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UNITED STATES ARMY
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HANDBOOK

Not for the weak or fainthearted

"Let the enemy come till he's almost close enough to touch.
Then let him have it and jump out and finish him with your hatchet."
Major Robert Rogers, 1759

RANGER TRAINING BRIGADE

United States Army Infantry School
Fort Benning, Georgia

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RANGER CREED

Recognizing that I volunteered as a Ranger, fully knowing the hazards of my chosen profession, I will always endeavor to uphold the prestige, honor, and high esprit de corps of the Rangers.

Acknowledging the fact that a Ranger is a more elite Soldier who arrives at the cutting edge of battle by land, sea, or air, I accept the fact that as a Ranger my country expects me to move further, faster, and fight harder than any other Soldier.

Never shall I fail my comrades I will always keep myself mentally alert, physically strong, and morally straight and I will shoulder more than my share of the task whatever it may be, one hundred percent and then some.

Gallantly will I show the world that I am a specially selected and well trained Soldier. My courtesy to superior officers, neatness of dress, and care of equipment shall set the example for others to follow.

Energetically will I meet the enemies of my country. I shall defeat them on the field of battle for I am better trained and will fight with all my might. Surrender is not a Ranger word. I will never leave a fallen comrade to fall into the hands of the enemy and under no circumstances will I ever embarrass my country.

Readily will I display the intestinal fortitude required to fight on to the Ranger objective and complete the mission, though I be the lone survivor.

STANDING ORDERS, ROGERS' RANGERS

MAJOR ROBERT ROGERS, 1759

1.Don't forget nothing.
2.Have your musket clean as a whistle, hatchet scoured, sixty rounds powder and ball, and be ready to march at a minute's warning.
3. When you're on the march, act the way you would if you was sneaking up on a deer. See the enemy first.
4. Tell the truth about what you see and what you do. There is an army depending on us for correct information. You can
lie all you please when you tell other folks about the Rangers, but don't never lie to a Ranger or officer.
5. Don't never take a chance you don't have to.
6. When we're on the march we march single file, far enough apart so one shot can't go through two men.
7. If we strike swamps, or soft ground, we spread out abreast, so it's hard to track us.
8. When we march, we keep moving till dark, so as to give the enemy the least possible chance at us.
9. When we camp, half the party stays awake while the other half sleeps.
10. If we take prisoners, we keep' em separate till we have had time to examine them, so they can't cook up a story between 'em.
11. Don't ever march home the same way. Take a different route so you won't be ambushed.
12. No matter whether we travel in big parties or little ones, each party has to keep a scout 20 yards ahead, 20 yards on each flank, and 20 yards in the rear so the main body can't be surprised and wiped out.
13. Every night you'll be told where to meet if surrounded by a superior force.
14. Don't sit down to eat without posting sentries.
15. Don't sleep beyond dawn. Dawn's when the French and Indians attack.
16. Don't cross a river by a regular ford.
17. If somebody's trailing you, make a circle, come back onto your own tracks, and ambush the folks that aim to ambush you.
18. Don't stand up when the enemy's coming against you. Kneel down, lie down, hide behind a tree.
19. Let the enemy come till he's almost close enough to touch, then let him have it and jump out and finish him up with your hatchet

RANGER HISTORY

The history of the American Ranger is a long and colorful saga of courage, daring, and outstanding leadership. It is a story of men whose skills in the art of fighting have seldom been surpassed. Only the highlights of their numerous exploits are told here.

Rangers mainly performed defensive missions until, during King Phillip's War in 1675, Benjamin Church's Company of Independent Rangers (from Plymouth Colony) conducted successful raids on hostile Indians. In 1756, Major Robert Rogers, of New Hampshire, recruited nine companies of American colonists to fight for the British during the French and Indian War. Ranger techniques and methods of operation inherently characterized the American frontiersmen. Major Rogers was the first to capitalize on them and incorporate them into the fighting doctrine of a permanently organized fighting force.

The method of fighting used by the first Rangers was further developed during the Revolutionary War by Colonel Daniel Morgan, who organized a unit known as "Morgan's Riflemen." According to General Burgoyne, Morgan's men were "….the most famous corps of the Continental Army, all of them crack shots."
Francis Marion, the "Swamp Fox," organized another famous Revolutionary War Ranger element known as "Marion's Partisans." Marion's Partisans, numbering anywhere from a handful to several hundred, operated both with and independent of other elements of General Washington's Army. Operating out of the Carolina swamps, they disrupted British communications and prevented the organization of loyalists to support the British cause, substantially contributing to the American victory.

The American Civil War was again the occasion for the creation of special units such as Rangers. John S. Mosby, a master of the prompt and skillful use of cavalry, was one of the most outstanding Confederate Rangers. He believed that by resorting to aggressive action he could compel his enemies to guard a hundred points. He would then attack one of the weakest points and be assured numerical superiority.

With America's entry into the Second World War, Rangers came forth to add to the pages of history. Major William O. Darby organized and activated the 1st Ranger Battalion on June 19, 1942 at Carrickfergus, North Ireland. The members were all hand picked volunteers; 50 participated in the gallant Dieppe Raid on the northern coast of France with British and Canadian commandos. The 1st, 3rd, and 4th Ranger Battalions participated with distinction in the North African, Sicilian and Italian campaigns. Darby's Ranger Battalions spearheaded the Seventh Army landing at Gela and Licata during the Sicilian invasion and played a key role in the subsequent campaign, which ended in the capture of Messina. They infiltrated German lines and mounted an attack against Cisterna, where they virtually annihilated an entire German parachute regiment during close in, night, bayonet, and hand to hand fighting.

The 2nd and 5th Ranger Battalions participated in the D Day landings at Omaha Beach, Normandy. It was during the bitter fighting along the beach that the Rangers gained their official motto. As the situation became critical on Omaha Beach, the division commander of the 29th Infantry Division stated that the entire force must clear the beach and advance inland. He then turned to Lieutenant Colonel Max Schneider, Commander of the 5th Ranger Battalion, and said, "Rangers, lead the way." The 5th Ranger Battalion spearheaded the breakthrough. This enabled the Allies to drive inland, away from the invasion beaches.

The 6th Ranger Battalion, operating in the Pacific, conducted Ranger-type missions behind enemy lines. These missions involved reconnaissance and hard hitting, long-range raids. These Rangers were the first American group to return to the Philippines, destroying key coastal installations prior to the invasion. A reinforced company from the 6th Ranger Battalion formed the rescue force that liberated American and Allied POWs from the Japanese prison camp at Cabanatuan.

Another Ranger type unit was the 5307th Composite Unit (Provisional), organized and trained as a long range penetration unit for employment behind enemy lines in Japanese occupied Burma. The unit commander was Brigadier General (later Major General) Frank D. Merrill. Its 2,997 officers and men became popularly known as “Merrill’s Marauders.”

The men of Merrill’s Marauders were volunteers from the 5th, 154th, and 33rd Infantry Regiments and from other Infantry regiments engaged in combat in the Southwest and South Pacific. These men responded to a call from Chief of Staff, General George C. Marshall, for volunteers for a hazardous mission. These volunteers were to have a high state of physical ruggedness and stamina and were to come from jungle trained and jungle tested units.

Before joining the Northern Burma Campaign, Merrill’s Marauders trained in India under British Major General Orde C. Wingate. From February to June 1943, they learned long range penetration tactics and techniques like those developed and first employed by General Wingate. The operations of the Marauders were closely coordinated with those of the Chinese 22nd and 38th Divisions in a drive to recover northern Burma and clear the way for the construction of Ledo Road, which was to link the Indian railhead at Ledo with the old Burma Road to China. The Marauders marched and fought through jungle and over mountains from Hukwang Valley in Northwest Burma, to Myitkyina and the Irrawaddy River. In 5 major and 30 minor engagements, they met and defeated the veteran soldiers of the Japanese 18th Division. Operating in the rear of the main force of the Japanese, they prepared the way for the Southward advances of the Chinese by disorganizing supply lines and communications. The climax of the Marauder’s operations was the capture of Myitkyina Airfield, the only all weather strip in northern Burma. This was the final victory of “Merrill’s Marauders,” which disbanded in August 1944. Remaining personnel merged into the 475th Infantry Regiment, which fought its last battle on February 3 and 4, 1945, at Loi Kang Ridge, China. This Infantry Regiment is the father of the 75th Ranger Regiment.

Soon after the Korean War started in June 1950, the 8th Army Ranger Company was formed of volunteers from American units in Japan. The Company was trained in Korea and distinguished itself in combat during the drive to the Yalu River, performing task force and spearhead operations. During the massive Chinese intervention of November 1950, this small, vastly outnumbered unit withstood five enemy assaults on its position.

In September 1950, a D.A. message called for volunteers to train as Airborne Rangers. Five thousand regular Army paratroopers from the 82nd Airborne Division volunteered. Nine hundred were chosen to form the first eight Airborne Ranger companies. Nine more companies were formed from regular Army and National Guard Infantry division volunteers. These seventeen Airborne Ranger companies were activated and trained at Fort Benning, Georgia. Most received more training in the Colorado mountains.

In 1950 and 1951, some 700 men of the 1st, 2nd, 3rd, 4th, 5th, and 8th Airborne Ranger companies fought to the front of every American Infantry Division in Korea. Attacking by land, water, and air, these six Ranger companies raided, penetrated, and ambushed North Korean and Chinese forces. They were the first Rangers to make combat jumps. After the Chinese intervention, these Rangers were the first Americans to re cross the 38th parallel. The 2nd Airborne Ranger Company was the only African American Ranger unit in the history of the American Army. The men of the six Ranger companies who fought in Korea paid the bloody price of freedom. One in nine of this gallant brotherhood died on the battlefields of Korea.

