

**UNITED STATES MARINE CORPS**  
Infantry Training Battalion  
School of Infantry  
Camp Pendleton, CA 92055-5081  
Camp Lejeune, NC 28542-0161

**FUNDAMENTALS OF ANTI-ARMOR WARFARE**

**AT1302**

**Student Handout**

**ANTI-TANK MISSILEMAN COURSE**

**M100352**

**05 APR 2004**

**LESSON PURPOSE.** This is a lesson purpose period of instruction, and there are no learning objectives associated with it.

1. **THREAT POSED BY ENEMY ARMORED VEHICLES.** The tank is the backbone of a mechanized force. This means at some point it must be engaged and destroyed. The greatest degree of any armored vehicles protection is the front of its hull and turret; with the least protection being on its rear, sides, top, and undercarriage. There are three basic types of materials that armored vehicles are made of. These materials are:
  - a. Homogenous steel. This is the type of armor used on tanks and armored vehicles before 1980. It is layered steel one on top of another.
  - b. Reactive armor. This type of armor can be bolted onto existing tanks. They are simply explosive charges attached to the front and sides of armored vehicles that explode when hit. Thereby reducing the effect of high explosive shaped-charge anti-armor rounds.
  - c. Composite armor. This type of armor is plating made of layered steel and ceramic with empty air spaces.

2. **ANTI-ARMOR WEAPONS.** There are four anti-armor weapons organic to the Marine infantry battalion. These weapons are:

a. TOW. The TOW Tube-launched, Optically tracked, Wire-command-link is the heavy anti-tank weapon (HAW). The TOW has a maximum range of 3,750 meters.

b. Javelin. The Javelin is a fire and forget, man-portable medium antitank weapon (MAW). The range of the Javelin is 2000 meters.

c. SMAW. The shoulder launched multipurpose assault weapon (SMAW) is a light anti-tank weapon (LAW). The SMAW has a maximum effective range of 500 meters using a high explosive anti-armor round (H.E.A.A.).

d. AT-4 (M-136). The AT-4 is a munition issued on an as needed basis to the infantry rifle squad. The AT-4 is a light anti-tank weapon (LAW). It is a disposable munition with a maximum effective range of 300 meters.

3. **METHODS OF ENGAGEMENT.** In order to accomplish the primary mission of anti-armor warfare, you must become familiar with the two methods used to initiate the anti-armor fire. These two methods are:

a. HAW-MAW-LAW. HAW-MAW-LAW takes into account each type of anti-armor weapon usually available to the infantry. These are the heavy anti-armor weapons TOWs and tanks, medium anti-armor weapons Javelin, and light anti-armor weapons SMAWs and AT-4s. It is a concept in which friendly anti-armor weapons engage enemy targets at their maximum effective ranges. The TOWs and tanks will begin to engage at 4,000 meters, company mortars will engage at 3,000, and so on, down to the light anti-armor weapons. All weapons continue to fire, until the enemy is destroyed or higher command dictates a displacement. This allows the enemy force to be slowly but surely destroyed

as they approach the point of no penetration (PNP), or the area that the command has ordered that no enemy armor shall cross. The advantage of this method of engagement is that the enemy is under constant anti-armor fire from at least 4,000 meters away, all along their axis of advance. You may also force the enemy armor to change direction. The disadvantage of this method is that you may not destroy the bulk of the armored force, because they may change their direction of movement and their new axis of advance may not be within your sectors of fire.

b. Massed Surprised Fires. This method of engagement utilizes all anti-armor weapons engaging the enemy force simultaneously, from the range of the light anti-tank weapons. This method requires the least amount of coordination and preparation. The advantage of this method is that the initial violent volleys will kill and demoralize many vehicles in a short amount of time unlike HAW, MAW, LAW, which destroys them at a slow, constant rate. However, the disadvantage of this method is that you must wait to fire until the enemy armor gets well within your desired standoff distances for your heavy anti-armor weapons. There is a good chance that the enemy's mass and momentum will carry the force into friendly positions. This method is ideal in the ambush of individual or small armor units.

c. Common Characteristics. Anti-armor weapons may have many different characteristics, however, there are four, which are common to all. These common characteristics are:

(1) High first round hit probability.

(2) Direct fire weapons require a clear line of sight to the target. With the indirect fire mode for the Javelin, a clear line of sight is only needed to lock onto the target. Once the Javelin is "locked on" to the target, a clear line of sight to the target is no longer required.

(3) High effectiveness-to-weight ratio: Lightweight, infantry portable weapons, such as a SMAW or Javelin can defeat a heavily armored vehicles.

(4) Large signature effect: The large white smoke and dust cloud from the back blast can be seen from a great distance. The exception to this is the Javelin weapon system, which has a very low signature effect when launching.

