of jungle operations. Humidity is high and rainfall frequent. There is little or no wind or sunlight below a jungle canopy. The green cover of the jungle provides some protection from the thermal energy of a nuclear detonation. However, the blast blows the canopy down and creates a jumble of splintered trees creating additional mobility challenges.

Chemical agents tend to persistent longer in the jungle. The forest creates a protective umbrella trapping chemical agents under the jungle canopy. High temperatures and humidity make MOPP gear almost unbearable. Commanders must plan for this burden when estimating work rates and heat casualties.

Desert Operations

High temperatures during the day may limit chemical agent use because the air is unstable. Chemical attacks will probably be limited to immediate on-target results when the terrain is hot because of the agent's tendency to rise into the atmosphere.

The most likely time of attack is anytime from early evening to morning. Coincidentally times of reduced visibility are when it may be advantageous to conduct a breach under obscuration of darkness. At that time, desert air is more stable and chemical vapors linger longer.

Mountain Operations

In mountains, the downwind hazard of NBC weapons can be unpredictable. Hills, valleys, and rapidly changing winds all make for an uncertain environment. Chemical agent clouds tend to travel around hills and down valleys where they settle into depressions. The concentration of forces in narrow canyons and valleys makes them vulnerable to nuclear attack. The shock waves from a nuclear blast may cause avalanches as far as 30 kilometers from ground zero.

Military Operations on Urban Terrain (MOUT)

In an urban fight, the defender has the advantage of mobility. By placing persistent chemicals into the defender's transportation network, the attacker can somewhat restrict defender's mobility.

Cool, narrow passages, such as sewage systems, filled with chemical agents are difficult to negotiate, with or without protective equipment. Buildings can either assist or inhibit the wind in the removal of chemical agents.

5007. MOUT OPERATIONS

Rapidly increasing urbanization throughout the world has heightened the chances of military operations in an urban environment.

While the process for planning engineer support of a MOUT attack follows existing decision-making steps, MAGTF planners must understand how this diverse terrain impacts breaching operations. Consider the following points:

> Ambushes were common. Sometimes they actually had three tiers. Chechens would be underground, on the ground floor, and on the roof. Each group had a different task in the ambush.
>
> Chechens weren't afraid of tanks. They assigned groups of RPG gunners to fire volleys at the lead and trail vehicles. The others were picked off one-by-one. Russian forces lost 20 of 26 tanks in the first three days of fighting.
>
> From Russian Army Lessons Learned in Grozny

- Structures are key terrain.
- Identifying the best reduction sites for securing a foothold and the engineer force required to seize the foothold and provide mobility support.
- Below ground and multilayered aboveground dimensions are added.
- Terrain enhances the enemy's countermobility and survivability efforts and increases Marine Corps forces' mobility requirements.
- Coordinated, decentralized execution is required.

♦ MOUT-specific precombat inspections, and rehearsals are integral to effective engineer support of the maneuver force.
♦ Executing hasty versus deliberate breaching operations.
♦ Identifying the best places to use the MICLIC, AAV, and tank mounted obstacle reduction equipment and manual breach techniques.
♦ A standard MAGTF marking for obstacles, bypasses, and breach sites.
♦ Identifying what situational obstacles (rapid mining, scatterable mining) are available to the enemy.
♦ Determining the composition (frame, brick, block, reinforced concrete) of the buildings to be attacked and which weapons are most effective on these structures.

Equipment

The Breach Force should be equipped with grapnels, bolt cutters, bypass and lane marking materials, hand-emplaced explosives, mine detectors, and probes. Use battering rams to enter doors. Conserve explosives by using 24-inch crowbars to lift manhole covers and pry open entryways in buildings and sewers.

Class V requirements largely will be based on the amount of collateral damage the MAGTF Commander is willing to accept. Plan for extensive use of handheld smoke, smoke pots, and artillery delivered smoke. Mass this smoke with the breach force at the objective rally point.

Ambient light inside hallways and underground is virtually zero, so plan for additional light sources. The use of night-vision equipment, and infrared or laser pointers is vital. Engineers should use flashlights to help move and reduce obstacles inside buildings and subsurface zones.

Large quantities of TNT, C4, and detonating cord will be required to reduce deep lanes for vehicles. Integrate some type of heavy equipment (ACE, dozer, tank with TWMP) into the plan to reduce rubble or junk vehicle obstacles. Inspect the MICLICs, ACEs, and AAV and tank-mounted obstacle reduction equipment. At a minimum, check initiation systems, demolition charges, reduction equipment, marking materials, and mine detectors.

Secure the Foothold

Designate buildings to enter and a reduction site that will support maneuver to the point of penetration. Plan procedures for dynamic entries into buildings and vertical envelopment, which require prepared special demolition charges, expedient assault ladders, and climbing grapnels. Rehearse the techniques and procedures for entering windows on second and third floors. Have cutting tools for padlocks, rebar, concrete mesh, and wire obstacles in stairwells and hallways. Plan for subsurface or overhead entry.

Subsurface Fight.

Salient points are: entering the tunnel or sewer complex using hand tools or explosives, identifying and neutralizing mines and booby traps, and marking cleared areas. Navigation inside

sewers and radio communications from inside the tunnel to above ground forces is challenging. There is no ambient light inside tunnels, so plan and rehearse using infrared and visible light signals.

Chapter 6

Breach Lane Marking Ashore

6001. Purpose

The aim of this is to standardize the procedures for marking obstacles and routes through them. The lane marking system described herein focuses on the pattern more than the marking device since the standard marking device currently used by Marine forces is designed for marking obstacle boundaries vice routes through them. The information contained herein is consistent with and implements the following North Atlantic Treaty Organization (NATO) Standardization Agreements (STANAGs): 2002, Warning Signs for the Marking of Contaminated or Dangerous Land Areas, Complete Equipments, Supplies and Stores; 2036, Land Minefield Laying, Marking, Recording and Reporting Procedures; 2889, Marking of Hazardous Areas and Routes Through Them. With the future of modern conflict involving military forces of multiple nations, the marking of obstacles and routes through them must be standardized for the safety of all. Breach lane marking is critical and can m
ake the difference between success or failure.

> *During the breakout from the Anzio beachhead in 1944, " . . . engineers completed most of the mine clearing during the night of 20 May, but they had to wait to remove wire and to mark gaps which would disclose the direction of the corps attack. On the night of 22 May the engineers removed the wire from the gaps and marked each lane with tracing tape and luminous markers. The breakout was a complete success."*
>
> Beck et al, *The Corps of Engineers: The War Against Germany*, p. 199.

6002. MARKING SYSTEMS

A good marking system allows a force to quickly pass through a breached lane thereby maintaining momentum, gives confidence in the safety of the lane, and helps prevent casualties. There are two critical components to a lane-marking system:

- Marking device.
- Marking pattern.

Marking Device

Currently, the Marine Corps uses the minefield marking kit, TAMCN B1320, for marking breached lanes through obstacles. Buttoned-up vehicle crews must be able to see lane markings. Vehicles which have infrared sights can see heat sources through smoke. Local commanders have the discretion to mark hazardous areas and routes through them using whatever materials are available. The method of marking should be passed to all forces from all friendly countries involved. Flares, bicycle flags on 6-foot nylon poles, highway cones, engineer stakes with engineer tape, painted 55 gallon drums, chemical lights and/or other expedient devices as shown

in figure 6-01 can be used to mark breached lanes. Large air panels make high visibility far recognition and approach markers.

Expedient lane marking from Operation DESERT STORM

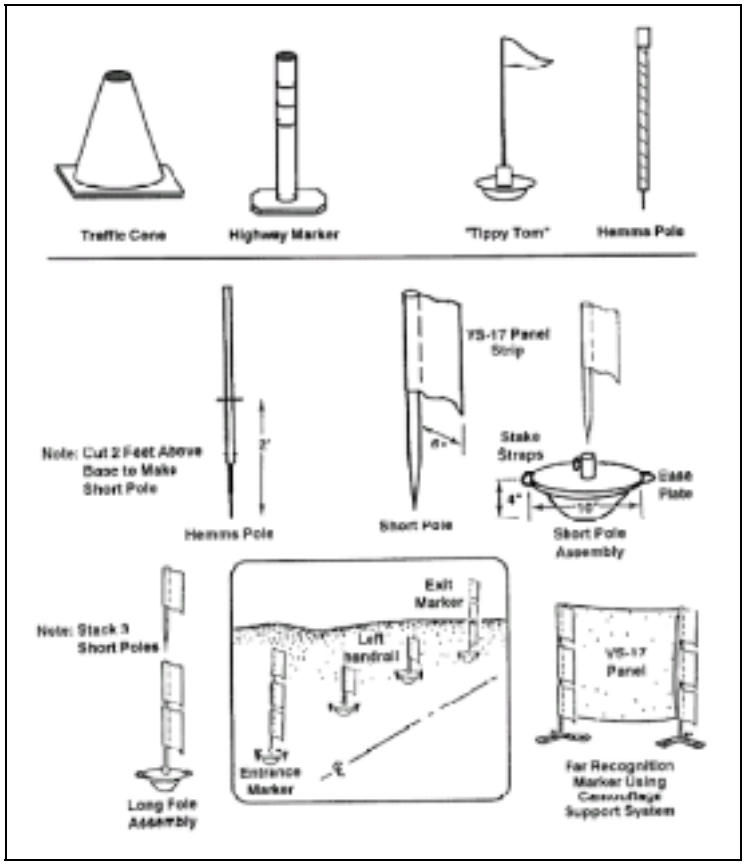


Figure 6-01 Examples of expedient marking devices

Marking Pattern

No matter what marking devices are used, the marking pattern should remain the same.

Far Recognition Marker. A far recognition marker is highly visible and helps identify the location of a breached lane from a great distance. This is the first marker an advancing unit will encounter as it approaches a breach site. The far recognition marker, depending on terrain and visibility, should be approximately 700 meters from the breach lane entrance. Several far recognition markers may be required. It is primarily used when passing forces through a lane where distance, visibility, or terrain do not allow direct observation of the final approach marker. The far recognition marker indicates the point at which forces should begin changing their formation for lane passage. A far recognition marker may be used for two breached lanes if the lanes are 200 to 400 meters apart. When a far recognition marker serves more than one lane or there are limited visibility conditions, guides should be posted to direct traffic. When a breached lane is converted to two-way traffic, a far recognition marker is required for each two-way lane.

Final Approach Marker. The next marker a unit will approach is the final approach marker. The final approach marker should be about 200 meters from the breach lane entrance. A final approach marker is a highly visible marker that helps identify entrance funnel markers from a distance. It is located between the far recognition marker and the entrance funnel markers. The final approach marker provides unit commanders a reference point toward which to maneuver his forces. Company sized units begin changing to a column formation. When possible, the final approach marker should be different from far recognition markers.

Entrance Funnel Markers. Entrance-funnel markers augment entrance marking. The wedge formed by the funnel markers channelizes and forces small units into a column formation and allows drivers and tank commanders in making last-minute adjustments before entering the lane.

Entrance Markers. Entrance markers indicate the start and width of a breached lane. Clear identification of the entrance markers is essential to prevent individuals or vehicles from going into an obstacle such as a minefield. They should be visibly different from lane markers so that individuals know when they are first entering a breached lane. When the friendly or forward edge of an obstacle is unclear (as in a buried minefield), the breach force should mark the entrance wherever obstacle reduction begins.

Handrail/Lane Markers. Handrail/lane markers are placed along the length of a breached lane from the entrance to the exit. Handrail/lane markers should be spaced no more than 15 meters apart, and may be closer if the Breaching task force commander so determines. In deciding to place markers closer together, the Breaching task force commander must consider the depth of the obstacle, terrain, and the availability of marking materials. Lanes must have a left handrail at a minimum. Drivers and footmobile forces use entrance markers to gauge the breached lane width when only the left handrail is marked and proceed keeping the left handrail immediately on their left. As the operation progresses, lane marking should be improved to include both left and right handrails.

Exit Markers. Exit markers indicate the end of a breached lane. The exit identifies the point at which movement is no longer confined to the lane path. Exit markers should be different from handrail markers so that individuals know when they are no longer in the breached lane. They may be the same as the entrance markers. Exit markers also indicate the width of the breached lane. This visual reference is critical when only the left handrail/lane is marked.

Exit Funnel Markers. Exit funnel markers help prevent the premature deployment of the passing force into a combat formation before they are safely outside the obstacle. When the lane is expanded to two-way traffic, they become the entrance funnel markers for returning traffic.

Far Side Final Approach Marker. A far side final approach marker helps returning traffic to clearly identify the lane from their side. It should be centered on the lane and placed approximately 200 meters beyond the exit.

Far Side Far Recognition Marker. When a breached lane is converted to two-way traffic, a far recognition marker is required for each two-way lane and should be placed 500-700 meters from the breach lane entrance.

6003. TRAFFIC CONTROL GUIDES

Traffic control guides should always be placed in at least teams of two. Traffic control guides are normally placed at the final approach marker, but may be placed at the far recognition marker is the Breaching task force Commander desires greater control of the area. Traffic control guides must have solid communication with the Breaching task force Commander to assist in the movement of forces through the breached lanes, allowing for changes in the traffic pattern and giving flexibility to the Breaching task force Commander. Traffic control guides assist in the turnover of the lanes to follow-on forces for further expansion and marking of the lanes.

Guides placed for traffic control should know the—

- Traffic control plan
- Azimuth and distance to the breach lanes(s).
- 8-digit grid coordinate of the lane if it is entered into the GPS or EPLRS.
- Level of lane marking and type of markers used.
- The current status as the lanes improved, expanded, and maintained.

6004. LEVELS OF LANE MARKING

There are three levels of marking for breached lanes:

- Initial.
- Intermediate.
- Full.

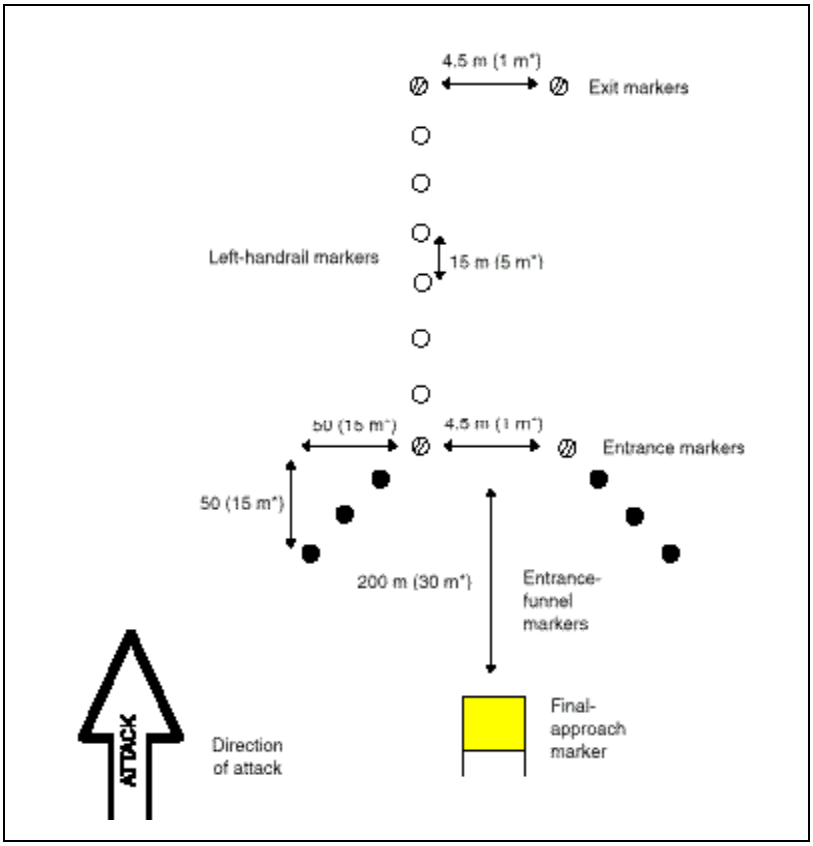
Each level of marking provides increased safety and accuracy of lanes. To maintain the momentum of the attack, initial marking is done rapidly. Intermediate marking is a safety

improvement until full two-way marking can be accomplished by follow-on forces. Regardless of the level of marking, lanes must be 5 meters wide to accommodate all wheeled and tracked vehicles. Lane marking must be absolutely clear to all involved in breaching operations, especially vehicle operators, and to follow-on forces to prevent unnecessary loss of life.

Initial Lane Marking

The initial lane marking pattern is emplaced by the Lane Marking Team of the Breach Force immediately after the lane is reduced and proofed. Initial lane marking is limited to those markings needed to pass assault forces rapidly through a breached lane. At a minimum it should have entrance funnel markers, entrance markers, left handrail/lane markers, and exit markers. The far recognition and final approach markers should be emplaced enroute as the Breach Force passes those designated locations. The entrance, entrance funnel, left handrail/lane, and exit markers should be the next markers to be emplaced as shown in figure 6-02. Exit markers are spaced the width of the lane and placed at the end of the reduced lane. The Assault Force does not have to wait until the final approach and funnel markers are in place before passing through the lane.

Figure 6-02. Initial lane with final approach and entrance funnel markers.



Intermediate Lane Marking

Initial lane marking should be improved to intermediate lane marking as soon as possible. Intermediate lane marking has two goals: to assist in the passage of larger, more distant forces, and to provide marking for two-way, single-lane traffic. Intermediate lane marking builds on the initial lane pattern by adding right handrail/lane markers, exit funnel markers, far side final approach markers, and far recognition markers (see figure 6-03). To speed the passage of follow-on forces, right handrail and far recognition markers should be the first markers emplaced. Traffic control guides should be moved to far recognition markers since these markers may indicate more than one breached lane.