Other Airborne Ranger companies led the way while serving with Infantry divisions in the U.S., Germany, and Japan. These volunteers fought as members of line Infantry units in Korea. They volunteered for the Army, the Airborne, the Rangers, and for combat. The first men to earn and wear the coveted Ranger Tab, these men are the original Airborne Rangers. One Ranger, Donn Porter, received the Medal of Honor posthumously. Fourteen Korean War Rangers rose to general officer. Dozens more became colonels, senior NCOs, and civilian leaders.

In October 1951, the Army Chief of Staff, General J. Lawton Collins, directed that Ranger training extend to all Army combat units. He directed the Commandant of the Infantry School to establish a Ranger Department. This new department would develop and conduct a Ranger course of instruction. His goal was to raise the standard of training in all combat units. The program built on lessons learned from World War II and the Korean conflict.

During the Vietnam Conflict, fourteen Ranger companies consisting of highly motivated volunteers served with distinction from the Mekong Delta to the DMZ. Assigned to separate brigade, division, and field force units, they conducted long range reconnaissance and exploitation operations into enemy held areas. They provided valuable combat intelligence. Initially designated as long-range reconnaissance patrol (LRRP), then long-range patrol (LRP) companies, these units were later designated as C through P (there is no Juliet Company) Rangers, 75th Infantry.

After Vietnam, the Army Chief of Staff, General Abrams, recognized the need for a highly trained and highly mobile reaction force. He activated the first battalion sized Ranger units since World War II, the 1st and 2nd Battalions (Ranger), 75th Infantry.
The 1st Battalion trained at Fort Benning, Georgia and was activated February 8, 1974 at Fort Stewart, Georgia. The 2nd Battalion was activated on October 3, 1974. The 1st Battalion is now based at Hunter Army Airfield, Georgia; the 2nd Battalion is based at Fort Lewis, Washington.

General Abrams' farsighted decision and the combat effectiveness of the Ranger battalions were proven in the U.S. invasion of Grenada, Operation ***"Urgent Fury,"*** October 1983. The mission was to protect American citizens and restore democracy. The Ranger battalions "led the way" with a daring, low level airborne assault (from 500 feet) to seize the airfield at Point Salines. They continued operations for several days, eliminating pockets of resistance and rescuing American medical students. Due to this iii success, in 1984, D.A. increased the strength of Ranger units to their highest levels in 40 years. To do this, it activated another Ranger battalion as well as a Ranger Regimental Headquarters. After these units, the 3rd Battalion (Ranger), 75th Infantry, and Headquarters Company (Ranger), 75th Infantry, were activated, there were over 2,000 Soldiers assigned to Ranger units. On February 3, 1986, the 75th Infantry was renamed the 75th Ranger Regiment.

On December 20, 1989, the 75th Ranger Regiment was again called to show its effectiveness in combat. For the first time since reorganizing in 1984, the Regimental Headquarters and all three Ranger battalions deployed together. During Operation ***"Just Cause"*** in Panama, the 75th Ranger Regiment spearheaded the assault into Panama by conducting airborne assaults on the Torrijos/Tocumen Airport and Rio Hato Airfield. Their mission: to facilitate the restoration of democracy in Panama and to protect the lives of American citizens. Between December 20, 1989 and January 7, 1990, the regiment performed many follow on missions in Panama.
Early in 1991, elements of the 75th Ranger Regiment deployed to Saudi Arabia in support of Operation ***"Desert Storm."***

In August 1993, elements of the 75th Ranger Regiment deployed to Somalia in support of Operation ***"Restore Hope,"*** and returned November 1993.

In 1994, elements of the 75th Ranger Regiment deployed to Haiti in support of Operation ***"Uphold Democracy."***

In 2000 – 2001, elements of the 75th Ranger Regiment deployed to Kosovo in support of Operation ***"Joint Guardian."***

Since September 11, 2001, the 75th Ranger Regiment has led the way in the Global War on Terrorism. In October 2001, elements of the 75th Ranger Regiment deployed to Afghanistan in support of Operation ***"Enduring Freedom."*** In March 2003, elements of the Regiment deployed in support of Operation ***"Iraqi Freedom."***

The performance of the Rangers significantly contributed to the overall success of these operations and upheld the Ranger tradition. As in the past, the Regiment stands ready to execute its mission to conduct special operations in support of the United States' policies and objectives.

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CHAPTER 1

LEADERSHIP

"Rank does not confer privilege or give power. It imposes responsibility."

In a study of World War I, Allied Leadership concluded that the most effective weapon was the *Großer Generalstab*, the German General Staff. The capability to give purpose, direction, and motivation to forces was rated as the most essential element of combat power. The Ranger Creed emphasize leadership, just as every Ranger is a Rifleman, so is every Ranger a leader and expected to be proficient in the principles of leadership and embody the standards and core values of the regiment.

PRINCIPLES

- Seek responsibility and take responsibility for your actions; exercise initiative; demonstrate resourcefulness; and take advantage of opportunities on the battlefield that will lead to you to victory; accept fair criticism, and take corrective actions for your mistakes.
- Assess situations rapidly, make sound and timely decisions, gather essential information, announce decisions in time for men to react, and consider the short- and long-term effects of your decision.
- Set the example by serving as a role model for your men. Set high but attainable standards; be willing do what you require of your men; and share dangers and hardships with them.
- Keep your subordinates informed to help them make decisions and execute plans within your intent, encourage initiative, improve teamwork, and enhance morale.
- Develop a sense of responsibility in subordinates by teaching, challenging, and developing them. Delegate to show you trust them. This makes them want more responsibility.
- Ensure the men understand the task; supervise them, and ensure they accomplish it. Soldiers need to know what you expect, when and what you want them to do, and to what standard.
- Build the team by training and cross-training your men until they are confident in their technical and tactical abilities. Develop a team spirit that motivates them to go willingly and confidently into combat.
- Know your unit's capabilities and limitations, and employ them accordingly.

COMPLICATED AND COMPLEX SYSTEMS

Today's rapidly changing world, marked by increased speed and dense interdependencies, has shifted traditional theories of management from secretive, siloed hierarchies based on planning and predicting with an emphasis on reductionist efficiency, to a high-speed network which empowers individuals to act and collaborate, producing real-time innovation and problem-solving in an integrative and transparent environment. The battles of tomorrow will not be won by the side with the greatest firepower, or by soldiers who are expert marksmen and are proficient in of all their respective tasks, but by the side with the best management; decentralized integrated networks of teams collaborating and adapting.

Adaptability is achieved in small-teams by emphasis on select traits such as trust, common purpose, shared awareness, and the empowerment of the individual to act. Doing this requires transparency to ensure common understanding and awareness. It often involves breaking down hierarchies to establish trust and foster collaboration. Decisions are pushed downward, allowing members to act quickly. This requires rewriting the definition of a leader: someone who creates a broad environment, instead of command-and-control micromanagement.

This dynamic is illustrated by complicated vs. complex systems of problem solving. A complicated system is deterministic, in that through following a series of calculations or mechanical movements, a desired outcome is achieved. A watch, though mechanically complicated, can be completely understood by the sum of all its pieces, one cog-piece turning another in sequence. Whilst a complex system is unpredictable, various components are interacting at a rate which makes calculations difficult or impossible. Some components may not even be measurable though they

are observable. An example would be predicting the weather, the success of a new novel, or practicing medicine. The old joke that “Doctors only practice” has more meaning than it lets onto, in that it is impossible to have set routines and procedures for everything that can go wrong in the human body. However, an individual trained in the functions of major organs and with an understanding of their interdependencies, can thusly adapt and apply various principles to solve unique problems.

In combat, this can be the difference between doing things right, and doing the right thing. As a case study, the French maginot line at the beginning of World War II was a marvel of military engineering. State of the art logistics routes, impenetrable fortifications, comfortable living conditions. The French officers had predicted likely routes of a German advance and when the Germans invaded north of the line through Belgium, they activated forces to block such an advance and connect it with the line. What was not in their plans was the Ardennes forest, a rough, mountainous region with minimal defenses due to the terrain. The Germans attacked at the Ardennes, split the French reaction force, whilst the German Air Force simply flew over the line. Having had no contingencies, the French were unable to adapt to this sudden change and the Germans captured the country in a matter of days. It was not that the French were relying upon obsolete tactics, the maginot line was built on traditional proven strategy while the German tactics were new and innovative and therefore unpredictable. On the other side of the coin, while the German blitzkrieg at a micro level was highly resilient and adaptable, at a macro level it was ironically micromanaged. Not in the original invasion plans, the German Army allowed over 380,000 British troops at Dunkirk to withdraw, rather than attack and leave Britain defenseless.