**4. ENGAGEMENT AREAS AND WEAPON POSITIONING**. There are six basic principles utilized to properly employ an anti-armor unit. Ensure you perform each of the following steps:

a. Reconnaissance. If there is enough time, conduct a thorough ground reconnaissance. Try and find out if there are any recent aerial photographs of your assigned area, or talk to someone who has operated there. Identify prominent terrain features and likely enemy armor approaches, from the front, flanks and rear.

b. Terrain Evaluation. In the offense, the terrain approaching the objective and on the objective itself, is evaluated to determine the best positions for the employment of your weapons. This position should accommodate both offensive and defensive postures. In the defense, the terrain should be evaluated both from the friendly and enemy points of view.

Under no circumstances, should you overlook the enemy's ability to negotiate natural and man-made obstacles.

c. Selection of Position. Always use the terrain to your maximum advantage. Some general principles for positioning are:

(1) Use the terrain for maximum cover and concealment from aerial and ground observation, and for the concealment of the weapon's back blast. Ensure you have covered and concealed routes to and from your firing positions.

(2) Position the weapons in areas that provide clear and overlapping fields of fire out to the weapons maximum effective range, if possible. This will increase your "standoff." Standoff is the range that a weapons maximum effective range exceeds that of an opposing weapons maximum effective range. A good example would be the TOW, maximum effective range of 3,750 meters and the T-64 MBT maximum effective range of 2,000 meters. The standoff of those two weapons is 1,750 meters. The TOW can fire 1,750 meters before the T-64 can. The T-64 will have to cover 1,750 meters before he can fire effectively on the TOW.

(3) If possible, employ your weapons to engage the enemy from the flank. Frontal fires, against tanks, should be avoided as a general rule. When advancing, the tank's heavily armored glacis plate, firepower and crew observation is generally oriented toward the front, making it difficult but not impossible, to detect a weapon firing from the flank or rear.

(4) Employ your weapons so they are mutually supported. Mutual support provides a high degree of protection for the weapons crews by ensuring complete and continuous coverage of the likely enemy avenues of approach. Mutual support consists of the following:

(a) Interlocking and overlapping field of fire:

(b) Position individual weapons so they can be re-orientated to cover specific areas not necessarily in their primary sector of fire.

(c) Integrate with nearby friendly infantry and armor units to enhance local security: Anti-armor weapons are vulnerable not only to tanks, but also to assaulting infantry.

(5) Avoid conspicuous terrain features. Features such as prominent hilltops and road junctions are often used as registration points for enemy indirect fire weapons.

d. Fire Planning

(1) In the offense, fire plans are designed for continuous protection during occupation of the assembly area and along the route to the objective, as well as on the objective itself. Fires are planned to provide all around security. Ensure that you have overlapping fires in the event of a weapon crew becomes a casualty covers all gaps.

(2) In the defense, fire plans are designed to integrate all units throughout the forward defensive area and the reserve forces as well. If the enemy armor succeeds in penetrating the forward edge of the battle area (FEBA), anti-armor weapons should be in a position to assist in repelling the

attack. Should this fail, the forward defense forces attempt to slow or stop the enemy to permit the reserve to execute a counterattack.

e. Saturate the Battlefield. This fundamental requires the coverage of the battlefield by different types of anti-armor weapons. Enemy armor is first engaged by anti-tank aircraft at long ranges, as he approaches he is then engaged by artillery. This is followed by long range anti-tank guided missiles, friendly tanks, medium range anti-tank guided missiles and finally by anti-tank rockets. The overall view is progressive; as the enemy mechanized forces approach; more and more weapons of various types engage them. Whichever weapon is engaging the fire will be massed. Heavy sustained section or platoon volleys are more effective than sections or platoons firing one or two uncoordinated missiles/rockets at a time.

f. Use Obstacles. The tank is heavily dependent on suitable terrain for movement. By skillful use of existing obstacles such as unstable soil, steep slopes or wooded areas and reinforcing man-made obstacles, such as the log post, the tank ditch or minefield, the infantryman can gain an advantage over attacking armor. Obstacles will allow the infantry to help canalize the enemy armor movement, and hopefully delay his advance. In addition, they are used to enhance the effectiveness of friendly anti-tank fires. All obstacles should be covered by indirect fire. However, no type of obstacle will completely stop the advance of a large, determined armor force.

**5. FIRE CONTROL (ADDRAC).** Fire commands are clear and concise commands that contribute to speed and accuracy in engaging armor formations. Fire commands will vary slightly, depending on the type of anti-armor weapon system.

- a. "Alert" this lets the gunner know to stand by for target.
- b. "Direction" lets the gunner know where to look.
- c. "Description" tells him what to look for.
- d. "Range" lets the gunner know at what range the target is.
- e. "Assignment" tells the gunner what target, of method to use in target engagement.
- f. "Control" this lets the gunner know when to fire.

**Reference and Pages: FMFM 2-11, Anti-armor Operations, pages 3-12 through 3-29 and 4-1 through 4-54.**