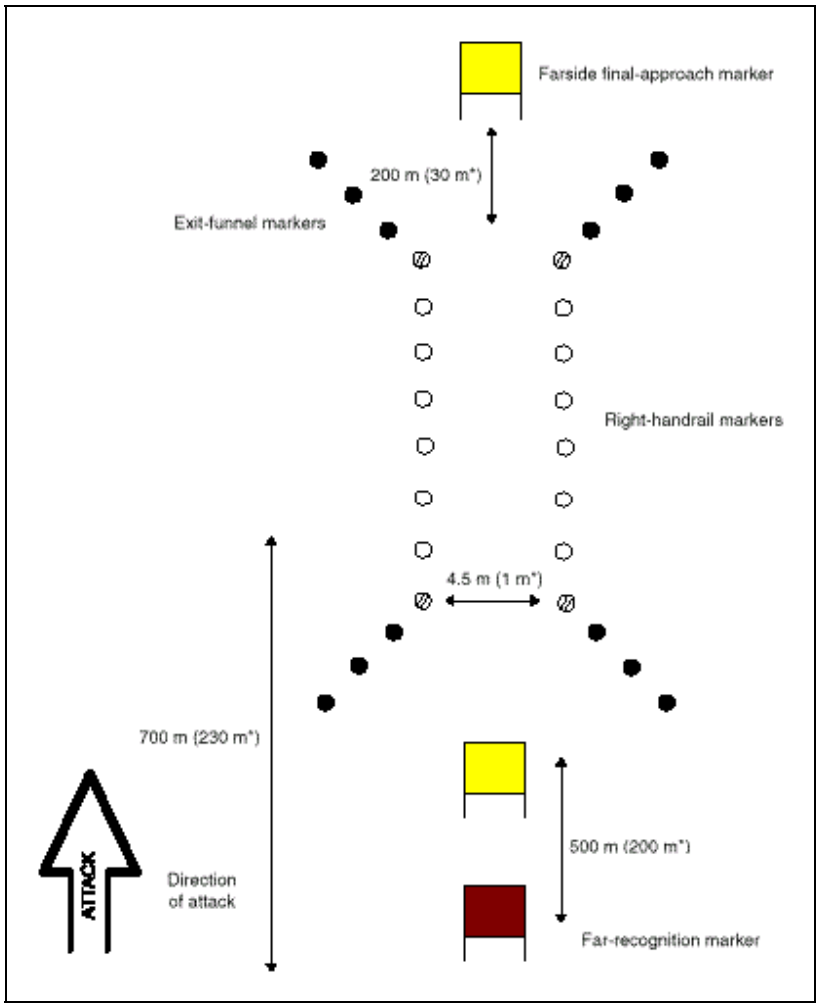
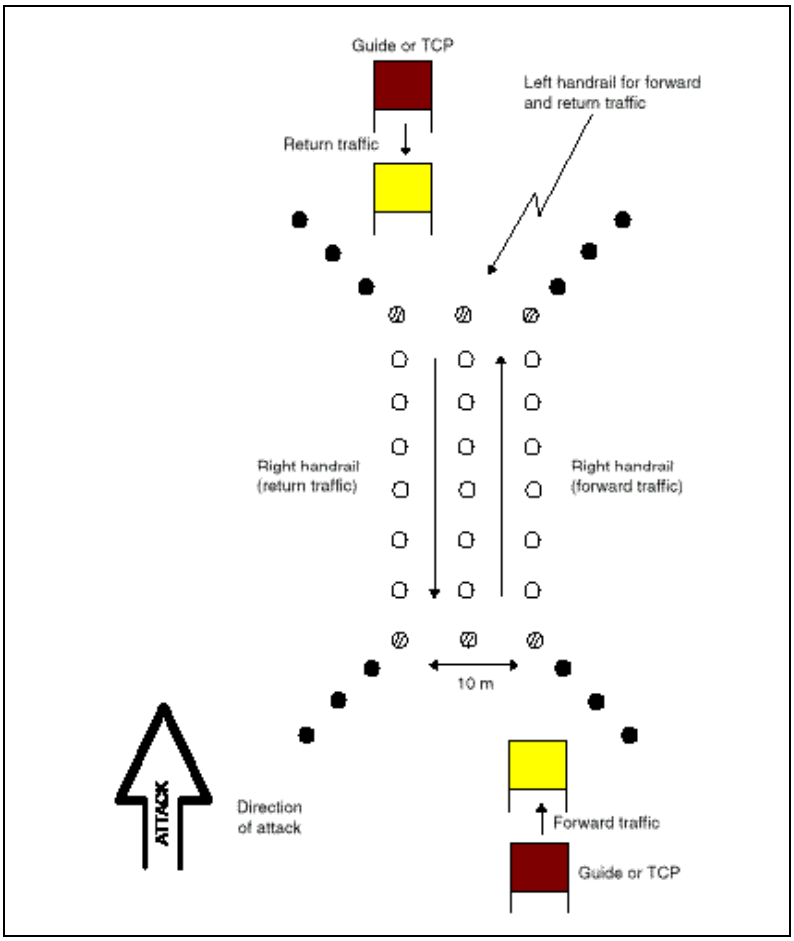


Figure 6-03. Intermediate Lane Marking

Full Lane (Two-way) Marking

Full lane marking is normally not part of an initial breaching operation. It is usually accomplished by follow-on forces who possess sufficient materials to reduce, proof, mark the additional lanes. It involves expanding the width of the lane for two-way traffic and modifying the marking pattern for two-way traffic. Full lane, or two-way, marking is accomplished beginning at the left handrail/lane markers. The new lane must be reduced and proofed 5 meters wide. Once proofed, the entrance, exit, right handrail/lane, funnel, final approach, and far recognition markers are emplaced (see figure 6-04). A barbed wire or concertina fence (one strand minimum) is laid 1 meter above the ground to connect funnel, entrance, and handrail/lane markers and exit pickets. Forces should always use the right lane when there is two-way traffic, just as on US roadways. In the full lane marking pattern, funnel markers extend out from the entrance and exit markers on the outside only, not in the center of the two lanes. Far recognition markers and final approach markers are centered on the entrances of each traffic lane. The minefield marking kit (TAMCN 1320) does not contain the long pickets and barbed wire necessary to emplace the full NATO standard marking. Full lane marking should always be used when marking a lane through obstacles along a major supply route or passage lane.

Figure 6-04. Full Lane Marking



Complex Obstacles

The MAGTF and Breaching task force Commanders must decide how they will mark complex obstacles and multiple obstacle belts. Basically they can be marked as separate, independent obstacles (see figure 6-05) or they can be marked as one entire obstacle system (see figure 6-06). Driving factors will be time, materials, and personnel available.

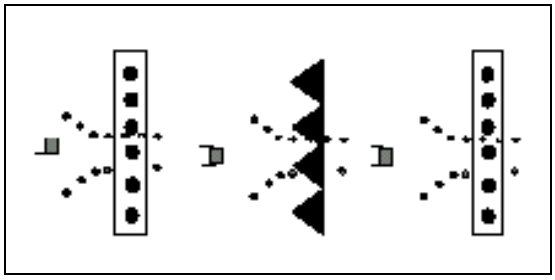


Figure 6-05. Marking a complex obstacle (independently).

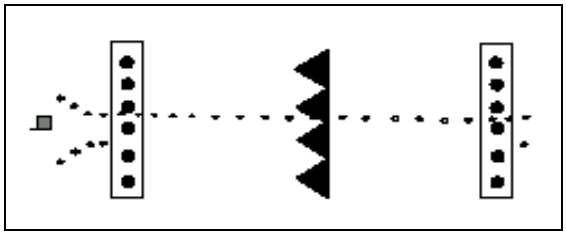


Figure 6-06. Marking a complex obstacle as a system.

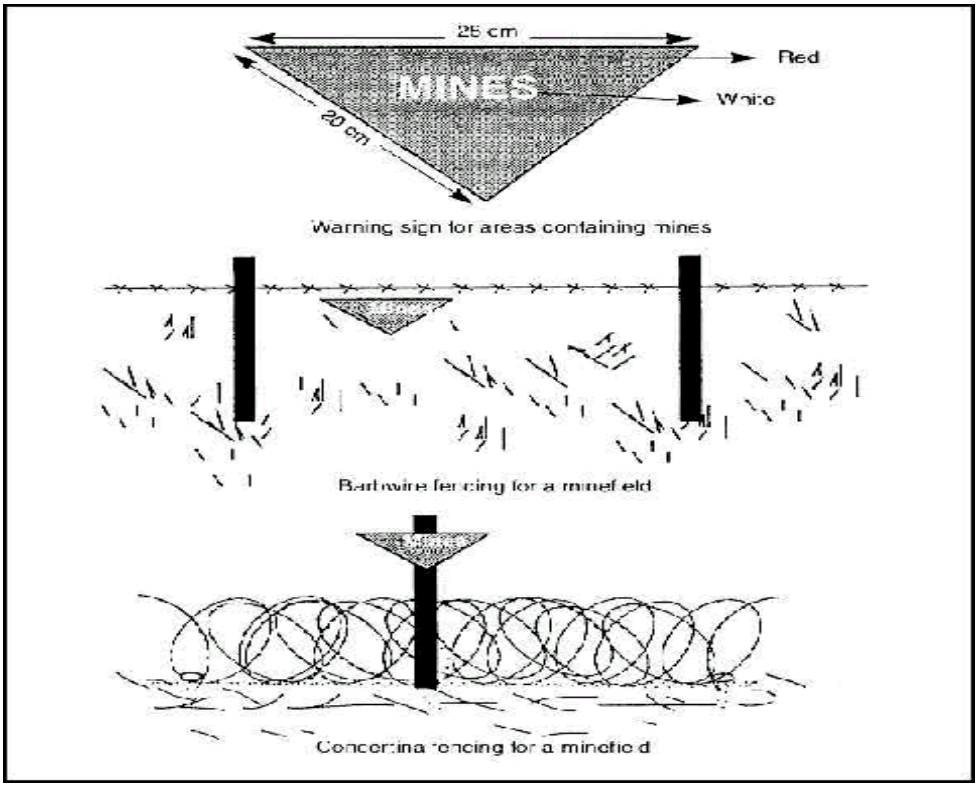
6005. STANDARDIZATION AGREEMENTS (STANAG) 2002/2036/2889

These STANAGs outline the established NATO guidelines for marking contaminated or dangerous areas, mines, and routes through hazardous areas. Regardless of the marking device used, the lane entrance point, exit point, and left and right handrail/lanes must be marked. The entrance and exit of a lane must be different from other markers and handrail/lane markers cannot be placed at intervals greater than 30 meters.

North Atlantic Treaty Organization (NATO) Standard Markers

Warning Signs. NATO standard warning signs are designed to mark hazardous areas such as NBC contaminated areas, minefields, chemical minefields, barriers, booby-trapped areas, and unexploded munitions areas. The signs are inverted right-angled isosceles triangles, 11.5 inches at the base, and 8 inches on each side. The triangles may be constructed of any durable material which can last for 60 days. The signs are hung with the apex pointing down and the sign markings facing the friendly side of the obstacle (see figure 6-07). Signs should be placed approximately waist high every 10-50 meters around the area as terrain dictates. Each nation should illuminate the signs at night as required, but there is not set standard for this. The coloring of the signs varies depending on the type of obstacle or hazard being marked as indicated on the table below. Details are in STANAG 2002.

Figure 6-07 . NATO Warning Signs

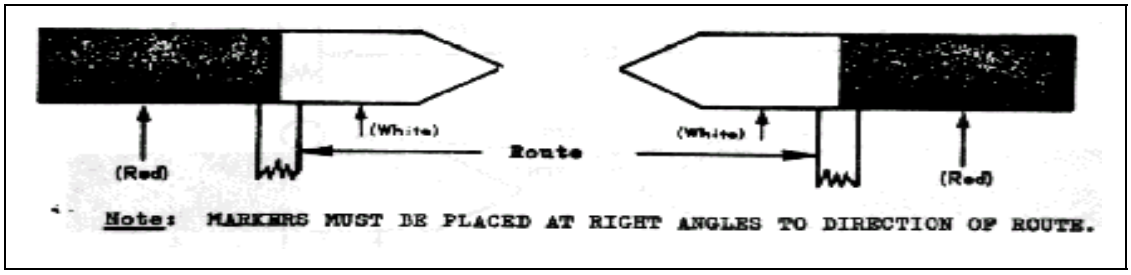


Hazard	Triangle Primary Color	Markings	Inscriptions
Chemical minefields	Red	Yellow Stripe	Yellow
Nonchemical minefields	Red	None	White
Booby-trapped areas	Red	White Stripe	None
Unexploded Ordnance	Red	White bomb	None
Chemical Hazard	Yellow	None	Red
Biological Hazard	Blue	None	Red
Radiological Hazard	White	None	Black

Handrail/Lane Markers. What NATO calls lane markers, US Forces call handrail markers. NATO standard lane markers are arrow shaped signs painted red and white. Red indicates danger and white indicates the safe or cleared area. The white portion of the NATO marker must point inward toward the breached lane (see figure 6-08). NATO markers are placed at right angles to the direction of travel. Units may fabricate NATO markers if they are not available. Markers must be large enough to be visible from 50 meters under most daylight conditions and have a field life of 60 days. When marking a full, or two-way lane, NATO lane markers are placed with

the red portions back-to-back over the space between the lanes, the white arrows still point towards the safe lanes. Marking devices should be converted to NATO standard as early as possible. Details are in STANAGs 2036 and 2889.

Figure 6-08. NATO Standard Marker

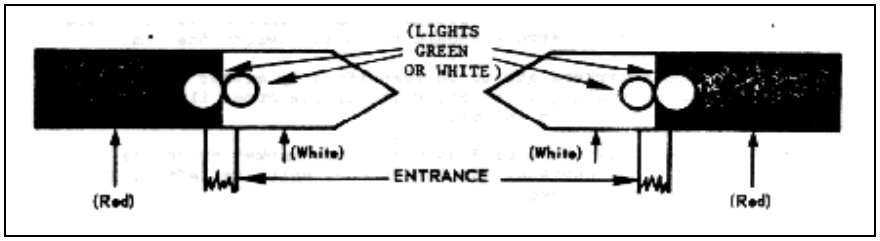


Night Marking. NATO uses white or green lights to illuminate markers at night. Lights must be visible from a minimum of 50 meters under most conditions. Light sources for marking at night must have a continuous life of 12 hours. Whenever possible, the light color should be consistent throughout the lane. The commander decides whether the light is placed on top of the NATO marker or on the vertical surface so that it illuminates the markers. The tactical commander should decide whether the route markers are illuminated for one way or two way traffic. When lights are used, they should indicate the appropriate direction of travel to forces passing through the lanes. There should be no way for anyone to confuse the direction of travel in a lane.

Entrance and Exit Markers. Entrance and exit markers are marked with either two green or two white lights placed horizontally so that they are clearly visible (see figure 6-09).

Figure 6-09 . NATO Entrance/Exit Marking at Night

Handrail/Lane Markers. One white or green light is used on funnel and handrail/lane markers (see figure 6-10.)



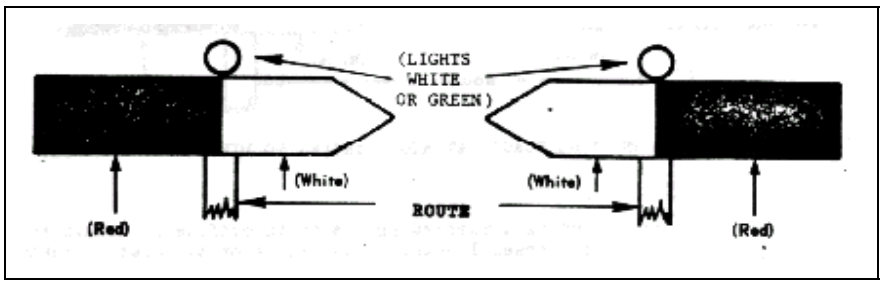


Figure 6-10 . NATO Left/Right Handrail/Lane Marking at night.

Full Lane Marking

For a full lane-marking pattern, the center of the lane is marked and directional arrows should be placed to clearly identify lane traffic direction (see figure 6-11). Two NATO markers are used at entrance and exit markings to make them distinctly different. One NATO marker is used for each funnel marker and each left and right handrail/lane marker. NATO marking for limited visibility is shown in figure 6-12.

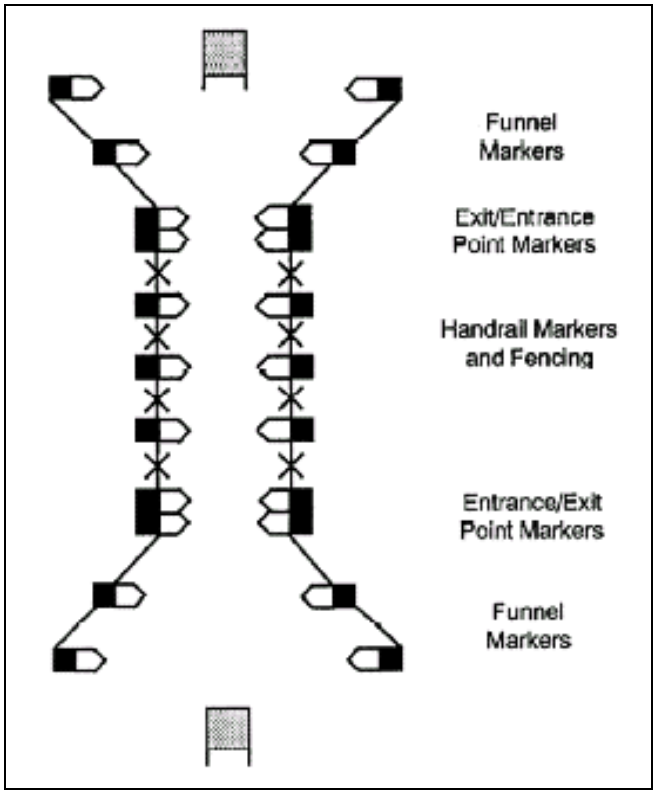
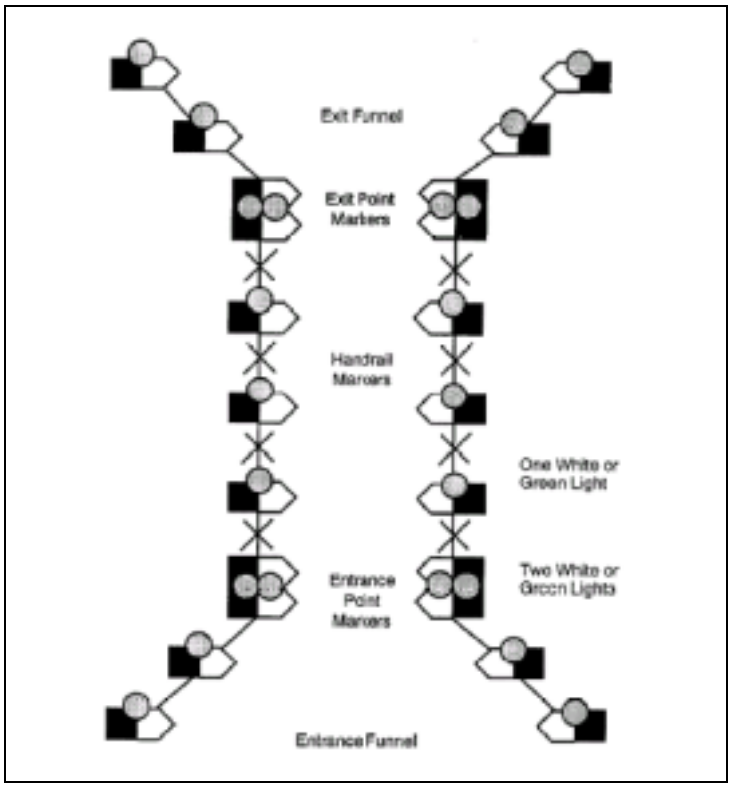


Figure 6-11. NATO Full Lane Marking.

Figure 6-12. NATO Marking for limited visibility



6006. PLANNING AND TASK ORGANIZATION

The following table demonstrates the different units who actually conduct breach lane marking and the differences in each level.

	Initial	**Intermediate**	**Full (two-way)**
	Lane Marking Team	Lane Marking Team	Follow-on forces
When	▪ Lanes are reduced ▪ Passing the Assault Force	▪ Passing the main body ▪ Passing a force which cannot see the lane ▪ Passing follow-on forces	▪ Situation requires uninterrupted flow of traffic
Markers	▪ Far recognition ▪ Funnel entrance ▪ Entrance/exit ▪ Left handrail/lane ▪ Final approach	Add: ▪ Right handrail/lane ▪ Funnel exit ▪ Farside final approach ▪ Traffic control guides	Expand lane to 5 meters each direction Add: ▪ Farside recognition ▪ Farside traffic control guides Adjust: ▪ Entrance/exit ▪ Handrail/lanes to new widths ▪ Final approach centered on each lane ▪ All traffic guides provided by follow-on forces

Appendix A

Breaching Plan Appendix

The breaching plan is normally appendix 15 to the operations annex.