Mogadishu, 1993, elements of the 75th Ranger Regiment and 1st SFOD-D AKA Delta Force have conducted 42 successful raids during Operation Gothic Serpent. While attempting capture of foreign minister Omar Salad Elmi, numerous problems arose which turned a standard 30-minute operation into an overnight firefight. While the downing of two UH-60 Blackhawks was not expected, American forces had contingency plans and were successful in CSAR with *Super Six One*. As time progressed, numerous small issues compounded resulting in the catastrophic loss of *Super Six Four*. Overhead ISR assets had to use middlemen to provide prompt navigation to ground convoys causing wrong turns and backtracking while under intense hostile fire, this resulted in hours of lost time. A gathering crowd of angry Somalis and hastily constructed roadblocks further delayed operations.Additionally, one rescue force in the vicinity of *Super Six One* was sent to the crash site of *Super Six Four* and vice versa. Ground teams who, lacking clear direction, were unable to move to an adjacent building. Seizing the initiative, Delta Force rallied scattered Ranger elements and moved on foot to the crash site of *Super Six Four* culminating in the infamous Mogadishu mile where a lack of communication caused the armored column to abandon the very men they were supposed to provide cover for. The Battle of Mogadishu is an example of a complicated systems breakdown upon meeting a complex situation. Lack of collaboration, transparency, and integration of various elements led to unnecessary delay in an extremely dynamic environment. The actions of Delta Force operators in seizing initiative is a prime example of adaptability and collaboration.

Perhaps the greatest difference between these two mindsets can be illustrated by a conversation between Delta Operator ‘*Hoot*’ and Ranger Captain Steele.

Steele: *I'm talking about your weapon, soldier. Now Delta or no-Delta, that's still a hot weapon. Your safety should be on at all times.*

Hoot: *This is my safety, sir. (Referring to his trigger finger.*)

Fasttrack to Iraq, 2006, JSOC Task Force 6-26 under the command of Gen. Stanley McChrystal has entirely revamped their operations protocol from siloed hierarchies to an integrated network. The Task Force which started with a relatively high 10 raids per month, increased that number to 18 by empowering operators to act and adapt. By further integrating intelligence agencies such as the CIA, DIA, and NSA and supporting military units, Task Force 6-26 was operating at an unbelievable record of 300 raids per month. Simple things such as encouraging attendance at briefings that were not directly relevant to a specific unit's daily operations, allowing collaboration, letting UAV operators make direct calls to the Task Force rather than through superiors and other middle men, even integrating separate units into the same barracks area to break segregation. To stubborn traditionalists, it seemed like absolute chaos without clear cut lines and protocol, but nobody can deny the results.

Recommended reading

Into the Storm: A Study in Command, by Tom Clancy

The Art of War, by Sun Tzu

On War, by Carl von Clausewitz

Infantry Attacks, by Field Marshal Erwin Rommel

Black Hawk Down, by Mark Bowden

Team of Teams, by Stanley McChrystal

SUA SPONTE

On 6 June 1944, during the assault landing on Dog White sector of Omaha Beach as part of the invasion of Normandy, General Norman Cota (assistant CO of the 29th ID) while under heavy machine gun fire, calmly walked towards Maj. Max Schneider, CO of the 5th Ranger Battalion and asked “What outfit is this?”, someone yelled "5th Rangers!". To this, Cota replied “Well, Goddamn it then, Rangers, lead the way!”

The latin motto of the 75th Ranger Regiment, *Sua Sponte* (Of their own Accord) embodies the concept that a Ranger is a highly trained, self-motivated professional who takes the initiative in absence of authority. This concept also applies to the formal leader, who should seek to lead rather than manage, promote creativity and individuality, and seek to integrate the team as a combined weapon rather than remake each man in the leader’s own image.

This places a great deal of emphasis on personal preparedness, situational awareness and proficiency in battle drills and other combat tasks. Reacting to fires, breaking contact, evaluating casualties, and performing all other duties should be executed without the need for input from a superior Officer or NCO.

Such can only be accomplished given the proper atmosphere and command climate. Though not Rangers, all Paratroopers should seek to befriend and form a close, tight-knit bond with fellow members of the Regiment and seek to be tactically and professionally competent. As members of an elite unit, everyone must depend and trust each other. Never fail your comrades.

ASSUMPTION OF COMMAND

In the event that the leading Officer or NCO has been sustained as a casualty. All Paratroopers should be familiar with the basic principles of assuming command.

- INFORMS: The unit’s subordinate leaders of the command and notifies higher authority.
- CHECKS Security.
- PINPOINTS Location.
- COORDINATES and CHECKS Equipment. Esp. Radio frequencies.
- CHECKS Personnel status. Ammo. Medical Supplies.
- REORGANIZES As needed.
- MAINTAINS Noise and light discipline.
- EXECUTES The mission.

STRESS

Stress is a condition we all experience. It may be described as our reaction to pressure. It provides us with challenges; chances to learn about our values and strengths. Stress can show our ability to handle pressure without breaking; it tests our adaptability and flexibility; it can stimulate us to do our best. As we do not consider unimportant events stressful, stress can also be an excellent indicator of the significance we attach to an event.

However, stress can be both constructive and destructive. Distress can affect your decision making, lead to angry outbursts, forgetfulness, decrease energy, increase anxiety, give you a propensity for mistakes, lead to carelessness and lack of responsibility. The key to your survival is to manage the inevitable stresses you will encounter. The most common stress you will encounter in the field will be frustration, anger, boredom, and guilt.

Frustration arises when a person is continually thwarted in his attempts to reach a goal. In all operations, it is inevitable that deviations from the plan will occur and obstacles arise. An outgrowth of this frustration is anger. Things that may frustrate or anger a soldier are getting lost, forgetting equipment, enemy patrols, poor leadership, friendly fire, and lack of unity and teamwork. Frustration and anger encourage impulsive reactions, irrational behavior, poorly thought-out decisions and an "*I quit*" attitude.

Boredom can arise due to lack of contact, lack of prompt decision making, or from being stationed in rear-echelon support roles. As a soldier alone or with others, you must find ways to keep your mind productively occupied. This can lead to the discovery of hidden talents and abilities. Developing a sense of humor, reminiscing about old memories, working on unrelated projects, or taking the initiative by generally being useful.

Guilt arises primarily due to a failure to operate at set standards in a given capacity. This can be from a failure to provide adequate cover fire, overdosing morphine or epinephrine, friendly fire, or bad tactical decisions.

Coping with these reactions is a product of careful preparation and solemn thought. In order to survive in high stress environments. Remember the following principles:

Know Yourself. Through training, family, and friends; take the time to discover who you are on the inside. Strengthen your stronger qualities and develop the areas that you know are necessary to survive.

Anticipate Fears. Don't pretend that you will have no fears. Begin thinking about what would frighten you the most if forced into an uncomfortable situation. Train in those areas of concern to you. The goal is not to eliminate the fear, but to build confidence in your ability to function despite your fears.

Be Realistic. Don't be afraid to make an honest appraisal of situations See circumstances as they are, not as you want them to be. Keep your hopes and expectations within the estimate of the situation. When you go into a survival setting with unrealistic expectations, you may be laying the groundwork for bitter disappointment. Follow the adage, "Hope for the best, prepare for the worst." It is much easier to adjust to pleasant surprises about one's unexpected good fortunes than to be upset by one's unexpected harsh circumstances.

Adopt a Positive Attitude. Learn to see the potential good in everything. Looking for the good not only boosts morale, it also is excellent for exercising your imagination and creativity.

Remind Yourself What Is at Stake. Remember, failure to prepare yourself psychologically to cope with survival leads to reactions such as depression, carelessness, inattention, loss of confidence, poor decision-making, and giving up before the body gives in. At stake is your life and the lives of others who are depending on you to do your share.

Train. Through military training and life experiences, begin today to prepare yourself to cope with the rigors of survival. Demonstrating your skills in training will give you the confidence to call upon them should the need arise. Remember, the more realistic the training, the less overwhelming an actual survival setting will be.

Learn Stress Management Techniques. People under stress have a potential to panic if they are not well-trained and not prepared psychologically to face whatever the circumstances maybe. While we often cannot control the survival circumstances in which we find ourselves, it is within our ability to control our response to those circumstances. Learning stress management techniques can enhance significantly your capability to remain calm and focused as you work to keep yourself and others alive. A few good techniques to develop include relaxation skills, time management skills, assertiveness and cognitive restructuring skills.

CHAPTER 2
OPERATIONS

While no plan survives contact with the enemy, planning is indispensable. Every Ranger should be versed in operations planning in order to provide input and ensure readiness. In many cases, dynamically changing scenarios call for major shifts in mission tempo and the overall objective. Rangers should be proficient enough in the processes of planning to successfully improvise, adapt, and overcome.

Planning

Upon receiving the OPORD, conduct personal reconnaissance of the area, make note of available cover, key terrain features and obstructions. Consider the reported enemy disposition in the intelligence brief and take into account possible contingency situations of unexpected enemy presence or reinforcements. Analyze if available assets are sufficient for the mission and campaign for additional support if inadequate. Consider the utilization of assets as he formulates a tentative plan. Coordinate with other units present. Form a tentative plan. Establish a timetable. Issue a WARNING ORDER to the platoon. Ensure that fellow soldiers: understand the plan and the commander's intent. Have pre-saved equipment loadouts. Are informed of which Radio frequencies the force will be operating on. Fire teams are assigned. A roll call of attendance taken. Issue a briefing at least one hour before the operation, preferably a day or more in advance.

MAP SIGNALS AND MARKINGS

- All Landing Zones are marked.
- Relevant MSRs (Roads) are color coded and named.
- Lines of travel are clearly marked.
- Friendly and enemy positions are updated with the appropriate marker. (IE: Rotary or Fixed Wing. Mechanized Infantry. Armor. Artillery.) OPFOR and BLUFOR markers are appropriately coded.
- Phase Lines are properly established.
- UXO's and other danger zones are clearly marked.
- Enemy positions can be easily reported via the SALUTE format. (Size. Activity. Location. Uniform. Time of Action. Equipment.)
  SALUTE Example: 4 man patrol. GRID 1922-0343. Ghillie suits. 0830z. AKs & RPGs)
  For Operational Expediency: the SALUTE report can be shortened to Size and Activity.

EXECUTION

All attending personnel should read the OPORD/WARNO and attend the briefing. They should ensure that their equipment loadout has been pre-saved and inspected. They should be combat ready at the beginning of the operation, normally 1920z (7:20pm EST) and in their individual fireteams color coded as the mission requires.

Fireteams leaders will conduct a re-check of all equipment followed by a radio check.The Commanding Officer will proceed to rebrief and quiz fireteam leaders on their understanding of specific mission objectives and conditions. Modify tactics/plans as needed in relation to the timetable and situation.

INTELLIGENCE COORDINATION CHECKLIST	OPERATIONS COORDINATION CHECKLIST
1. Identification of enemy unit. 2. Weather and light data. 3. Terrain update. a. Aerial photos. b. Trails and obstacles not on map. 4. Known or suspected enemy locations. 5. Weapons. 6. Probable course of action. 7. Recent enemy activities. 8. Reaction time of reaction forces. 9. Civilians on the battlefield.	1. Mission brief. 2. Identification of friendly units. 3. Route selection, LZ/ PZ/ DZ selection. 4a. Linkup procedures. b. Contingencies c. QRF 5. Transportation/movement plan. 6. Resupply 7. Special equipment requirements. 8.. Method of insertion/extraction.

JUNGLE WARFARE

Operations in jungles or deciduous forests can greatly restrict movement, visibility, and firepower. Thick underbrush severely limits visibility and provides excellent concealment. The side which acquires the enemy first wins. Hostile combatants are normally not seen but can be detected by sound or color contrast with the surrounding fauna. Movement should always be conducted while crouched in a column with two meter spacing between each man. Additional distance can cause confusion as personnel may become lost or mistake friendly units for hostile combatants. Any communication should be relayed man to man, each man repeating what he hears the man behind/in front of him say. Firefights are short but intense. When contact is taken, the unit should form a skirmish line with every odd man in line going to the right of the pointman and every even man going to his left, making use of available cover/concealment. Every man should throw two fragmentation grenades in the direction of contact and suppress the enemy in a spray-and-pray like fashion even if the enemy is not visible. If ambushed, every man should throw one grenade, seek cover, throw his second, and unleash a suppressive barrage. While defending, three waves of grenades are thrown. After the suppressive barrage, the unit should immediately fall back 50 meters, shift to the right or left depending on terrain, and proceed another 25 meters and wait in ambush for pursuing enemy combatants. This is called doglegging, the maneuver forms a large L-shape. If all contact has been eliminated but enemy presence is known in the area, the unit may choose to deploy claymores and tripwires in the vicinity of dead enemy combatants to ambush patrols or quick reaction forces.

Jungle Warfare is really unconventional warfare in which small guerilla forces conduct a series of brief but intense ambushes and counter ambushes against each other. It is heavily dependent on *Cooperation*, *Coordination*, and *Communication.*

A view from the canopy of Tigeria

DESERT WARFARE

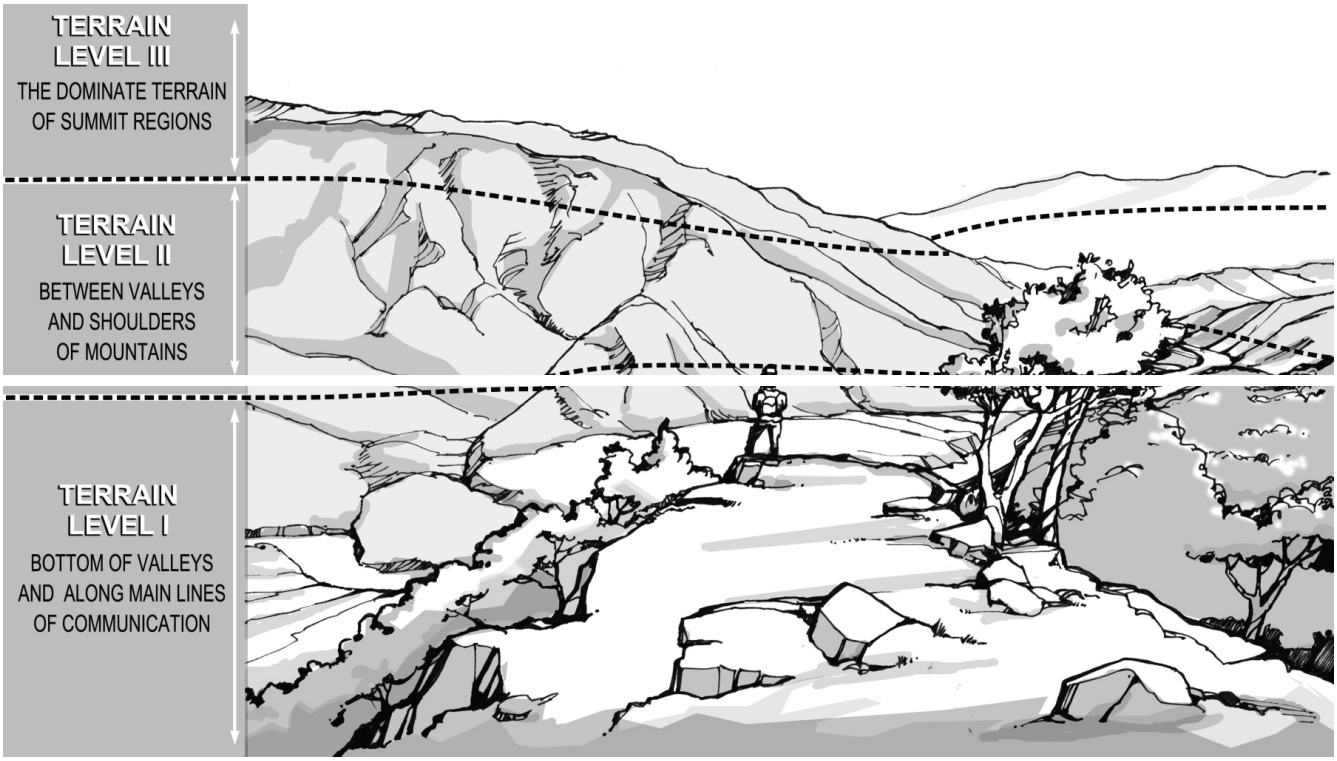
Deserts offer little available in cover and concealment , especially overhead cover against attacks by air. Lack of rain and storms normally mean clear open skies facilitating target acquisition from aviation assets. Dismounted infantry is at a distinct disadvantage. All infantry engagements should be conducted via mounted or mechanized operations. This not only provides cover, but increases mobility and allows infantry to close the gap and engage enemy positions without exposing themselves in no-mans-land. Camouflage should be a mixture of brown and tan patterns for maximum effectiveness. Flat brown or tan uniforms offer too much contrast to provide adequate concealment. Special considerations must be taken for dismounted weight as an increased heat index will reduce stamina proportionally to weight at a faster rate. As local wildlife is nearly non-existent, noise discipline should be religiously practiced as the only ambient sounds will be engines or gunfire. Movement by vehicles should be conducted on roads when possible as large clouds of sand and dust are generated and may expose positions. When conducting convoy operations offroad, additional spacing between vehicles is necessary to prevent the dust cloud of the lead vehicle from obscuring visibility. As cover and concealment is low, forces normally acquire visual identification of the enemy at standoff distance giving them ample time to coordinate fire support. All engagements should be conducted while mounted, upon acquisition of enemy positions, available artillery and close air support should be used as preparatory fires to suppress the enemy while friendly forces maneuver into engagement range using terrain features as defilade. A common feature found in deserts is the Wadi, a dry gully or valley formed by erosion between two cliff faces. Movement should never be conducted in Wadis as they canalize movement and are obvious places to conduct an ambush. They should be passed via the high ground on either side or circumvented completely. Despite the long engagement ranges, the higher heat index will increase overall muzzle velocity extending the maximum effective range of most weapons if accuracy is not an issue.

The Naygul Valley: A large wadi in Northwestern Takistan

MOUNTAIN WARFARE

Mountains are difficult terrain which greatly restrict all forms of ground movement. Mountains are divided at three operational terrain levels.
Level 1 terrain is located at the bottom of valleys and allows mounted forces to operate through movement is restricted. Main roads, townships, and lines of communication are normally found at this level. Movement along this level is exposed to ambushes from forces operating on level 2 terrain.
Level 2 terrain lies between valleys and the shoulders of mountains. Narrow roads and trails may be present but generally such is only accessible by dismounted forces. Most engagements are conducted at this level as bunkers, caves, and large rock formations may be present aiding cover and concealment.
Level 3 terrain consists of the dominant terrain or summit regions of mountains. While such terrain is relatively flat and gentle, it is difficult to achieve and maintain. Visibility is high, however cover and concealment are generally low and forces operating at this level are exposed to air or artillery fires.