CLASSIFICATION

Copy ___ of ___ copies
Issuing Headquarters
PLACE OF ISSUE
Date/time of issue

APPENDIX___(Breaching Plan) to ANNEX C (Operations) to Operation Plan ___

Ref: (a) SOP for Breaching Operations
(b) MCWP 3-17.3, *Breaching Operations*

Time Zone: X

1. SITUATION

a. Enemy Forces. Refer to Annex B (Intelligence) and current intelligence summary. Describe enemy obstacle capability and probability of employment.

b. Friendly Forces. Note higher, adjacent, and supporting forces involved in the operation.

c. Attachments and Detachments. Refer to Annex A (Task Organization): support, assault, and breach force organization.

d. Assumptions. State any assumptions on which obstacle breaching planning is based.

2. MISSION

State the mission to be accomplished by obstacle breaching operations.

3. EXECUTION

a. Commander's Intent and Concept of Operations.

(1) Commander's Intent.

(2) Concept of Operations. Summarize the intended course of action for obstacle breaching operations.

b. Tasks. In separate numbered paragraphs, assign breaching tasks and responsibilities to each appropriate unit.

c. Coordinating Instructions. Include coordination and control measures applicable to two or more units. The marking system should be well defined to include the location of traffic control guides and traffic priority.

4. ADMINISTRATION AND LOGISTICS

Refer to Annex P (Combat Service Support). Provide a statement of the combat service support requirements for obstacle breaching operations, including resupply.

5. COMMAND AND SIGNAL

Refer to Annex K (Communications-Electronics) and include any special instructions such as use of smoke.

/S/

_____

Appendix B

Navy MCM and Amphibious Breaching Equipment

This appendix focuses on means to overcome the naval mine threat. However, natural obstacles such as tidal range, coral heads, and rocks also limit the ability of an ATF to conduct an amphibious breach, and must always be taken into consideration. Naval mines may be triggered by various types of fuzing: contact, magnetic influence, acoustic influence, pressure influence, or a combination thereof. For a successful amphibious breach, a variety of minehunting, minesweeping, and mine neutralization assets should be employed.

MCM equipment and technology is constantly being upgraded. Commanders should always be aware of the MCM assets that are available. The importance of naval mine warfare and the Navy/Marine Corps ". . . From the Sea" philosophy dictate that obstacles which limit our ability to maneuver at sea must and will be overcome.

PLATFORMS

Airborne Mine Countermeasures (AMCM) -- The MH-53E Sea Dragon helicopter (see figure B-1) provides the Navy rapid response MCM capabilities around the world.

Surface Mine Countermeasures (SMCM) -- There are two types of SMCM ships. First, the Avenger class (MCM 1) as shown in figure B-2. These are glass-sheathed wooden hull ships that can detect, classify, and neutralize moored and bottom sea mines, capable of mechanical, magnetic, and acoustic influence minesweeping. Secondly are Osprey class (MCH 51) coastal mine hunter ships. These are glass-reinforced plastic ships designed to clear vital waterways, chokepoints, and harbors.

Figure B-1. AMCM Helicopter, MH-53E Sea Dragon

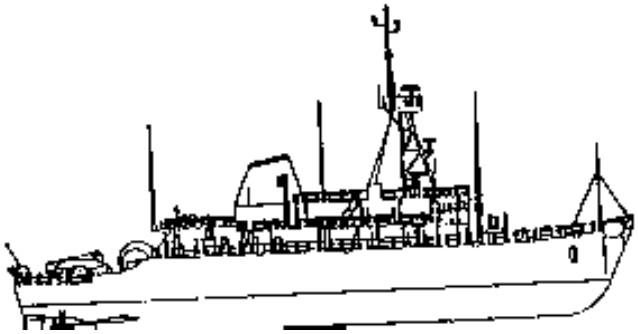


Figure B-2. Avenger (MCM-1) Mine Countermeasures Ship

Landing Craft Air Cushion (LCAC)/Mk-5 Assault Breaching System (ABS)—This platform's high speed and ability to hover over the water makes it less susceptible to destruction from sea mines than water displacement craft (see figure B-3). It can move over many natural obstacles which limit the mobility of displacement craft. Mine neutralization and/or minesweeping equipment can be placed on this platform in a contingency. This capability is in the developmental concept stage.

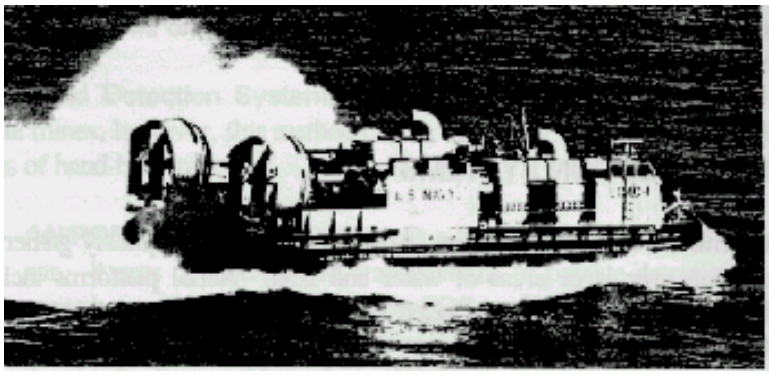


Figure B-3. LCAC/Mk-5 ABS

Unmanned Underwater Vehicles (UUVs) -- UUVs can be mounted with influence sweep gear to provide an unmanned capability to sweep dangerous areas.

MINE DETECTION SYSTEMS

Airborne Detection Systems—Airborne systems can quickly gather information over large areas of water and land. Aerial platforms include helicopters, strategic satellite-based sensor systems, and unmanned aerial vehicles.

AN/AQS 14. The AN/AQS 14 is a helicopter-towed, multi-beam side looking sonar. It has a display of two continuous moving television-like window pictures.

Magic Lantern 90. Magic Lantern 90 is an airborne laser system used to detect large moored mines. It uses the same type of technology as airborne laser detection systems used for land operations.

Detection by Personnel and Mammals

Navy EOD MCM Detachments. Navy EOD MCM Detachments are specially trained and equipped to provide real-time/near real-time intelligence in mine locatiom, identification, and exploitation.

SEAL Teams. SEAL teams used for reconnaissance can relay information on underwater obstructors as well as manmade obstacles such as sea mines.

USMC Force Reconnaissance Company. This company has the capability to conduct hydrographic studies.

Marine Mammal Systems (MMS). Specially trained marine mammals operate with Navy EOD MCM Detachments to detect, locate, mark, and neutralize moored and bottom mines. They have some capability to detect buried mines.

Mk 4. MMS used to detect moored mines, including close-tethered, deep-moored mines.

Mk 7. MMS used to unburied bottom mines and buried ground mines.

Hand-Held Detection Systems—Divers can use hand-held systems to locate mines, however, this method can be very slow.

AN/PQS 2A. The AN/PQS 2A is a hand-held mine relocation sonar used by Navy EOD divers. It uses continuous FM transmissions or passive detection of a sonar beacon to locate mines. The PQS is effective in detecting partially buried mines (more than 50 percent buried). Its performance is degraded when searching for mines on an irregular or cluttered sea bed.

Mk 25. The primary magnetic locating device used for MCM is the Mk 25 Ordnance Locator. This is used by EOD MCM forces to locate ferrous objects. It has a relatively short range and is therefore more of a localization device than a minehunting system.

Surface Ship Detection Systems

AN/SQQ 30. The AN/SQQ 30 is a solid-state mine detection and classification sonar. It is also lowered from under the hull by a cable. It can be operated more easily and at greater depths than the AN/SQQ 14.

AN/SQQ 32. The AN/SQQ 32 is a variable-depth mine detection and classification sonar. It is designed for deep water mine hunting. It is better at discriminating between mines and other objects than the AN/SQQ 14 or AN/SQQ 30. It can identify objects using near picture quality images and can be used from within the hull in shallow water. The AN/SQQ 32 can detect and classify buried mines.

MINESWEEPING SYSTEMS

Minesweeping is the technique of clearing mines using either mechanical, explosive, or influence sweep equipment. Mechanical sweeping removes, disturbs, or otherwise neutralizes the mine; explosive sweeping causes sympathetic detonation in, damages, or displaces the mine; and influence sweeping produces either the acoustic and/or magnetic influence required to detonate the mine (Joint Pub 1-02).

Airborne Minesweeping Systems—The U.S. Navy currently utilizes several types of helo-pulled mine sweepers:

A MK 2. The A MK 2(g) can also be towed by an aerial platform. A-MK-2(g) Rattlebars are a mechanical sweep consisting of closely fixed parallel pipes towed through the water. Water flowing through the pipes causes the pipes to bang together and produce the acoustic output. The acoustic frequency generated is uncontrolled medium to high frequency broadband noise. The sweep is very effective but has a small actuation width due to limited volume. Frequency and volume are dependent on tow speed, but the device will self-destruct if towed too fast. An A-MK-2(g) is used in shallow water to simulate hull noise and cavitation.

AN/37U-1. The AN/37U-1 is an advanced MK 103. It can be controlled from a helicopter for use in greater depths. Depth sensors are used to vary the control surfaces and maintain the indicated depth.

Magnetic Orange Pipe (MOP). MOP was developed for AMCM use in shallow water, as well as fresh and brackish water. The MOP is a ferrous metal pipe 30 feet long, 10 3/4 inches in diameter, and weighs 1,000 pounds. It is filled with polystyrene foam to provide buoyancy. The MOP must be remagnetized prior to each mission. It does not have a large magnetic field and is limited to use in water where other sweeps cannot be used. A helicopter can tow as many as three MOPs in tandem.

MK 103. The MK 103 is a helicopter-towed mechanical cutter array that is designed to sever the cables which keep moored mines in place. This sweep may also be towed by the MCAC.

MK 104. The MK 104 is a helicopter-towed acoustic sweep device that makes cavitation noises like a ship to trigger acoustic or seismic mines on the ocean bottom.

MK 105. Magnetic Minesweeping System is a hydrofoil sled towed by the MH-53E AMCM helicopter. Mounted on the sled is a 2,000 amp gas turbine generator which

provides electric currents in the water to activate magnetic influence mines. The device will sweep in water as shallow as 12 feet. See figure B-4.

MK 106. The MK 106 is a helicopter-towed acoustic/magnetic sweep device. It consists of the MK 105 sled with an attached MK 104.

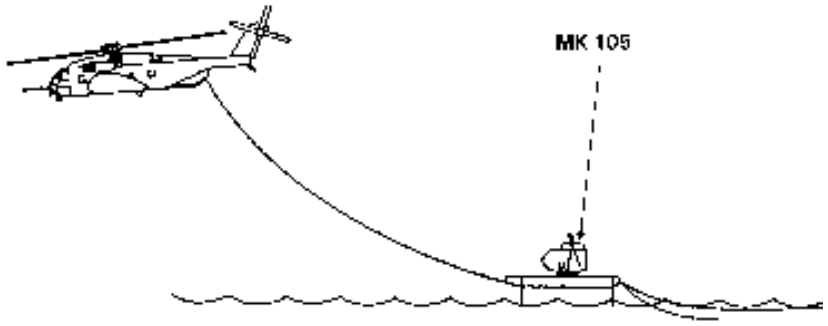


Figure B-4. MK 105 Under Tow.

Surface Ship Minesweeping Systems

A MK 2. The A MK 2 is an acoustic sweep device that consists of parallel pipes or bars that are towed in different variants and at different speeds to produce different frequencies.

AN/SLQ 53. The AN/SLQ 53 is a mechanical cutter array that is designed to sever the cables which keep moored mines in place. It is being developed for the MHC-51 Osprey class ship. It will enable ships to mechanically sweep for deep and shallow moored mines.

TB 26. The TB 26, originally called A-MK-6(b), is a low frequency device that contains electrically driven eccentric oscillating diaphragms to create the acoustic signal. The eccentrics can be changed to alter the frequency range.

TB 27. The TB-27, originally called A-MK-4(v), is a medium frequency device with an electric motor-driven hammer striking a steel diaphragm to cause broad band noise. It can be operated in steady, pulsed, or modulated patterns.

M MK 5. The M MK 5 is a magnetic sweep device that has a straight tail, two-electrode sweep.

MOP. The MOP is a magnetized pipe filled with styrofoam that can be pulled behind an MCM ship. It is used to defeat magnetically influenced mines.

AN/SLQ 38. The SLQ 38 wire sweep is designed to be used against mines which are moored close to the surface. It is standard on the MSO and MCM-1 class ships. The wire can be rigged to one or both sides of a hull and pulled through the water. It can also be rigged to two different ships to increase the swept area.

MK 105. Components of the Mk-105 system are used when outfitting an MCAC for magnetic sweeping.

MINE NEUTRALIZATION

Direct Fire—Direct fire from ships, aircraft, landing craft, or AAVs can be effective in neutralizing floating mines.

M58 Mine-Clearing Line Charge (MICLIC)—MICLICs (see Appendix C) can be loaded onto and fired from various platforms, including AAVs and landing craft. Water has a tamping effect on the MICLIC and increases the overpressure which is created. Figure B-5 shows a LCAC preloaded with 12 MICLICs (Mk-5 Assault Breaching System). Tests using this configuration have been conducted and are ongoing by the Surface Warfare Development Group, Norfolk, VA.

MK 1 Mine Clearance System—The MK 1 clearance system (see Appendix C) provides the capability of conducting breaches from the water. It consists of the MK 154 mine clearance launcher and three M59 MICLICs (a variant of the M58), with an AAV as the host vehicle. The MK 1 mine clearance system can perform multiple breaches of the same obstacle or breach a single lane up to 270 meters in length. This is the primary explosive breaching system of the Marine Corps.

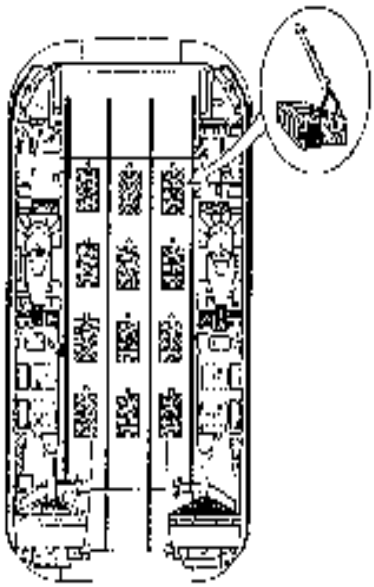


Figure B-5. LCAC Preloaded with 12 MICLICs

Navy EOD Divers—Navy EOD divers can manually place explosives to destroy or remove antilanding obstacles such, wire, debris, or sea mines. However, this can be very dangerous and time intensive.

SLQ 48 Mine Neutralization System (MNS)—This system is a remotely operated submersible vehicle used by MCM-1 and MHC-51 class ships. The SLQ 48 is commanded from the launching ship by an umbilical cable. It can be tracked by shipboard sonar and has a television for examining the target. The SLQ 48 carries cable cutters and explosive mine destruction charges.

Brute Force Mine Clearance -- *Brute force* refers to the highly desirable but rarely practical requirement to clear or neutralize the mines in an area all at once. In theory the use of a large enough force, sympathetic detonation or neutralization of all the mines in an area could be accomplished in the same instant. In practice it has not yet proven to be feasible. Attempts have been made using saturation bombing and naval gunfire, with little success because these methods do not provide a uniform distribution of explosives. Thus, while some mines may be detonated and others damaged, the commander cannot, with confidence, consider the area to be cleared to a safe level. In the future, it may be possible to clear the surf zone or other shallow water zones with brute force techniques using SABRE/DET or similar equipment.

STATIC BOMB TESTS

The summary of static bomb tests located on the following pages is derived from an Army Air Forces board study completed on 21 March 1944. It was undertaken to develop a technique for the passage of beach and underwater obstacles. Obstacles used in 1944 are similar to those antilanding defenses which forces may encounter today. Although this study was conducted over 50 years ago, it still contains useful information that can be applied to help determine the effects of various sized bombs and explosives on beach and underwater obstacles.

All tests were fired with electric caps from the tail with the exception of tests no. 24 through 29. In these tests, the bombs were fired from the nose with electric caps.

Test#	Obstacle	Bomb	Position

1	6' X 6' reinforced concrete wall	200 lb demolition	5' below surface at 60° angle with horizontal, simulating high-level bombing with delay fuzing.
2	6' X 6' reinforced concrete wall	1,000 lb demolition	3' below surface and 5' in front of wall horizontal, simulating low-level bombing with delay fuzing.
3	Dragons teeth	500 lb demolition	5' below surface at 60° angle with horizontal, simulating high-level bombing with delay fuzing.
4	Dragons teeth	500 lb demolition	Flat on surface, simulating low- level bombing with delay fuzing.
5	Log piling	500 lb demolition	60° angle with horizontal, with nose just in surface, simulating high-level bombing with instantaneous tail fuzing.
6	Log piling	500 lb demolition	3' below surface at 60° angle with horizontal, simulating high-level bombing with delay fuzing.
7	Log piling	500 lb demolition	Flat on surface, simulating low- level bombing with delay fuzing.
8	Antitank ditch	100 lb demolition	4 in a train on the surface at 60° angle with horizontal, simulating high-level bombing with instantaneous tail fuzing.
9	Antitank ditch	100 lb demolition	5' under the crest of the high side of the ditch and 5' back of the lip, simulating extremely low-level bombing with delay fuzing.

1

Results
TEST #1: Successful breach for troops. Resulting crater impassable to vehicles. 2 teller mines 30' and 40' from the bomb were not detonated. 11 man squad passed through crater in 15 seconds. Same squad scaled wall in 23 seconds.
TEST #2: Section of wall moved back 2'. Otherwise unaffected. Crater formed impassable to vehicles.
TEST #3: 7 teeth removed completely, 2 teeth damaged. Resulting crater impassable to vehicles. First 3 lines of teeth unharmed.
TEST #4: 3 teeth completely destroyed, 1 pushed into crater of first bomb, 2 badly damaged and several slightly damaged. Results on the whole were better than in test #3. First 3 rows of teeth unaffected.
TEST #5: 3 piles were removed and a crater 16.5' in diameter and 2.5' deep was formed. A teller mine 40' from the bomb was detonated. Wire was removed the entire width of the entanglement.
TEST #6: 8 piles were removed and a crater formed 8' deep and 22' in diameter, impassable to vehicles. A teller mine 30' from the bomb was not detonated. Wire outside of the crater was not removed.
TEST #7: 6 piles were removed and 2 damaged to ineffectiveness. Only a shallow crater was formed. The wire throughout the width of the entanglement was removed. Tanks could have passed through the obstacle.
TEST #8: 35' gap in wire on one side, 20' gap in wire on the other side. 2 teller mines 20' from the bomb detonated, 1 teller mine 25' from the bomb detonated; shallow craters formed on banks of ditch; ditch remained impassable to vehicles. The shallow craters formed would not have hindered the passage of vehicles.
TEST #9: The high side of ditch was blown down and the wire in the ditch was covered by sand. A light and medium tank passed through the gap. After 5 minutes work by 5 men and a half-track, armored car and 2 1/2 ton truck passed through.