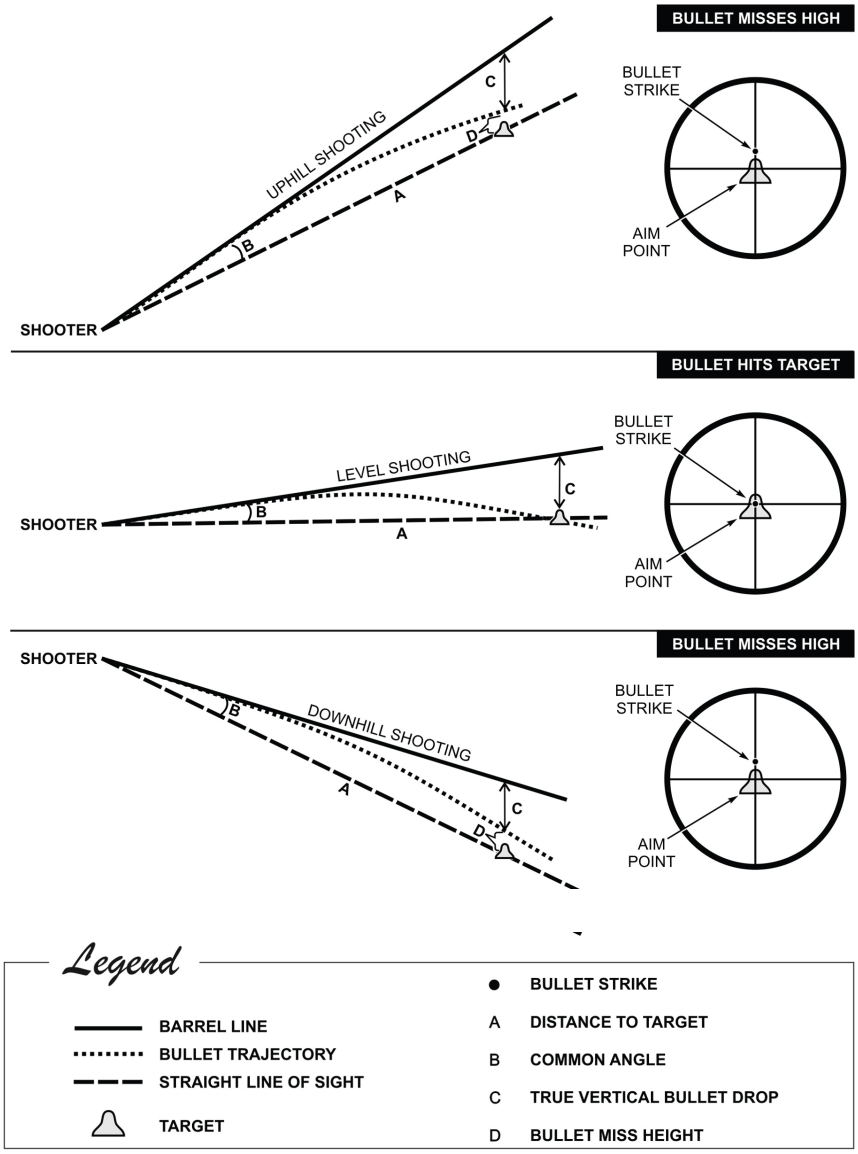
High angle slopes found in level 2 terrain severely restricts and canalizes movement and presents an immediate hazard. All movement undertaken should be at a standard 45° slant to minimize the effect of slope angle and to conserve stamina. As the angle of the slope increases, a more horizontal angle of movement may be necessary. Lines of Deployment are normally located on level 2 terrain.



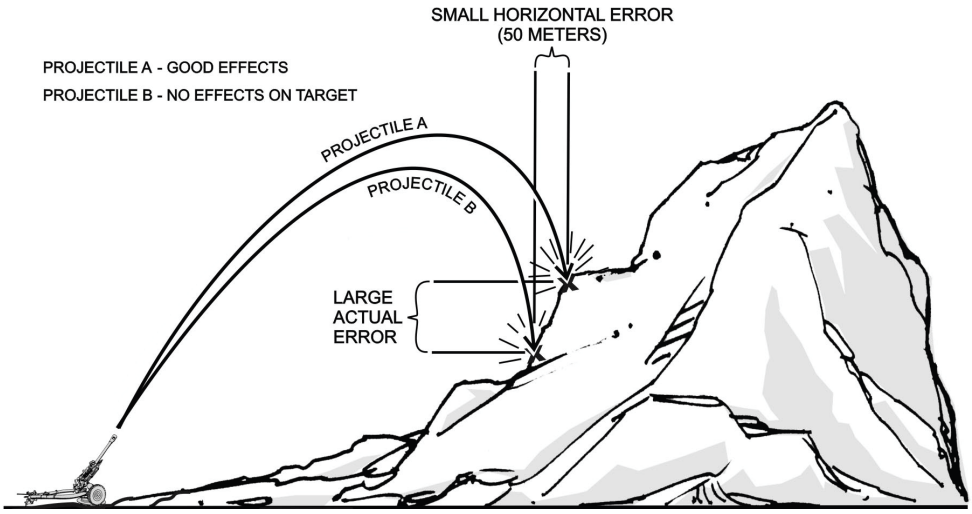
High angle slopes found in level 2 terrain severely restricts and canalizes movement and presents an immediate hazard. All movement undertaken should be at a standard 45° slant to minimize the effect of slope angle and to conserve stamina. As the angle of the slope increases, a more horizontal angle of movement may be necessary. Lines of Deployment are normally located on level 2 terrain. All operations should be conducted by helicopter whenever possible. The CH-47F is optimal as its powerful engines, lift capacity, and speed allow it to easily navigate over high mountain peaks. Despite its large size, only the rear ramp will need to be deployed over the landing zone allowing it to hover and deploy troops on steep slopes that other helicopters would be unable to land on. All other landings should be conducted by use of fast ropes if a regular landing is made difficult by terrain or circumstances. All Airborne personnel should be familiar with the usage and procedures of fast roping. Mountains provide excellent cover and concealment. Care should be taken to prevent skylining of friendly positions when moving around the crest of the hill. Whenever possible, the high ground should be acquired as this gives a distinct tactical advantage. When firing from the tops of hills or mountains, firing positions should be selected in a nearby saddle, a dip or low point along the crest of a ridge. The crest is normally the first area individuals will look when conducting surveillance, positioning below it in a saddle prevents accidental skylining and will aid in concealment. All personnel must take into account the difference in elevation when acquiring targets. All range estimations should be calculated using the flat horizontal distance to the target by way of map grids or the Vector-21B Rangefinder. Additional care should be taken when throwing grenades as the slope will cause them to roll potentially causing the grenade to be short or overshoot its intended target. As Mountains provide an excellent view of the surrounding area, high angle artillery and air support fires may be used to great effect. Cliffs should never be descended or ascended. These are known as vertical danger areas. Ascending or descending mountains is best done along spurs, a continuously sloping line of higher ground, normally jutting out from the side of a ridge. If concealment is necessary, movement may be conducted within a ravine, treeline, or the gully between spurs, however this is not generally recommended as visibility is limited, movement is canalized, and there is an increased vulnerability to ambush if spotted. Mountainous terrain is highly compartmentalized and will block line of sight radios. Retransmission stations found on level 3 terrain or aircraft may be necessary to facilitate proper command and control. Lower humidity and barometric pressure will decrease drag on all rounds allowing engagement at further range giving advanced marksman an advantage. Static line jumps should never be conducted as a drop zone 100

meters in diameter may be the difference between a mountain peak several hundred meters in height and a low valley. As tempo is hard to achieve and maintain, leaders should create a proper rest plan to conserve stamina.

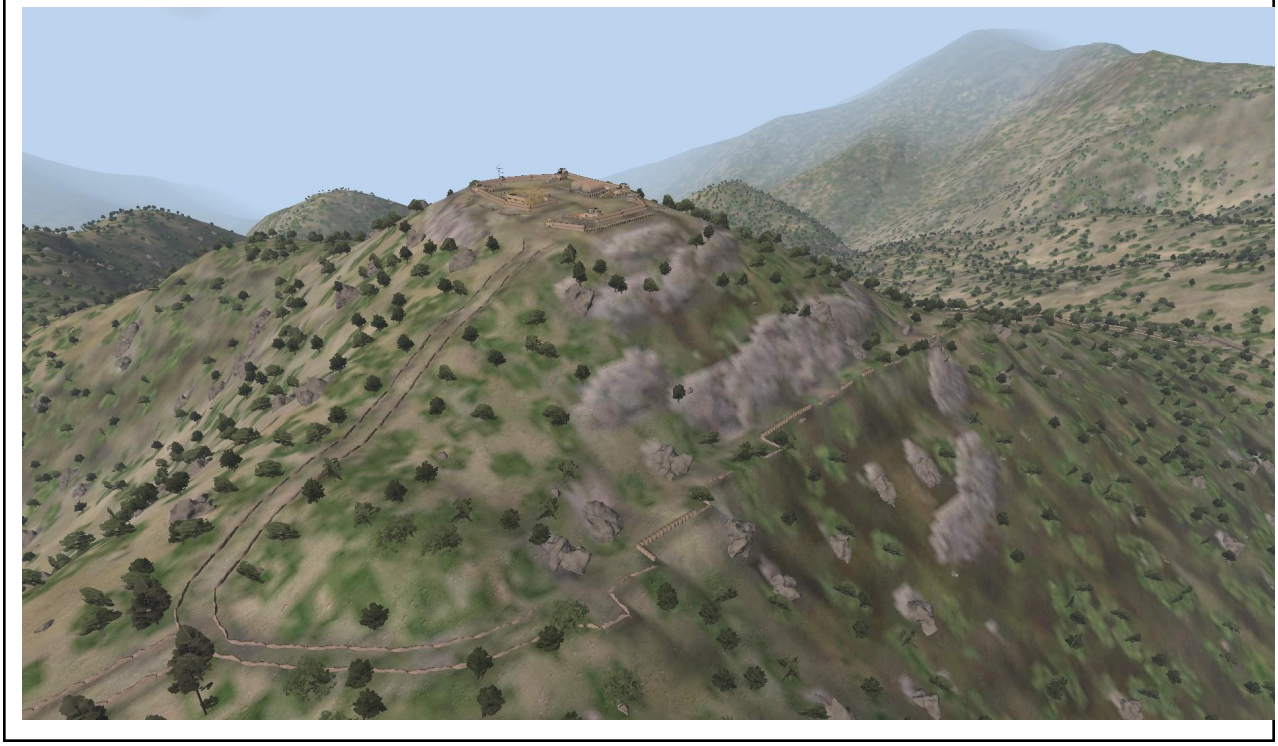
As earlier stated, firing up or down hill presents a particular challenge to untrained marksman. While line of sight distance may be several hundred meters uphill, it may be a shorter distance as the crow flies. The AtragMX in conjunction with a Vector-21B can calculate a zero for angular shooting. Otherwise, it is recommended that individuals aim well below their desired point of impact. Units should be trained prior and become familiar with angular shooting ballistic behavior.