2

Test#	Obstacle	Bomb	Position
10	Antitank ditch	250 lb demolition	5.4' under the crest of the high side of the ditch and 9' back of the lip, simulating extremely low-level bombing with delay fuzing.
11	Underwater rails and barbed wire	500 lb demolition	Standing on nose, 60^{o} angle with horizontal under 1' of water, simulating high-level bombing with instantaneous tail fuzing. Bomb 5' from nearest rail.
12	Underwater rails and barbed wire	500 lb demolition	Flat on the sea floor under 3' of water, simulating low-level bombing with delay fuzing. Bomb 6' from nearest rail.
13	Underwater rails and barbed wire	1,000 lb demolotion	Flat on the sea floor in 3' of water, simulating low-level bombing with delay fuzing.
14	Underwater rails and barbed wire	2,000 lb demolition	Flat on the sea floor in 2' of water, simulating low-level bombing with delay fuzing.
15	Underwater rails and barbed wire	100 lb demolition	Flat on the sea floor in 2.5' of water 3 bombs placed .5', 1.0', and 2.0' from individual rails. Simulating low-level bombing with delay fuzing.
16	Tubular steel scaffolding	250 lb demolition	Flat on the sea floor perpendicular to line of obstacle, 4' inside obstacle from sea face, under 1' of water, simulating high-level bombing with instantaneous tail fuze.

1

Results
TEST #10: The high side of the ditch was blown down and the wire in the ditch was covered by sand. The sand was packed after the explosion. A light and medium tank, half-track, armored car and 2 1/2 ton truck passed through the gap.
TEST #11: Slight crater formed which rapidly filled in. 1 or 2 wires cut, no damage to rails.
TEST #12: A few strands of barbed wire were cut. No rails were removed. A shallow crater was formed 4' deep and 22.5' in diameter, which rapidly filled in.
TEST #13: 3 rails 7', 10', and 13' from the bomb were blown out, rail 10' from the bomb was untouched. Some wire remained in the crater formed. The crater rapidly filled in.
TEST #14: 4 rails 9', 10', 11', and 12' from the bomb were blown out; rail 18' from the bomb was untouched. All the wire in the crater formed was eliminated. The lip of the crater projected about 18" above the surface of the water immediately after the explosion but washed away in about 5 minutes.
TEST #15: Rail 2' from the bomb was bent over parallel to and 1.3' from the sea floor. Rails 1' and 5' from bombs were broken off .3' from the sea floor. No appreciable craters formed.
TEST #16: 15' of scaffolding was effectively removed with the exception of 1 tube in the center slanting seaward. It would not have stopped landing craft. The crater formed was negligible.

2

Test#	Obstacle	Bomb	Position
17	Tubular steel scaffolding	500 lb demolition	Standing on nose, 60^{o} angle with horizontal, 4.5' from seaward face of obstacle under 4' of wate, simulating high-level bombing with delay tail fuzing.
18	Tubular steel scaffolding	500 lb demolition	Flat on the sea floor parallel to and 4.5' from seaward face of obstacle under 3.5' of water, simulating low-level bombing with delay fuzing.
19	Tubular steel scaffolding	1000 lb demolition	Flat on the sea floor parallel to and 4.5' from seaward face of obstacle under 3.5' of water, simulating low- level bombing with delay fuzing.
20	Horned scullys	2,000 lb demolition	Standing on nose 60^{o} angle with horizontal under .5' of water, simulating high-level bombing with delay tail fuzing.
21	Horned scullys	1,000 lb demolition	Flat on the sea floor under 4' of water, simulating low-level bombing with delay fuzing.
22	Horned scullys	500 lb demolition	Flat on the sea floor under 4' of water, simulating low-level bombing with delay fuzing.
23	Barbed wire entanglement	20 lb fragmenta-tion bombs	Flat on the ground in a 30' band of double apron wire.
24	Barbed wire entaglement	20 lb fragmenta-tion bombs	A train of 3 on 15' centers standing on their noses at 60^{o} angle with horizontal through a 30' band of double apron wire, simulating high- level bombing with instantaneous nose fuzing.

1

Results
TEST #17: The end 43' of obstacles were removed; some tubes remained loosely waving in the gap under water but would not have stopped landing craft. The crater formed had no lip above the sea floor.
TEST #18: 25' of scaffolding was effectively removed. The crater formed had no lip above the sea floor.
TEST #19: 45' of scaffolding was effectively removed. The crater formed had no lip above the sea floor.
TEST #20: 2 adjacent scullys were shattered and blasted out of position 75' apart. The reinforcing held them together, however, and they remained as effective obstacles though out of place. The crater formed had no lip above the sea floor.
TEST #21: 2 adjacent scullys were shattered and blasted out of position 35' apart. One was 2/3 destroyed and the other remained an effective obstacle. The crater formed had no lip above the sea floor.
TEST #22: 2 adjacent scullys were blown 25' apart. They were slightly shattered and 1 lost a rail, but otherwise they were intact. The crater formed had no lip above the sea floor.
TEST #23: 1 or 2 wires were out.
TEST #24: The group of 3 mutually helped each other and cut more wires in their individual area than the single bomb in test #22 did, but they were not nearly as effective as 100 lb demolition bombs. About half the wires were out in the 30' band.

2

3

Test#	Obstacle	Bomb	Position
25	Antitank mines	100 lb demolition	A train of 5 on 25' centers standing on their noses at 60^{o} angle with horizontal, through minefield. Simulating high-level bombing with instantaneous nose fuzing.
26	Antitank mines	100 lb demolition	A train of 5 on 15' centers standing on their noses at 60^{o} angle with horizontal, through minefield. Simulating high-level bombing with instantaneous nose fuzing.
27	Antitank mines	100 lb demolition	A train of 3 on 15' centers standing on their noses at 60^{o} angle with horizontal, through minefield. Simulating high-level bombing with instantaneous nose fuzing.
28	Antitank mines	250 lb demolition	A train of 3 on 30' centers standing on their noses at 60^{o} angle with horizontal, through minefield. Simulating high-level bombing with instantaneous nose fuzing.
29	Antitank mines	250 lb demolition	A train of 3 on 15' centers standing on their noses at 60^{o} angle with horizontal, through minefield. Simulating high-level bombing with instantaneous nose fuzing.

Results
TEST #25: Path not adequate.
TEST #26: Due to 2 failures and 1 partial detonation, the test was inconclusive. Mines that detonated near bombs that fired are an indication of good results.
TEST #27: Indicates that a high percentage of clearance could be expected over a path 15' wide.
TEST #28: Indicates that a high percentage of clearance could be expected over a path 15' wide.
TEST #29: Indicates 92 percent clearance over a path 30' wide.

4

Appendix C

Breaching Equipment and Techniques Land Operations

This appendix contains information on breaching equipment which has been or is in the process of being fielded to the Fleet Marine Force. The variety of reduction techniques is virtually unlimited and depends on initiative and innovation. Many techniques involve common hand-tools such as shovels to knock down the sides of AT ditches, wire cutters to cut barbed wire, and axes and chain saws to cut logs and trees. Commanders should always be aware of and capitalize on the simple ways to get through obstacles.

BALLISTIC PROJECTILES

Ballistic projectiles have proven effective in neutralizing obstacles in certain situations. Rifle, machine gun, and cannon projectiles can be used against thin walls and mines that can be located. A tank's main gun and the SMAW are also effective.

BOMBING

Bombs have been used since World War II to reduce obstacles with mixed results. Bombing can reduce some obstacles; however, it requires extreme accuracy and can result in making large craters strewn with debris, thereby making the area impassable to vehicles. While not the preferred method, bombing is an obstacle reduction option available to commanders. See Appendix B for a summary of static bomb tests performed in 1944. These tests were conducted to find a technique for breaching beach and underwater obstacles. Although conducted over 50 years ago, the information should not be forgotten.

MANUAL EQUIPMENT AND TECHNIQUES

Assault Ladders—Folding assault ladders constructed from metal or wood can be carried on vehicles or by individuals. Figure C-1, shows an example of a steel folding ladder. The assault ladder is useful for passing individuals over gaps, walls, wire, and into buildings.

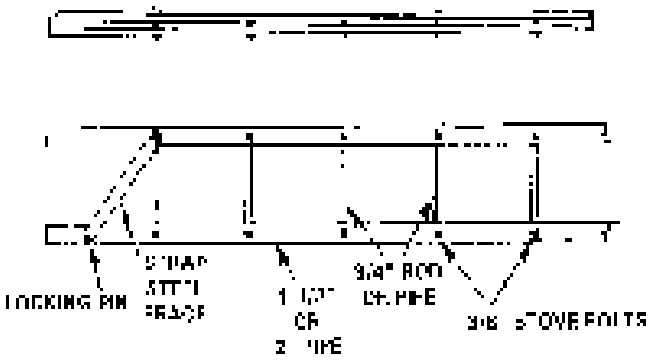


Figure C-1. Assault Ladder

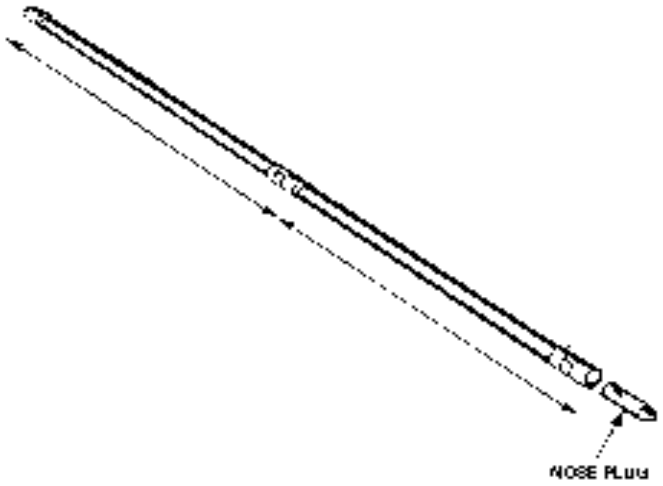
Bolt Cutters—After an area of wire has been cleared of mines and booby traps, bolt cutters can be used to breach wire. To reduce noise during a covert breach, cloth can be wrapped around the wire where it will be cut. The wire cutter then cuts part way through the wire. The wire is then bent back and forth until it breaks. Wire should be staked or tied down to prevent it from springing back and closing the breach.

Explosives—Surface-laid mines can be reduced by manually placing blocks of explosives next to them. These blocks can be either pre-primed with fuzes or attached in a line main and detonated. Other obstacles such as tetrahedrons, dragons teeth, and hedgehogs can also be reduced by using military demolitions such as C-4 or trinitrotoluene (see FM 5-34/MCRP 3-17A, *Engineer Field Data*, or FM 5-250, *Explosives and Demolitions*). An AT ditch can be reduced by digging four holes in the side walls (two on each side) near the bottom of the ditch. Holes should be about 5 feet apart and 2 feet deep in each wall directly opposite each other. Satchel charges can be placed in the holes and detonated simultaneously. Further reduction can be accomplished using shovels.

Bangalore Torpedo. The bangalore torpedo is a manually placed explosive-filled pipe (see figure C-2). It is designed to create a footpath through obstacles such as AP minefields and wire. Bangalores generate one short impulse. Many modern mines require two impulses or a single, long impulse for detonation. Generally, bangalores do not generate enough overpressure to detonate AT mines unless placed beside or on top of the AT mine. It consists of ten sections. Each section is 1.5 meters long and weighs 15 lbs. For speed and simplicity, bangalores should be primed nonelectrically with a single cap in the detonator well.

Improvised Bangalore Torpedo. An improvised bangalore can be made using lengths of pipe or engineer stakes filled with 2 lbs of explosive per foot as described in FM 5-34/MCRP 3-17A. The pipe or engineer stake should be tightly packed with explosives.

Figure C-2. Bangalore Torpedo.



Grapnel—There are three grapnels per minefield marking kit (see figure C-3). Individuals can usually throw the hook no more than 25 meters, which is within the casualty radius of many types of mines. There should be excess rope for standoff distance. Grapnels can detonate mines by activating trip wires and antihandling devices. One technique for using the grapnel is for a thrower to toss the grapnel and seek cover in case the impact detonates a mine. The thrower then moves rearward, reaches the end of the excess rope, takes cover again, and carefully pulls the grapnel toward him. After recovering the grapnel, the thrower moves forward to the original position, and repeats the technique at least two more times. Then he moves to the end of the grappled area and repeats this sequence to the depth of the minefield. Multiple grapplers can clear a lane of trip wires more quickly and thoroughly, but their efforts must be simultaneous. After the grapnel is used to clear the trip wires in a lane, engineers can move through the minefield and locate mines. This is a very slow procedure and should only be used after enemy fire has been eliminated.

Grapnels can be fastened to an AAV or some other armored vehicle to reduce wire obstacles. The vehicle is driven to the wire and the crew throws or places the hook into the wire next to a picket. The vehicle then backs away, stretching and breaking the wire. Individuals should take cover in case they detonate a mine. Larger grappling hooks can be fabricated out of angle iron or bar stock.

Figure C-3 Grapnel

Material—Material can be placed over wire after clearing it from mines to make a footpath. Figure C-4 shows a footpath made by using boards attached to a roll of material or chicken wire. Many variations are possible based on available materials. Extreme care must be taken not to use this method over mines as they could detonate.

Figure C-4. Material Constructed Footpath

AN/PSS 12 Metallic Mine Detector. The AN/PSS-12 Mine Detector , in figure C-5, is a light weight, hand held, metallic mine detector. It is capable of detecting very small metallic objects such as small firing pins in plastic and wooden mines. The AN/PDSS-12 Mine Detector is capable of detecting mines in fresh or salt water, and objects buried up to 20 inches in the ground. Mine detectors can be used along with probes to locate obstacles. However, this method is very slow and leaves personnel exposed to enemy fire.

A detector team could consist of: a detector operator, assistant, demo man, and security. The detector operator sweeps a 2-meter wide path, carefully observing the ground for visual indicators as he moves. Immediately behind him, his assistant also visually searches the ground for mine indicators. When the detector operator locates a suspected mine, his assistant places an explosive charge on it. The third member of the team follows with additional breaching charges and a roll of detonating cord. He lays a line main through the minefield and clips the detonating cord from each charge to the line main. The fourth member of the team provides cover.

Detector teams should sweep in echelon and be spaced about 25 meters apart to prevent interference between detectors. Each team must overlap the lane swept by the team to its front. The breach should continue for a distance of at least 150 meters past the first suspected mine location. When each detector team has passed the suspected minefield, the line mains are connected together and the charges are detonated.

Figure C-5. AN/PSS 12 Metallic Mine Detector

Probes—Probing for mines is extremely slow; however, it is effective. Only nonmetallic probes should be used and individuals should remove metallic items on their forearms to prevent detonating magnetically influenced mines. Sleeves should be rolled up in order to feel for trip wires. A probing technique is for a lead prober to clear a 1-meter wide path, followed by a second prober one body length behind and staggered, probing to overlap the first path (see figure C-6). Trip wires are traced to their origin. Slack wires should be cut, taut wire and mines marked. Mines and taut trip wires are bypassed by at least 2 meters. Cleared lanes can be marked with engineer tape, chemical lights, or field-expedient markers. If a chemical light is used, it must be a different color than the ones used for marking mines and taut trip wires. The lights must be shielded from enemy observation. Extensive trip wires and mines may require explosive breaching. Individuals can also use a flashlight to cause reflections and shadows to find trip wires. A wand with a dangling thread can be swept over the ground ahead with the thread being watched for any disturbance by a trip wire.

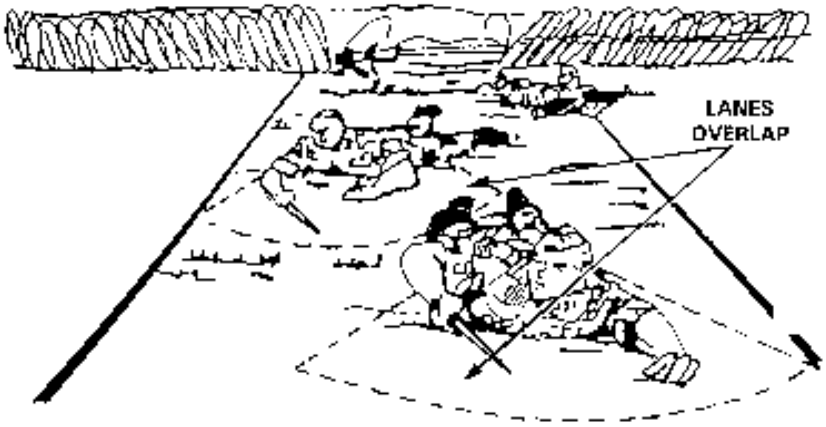


Figure C-6. Overlap Probing Technique

Anti-Personnel Obstacle Breaching System (APOBS). The APOBS, seen in figure C-7, is a 110 pound portable explosive minefield breaching device employed by Engineer and Infantry Marines at squad level to create a footpath for the passage of Marines through antipersonnel minefields and wire entanglements. The system will clear a lane 45 meters long and 0.6 meters. The system will be transported by a maximum of two Marines who will advance to the edge of the obstacle, set up, aim, and fire the device across the obstacle. The breach may then be improved by using additional APOBS or other available countermine techniques as the situation permits.

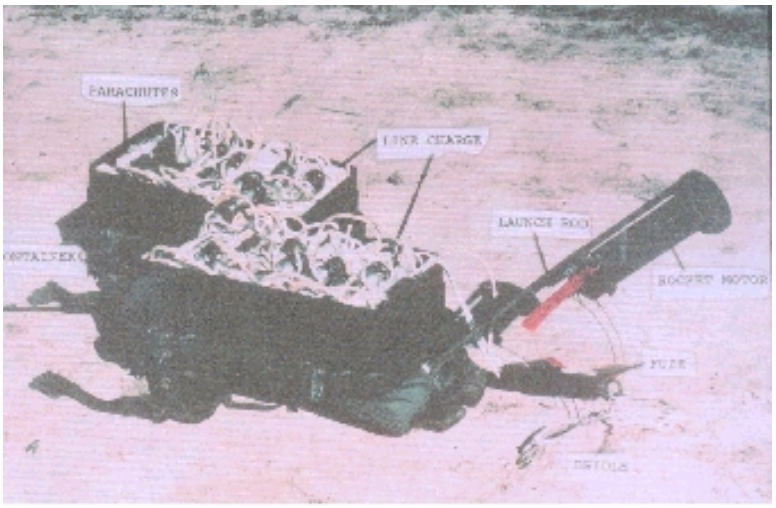


Figure C-7. Anti-Personnel Obstacle Breaching System (APOBS)

MECHANIZED EQUIPMENT

Armored Vehicle Launched Bridge. The M60A1 AVLB, shown in figure C-8, is an armored vehicle used for launching and retrieving a 60-foot scissors-type bridge. The bridge, when emplaced, is capable of supporting tracked and wheeled vehicles with a military load bearing capacity up to Class 60. The bridge can be retrieved from either end. The roadway width of the AVLB is 12 feet, 6 inches. Bridge emplacement can be done in 2 to 5 minutes, and retrieval can be accomplished in 10 minutes under armor protection. The bridge weights 14.65 tons, the chassis weights 56.6 tons. Maximum speed is 30 miles per hour on improved roads and 8-12 miles per hours cross country. Tanks equipped with plows or rollers may exceed the MLC of the bridge and cause extensive damage to the bridge when crossing.