Steep mountain terrain creates challenges for adjusting indirect fires. An artillery round impacting 50 meters away from the intended target may cause the round to impact significantly above or below the target. Observers should be aware of this consequence and consider creeping or bracketing rounds for adjustments. Adjustment rounds from a lower elevation up to the target are often better since impacts over a ridgeline are difficult or impossible to observe. Comparing the impact grid with the target grid rather than the difference in visual range may also be a viable way of calculating the necessary argument



A FOB placed upon a hill in Afghanistan



OFFENSIVE OPERATIONS

All offensive operations follow a basic four step process: Movement from the line of departure. Actions at the probable line of deployment. The breach of enemy fortifications. Actions on the objective.
A unit may wish to conduct preparatory fires with artillery and close air support on key enemy positions such as early warning radar systems, artillery encampments, air defenses, or strong points. These can only be identified by assets such as Pathfinders or aerial ISR prior to the assault. As combat is a rapidly changing and dynamic action, commanders may wish to acquire live footage via unmanned aerial drones to increase flexibility.

The key to a successful assault is surprise and the tempo of the attack. When surprised is achieved the attacker may advance from the direction he believes the enemy to be the weakest, quickly breach obstacles, and seize key terrain. If surprise is achieved but the operation tempo is low, the enemy may re-consolidate, coordinate fires, and repel the assault before they can conduct a breach. Preparatory fires completely negate the element of surprise and such should be used at the commander's discretion and in coordination with the assaulting force. An assault conducted seconds after preparatory fires have ceased will maintain both the element of surprise and exploit the enemy in a time of disarray. However, the assaulting force may normally have to be within Danger Close range of friendly artillery fires. Once an engagement has started, achieving fire superiority is paramount.

The line of departure is a pre established phase line in which a unit is committed to an assault. It represents the point of no return meaning that a withdrawal may require complex maneuvering, additional supporting fires, or present certain negative effects. The line of departure may also be a metaphysical event such as preparatory fires.

The unit moves from the line of departure to the probable line of deployment. This represents the position in which a unit establishes hasty fighting positions to engage the target while also providing overwatch to the main assault force. If manpower permits, optimally two supporting forces exist in relation to the main assault force.

The unit then conducts a breach. This can consist of the destruction of fortifications or obstacles, or a penetration attack going straight through the enemy's lines and, once through, flanking and attacking the opponent's rear.

Actions on the objective involve the seizure of key terrain features, completion of the objective, and establishing both a security and defensive perimeter.

When the enemy disposition is unknown or vague, a movement to contact is conducted. Such is designed to develop the situation or regain contact with the enemy. Once the enemy is found the commander may attack, defend, bypass, delay, or withdraw. Initial contact should be established with the smallest force possible. A forward security element should be employed ahead of the main force. The commander may also deploy flank security at his discretion. Due to manpower restrictions, usually only one advance guard is present. Three principles guide movement to contact: Fix, maneuver, and engage. The enemy’s ability to maneuver should be neutralized by heavy suppressive fires fixing and isolating their location and allowing indirect fires or air support to engage the target. A unit will then conduct a flanking maneuver in which an overwatch element fixes the enemy position while another element moves into a favorable position to defeat enemy

cover and neutralize the enemy.

USMC TBS Platoon Attack
Combined Arms Assault

DEFENSIVE OPERATIONS

Defensive Operations are the easiest to conduct, but the most dangerous if preparation has not been accomplished prior. The purpose of a defense is to mitigate or prevent the enemy from massing fires and to disrupt their operational tempo in order to repel the assault. This can include offensive spoiling actions to prevent the enemy from properly preparing for an assault. Defensive measures consist of reconnaissance and surveillance, fortified fighting positions, area denial weapons and obstacles, and the emplacement of static crew served weapons.

Defensive Operations normally involve the holding of key terrain and thus establishing surveillance and reconnaissance of the surrounding area is key to enacting a proper defense. Unmanned ground sensors such as the Remote Designator are highly effective at providing early warning. They also may be used to coordinate with close air support or laser guided artillery fires to neutralize hostile forces before they enter the main battle area. Drones such as the MQ-9 Predator can be ordered to loiter establishing a passive means of observation. When such is not available, patrols should be regularly maintained with status reports taken on a regular interval. Seizing key terrain features such as towers or the crests of hills will not only provide a suitable vantage point, but can be developed into hardened fighting positions.

As the defender normally has the advantage of choosing the terrain, natural defenses should be improved by constructed fortifications. Standard fortifications should be placed to offer all around security against common types of enemy fire. Small corridors between sandbags, HESCOE bastions, or trenches should be formed minimizing the effect that explosives and indirect fire will have. They should be designed to withstand heavy small arms fire with minimal penetration. Battle positions should be made facing likely avenues of approach. Alternate positions should be designated in case a battle position is untenable. In the event that a hostile force launches an assault and rushes the battle positions, a disengagement line should be designated prior. A disengagement line is a phase line located on identifiable terrain that, when crossed by the enemy, signals to defending elements that it is time to displace to their next position. Friendly forces should place tripwire or claymore mines before displacing to deny enemy forces use of their battle position. Preplanned artillery targets may be designated to provide final protective fires to the position, as the final implies, it is the last resort in defensive plans, involving artillery directed close to friendly defensive positions that are at risk of being overrun by the enemy.

Obstacles should be emplaced to canalize the advance of assaulting forces. A standard sheaf of obstacles consists of a minefield followed by anti-vehicle obstacles such as hedgehogs or dragon's teeth and two rows of barb wire with a buffer zone consisting of a second minefield in between. As the enemy will likely flow to the path of least resistance, it may not be wise to construct a linear defensive line of obstacles with no apparent gaps or entrances as this will induce them to breach the obstacles. Instead, small gaps should be created to canalize the assaulting force into a killzone and maintain the integrity of obstacles. When constructing minefields, mines with a minimal blast radius such as the M-15, or with a directional charge such as the M18 claymore mine should be used. Omnidirectional mines such as the APERS bounding mine may rebound on the defenders and should not be used.

Crew served weapons should be placed to ensure maximum protection while maintaining visibility and giving them maximum traversal. They should be emplaced facing the likely direction of attack. Hand-held crew served weapons such as the M107 LRSR or the M240B machine gun should have additional ammo placed in their fighting positions. Launchers such as the M3 MAAWS or BGM-71 TOW should have an adequate area for backblast. Mortars should be placed centrally to ensure no part of the battle area is within the deadzone.

Guerilla Warfare

"Woe to the English soldiery, that little dreads us near!
On them shall come at midnight, a strange and sudden fear;
When, waking to their tents on fire, they grasp their arms in vain,
And they who stand to face us are beat to earth again;
And they who fly in terror deem a mighty host behind,
And hear the tramp of thousands upon the hollow wind."

Revolutionary War Ode: The Song of Marion's Men

At one end of the spectrum, ranks of electronic boxes buried deep in the earth hungrily consume data and spew out endless tapes, Scientists and engineers confer in air-conditioned offices; missiles are checked by intense men who move about them silently, almost reverently. At the other end of this spectrum, a tired man wearing a greasy felt hat, a tattered shirt, and soiled shorts is seated, his back against a tree. Barrel pressed between his knees, butt resting on the moist earth between sandaled feet, is a Browning automatic rifle. Hooked to his belt, two dirty canvas sacks—one holding three home-made bombs, the other four magazines loaded with .30-caliber ammunition.

It is often said that guerrilla warfare is primitive, This generalization is dangerously misleading and true only in the technological sense. If one considers the picture as a whole, a paradox is immediately apparent, and the primitive form is understood to be in fact more sophisticated than nuclear deterrents and war as it is waged by conventional armies, navies, and air forces. Guerrilla war is not dependent for success on the efficient operation of complex mechanical devices, highly organized logistical systems, or the accuracy of electronic computers. It can be conducted in any terrain, in any climate, in any weather; in swamps, in mountains, in farmed fields. Its basic element is man, and man is more complex than any of his machines.

Guerilla warfare is the antithesis of decades of conventional tactics and strategy and thus it is difficult for conventional units to both counter and conduct. Overhead ISR assets, advanced thermal optics, readily available artillery and air support, armored vehicles, and ease of resupply tends to breed a sense of tactical complacency. When deprived of these assets, conventional units may find themselves combat ineffective. It is important to know how to effectively fight or rather resist enemy forces in situations where you are outmatched both numerically and qualitatively, deprived of normal support, or otherwise displaced or cut off from reinforcements. While Guerilla warfare is simple and robust, it requires careful training in order to mentally prepare conventional troops to think outside of their complicated mechanical systems of operations and embrace a more dynamic, fluid, and complex system. The biggest failure while conducting asymmetrical warfare is when the guerilla force out of habit or ignorance attempts to fight using conventional paradigms such as attempting to fix and flank the enemy in a protracted engagement.

There are three main assumptions which must be considered to be true at all times even when they are not:
1.) Your own forces and supplies are limited and must be carefully preserved.
2.) The enemy forces are vastly superior to your own in both numbers and available firepower.
3.) An overbearing enemy counter-attack is always right around the corner.

Following and believing these assumptions is critical to conducting successful guerilla operations as if at any time they are not strictly observed it is easy to relapse into conventional tactics. If these assumptions are all false, a commander should ponder over the advantage of conducting a conventional campaign to achieve his objectives rather than attempt asymmetrical warfare. In many cases, guerilla warfare is not capable of achieving conventional objectives such as seizing key terrain or destroying an enemy force. But can achieve specific objectives such as denying the enemy key terrain and travel along main supply routes, destruction of critical assets, or disruption of the enemy's operational tempo. These objectives can be accomplished quickly and with minimal resources and manpower when conventional means may be too costly.

Guerrilla warfare is normally conducted in a series of merging phases:
Phase I: Organization, consolidation, and preservation.
Phase II: Progressive expansion.
Phase III: Engagement and harassment of the enemy.

The initial phase can be considering the planning phase; three points must be considered under this subject
1.) How are guerrilla bands formed?
2.) How are guerrilla bands organized?
3.) What are the methods of arming guerrilla bands?

Guerilla bands are formed both from regular and irregular forces and local civilians. These can be small conventional fireteams displaced from the larger platoon or friendly indigenous forces. In some situations, it may be necessary to actively recruit individuals who are foreign to you by uniting them in a common cause.

As guerilla forces normally lack a centralized base to operate out of, it is necessary to divide the area of operations into separate districts in which forward staging points can be constructed. By having a decentralized location, this greatly increases flexibility and mobility and allows one to launch attacks and then retreat to a fortified position to repel potential pursuers. By diversifying your focus and the spread of your forces, one can cause an immense amount of chaos and limit the enemy's ability to respond effectively. In protracted operations in which the goal is to consistently harass the enemy force, it may be necessary to designate a group to passively defend these districts and safeguard your stockpiles.

Guerrilla's cannot be armed according to their wants or needs, but rather by what is available. Equipment cannot be furnished immediately, but must be acquired gradually. Initially, weapons and ammunition is difficult to acquire however this problem corrects itself over time. The most important resources to acquire are medical supplies and demolition equipment. Without proper medical supplies, a larger enemy force will quickly exhaust and overwhelm you. Demolitions will greatly increase the ability of the guerrillas to conduct ambushes, combat vehicles, and destroy key structures. In every case, equipment must be stolen or salvaged from the enemy. It is far more beneficial to score a mobility kill rather than destroy a vehicle as it can later be repaired and used against the enemy. While it may be tempting to attempt to loot fallen enemy soldiers during combat, if circumstances permit, is far safer to return long after contact has been broken as

dead bodies are seldom if ever recovered. While the base of guerrilla warfare is the individual and asymmetrical warfare can be conducted with limited supplies, advanced equipment is always a tremendous force multiplier.

The initial formation of a guerrilla band may be slow and their capability to harass the enemy severely limited. It may be necessary to begin in a far and remote area, consolidate forces and equipment, and then begin to establish various other districts within the area of operations to expand your reach. Attempting to do this at the start will result in you spreading your forces too thin and rob you of critical supplies in the area in which they are needed most. As you begin transitioning into Phase II, it is important to note that such does not necessarily have to be linear in which you establish a wider front with clear demarcated borders. One may expand in any direction as far as they desire far behind the enemy positions.

Once guerrilla bands have been organized and armed, one may begin to conduct large scale offensive operations against the enemy. All operations follow two very simple steps: ambush and disperse. In all cases, the guerrilla must have the initiative. If the initiative cannot be gained or is lost, the guerillas must retreat or risk being fixed and overwhelmed by a superior force. In general, guerrilla units disperse when the enemy is in overextended defense, and sufficient force cannot be concentrated against him, guerrillas must disperse, harass him, and demoralize him. When encircled by the enemy, guerrillas disperse to withdraw. When the nature of the ground limits action, guerrillas disperse. When the availability of supplies limits action, they disperse. Guerrillas may also disperse in order to promote mass movements over a wide area.

In every case, guerilla warfare is simply a series of ambushes and counter ambushes. A guerrilla band may engage a roadside patrol near a village and disperse into the woods. As the patrol pursues them, a secondary group of guerrillas hiding within the village can open fire upon their flank sandwiching the patrol out in the open. As quick reaction forces arrive, pre placed explosive charges, not detonated in the initial ambush, can be detonated to further disorient the enemy. In this way, though the battle has gone on for some time, the guerrillas have maintained the initiative through careful preparation.

In some cases, it may be necessary to immediately disperse or hide upon contact. Dripping water hollows out stone, not through force but persistence. It can be possible to easily win a war of attrition as a lone sniper takes a single shot then retreats into defilade until the enemy's response has grown weary.

It is far better to disable vehicles rather than outright destroy them. Not only does this lend the chance to later repair and acquire them, but it expends enemy time, resources, and manpower to conduct repairs and thus makes them predictable. When the enemy's base is known, a guerrilla band can slowly erode the availability of enemy equipment as tires are shot out, RCWS turrets are disabled, and tail rotors on helicopters are damaged. A single sniper with an anti-material rifle can disable entire divisions of vehicles over an anti-Tank launcher with limited ammo and a noticeable smoke trail.

Counter-Insurgency

Attempting to fight a guerilla force conventionally will only result in you becoming predictable and ultimately defeatable. The best way to defeat insurgents is to fix them in a specific area, seize the initiative, and destroy them violently before they can disperse. All successful insurgent campaigns are dependent upon logistics. By denying them access to equipment, you deny them the ability to grow. This can be accomplished by destroying abandoned vehicles preventing them from later repairing and acquiring it or by booby trapping the bodies of fallen comrades. It is inevitaTble though that eventually a guerilla force will acquire a sizeable

stash of munitions. A high-altitude UAV ISR flight can secretly track a guerilla band to one of their staging areas allowing you to launch an artillery or air strike against them. Surface to Air shoulder launched missiles can only lock-on to potential targets within two kilometers. By flying above this, you guarantee immunity against insurgent strikes and thus can skirt their air defenses.

A guerilla force knows that you will attempt to fix and engage them and thus will disperse whenever put in a defensive role. One should never attempt to engage guerillas when they have the initiative, but rather retreat and break contact. In most cases, guerillas lack reliable transportation and will be unable to pursue you. In other cases, by pursuing you they have left cover and can easily be routed by air support or a counter ambush.

Many guerrillas lack reliable anti-aircraft weaponry besides light machine guns. If possible, all travel should be conducted by fast low altitude flights. This will severely limit their ability to ambush or engage your forces. In cases where the enemy has anti-air, fast low altitude flights will allow you to use the terrain to mask your movement and prevent the enemy from acquiring a lock.

Counter-Insurgency ultimately boils down to intelligence, surveillance, and reconnaissance. Guerrillas rely upon stealth and decentralization to protect themselves. By establishing overwhelming surveillance, it can be impossible without the use of specialized gear to escape. If properly intelligence is not collected, guerrillas will continue to execute hit and run attacks until nowhere is safe and mass sabotage has crippled your available assets.

Thoughts on Insurgency

Military historian Martin van Crevel noted that almost all attempts to deal with insurgency have ended in failure. Thus, in his opinion, the first, and absolutely indispensable, thing to do is throw overboard 99 percent of the literature on counterinsurgency as it was almost always written by the losing side and thus ineffectual in properly guiding individuals. As asymmetrical warfare is dynamic and fluid, it will eventually prove to be frustrating if not impossible to launch a systematic counter-insurgency campaign to route them out. Though his conclusions were to commit blatant human rights violations in conflict with the established laws of war, he was correct in the assumption that in order to effectively adapt to an insurgent force, one must understand their position in relation to your own and work to redefine these positions.

Van Creveld identifies a key dynamic in convention vs asymmetrical forces that he illustrates by the metaphor of killing a child. Regardless of whether the child started the fight or how well armed the child is, an adult in a fight with a child will feel that he is acting unjustly if he harms the child and foolish if the child harms him. This mentality severely limits the operational ability of conventional forces. Creveld further illustrates that a child who is in a serious fight with an adult is justified in using every and any means available – not because he or she is right, but because he or she has no choice. Thus according to Van Creveld, fighting against guerrillas can only be accomplished by abandoning morality as a sacrifice for the greater good.

Van Creveld uses the Hama massacre of 1982 as an analog to his theory. The Muslim Brotherhood had launched a vicious insurgency against Hafez Al-Asad. In response, he sent his brother Rifaat to the city of Hama to disperse the insurgents. Rifaat entered the city and was immediately encircled by insurgents. His forces broke contact and Rifaat used his heavy artillery to demolish the city, killing between ten and 25 thousand people, including many women and children. Asked by reporters what had happened, Hafez

al-Assad exaggerated the damage and deaths, promoted the commanders who carried out the attacks, and razed Hama's well-known great mosque, replacing it with a parking lot. With the Muslim Brotherhood scattered, the population was so cowed that it would be years before opposition groups dared to disobey the regime again and, Van Creveld argues, the massacre most likely saved the regime and prevented a bloody civil war.