Figure C-8. Armored Vehicle Launched Bridge

Blade-Placed Antitank Wall Charges—The blade of an armored combat earthmover or bulldozer can carry a large explosive charge to an AT wall or other vertical-faced obstruction and drop it off against the face of the wall. A wooden frame can be fabricated to carry the charge. It should consist of a rack for the explosives and hook over the dozer blade. It should also have legs to hold the rack up against the wall and shoes to prevent the legs from sinking into the ground. (See figure C-9.)

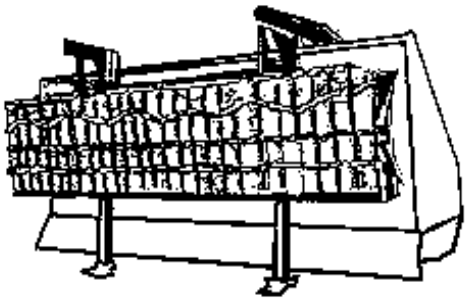


Figure C-9. Blade-Placed Explosive Charge

Engineer Blades—Blades are ideally suited to break down and reduce earthen gaps such as AT ditches and road craters. Sometimes it is faster to push an earthen ramp over an obstacle rather than remove it. Blades were not designed for breaching minefields. This is extremely dangerous to the equipment and its crew. If a blade must be used, a herringbone skimming technique should be utilized, shown in figure C-10. Multiple overlapping passes should be made, stripping away about 6 inches of soil each time. The operator should skim for no more than 15 meters at a time to prevent excessive spoil from building up in front of the blade. Mines can gather in the spoil in front of the blade and can cause them to detonate. It is also easy for mines to roll under the blade, particularly if the surface is irregular. This technique should only be used as a last resort for removing surface and shallowly buried mines.

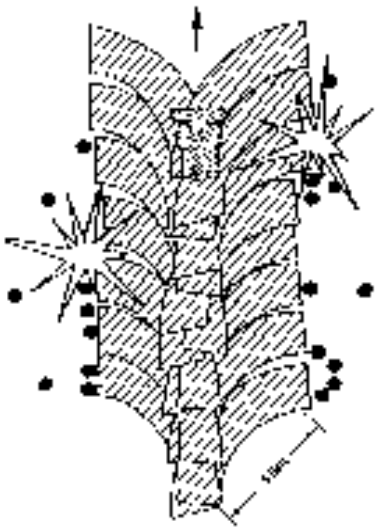


Figure C-10. Herringbone Skimming Technique

Armored Combat Earthmover. M9 ACE, in figure C-11, is a highly mobile, full-tracked, armored earthmover capable of supporting the maneuver element in offensive and defensive operations. The M9 ACE requires a single operator, travels at 30 mph on land, and swims at 3 mph in calm water. It is configured for on/off loading in the C130, C141, and C5 airlift aircraft, and is compatible with existing U. S. Navy amphibious shipping. The M9 is capable of performing mobility, countermobility and survivability tasks in support of light and heavy forces. Tasks to be performed are the excavation and preparation/reduction of obstacles, bridging operations, battle positions, strong points, protective emplacements for command posts, air defense, communications equipment and critical supply/logistical bunkers. The M9 is capable of route clearing and maintenance in conjunction with both defense and offensive operations.

Figure C-11. Armored Combat Earthmover.

Bulldozers. Bulldozers are very effective in countering earthen obstacles. However, there are some big drawbacks in using bulldozers for breaching. Unless the bulldozer is modified, it provides no protection for the operator. Bulldozers are also very slow and require transportation. Figure C-12 shows the D7G medium sized bulldozer.

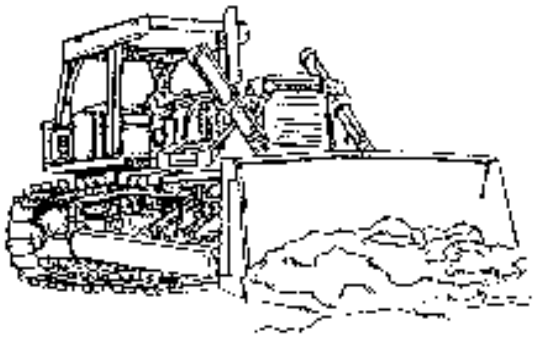


Figure C-12. D7G Medium Sized Bulldozer.

Mine-Clearing Line Charge (MICLIC)—There are currently two types of linear explosive charges, or MICLICs, in the Marine Corps inventory: the M58 and M59. Both types of MICLICs have the same characteristics; the difference is the platform from which they are fired. Each MICLIC contains 1,750 lbs of C-4 and is 105 meters long. The explosive charge is anchored by a rope and gives a 62 meter standoff distance from the charge. It utilizes an electrical detonating system and will create a lane approximately 90 meters deep and 16 meters wide through a minefield containing single impulse pressure activated AT mines and mechanically activated AP mines. Within this zone, the MICLIC detonates 92 to 95 percent of mines that are surface-laid or buried up to l inch. Mines buried deeper are less likely to detonate. The MICLIC has a very limited effect on mines that have magnetic, blast-hardened, or other nonpressure-sensitive fuzes. It may uncover or blow such mines sideways out of the lane. The MICLIC is very effective against wire obstacles. It may have reduced effectiveness if employed across broken or wooded terrain. After it has been fired, the MICLIC leaves an obvious rut along the center of the cleared path.

Breaching a lane through a minefield of uncertain depth or greater than 90 meters may require more than one MICLIC (see figure C-15). Once the first MICLIC is detonated, a second MICLlC should be detonated further down on the same path formed by the first. The two charges should overlap each other. Additional MICLICs are used as necessary. Detonating more than one line charge in the same lane does not necessarily mean that the lane is twice as clear. Lanes should still be proofed. Failure to proof a lane can significantly increase the chances of encountering an active mine during lane transit. MICLICs must be ready to deploy prior to reaching an obstacle. MICLICs have been mounted and fired from various platforms, including trailers, AAVs, and dump trucks. Practice MICLICs (M 68 and M 69) are available for training.

MK 154 Mine Clearance System. TAMCN B1315 contains three MICLICS (M 59). The MK154, shown in figure C-13, was developed to breach a lane through a minefield during an amphibious assault and subsequent operations inland, breaching a single lane up to 270 meters. This is the primary explosive breaching system of the Marine Corps. The MK 154 MCL is an electric and hydraulic system which can be installed into any AAVP7A1. The system has the capability to house and fire three linear demolition charges (LDC) using three MK22 Rockets. The LDCs will clear a path 16 meters wide and 100 meters long through a minefield consisting of single impulse, non-blast resistant, pressure-fuzed mines. Because the LDC is only effective against single impulse, non-blast resistant, preasure-fused mines, a mechanical proofing devise must be used in a lane that has been explosively breached.

Figure C-13. MK 154 Mine Clearance System

MK 155 Mine Clearance System. The TAMCN B1298, MK155 Launcher, Mine Clearance (LMC), consists of a single M58 MICLIC mounted on an M353 Trailer Chassis, will normally be towed by an Assault Amphibious Vehicle. The operator can detonate the charge from inside the AAV. The over-pressure created by the 1,750 lbs charge will clear a path 16 meters wide and 100 meters long through a minefield consisting of single impulse, non-blast resistant, pressure-fused mines. The width of the lane and the ability to neutralize mines is dependent upon the mine type and fusing. A mechanical proofing device must also be used in a lane that has been explosively breached. The majority of these kits are in the Combat Engineer Battalions and the Engineer Support Battalions. The Mk 155 with trailer, fully loaded weights 6,405 lbs, as shown in figure C-14.

Figure C-14. MK 155 Mine Clearance System

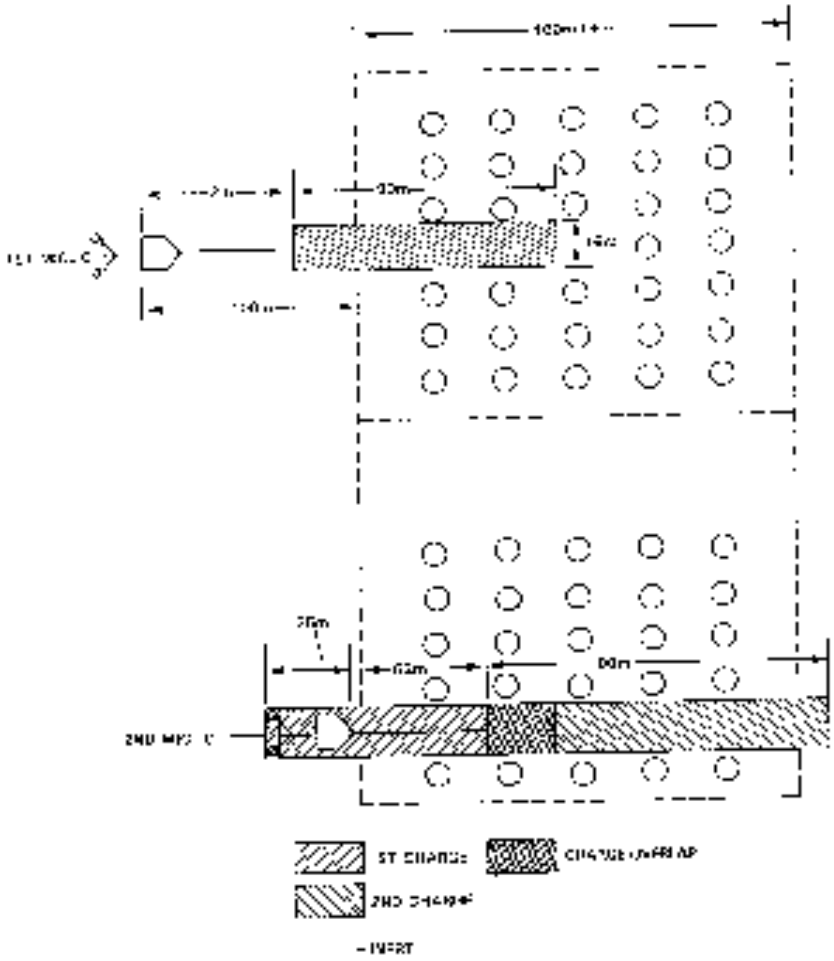


Figure C-15. Use of One or more MICLICs

Track Width Mine Plow (TWMP), TAMCN E0996—The TAM E0996 lifts and pushes surface-laid or buried mines up to 4 inches deep in front of its path. A float assembly exerts enough pressure to activate most single-pulse mines. This effectively clears a section of the centerline by explosive detonation, but it may disable the plow. A "dogbone" and chain assembly, consisting of a rolling antimagnetic mine actuating device, is used in conjunction with the plow to defeat tilt-rod and magnetic influence fuzed mines. Mines not lifted and moved by the plow will not be defeated. Mines armed with antihandling/antidisturbance devices or seismic fuzes may detonate when lifted by the plow. Mines lifted by the plow are left in the spoil on each side of the furrowed path and remain a hazard until removed or neutralized. The plow can be mounted to an M1A1 tank (see figure C-16); however, this takes time and it cannot be easily mounted or transferred to another tank under battlefield conditions.

Figure C-16. Track Width Mine Plow Mounted to M1A1 Tank.

The 3-ton plow restricts the tank's maneuverability and speed and prevents the tank from climbing up a vertical step. Tanks mounted with plows cannot negotiate gaps. The plow will restrict the M1A1 to a speed of less than 10 kilometers per hour (depending on soil conditions) when plowing. Although the plow has an emergency disconnect, the tank should not maneuver when it is plowing. A straight course must be maintained to prevent damage to the plow. The main gun should be traversed to the side when plowing because a mine detonating under the plow can throw it into the air and damage the gun tube. The area selected for the lane must be relatively flat and free of rocks or other obstructions. The plow creates a 58-inch cleared path in front of each track (see figure C-17). Plowing should begin about 100 meters from the leading edge of a minefield and continue 100 meters beyond the far edge to ensure a complete breach. A second plow should not re-plow the lane, since any deviation from the first plowed path may push mines from the lane centerline into the track width lane created by the first plow.

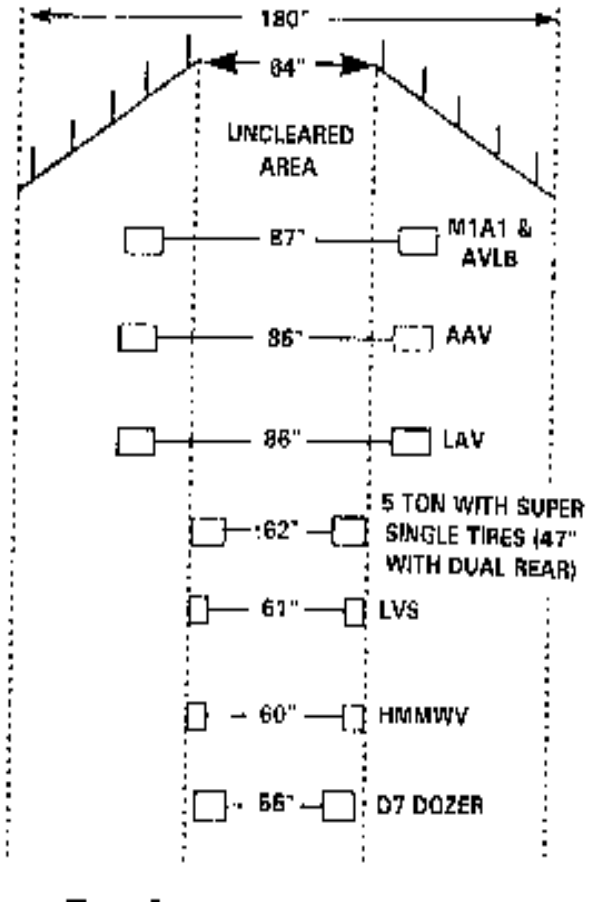


Figure C-17. TWMP Cleared Path

Appendix D

Contingency Equipment for Land Operations

The following equipment is held in various locations for contingency use only. Most of the equipment is held at one or both of the Marine Corps logistics bases (MCLBs) located in Albany, Georgia and Barstow, California. Some equipment is maintained aboard maritime prepositioning force (MPF) shipping. Current information may be obtained by contacting the Program Manager Engineer Systems, Marine Corps Systems Command, Quantico, Virginia at DSN 278-2242, commercial (703) 784-2242, or Program Manager Ground Weapons at DSN 278-2137. The engineer branch (837-3), MCLB, Albany can be contacted at DSN 567-6533/6597/6609.

Fascines-- Fascines, shown in figure D-1, are large cylindrical bundles of material (ususally wooden poles, heavy duty plastic pipes, or metal pipes) bound together and placed alone or in groups into gaps, ditches, or trenches to allow vehicles to drive over them. The material should be at least 15 feet long and must have enough width and load-bearing capacity to handle the crossing traffic. Fascines can be mounted to most armored vehicles using cable or rope. To employ the fascines, a vehicle pulls along side a gap and releases the cable or rope dropping the fascines into the gap. Fascine employment takes less than half the time than to employ the AVLB.

Figure D-1 Fascines

Flexible Coil System (FCS)—FCS is a coil of insulated wire with a flexible armor covering. It is used to counter magnetically influenced mines by projecting a magnetic field in front of the host vehicle. Figure D-2 shows an AAV-mounted FCS.

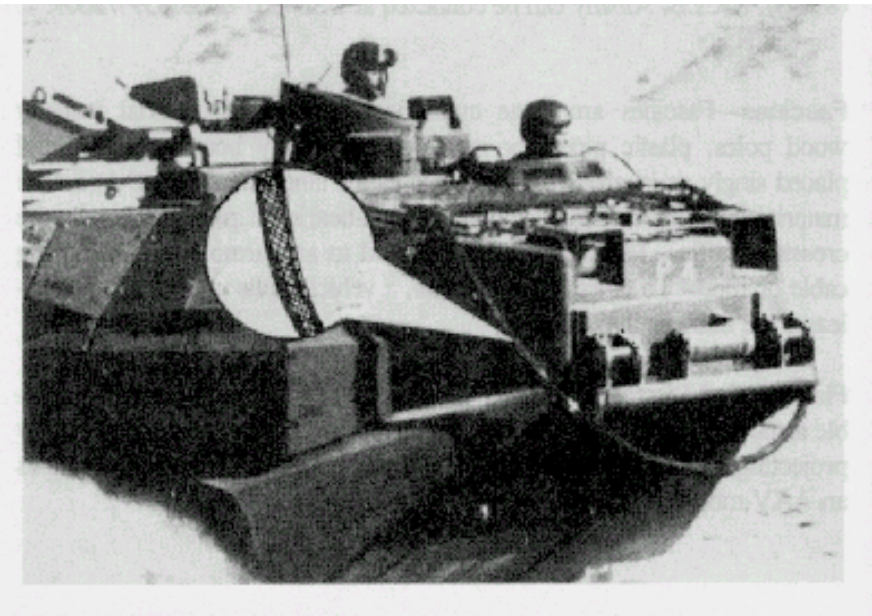


Figure D-2. AAV Mounted Flexible Coil System.

Mine Rollers—Mine rollers are used primarily to detect minefields. A secondary use of mine rollers is to proof lanes created by other means (see figure D-3). However, it is not a good primary system for minefield reduction. The roller is designed to withstand about two mine explosions depending on the amount of explosive material in the mine. A roller can be mounted on M1A1 tanks modified with the permanent attachment of the mine roller mounting kit. Mounting the roller takes time and is difficult under battlefield conditions. The roller weighs more than 10 tons and has a great impact on the tank's maneuverability and speed.

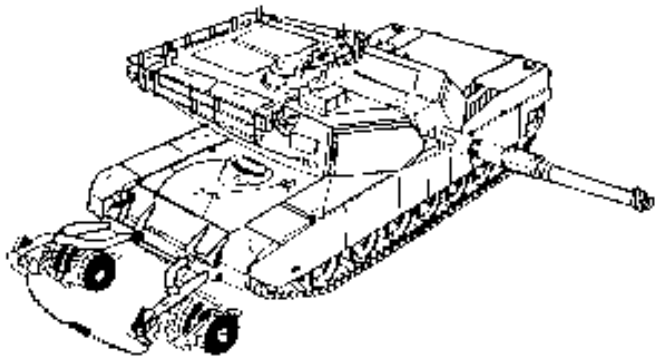


Figure D-3. Mine Roller.

Rollers can be moved with the CSSE on tractor trailers or farther forward if the roller is needed. Planning for its movement and designating an assembly area for mounting the roller is critical. It is most effective when leading columns on route movement but can be used to lead tactical formations. In column movement, vehicles follow the rolled path. However, this causes the column to slow to 5 to 15 kilometers per hour.

A roller tank should travel in a relatively straight path since tight turns may cause the rollers to deviate from the path of the tracks and miss mines. Bumps and berms may cause the rollers to lift from the ground and miss mines. The main gun should be traversed to the rear or side because a mine blast may throw the roller or parts of the roller into the air and damage the tube. The roller sweeps a 44-inch path in front of each track (see figure D-4). A dogbone and chain assembly between the rollers defeats tilt-rod fuzed mines. Magnetically fuzed mines will not be defeated unless activated or crushed by the roller.

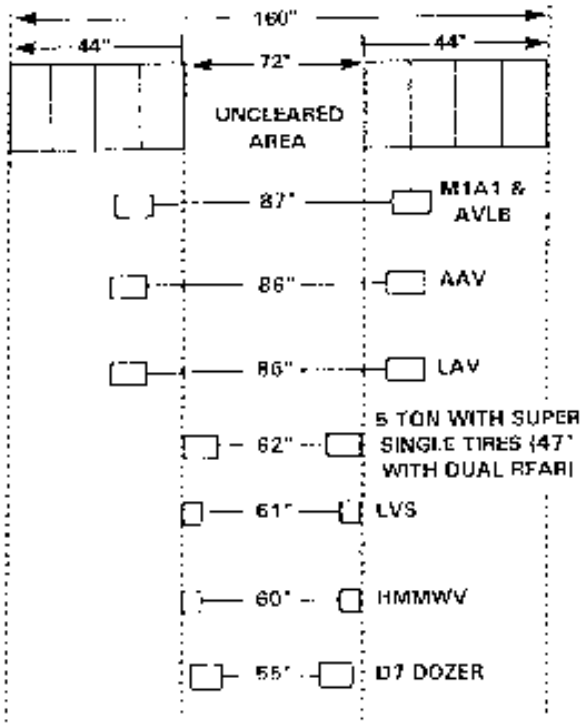


Figure D-4. Mine Roller Path

Tractor Protective Kit (TPK)—The TPK is a ballistic steel-plated kit that can be mounted on the D7G bulldozer (see figure D-5). It is used to protect the bulldozer (engine, fuel tank, and exposed hydraulics) and operator from small arms fire and shrapnel. Ballistic glass is in each vision port to permit viewing by the operator.

Figure D-5. Tractor Protective Kit

Full-Width Mine Rake (FWMR)—The full-width mine rake is an array of vertical plates welded into a V-shape frame. Figure D-6 depicts the FWMP mounted on a D7G bulldozer. It is effective in sandy or loose soil and plows to a depth of 12 inches. It can clear a 15 foot wide path against antitank mines; however, antipersonnel mines may still be left in the clear path. After action reports from Operation Desert Storm stress that a full width plow or rake capability is preferred over a track width plow. There are none in the contingency pool at the MCLB's, however, some operational units maintain an available supply.

Figure D-6. Full Width Mine Rake mounted on D7 dozer.

M1 Mine Clearing Blade System -- The Mine Clearing Blade System is an ancillary piece of support equipment for the M1A1 Main Battle Tank. It is designed to effectively counteract and neutralize all land mines. It is electrically operated and is capable of clearing surface or buried mines up to 6 feet in front of the tank's path without the aid of supporting forces or additional equipment. It weighs 4.5 tons, is 2.5 feet high, and is 14.9 feet wide.

Appendix E

Equipment Under Development for Amphibious Breaching and Operations Ashore

The following equipment is in various stages of development and may or may not become part of the breaching equipment available for Marine Corps use. Current information may be obtained by contacting the Program Manager Engineer Systems, Marine Corps Systems Command, Quantico, Virginia at DSN 278-2242 or commercial (703) 640-2242.

NEAR-TERM MINE RECONNAISSANCE SYSTEM (NMRS) -- NMRS, depicted in figure E-1, provides Theater Commanders with a near-term capability for conducting clandestine minefield reconnaissance from a submarine in deep to shallow water. The NMRS uses an underwater unmanned vehicle (UUV) to precisely locate and classify mine-like objects, provide theater commander with detailed information used to estimate location of enemy- deployed mine defenses, unmined coastal areas and the need for further reconnaissance. Position and sonar data are continuously relayed back to the host SSN via a fiber-optic cable, thereby allowing continuous real-time analysis. Should the optic fiber break, the UUV is programmed to autonomously return to a pre-set rendezvous point for recovery by the SSN.

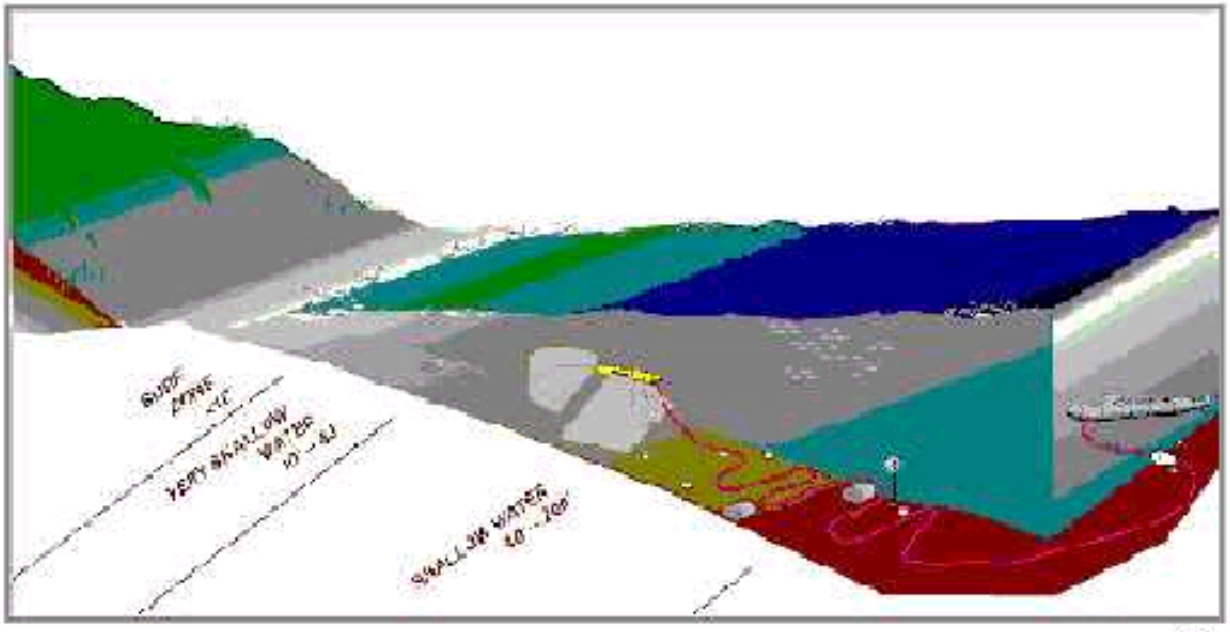
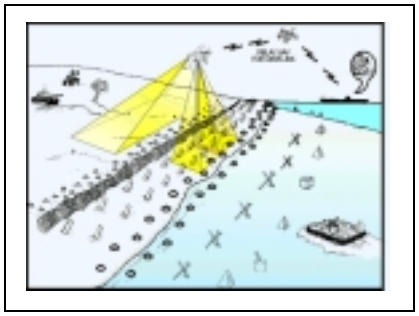


Figure E-1. NEAR-TERM MIN E RECONNAISSANCE SYSTEM (NMRS) .

Coastal Battlefield Reconnaissance and Analysis (COBRA)

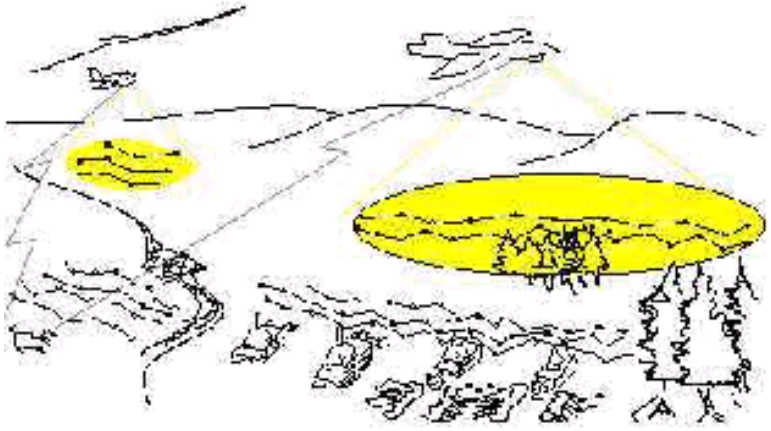


Figures E-2 &3. Co astal Battlefield Rec onnaissance and Analysis (COBRA).

The Coastal Battlefield Reconnaissance and Analysis (COBRA) system is a UAV-based multi-spectral optical sensor system. COBRA will be launched from, and recovered on, a battle group ship to fly during pre-assault operations over proposed landing areas between 500 and 1,100 feet of altitude. COBRA will be able to detect minefields/obstacles in the beach and craft landing zone region during amphibious assault operations, providing near real time data to the MAGTF and battle group staffs via data links or video cassette. This reconnaissance and analysis of mine-sized spectral anomalies provides the capability to exploit gaps in the enemy's barriers, obstacles and minefields and will help determine the best breaching and clearing techniques.

AIRBORNE STANDOFF MINEFIELD DETECTION SYSTEM (ASTAMIDS)--ASTAMIDS, depicted in figure E-4, can be mounted on a variety of rotary wing aircraft. The sensor assembly is a cylindrical sensor pod containing sealed optics, a scanning mechanism and infrared detector(s) with associated electronics. Minefields are identified and delineated on both digital map and raw imagery displays. Will provide a means to detect and identify boundaries of patterned and scatterable minefields, detecting virtually all metallic surface laid, buried patterned and scatterable mines. The information is relayed to ground stations where it is screened, processed and transmitted to key leaders.

Figures E-4. Airborne Standoff Minefiel d Detection System (ASTAMIDS).



Advanced Sensors -- As depicted in Figure E-5, Advanced Sensors rapidly conducts clandestine mine reconnaissance and hunts mines from deep through shallow water using a low observable system; advances mine identification needs for creating and exploiting gaps in enemy defense. Under development by the Office of Naval Research, for reconnaissance and underwater mine hunting, plays an important role to ensure the Navy's Mine Warfare vision becomes a reality.

Two different sensor packages have been developed, the Deep Water (DW) Package and the Shallow Water (SW) Package. A Remotely Operated Vehicle (ROV) will tow a single-tow body that contains the appropriate sensor package for the water depth being surveyed and an onboard computer for processing the sensor data. The ROV will communicate with the ship via a radio link capable of transmitting digital data.

Figures E-5. A dvanced Sensors

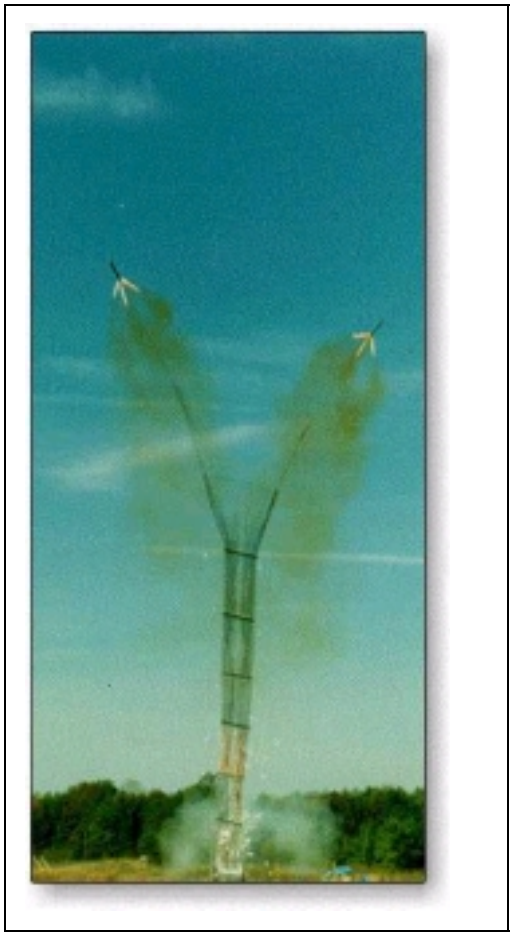
SHALLOW WATER ASSAULT BREACHING SYSTEM (SABRE) -- The SABRE system, demonstrated in figure E-6, consists of an explosive line charge and a single MK22 Mod 4 rocket motor. The line charge consists of 130 individual explosive charges separated three feet apart (for a total static length of 390 feet). The explosive charges are connected by detonating cord. The rocket motor will be used to deploy the line charge and its fuse. The Safe & Arm component will enable the line charge (during proper deployments) to arm and automatically detonate the system. The SABRE container will have the capability to be air lifted externally by helicopter.

Figures E-6. Shallow Water Assaul t Breaching System (SABRE).

1

Distributed Explosive Technology (DET) -- The DET EX10 Mod 0 Mine Clearance System, demonstrated in figure E-7, consists of an 180' by 180' explosive net deployed by two rockets. The function of DET is to clear a 50-yard-wide path in the surf zone area from a 3' water depth to the water's edge in order to provide a cleared transit lane for amphibious operations. It has a fire-and-forget fuse. The package size weighs approximately 4000 lbs. The two MK 22 Mod 4 Rocket Motors are ignited simultaneously to deploy the over the target area.

The integrated SABRE/DET-LCAC System, will act as an independent "from-the-sea" operating platform, supporting assault breaching of minefields and/or other obstacles using explosive line charges and nets. A concept for operational employment is to have LCACs accommodate the integration of nine SABRE and two DET systems (which may be adjusted). The firing of each line charge and net will be initiated by the LCAC Craftmaster.



Figures E-7. Distributed E xplosive Technology (DET).

Clausen Power Blade (CPB)-- The Clausen Power Blade (CPB) is under consideration to mechanically clear mines and heavy obstacles on the beach and inland approaches. The CPB consists of an 18 foot standard angled cutting edge; a 16 foot steel track laid on edge to form a belt traveling around two vertical axes; five hydraulic motors with sprockets to drive the belt; and an auxiliary power unit mounted on the rear of the bulldozer. The steel belt rotates around the two vertical axes casting soil, mines, and obstacles to the side of the vehicle's path. The speed of the belt is matched to the bulldozer's forward speed so material is continuously unloaded. The average cutting depth in sand is about 8-15 inches. The total system weight is about 122,000 pounds, with forward speed of about two miles per hour under full load.

Conceptually, the CPB system will be delivered to the beach by an LCAC and create a cleared initial craft landing site (ICLS).

Figures E-8. Clausen Power Blade (CPB).

Pathfinder Marker System -- The Pathfinder, shown in figures E-9 and E-10, is a self contained electro-pneumatic marking system. It is lightweight, compact, and can be operated from under armor from any military vehicle. It places marker poles at preset intervals or manually selected distances to delineate hazardous areas. The primary use of the Pathfinder marker system is to mark the edges of a minefield breach created by the passage of minefield breaching equipment. This ensures that all following vehicles can clearly identify the safe pathway. It can be mounted on either side of the breaching vehicle to mark the edges of the cleared path. The Pathfinder holds 100 marker poles in a quick change magazine. The poles are white with orange dayglo and reflective bands which ensure that the rod can be seen in conditions of poor visibility.

Figures E-9 & 10. Path finder Marker System.

Combat Breacher Vehicle -- Formerly known as the "Grizzly", the Combat Breacher Vehicle, shown in figure E-11, is an M1 tank chassis equipped with a full width mine clearing blade and a power driven excavating arm (weight 137,251 lbs.). The system will be able to breach a full width lane (vice track width) to allow maneuver forces mobility through minefields, rubble, tank ditches, and other obstructions.

Figures E-11. Combat Breacher Vehicle.

Appendix F

Glossary

AAV assault amphibious vehicle MCRP 5-12C
AAAV advanced amphibious assault vehicle MCRP 5-12C
ACE aviation combat element (MAGTF) JP 1-02; armored combat earthmover FM 5-101
ALZ assault landing zone MCRP 5-12C
AMCM airborne mine countermeasures NWP 3-15
AOA amphibious objective area JP 1-02; angle of arrival/angle of attack MCRP 5-12C
AP average power JP 1-02; antipersonnel MCRP 5-12A
APOBS antipersonnel obstacle breaching system
ATF amphibious task force; Bureau of Alcohol, Tobacco and Firearms (TREAS) JP 1-02
AVLB armored vehicle-launched bridge MCRP 5-12C
BHL battle handover line MCRP 5-12C
C2 command and control JP 1-02
C2E command and control element JP 1-02
C2S command and control support JP 1-02
C2W command and control warfare JP 1-02
C3 command, control, and communications JP 1-02
C3CM command, control, and communications countermeasures JP 1-02
C3I command, control, communications, and intelligence JP 1-02
C3IC coalition coordination, communications, and integration center JP 1-02
C4 command, control, communications, and computers JP 1-02
C4CM command, control, communications, and computer countermeasures JP 1-02
C4I command, control, communications, computers, and intelligence JP 1-02
CAS close air support JP 1-02
CATF commander, amphibious task force JP 1-02
CAX combined arms exercise MCRP 5-12C
CBAE commander's battlespace area evaluation MCRP 5-12C
CCIR commander's critical information requirements MCRP 5-12C
CLF commander, landing force; combat logistics force JP 1-02
CLS craft landing site NWP 3-02.12
CLZ cushion landing zone JP 1-02; craft landing zone NWP 3-02.12
COA course of action JP 1-02
COC combat operations center; current operations center MCRP 5-12C
CPP craft penetration point NWP 3-02.12
CQB close quarters battle MCRP 5-12C
CSS combat service support JP 1-02
CSSE combat service support element (MAGTF) JP 1-02
CZ craft zone MCRP 5-12C
DW deep water NWP 3-15
ECM electronic countermeasures JP 1-02
EEFI essential elements of friendly information JP 1-02

EEI essential elements of information JP 1-02
EOD explosive ordnance disposal JP 1-02
EPLRS enhanced position location reporting system MCRP 5-12C
FAE fuel air explosive JP 1-02
FASCAM family of scatterable mines JP 1-02
FEXfield exercise MCRP 3-0A
FLIR forward-looking infrared JP 1-02
FM field manual JP 1-02
FMF Fleet Marine Force JP 1-02
FMFM Fleet Marine Force manual JP 1-02
FMFRP Fleet Marine Force reference publication JP 1-02
FSC fire support coordinator JP 1-02
FSCC fire support coordination center JP 1-02
FSSG force service support group (USMC) JP 1-02
FTXfield training exercise MCRP 3-0A
GCE ground combat element (MAGTF) JP 1-02
GPS global positioning system JP 1-02
HEMMShand-emplaced minefield marking system FM 90-13-1
intel intelligence MCRP 5-12C
ICLSinitial craft landing site NWP 3-02.15
IPB intelligence preparation of the battlespace JP 1-02
ITSindividual training standards MCRP 5-12C
JP joint pub JP 1-02
LARlight armored reconnaissance MCRP 5-12C
LCAClanding craft air cushion NWP 3-02.12
LDline of departure (ground operations) MCRP 5-12C
LF landing force; low frequency JP 1-02
LFSPlanding force support party JP 1-02
LOD line of departure JP 1-02
LPPlittoral penetration point STOM
LPSlittoral penetration site STOM
LPZlittoral penetration zone STOM
MARFORLANTMarine Corps Forces, Atlantic MCRP 5-12C
MARFORPACMarine Corps Forces, Pacific MCRP 5-12C
MARFORRESMarine Corps Forces Reserve MCRP 5-12C
MCACmultipurpose craft air cushion NWP 3-15
MCDPMarine Corps doctrinal publication MCRP 5-12C
MCMmine countermeasures JP 1-02
MCOOmodified combined obstacle overlay MCRP 5-12C
MCPP Marine Corps Planning Process MCRP 5-12C
MCRPMarine Corps reference publication MCRP 5-12C
MCWPMarine Corps warfighting publication MCRP 5-12C
MEFMarine expeditionary force JP 1-02 & MCRP 5-12A
MEF (Fwd) Marine expeditionary force (Forward) MCRP 5-12C
METL mission-essential task list JP 1-02

METT-T mission, enemy, terrain and weather, troops and support available - time available JP 1-02
MEU Marine expeditionary unit JP 1-02 & MCRP 5-12A
MHC mine hunter, coastal NWP 1-02
MMS Marine mammal system NWP 3-02.15
MOBA military operations in a built-up area MCRP 5-12A
MOOTW military operations other than war JP 1-02 & MCRP 5-12A
MOUT military operations on urbanized terrain MCRP 5-12C
MPS maritime prepositioning ships JP 1-02; mission performance standard MCRP 3-0A
MSO mine sweeper, ocean NWP 3-15
NAI named area of interest JP 1-02
NAVFLIR navigation forward looking infrared MCRP 5-12C
NEF naval expeditionary force MCDP 3 & NWP 1-02
NSFS naval surface fire support JP 1-02
NSW naval special warfare JP 1-02
NWP naval warfighting publication JP 1-02
NVD night vision devices JP 1-02
OAS offensive air support MCRP 5-12C
obs obstacles MCRP 5-12C
OBSTINTEL obstacle intelligence FM 90-13-1
OCD obstacle clearing detachment NWP 3-02.15
OMFTS operational maneuver from the sea MCRP 5-12C
OTH over-the-horizon JP 1-02
PCO primary control officer JP 1-02
phib amphibious MCRP 5-12C
PHIBLEX amphibious landing exercise MCRP 5-12C
PL phase line MCRP 5-12C
PLRS position location reporting system JP 1-02
R2P2 rapid response planning process MCRP 5-12C
RFI request for intelligence MCRP 5-12C
SOA special operations area; subsequent operations ashore; sustained operations ashore MCRP 5-12C
SOSR suppress, obscure, secure, and reduce JP 1-02
SOSRR suppress, obscure, secure, reduce, and reconstitute
STOM ship-to-objective maneuver MCRP 5-12C
SW shallow water NWP 3-15
SZ surf zone NWP 3-15
TCO tactical combat operations MCRP 5-12C
TEWT tactical exercise without troops MCRP 5-12C
TRUE training in an urban environment MCRP 5-12C
UJTL universal joint task list MCRP 5-12C
VMU Marine unmanned aerial vehicle squadron MCRP 5-12C
VSW very shallow water NWP 3-15
WF warfighting function MCRP 5-12C

A

amphibious assault --The principal type of amphibious operation that involves establishing a force on a hostile or potentially hostile shore. JP 1-02

amphibious breach -- An amphibious breach is a type of deliberate breach specifically designed to overcome antilanding defenses to conduct an amphibious assault. NWP 3-15

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 a course of action unfavorable to him. JP 1-02

amphibious objective area -- A geographical area, delineated in the initiating directive, for purposes of command and control within which is located the objective(s) to be secured by the amphibious task force. This area must be of sufficient size to ensure accomplishment of the amphibious task force's mission and must provide sufficient area for conducting necessary sea, air, and land operations. JP 1-02

amphibious operation -- An attack launched from the sea by naval and landing forces, embarked in ships or craft involving a landing on a hostile or potentially hostile shore. As an entity, the amphibious operation includes the following phases: a. planning--The period extending from issuance of the initiating directive to embarkation. b. embarkation--The period during which the forces, with their equipment and supplies, are embarked in the assigned shipping. c. rehearsal--The period during which the prospective operation is rehearsed for the purpose of: (1) testing adequacy of plans, the timing of detailed operations, and the combat readiness of participating forces; (2) ensuring that all echelons are familiar with plans; and (3) testing communications. d. movement-- The period during which various components of the amphibious task force move from points of embarkation to the objective area. e. assault--The period between the arrival of the major assault forces of the amphibious task force in the objective area and the accomplishment of the amphibious task force mission. JP 1-02

amphibious raid -- A type of amphibious operation involving swift incursion into or temporary occupation of an objective followed by a planned withdrawal. JP 1-02

amphibious withdrawal -- A type of amphibious operation involving the extraction of forces by sea in naval ships or craft from a hostile or potentially hostile shore. JP 1-02

assault -- 1. The climax of an attack, closing with the enemy in hand-to-hand fighting. 2. In an amphibious operation, the period of time between the arrival of the major assault forces of the amphibious task force in the objective area and the accomplishment of the amphibious task force mission. 3. To make a short, violent, but well-ordered attack against a local objective, such as a gun emplacement, a fort, or a machine gun nest. 4. A phase of an airborne operation beginning with delivery by air of the assault echelon of the force into the objective area and extending through attack of assault objectives and consolidation of the initial airhead. See also assault phase; landing attack. JP 1-02

assault echelon --The element of a force that is scheduled for initial assault on the objective area. In an amphibious task force, it consists of Navy amphibious ships and the assault troops, vehicles, non-self-deployable aircraft, equipment, and supplies required to initiate the assault landing. Also called AE. See also amphibious task force; assault; echelon; objective area. JP 1-02

assault fire -- 1. That fire delivered by attacking troops as they close with the enemy. 2. In artillery, extremely accurate, short-range destruction fire at point targets. JP 1-02

assault follow-on echelon -- In amphibious operations, that echelon of the assault troops, vehicles, aircraft equipment, and supplies which, though not needed to initiate the assault, is required to support and sustain the assault. In order to accomplish its purpose, it is normally required in the objective area no later than five days after commencement of the assault landing. See also assault; follow-up. JP 1-02

assault force -- 1. In an amphibious, airborne, or air assault operation, those units charged with the seizure of the objective or lodgment area. 2. Those forces charged with passing through a breach in an enemy fortified position or strongpoint and seizing an objective or completing destruction of the enemy. 3. Those forces charged with seizure of the objective in the attack. (See also breach force and support force.) MCRP 5-12A

B

barrier -- A coordinated series of obstacles designed or employed to channel, direct, restrict, delay, or stop the movement of an opposing force and to impose additional losses in personnel, time, and equipment on the opposing force. Barriers can exist naturally, be manmade, or a combination of both. JP 1-02

battle/tactical drills -- Exercises designed to prepare a unit or team to perform a tactical technique or procedure through progressive repetition. They are used, principally, to train small units to perform tasks requiring a high degree of teamwork, such as fire and maneuver, actions in danger areas, and counter-ambush techniques. MCRP 3-0A

beachhead -- A designated area on a hostile or potentially hostile shore that, when seized and held, ensures the continuous landing of troops and materiel, and provides maneuver space requisite for subsequent projected operations ashore. JP 1-02

breach -- The employment of any means available to break through or secure a passage through an obstacle. MCRP 5-12C

breach area --__A geographic area containing one or more breach sites, extending from the rear and flanks of the deployed support force to beyond the obstacles where enemy direct fire weapons or observation posts are located. **(*)**

breach force -- A combined arms force task-organized with the maneuver and engineer forces necessary to reduce obstacles and create lanes through an obstacle to pass initial assault forces through the lanes. (See also assault force and support force.) MCRP 5-12A

breaching task force -- A temporary grouping of units, under one commander, consisting of a support force, a breach force, and an assault force, formed for the purpose of breaching through or securing a passage through obstacles. **(*)**

breach site -- The location at an obstacle where a lane is created. **(*)**

bridgehead -- An area of ground held or to be gained on the enemy's side of an obstacle. JP 1-02

bypass – To maneuver around an obstacle, position, or enemy force to maintain the momentum of advance. Previously unreported obstacles are reported to higher headquarters. Bypassed enemy forces are reported to higher headquarters. MCRP 5-12C

C

clandestine operation -- An operation sponsored or conducted by governmental departments or agencies in such a way as to assure secrecy or concealment. A clandestine operation differs from a covert operation in that emphasis is placed on concealment of the operation rather than on concealment of identity of sponsor. In special operations, an activity may be both covert and clandestine and may focus equally on operational considerations and intelligence-related activities. See also covert operation; overt operation. JP 1-02

clearing operation -- An operation designed to clear or neutralize all mines and obstacles from a route or area. JP 1-02

close air support -- Air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces. Also called CAS. JP 1-02

close supporting fire -- Fire placed on enemy troops, weapons, or positions which, because of their proximity, present the most immediate and serious threat to the supported unit. See also supporting fire. JP 1-02

collective training -- Instruction and applied exercises that prepare an organizational team (such as squad, crew, battalion, or multi-Service task force) to accomplish required military tasks as a unit. MCRP 3-0A

colored beach --That portion of usable coastline sufficient for the assault landing of a regimental landing team or similar sized unit. In the event that the landing force consists of a single battalion landing team, a colored beach will be used and no further subdivision of the beach is required. See also numbered beach. JP 1-02

commander's critical information requirements -- Information regarding the enemy and friendly activities and the environment identified by the commander as critical to maintaining situational awareness, planning future activities, and facilitating timely decisionmaking. Also called CCIR. Note: CCIRs are normally divided into three primary subcategories: priority intelligence requirements, friendly force information requirements, and essential elements of friendly information. MCRP 5-12C

commander's intent-- A commander's clear, concise articulation of the purpose(s) behind one or more tasks assigned to a subordinate. It is one of two parts of every mission statement which guides the exercise of initiative in the absence of instructions. MCRP 5-12C

combined arms -- The full integration of combat arms in such a way that to counteract one, the enemy must become more vulnerable to another. MCRP 5-12C

complex obstacles -- Those functionally related obstructions composed of multiple parts which together create a mobility dilemma. **(*)**

complex system -- A functionally related group of elements, composed of multiple parts, each of which may act individually according to its own circumstances and, by so acting, change the circumstances affecting some or all of the other parts or elements. MCRP 5-12C

conventional mines -- Land mines, other than nuclear or chemical, which are not designed to self-destruct. They are designed to be emplaced by hand or mechanical means. Conventional mines can be buried or surface laid and are normally emplaced in a pattern to aid in recording. JP 1-02

covert operation -- An operation that is so planned and executed as to conceal the identity of or permit plausible denial by the sponsor. A covert operation differs from a clandestine operation in that emphasis is placed on concealment of identity of sponsor rather than on concealment of the operation. See also clandestine operation; overt operation. JP1-02

covering fire -- 1. Fire used to protect troops when they are within range of enemy small arms. 2. In amphibious usage, fire delivered prior to the landing to cover preparatory operations such as underwater demolition or minesweeping. JP 1-02

craft landing site -- An individual LCAC landing spot within the craft landing zone. Also called CLS. NWP 3-02.12 **(*)**

craft landing zone -- The beach or inland area selected by CLF where LCAC waves come off-cushion to off-load or on-load personnel, equipment, and cargo. It is connected with the craft penetration point by an ingress route. Also called CLZ. NWP 3-02.12 **(*)**

craft penetration point -- The geographic position where an LCAC crosses the high water mark at the landward end of an LCAC transit lane. Also called CPP. NWP 3-02.12 **(*)**

D

decisive force -- Combat power applied that results in the conclusive imposition of will on an adversary. MCRP 5-12C

deep water -- Water greater than 200 feet deep. NWP 3-15 **(*)**

deliberate attack -- A type of offensive action characterized by preplanned coordinated employment of firepower and maneuver to close with and destroy or capture the enemy. JP 1-02

deliberate breaching -- The creation of a lane through a minefield or a clear route through a barrier or fortification, which is systematically planned and carried out. JP 1-02

direct support -- A mission requiring a force to support another specific force and authorizing it to answer directly the supported force's request for assistance. See also close support; general support; mutual support; support. JP 1-02

direct support artillery -- Artillery whose primary task is to provide fire requested by the supported unit. JP 1-02

doctrine -- Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application. JP 1-02

E

electronic warfare -- Any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. Also called **EW.** The three major subdivisions within electronic warfare are: electronic attack, electronic protection, and electronic warfare support. a. electronic attack. That division of electronic warfare involving the use of electromagnetic, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability. Also called **EA.** EA includes: 1) actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum, such as jamming and electromagnetic deception, and 2) employment of weapons that use either electromagnetic or directed energy as their primary destructive mechanism (lasers, radio frequency weapons, particle beams). b. electronic protection. That division of electronic warfare involving actions taken to protect personnel, facilities, and equipment from any effects of friendly or enemy employment of electronic warfare that degrade, neutralize, or destroy friendly combat capability. Also called **EP.** c. electronic warfare support. That division of electronic warfare involving actions tasked by, or under direct control of, an operational commander to search for, intercept, identify, and locate sources of intentional and unintentional radiated electromagnetic energy for the purpose of immediate threat recognition. Thus, electronic warfare support provides information required for

immediate decisions involving electronic warfare operations and other tactical actions such as threat avoidance, targeting, and homing. Also called **ES.** Electronic warfare support data can be used to produce signals intelligence, both communications intelligence, and electronics intelligence. JP 1-02

element -- A subdivision of a military unit. (Webster's Dictionary) **(*)**

enabling mission -- A time-sensitive mission generally of short duration assigned to a military force to make possible the introduction of follow-on forces. Minimum tasks or functions to be accomplished must be specified in the mission order or other directive. Specific enabler tasks are situationally dependent and may include initial on-scene situational assessments and requirements development; essential communications-information systems connectivity with pertinent command and control elements; intelligence operations; critical force protection tasks; provision of essential logistic support; liaison with U.S. country team, host nation, nongovernmental organizations and coalition military officials. MCRP 5-12C

enabling tactical action -- An activity/operation that must be done to allow a force to accomplish a mission, which by not doing, will prevent the force from accomplishing the mission. May be either the main effort or supporting effort. Examples include: breaching, river crossing, linkups, passage of lines, and breakouts. (Clarify with MC Doc Div) **(*)**

engagement area -- An area along an enemy avenue of approach where the commander intends to contain and destroy an enemy force with the massed fires of all available weapons. The size and shape of the engagement area is determined by the relatively unobstructed intervisibility from the weapon systems in their firing positions and the maximum range of those weapons. Sectors of fire are usually assigned to subordinates to prevent fratricide. MCRP 5-12A

engineer reconnaissance -- The gathering of specific, detailed, technical information required by supporting engineer forces in order to prepare for and accomplish assigned missions. MCRP 5-12C

essential elements of friendly information – (See JP1-02) Specific facts about friendly intentions, capabilities, and activities needed by adversaries to plan and execute effective operations against our forces. Also called EEFI. MCRP 5-12C

essential elements of information -- The critical items of information regarding the enemy and the environment needed by the commander by a particular time to relate with other available information and intelligence in order to assist in reaching a logical decision. Also called EEI. JP 1-02

F

field exercises -- Exercises conducted under simulated combat conditions in which troops and armament of one side are actually present. Forces or equipment of the opposition may be either imagined or partially or fully present. MCRP 3-0A

follow-up -- In amphibious operations, the landing of reinforcements and stores after the assault and assault follow-on echelons have been landed. See also assault; assault follow-on echelon. JP 1-02

force -- 1. An aggregation of military personnel, weapon systems, vehicles and necessary support, or combination thereof. 2. A major subdivision of a fleet. JP 1-02

force beachhead -- The geographic area which contains the amphibious task force and landing force objectives and which, when secured, will enable the landing force to accomplish its basic mission. When seized and held, the continuous landing of personnel and material is ensured and provides a base for subsequent operations ashore. MCRP 5-12C

friendly force information requirements -- Information the commander needs about friendly forces in order to develop plans and make effective decisions. Depending upon the circumstances, information on unit location, composition, readiness, personnel status, and logistics status could become a friendly force information requirement. Also called FFIR. MCRP 5-12C

G

gap(s) --1. An area within a minefield or obstacle belt, free of live mines or obstacles, whose width and direction will allow a friendly force to pass through in tactical formation. (Joint Pub 1-02) 2. Any break or breach in the continuity of tactical dispositions or formations beyond effective small arms coverage. 3. Gaps (soft spots, weaknesses) may in fact be physical gaps in the enemy's disposition, but they also may be any weakness in time, space, or capability; a moment in time when the enemy is overexposed and vulnerable, a seam in an air defense umbrella, an infantry unit caught unprepared in open terrain, or a boundary between two units MCRP 5-12C

general support -- That support which is given to the supported force as a whole and not to any particular subdivision thereof. See also close support; direct support; mutual support; support. JP 1-02

general support artillery -- Artillery which executes the fire directed by the commander of the unit to which it organically belongs or is attached. It fires in support of the operation as a whole rather than in support of a specific subordinate unit. JP 1-02

H

handover line -- A control feature, preferably following easily defined terrain features, at which responsibility for the conduct of combat operations is passed from one force to another. JP 1-02

hasty attack -- In land operations, an attack in which preparation time is traded for speed in

order to exploit an opportunity. See also deliberate attack. JP 1-02

hasty breaching -- The rapid creation of a route through a minefield, barrier, or fortification by any expedient method. JP 1-02

hasty breaching (land mine warfare) -- The creation of lanes through enemy minefields by expedient methods such as blasting with demolitions, pushing rollers or disabled vehicles through the minefields when the time factor does not permit detailed reconnaissance, deliberate breaching, or bypassing the obstacle. JP 1-02

high-water mark -- Properly, a mark left on a beach by wave wash at the preceding high water. It does not necessarily correspond to the high-water line. Because it can be determined by simple observation, it is frequently used in place of the high-water line, which can be determined only by a survey. When so used, it is called the high-water line. JP 1-02

I

individual training -- That type of training a Marine receives, either in the institution/formal school or in the unit/organization environment which prepares an individual to perform specific duties and tasks related to an assigned MOS and duty position. MCRP 3-0A

Individual Training Standards -- The contents of Marine Corps Orders in the 1510 series that describe the scope of unique tasks that may be encountered by Marines in a particular occupational field. It uses tasks, conditions, and standards to establish a minimum level of competence required by grade and MOS. These standards are especially useful in designing training and they are required for formal school course development. Also called ITS. MCRP 3-0A

infiltration -- 1. 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 infers that contact is avoided. 2. In intelligence usage, placing an agent or other person in a target area in hostile territory. Usually involves crossing a frontier or other guarded line. Methods of infiltration are: black (clandestine); grey (through legal crossing point but under false documentation); white (legal). JP 1-02

initial craft landing site -- The ICLS is defined as being within the beach proper. NWP 3-02.15 **(*)**

intelligence requirement -- Any subject, general or specific, upon which there is a need for the collection of information, or the production of intelligence. See also essential elements of information; priority intelligence requirements. JP 1-02

K

killing zone -- An area in which a commander plans to force the enemy to concentrate so as to destroy him with conventional weapons or the tactical employment of nuclear weapons. JP 1-02

L

landing craft air cushion -- A high-speed (40+ knots), over-the-beach, ship-to-shore amphibious landing vehicle capable of a 60-ton payload (75-ton overload). It is designed to lift all equipment organic to the MAGTF in an amphibious operation. Also called LCAC. MCRP 5-12C

landing force support party --The forward echelon of the combat service support element formed to facilitate the ship-to-shore movement. It may contain a surface assault support element (shore party) and a helicopter assault support element (helicopter support). The landing force support party is brought into existence by a formal activation order issued by the commander, landing force. Also called LFSP. JP 1-02

lane -- A clear route through an obstacle. A lane for foot troops is a minimum of one meter in width and may be further expanded. A foot lane is marked with tracing tape along its center line. A single lane for vehicles is a minimum of eight meters in width; a double lane is at least 15 meters in width. Vehicle lanes are marked by any means available. MCRP 5-12C

lateral communications -- Sharing information, assessments, and products with adjacent forces or other forces as necessary for the conduct of operations. It is normally used to facilitate decentralization and freedom of action by subordinates. MCRP 5-12C

main attack -- The principal attack or effort into which the commander throws the full weight of the offensive power at his disposal. An attack directed against the chief objective of the campaign or battle. JP 1-02

M

main body -- The principal part of a tactical command or formation. It does not include detached elements of the command such as advance guards, flank guards, covering forces, etc. MCRP 5-12C

main effort -- The designated subordinate unit whose mission at a given point in time is most critical to overall mission success. It is usually weighted with the preponderance of combat power and is directed against a center of gravity through a critical vulnerability. MCRP 5-12C

maneuver warfare -- A warfighting philosophy that seeks to shatter the enemy's cohesion through a variety of rapid, focused, and unexpected actions which create a turbulent and rapidly deteriorating situation with which the enemy cannot cope. MCRP 5-12C

Marine Corps Planning Process -- A six-step methodology which helps organize the thought processes of the commander and staff throughout the planning and execution of military operations. It focuses on the threat and is based on the Marine Corps philosophy of maneuver warfare. It capitalizes on the principle of unity of command and supports the establishment and maintenance of tempo. The six steps consist of mission analysis, course of action development, course of action analysis, comparison/decision, orders development, and transition. Also called MCPP. Note: Tenets of the MCPP include top down planning, single battle concept, and integrated planning. MCRP 5-12C

Marine mammal system -- A naval explosive ordnance disposal detachment that employs marine mammals to conduct mine countermeasures operations. Also called MMS. NWP 3-15 They can be used to detect, locate, mark, and neutralize moored and bottom mines. NWP 3-02.15 **(*)**

mine cluster -- The basic unit of deliberate, manually laid minefields. It normally consists of one to five mines emplaced within or on a semicircle within a 2-meter radius. MCRP 5-12C

mine countermeasures -- Mine countermeasures are any actions taken to counter the effectiveness of and/or reduce the probability of damage to surface ships and craft or submarines from underwater mines. It includes all offensive and defensive measures for countering a mine threat, including the prevention of enemy minelaying. Also called MCM. NWP 3-15 **(*)**

MCM commander -- The officer who exercises tactical control of all assigned MCM units. Also called MCMC. NWP 3-15

minefield breaching -- In land mine warfare, the process of clearing a lane through a minefield under tactical conditions. JP 1-02

minefield lane -- A marked lane, unmined, or cleared of mines, leading through a minefield. JP 1-02

minefield marking -- Visible marking of all points required in laying a minefield and indicating the extent of such minefields. JP 1-02

minehunting -- Employment of sensor and neutralization systems, whether air, surface, or subsurface, to locate and dispose of individual mines. Minehunting is conducted to eliminate mines in a known field when sweeping is not feasible or desirable, or to verify the presence or absence of mines in a given area. JP 1-02

minesweeping -- The technique of clearing mines using either mechanical, explosive, or influence sweep equipment. Mechanical sweeping removes, disturbs, or otherwise neutralizes the mine; explosive sweeping causes sympathetic detonations in, damages, or displaces the mine; and influence sweeping produces either the acoustic and/or magnetic influence required to detonate the mine. JP 1-02

mine warfare --The strategic, operational, and tactical use of mines and mine countermeasures. Mine warfare is divided into two basic subdivisions: the laying of mines to degrade the enemy's capabilities to wage land, air, and maritime warfare; and the countering of enemy-laid mines to permit friendly maneuver or use of selected land or sea areas. JP 1-02

Mission-essential task list -- Descriptive training document which provides units a clear, warfighting-focused description of collective actions necessary to achieve wartime mission proficiency. Also called METL. MCRP 3-0A

mission performance standards -- Criteria that specify mission and functional area unit proficiency standards for combat, combat support, and combat service support units. They include task, conditions, standards, evaluator instructions, and key indicators. Also called MPS. MCRP 3-0A

modified combined obstacle overlay -- A product used to depict the battlespace's effects on military operations. It is normally based on a product depicting all obstacles to mobility, modified to also depict the following, which are not prescriptive nor inclusive: cross-country mobility classifications (such as RESTRICTED); objectives; avenues of approach and mobility corridors; likely locations of countermobility obstacle systems; likely engagement areas; and key terrain. Also called MCOO. MCRP 5-12C

mutual support -- That support which units render each other against an enemy, because of their assigned tasks, their position relative to each other and to the enemy, and their inherent capabilities. JP 1-02

N

named area of interest -- A point or area along a particular avenue of approach through which enemy activity is expected to occur. Activity or lack of activity within a named area of interest will help to confirm or deny a particular enemy course of action. Also called NAI. MCRP 5-12C

naval surface fire support -- Fire provided by Navy surface gun, missile, and electronic warfare systems in support of a unit or units tasked with achieving the commander's objectives. Also called NSFS. JP 1-02

numbered beach -- In amphibious operations, a subdivision of a colored beach, designated for the assault landing of a battalion landing team or similarly sized unit, when landed as part of a larger force. See also colored beach. JP 1-02

O

objective -- The physical object of the action taken, e.g., a definite tactical feature, the seizure and/or holding of which is essential to the commander's plan. JP 1-02

objective area -- 1. A defined geographical area within which is located an objective to be captured or reached by the military forces. This area is defined by competent authority for purposes of command and control. (DOD) 2. The city or other geographical location where a civil disturbance is occurring or is anticipated, and where Federal Armed Forces are, or may be, employed. JP 1-02

obscuration -- The effects of weather, battlefield dust, and debris, or the use of smoke munitions to hamper observation and target-acquisition capability or to conceal activities or movement. MCRP 5-12A

obscure -- To hide or make something not clearly seen or easily distinguishable. (MC Doctrine Division) **(*)**

obscuring smoke -- Smoke used to degrade the enemy's combat effectiveness. Obscuring smoke is placed on or near the enemy to suppress enemy observers and to minimize their vision and/or their ability to command and control their forces. MCWP 3-16.6

obstacle -- Any obstruction designed or employed to disrupt, fix, turn, or block the movement of an opposing force, and to impose additional losses in personnel, time, and equipment on the opposing force. Obstacles can exist naturally or can be manmade, or can be a combination of both. (Joint Pub 1-02) Obstacles can be used to protect friendly forces from close assault.

obstacle belt -- A brigade-level command and control measure, normally given graphically, to show where within an obstacle zone the ground tactical commander plans to limit friendly obstacle employment and focus the defense. It assigns an intent to the obstacle plan and provides the necessary guidance on the overall effect of obstacles within a belt. JP 1-02

on-call target -- In artillery and naval gunfire support, a planned target other than a scheduled target on which fire is delivered when requested. JP 1-02

overt operation -- An operation conducted openly, without concealment. See also clandestine operation; covert operation. JP 1-02

over-the-horizon amphibious operations -- An operational initiative launched from beyond visual and radar range of the shoreline. JP 1-02

overwatch -- 1. A tactical technique in which one element is positioned to support the movement of another element with immediate fire. 2. The tactical role of an element positioned to support the movement of another element with immediate fire. MCRP 5-12C

P

penetration -- In land operations, a form of offensive which seeks to break through the enemy's defense and disrupt the defensive system. JP 1-02

phase(s) -- A planning and execution tool that is used to divide an operation in duration or activity. A change in phase may involve a change in task or task organization. Phasing helps in planning and controlling and may be indicated by time, by distance, by terrain, or by occurrence of an event. MCRP 5-12C

precision logistics -- A continuous program to enhance logistic support through improved logistic response time, enhanced regional distribution, automated identification technology, enhanced acquisition strategies, and institutionalizing applicable commercial industry practices. MCRP 5-12C

principles of war -- Principles that guide warfighting at the strategic, operational, and tactical levels. They are the enduring bedrock of US military doctrine. The nine principles are: maneuver, offensive, objective, surprise, economy of force, mass, unity of command, security, and simplicity. MCRP 5-12A

priority -- With reference to operation plans and the tasks derived therefrom, an indication of relative importance rather than an exclusive and final designation of the order of accomplishment. JP 1-02

priority intelligence requirements -- Those intelligence requirements for which a commander has an anticipated and stated priority in his task of planning and decisionmaking. (JP 1-02) 2. In Marine Corps usage, an intelligence requirement associated with a decision that will critically affect the overall success of the command's mission. Also called PIR. MCRP 5-12C

priority of effort -- The element designated by the commander to receive a higher concentration of support assets for the duration that it remains the priority of effort. MCRP 5-12A

priority of fire -- Guidance to a fire support planner to organize and employ fire support means in accordance with the relative importance of the maneuver unit's missions. MCRP 5-12C

proof -- Proving or testing a lane to verify that all mines are cleared. Webster's Ninth New Collegiate

R

reconstitute -- Reforming a damaged or destroyed unit, or elements of the same, from survivors and/or personnel from other sources.

reconstitution site --- A location selected by the surviving command authority as the site at which a damaged or destroyed headquarters can be reformed from survivors of the attack and/or personnel from other sources, predesignated as replacements. JP 1-02

reduction -- The creation of lanes through a minefield or obstacle to allow passage of the attacking ground force. JP 1-02

S

scatterable mine -- In land mine warfare, a mine laid without regard to classical pattern and which is designed to be delivered by aircraft, artillery, missile, ground dispenser, or by hand. Once laid, it normally has a limited life. JP 1-02

secure -- In an operational context, to gain possession of a position or terrain feature, with or without force, and to make such disposition as will prevent, as far as possible, its destruction or loss by enemy action. JP 1-02

screening smoke -- Smoke used to conceal friendly forces, positions, and activities from enemy ground or air observation. Screening smoke is normally placed between friendly and enemy forces. MCWP 3-16.6

security -- 1. Measures taken by a military unit, an activity or installation to protect itself against all acts designed to, or which may, impair its effectiveness. 2. A condition that results from the establishment and maintenance of protective measures that ensure a state of inviolability from hostile acts or influences. 3. With respect to classified matter, it is the condition that prevents unauthorized persons from having access to official information that is safeguarded in the interests of national security. See also national security. JP 1-02

shallow water -- Water between 40-to 200-feet deep. NWP 3-15 **(*)**

situational awareness -- Knowledge and understanding of the current situation which promotes timely, relevant and accurate assessment of friendly, enemy and other operations within the battlespace in order to facilitate decisionmaking. An informational perspective and skill that foster an ability to determine quickly the context and relevance of events that are unfolding. MCRP 5-12C

special assault tasks -- Tasks conducted during advance force operations to facilitate the ship-to-shore movement of the landing force. Such tasks could include the limited demolition of beach obstacles and defenses or securing key points in the enemy's rear. MCRP 5-12C

Support

GENERAL SUPPORT – That support which is given to the supported force as a whole and not to any particular subdivision thereof. JP 1-02

DIRECT SUPPORT - A mission requiring a force to support another specific force and authorizing it to answer directly the supported force's request for assistance. JP 1-02

support force -- Those forces charged with providing intense direct overwatching fires to the assault and breaching forces or a force that supports a river crossing and other combat operations. (See also assault force and breach force.) MCRP 5-12A

supporting attack -- An offensive operation carried out in conjunction with a main attack and designed to achieve one or more of the following: a. deceive the enemy; b. destroy or pin down enemy forces which could interfere with the main attack; c. control ground whose occupation by the enemy will hinder the main attack; or d. force the enemy to commit reserves prematurely or in an indecisive area. See also supported commander; supporting commander. JP 1-02

supporting effort -- A designated subordinate unit(s) whose mission is designed to directly contribute to the success of the main effort. MCRP 5-12A

supporting fire -- Fire delivered by supporting units to assist or protect a unit in combat. See also close supporting fire; deep supporting fire; direct supporting fire. JP 1-02

suppression -- Temporary or transient degradation by an opposing force of the performance of a weapons system below the level needed to fulfill its mission objectives. JP 1-02

suppressive fire -- Fires on or about a weapons system to degrade its performance below the level needed to fulfill its mission objectives, during the conduct of the fire mission. JP 1-02

surf zone -- That area between the high water mark or zero feet out to a depth of 10 feet. NWP 3-15 **(*)**

sustained operations ashore -- The employment of Marine Corps forces on land for an extended duration. It can occur with or without sustainment from the sea. Also called SOA. MCRP 5-12C

T

tactical exercises without troops – An exercises where leaders plan a maneuver or deployment of simulated troops on a specific piece of ground. This method permits training personnel to spend a great deal more time with unit leaders than would be possible if the entire unit were present. Also called TEWT. MCRP 3-0A

task organization -- 1. In the Navy, an organization which assigns to responsible commanders the means with which to accomplish their assigned tasks in any planned action. 2. An organization table pertaining to a specific naval directive. (Joint Pub 1-02) In the Marine Corps, a temporary grouping of forces designed to accomplish a particular mission. Task organization involves the distribution of available assets to subordinate control headquarters by attachment or by placing assets in direct support or under the operational control of the subordinate. MCRP 5-12C

tempo -- The relative speed and rhythm of military operations over time. MCRP 5-12C

training in an urban environment -- A select training program for maritime special purpose force assets that is conducted in highly urbanized cities. Also called TRUE. MCRP 5-12C

training standard -- A measure of collective or individual performance. As a minimum, both individual and collective training standards consist of a task, the condition under which the task is to be performed, and the evaluation criteria which will be used to verify that the task has been performed to a satisfactory level. MPSs, ITSs, aviation syllabus sorties, and aviation maintenance tasks, are examples or performance measures used as the basis for Marine Corps training. MCRP 3-0A

V

very shallow water -- Water between 10 and 40 feet deep. NWP 3-15 **(*)**

W

warfighting functions -- Also called WF. The six mutually supporting military activities integrated in the conduct of all military operations are:

1. command and control--The means by which a commander recognizes what needs to be done and sees to it that appropriate actions are taken.
2. maneuver--The movement of forces for the purpose of gaining an advantage over the enemy.
3. fires--Those means used to delay, disrupt, degrade, or destroy enemy capabilities, forces, or facilities as well as affect the enemy's will to fight.
4. intelligence--Knowledge about the enemy or the surrounding environment needed to support decisionmaking.
5. logistics--All activities required to move and sustain military forces.
6. force protection--Actions or efforts used to safeguard own centers of gravity while protecting, concealing, reducing, or eliminating friendly critical vulnerabilities. MCRP 5-12C
Note: Terms with (*) will be included in next update of MCRP 5-12C

Appendix G

References and Related Publications

U. S. Army Field Manuals

FM 3-6 *Field Behavior of NBC Agents* 3 November 1986
FM 5-100 *Engineer Combat Operations* 27 February 1996
FM 5-101 *Mobility* 23 January 1985
FM 5-102 *Countermobility* 14 March 1985
FM 5-250 *Explosives and Demolitions* 30 July 1998
FM 7-7 *The Mechanized Infantry Squad and Platoon* 15 March 1985
FM 20-32 *Mine/Countermine Operations* 29 May 1998
FM 31-71 *Northern Operations* 21 June 1971
FM 90-3 *Desert Operations* 24 August 1993
FM 90-5 *Jungle Operations* 16 August 1982
FM 90-6 *Mountain Operations* 30 June 1980
FM 90-13-1 *Combined Arms Breaching Operations, w/ Chg 1* 17 May 1993
FM 90-13-1 (FD) *Combined Arms Breaching Operations (Final Draft)* November 1998

Fleet Marine Force Manuals

FMFM 7-20 *Marine Air-Ground Task Force Planning and Training for Cold Weather Operations* 30 March 1994

Fleet Marine Force Reference Publications

FMFRP 7-24 *Commander's Guide to Cold Weather Operations* 22 August 1988

Joint Publications

JP 1-02 *Department of Defense Dictionary of Military and Associated Terms* 23 March 1994 as amended 10 June 1998
JP 3-02 *Joint Doctrine for Amphibious Operations* 8 October 1992
JP 3-15 *Joint Doctrine for Barriers, Obstacles, and Mine Warfare* 30 June 1993

Marine Corps Doctrinal Publications

MCDP 1 *Warfighting* 20 June 1997
MCDP 1-3 *Tactics* 12 November 1997
MCDP 3 *Expeditionary Operations* 16 April 1998
MCDP 5 *Planning* 21 July 1997
MCDP 6 *Command and Control* 4 October 1996

Marine Corps Reference Publications

MCRP 2-15B *Reconnaissance Reports Guide* 21 April 1998
MCRP 3-0A *Unit Training Management Guide* September 1996
MCRP 3-0B *How To Conduct Training* 25 November 1996
MCRP 3-17A *Engineer Field Data (Dual Designated FM 5-34)* 14 September 1987
MCRP 3-17B *Engineer Forms and Reports* 3 October 1997

MCRP 5-12A *Operational Terms and Graphics* 29 December 1998
MCRP 5-12 C*Marine Corps Supplement to the DOD Dictionary of Military and Associated Terms* 23 July 1998

Marine Corps Technical Manuals
TM 11275-15/3C *Principal Technical Characteristics of U. S. Marine Corps Engineer Equipment* September 1991

Marine Corps Warfighting Publications
MCWP 3-16.6 *Supporting Arms Observer, Spotter, and Controller* 20 November 1998
MCWP 3-17 (CD) *MAGTF Engineer Operations (Coordinating Draft)* 15 June 1998
MCWP 3-35.5 *Military Operations on Urbanized Terrain* 15 April 1998
MCWP 5-1(CD) *Marine Corps Planning (Coordinating Draft)* 16 December 1997
MCWP 6-22 *Communication and Information Systems* 16 November 1998

Marine Corps Operational Concepts
MCM in Littorals *Mine Countermeasures in Littoral Environments* 1 May 1998
OMFTS *Operational Maneuver From the Sea* 4 January 1996
SOA *Sustained Operations Ashore* 28 June 1998
STOM *Ship to Objective Maneuver* 25 July 1997

Naval Warfighting Publications
NWP 1-02 *Naval Supplement to the DOD Dictionary of Military and Associated Terms* 1 August 1995
NWP 3-02.12 *Employment of Landing Craft Air Cushion (LCAC) (Dual Designated MCWP 3-31.1A)* 1 February 1997
NWP 3-02.15 *Amphibious Operations in a Mine Environment* 25 July 1997
NWP 3-15 *Mine Warfare (Dual Designated MCWP 3-31.2)* 1 August 1996

Standardization Agreements
STANAG 2002 *Warning Signs for the Marking of Contaminated or Dangerous Land Areas, Complete Equipments, Supplies, and Stores* 29 June 1999
STANAG 2036 *Land Minefield Laying, Recording, Reporting and Marking Procedures* 12 February 1987
STANAG 2889 *Marking of Hazardous Areas and Routes Through Them* 26 March 1984

Other Publications
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