While such an extreme as the Hama massacre should never be resorted to, there are key lessons to be learned regarding the commitment and conviction of an anti-insurgent campaign.

1. There are situations in which cruelty is necessary, and refusing to apply necessary cruelty is a betrayal of the people who put you into power. When pressed to cruelty, never threaten your opponent but disguise your intention and feign weakness until you strike.

2. Once you decide to strike, it is better to kill too many than not enough. If another strike is needed, it reduces the impact of the first strike. Repeated strikes will also endanger the morale of the counterinsurgent troops; soldiers forced to commit repeated atrocities will likely begin to lose faith in the operation and begrudgingly force themselves to carry out orders and will inevitably lose their military edge, eventually turning into a danger to their commanders.

3. Act as soon as possible. More lives will be saved by decisive action early, than by prolonging the insurgency. The longer you wait, the more inured the population will be to bloodshed, and the more barbaric your action will have to be to make an impression.

4. Strike openly. Do not apologize, make excuses about "collateral damage", express regret, or promise investigations. Afterwards, make sure that as many people as possible know of your strike.

An example of these principles being adopted by coalition forces is found in Operation Michigan, a prelude to Operation Gothic Serpent in Mogadishu. Insurgent leader Mohamed Farrah Aidid held a clan meeting with his chief officers and elders. While having so many high-priority targets in one place was unsafe, Aidid was confident that they could shield themselves behind the restraint of coalition forces. Instead, the U.S. Task Force launched an assault on the compound leveling the entire building with 16 TOW missiles and thousands of 20mm explosive rounds. Casualty estimates were anywhere from 20 to 73 dead including bystanders. Though Aidid himself was not present during the attack, his entire command staff and others had been wiped out in a single night. Many local militia fighters were also discouraged, fearing mass retaliation unless they acquiesced to the United Nation’s demands. Unfortunately, rather than cordon off the area as unsafe, the coalition allowed reporters to investigate the compound. The reporters were subsequently murdered by Aidid and this drew the attention of the mass media who blamed Operation Michigan’s heavy handedness for the deaths of their reporters and allowed Aidid to use the attack to engender sympathy leading to the disaster that was the Battle of Mogadishu.

Van Creveld also argues for an alternative strategy on the opposite spectrum as the Hama massacre citing the United Kingdom’s response towards the Irish Republican Army and the massive restraint they had in the middle and late stages of the war. Towards the beginning, security forces had clashed violently with the IRA leaving hundreds dead and many homes torched. Eventually, the Army was called in but rather than violently crush all elements of rebellion, they followed a very strict protocol.

First, never again did the British open indiscriminate fire into marching or rioting crowds; in the future, however violent the riots and demonstrations with which they faced, they preferred to employ less violent means that led to a far smaller number of casualties.

Second, not once in the entire struggle did they bring in heavy weapons such as tanks, armored personnel carriers, artillery, or aircraft to repulse attacks and inflict retaliation. Such were only used as transports and to form protective barriers for infantry.

Third, never once did they inflict collective punishments such as imposing curfews, blowing up houses, destroying entire neighborhoods to open up fields of fire, and the like; by posing as the protectors of the population, not its tormentors, they were able to prevent the uprising from spreading.

Fourth and most important, by and large the Army stayed within the law. Partly because they restrained themselves, partly because there were other, less conspicuous organizations to do some of the dirty work for them, they were able to refrain from arbitrary imprisonment, torture, and illegal killings.

This led eventually to peace accords and when extremist groups had later restarted an insurgent campaign, many of the original guerillas had either died or no longer wished to fight and the British Military had expertly fostered much of its strength allowing them to easily clean up dissidents.

CHAPTER 3
FIRE SUPPORT

During combat operations, infantry assault-tunnel vision may develop. Indirect fire support can greatly increase the combat effectiveness and survivability of any Infantry unit. Planning to effectively use this asset beforehand can reduce chance of developing tunnel vision and will greatly contribute to mission success. Many mission objectives may be simplified by surgical use of fire support. Leaders should consider employing indirect fire support throughout every offensive and defensive operation. This chapter discusses capabilities, risk estimate distances, close air support, elements and sequence of calls for fire, and example call for fire transmissions.

CAPABILITIES OF FIELD ARTILLERY

WEAPON SYSTEM	**MAX RANGE**	**DIRECT DAMAGE**	**INDIRECT DAMAGE**	**Burst Radius**	**Sustained ROF**
M3 MAAWS HEDP/HEAT 84mm	900m	HEDP 150 HEAT 480	40 HEDP 12 HEAT	12m HEDP 1m HEAT	10 RP/M
M6 Mortar HE 81mm	5.6km	165	52 HE	18m	16 RP/M

M119 Howitzer HE 105mm	14km	260	85 HE	25m	10 RP/M
M109 Paladin HE, GUIDED, LASER, SMOKE, MINES, AT MINES, DPICM. 155mm	18km	340	125 HE	30m	10 RP/M
M270 MLRS HE, DPICM 227mm	30km	1200 HE 550 DPICM	800 HE 50 DPICM	30m HE 50m DPICM	12 RP/M

CAPABILITIES OF (CLOSE) AIR SUPPORT

NAME	ARMAMENT/EFFECTIVE RANGE	SPEED	LETHALITY	NOTES
AH-6J Littlebird Rotary-Wing	2x M134 Miniguns/5000rnds/2km 24x Hydra 70mm Rockets/2km	200km/hr	Infantry. Buildings. Light vehicles.	Highly susceptible to small arms fire. Low operational ceiling.
UH-1Y Venom Rotary Wing	2x M134 Miniguns/8000rnds/2km 12x Hydra 70mm Rockets/2km	225 km/hr	Infantry. Buildings. Light vehicles.	Gunship with transport capabilities.
AH-1Z Viper Rotary Wing	**DEFAULT** 20mm M197/750rnds/2km 14x Hydra 70mm Rockets/2km 8x AGM-114 Hellfire 2x AIM-9X Sidewinder **ESCORT** 20mm M197/750rnds/2km 76x Hydra 70mm Rockets/2km 2x AIM-9X Sidewinder	200 km/hr	Infantry. Buildings. Light vehicles. Armor. Aircraft.	Can self-designate. Retractable rotor blades.

	ANTI-TANK 20mm M197/750rnds/2km 16x AGM-114 Hellfire			
AH-64D Apache Longbow Rotary-Wing	**DEFAULT** 30mm M230/1200rnds/3km 38x Hydra 70mm Rockets/2km 8x AGM-114 Hellfire **ESCORT** 30mm M230/1200rnds/3km 76x Hydra 70mm Rockets/2km **ANTI-TANK** 30mm M230/1200rnds/3km 16x AGM-114 Hellfire	400km/hr	Infantry. Buildings. Light vehicles. Armor.	Doppler radar system for target identification and acquirement. Can self-designate.

RAH-66 Comanche Rotary Wing	20mm XM301/500/2km 24x DAGR 4x AIM-132 ASRAAM	250km/hr	Infantry. Buildings. Light vehicles. Armor. Aircraft.	Retractable landing gear and weapons platforms. Armed reconnaissance bird.
A-10 Thunderbolt II Fixed-Wing	**CAS** 30mm GAU-8/1350rnds/3km 4x GBU-12 Paveway 6x MK 82 38x Hydra 70mm Rockets/2km 6x AGM-65D Maverick (IRR/Laser) 2x AIM-9X Sidewinder **ANTI-TANK** 30mm GAU-8/1350rnds/3km 4x MK 82 38x Hydra 70mm Rockets/2km 6x AGM-65D Maverick (IRR/Laser) 2x AIM-9X Sidewinder	625km/hr	Infantry. Buildings. Light vehicles. Armor. Low-level aircraft.	Cannot self-designate.
AV-8B Harrier	**DEFAULT**	900km/hr	Infantry.	STOL/VTOL craft.

Fixed Wing	20mm GAU-12/300rnds/2m 6x MK 82 38x Hydra 70mm Rockets/2km 2x AIM-9X Sidewinder **CAP** 20mm GAU-12/300rnds/2m 4x AIM-120 AMRAAM **GBU** 20mm GAU-12/300rnds/2m 6x GBU-12 Paveway 2x AIM-9X Sidewinder **AGM-65** 20mm GAU-12/300rnds/2m 4x AGM-65D Maverick 2x AIM-9X Sidewinder		Buildings. Light vehicles. Armor. Aircraft.	Auto-hover capabilities.

F-35 Lightning II Fixed-Wing	**AA** 25mm GAU-22/220rnds/3km 4x AIM-120C AMRAAM 4x GBU-12 Paveway 2x AIM-9X Sidewinder **LGB** 25mm GAU-22/220rnds/3km 4x GBU-12 Paveway 4x MK 82 2x AIM-9X Sidewinder	900km/hr	Infantry. Buildings. Light vehicles. Armor. Aircraft.	Air superiority fighter. STOL/VTOL craft. Auto-hover capabilities.
MQ-9 Reaper Fixed Wing	8x AGM-114 Hellfire	500km/hr	Infantry. Buildings. Light vehicles. Armor.	Autonomous Drone. Can self designate.

AIRBORNE WEAPON SYSTEMS

CANNONS

WEAPON SYSTEM	DAMAGE	INDIRECT DAMAGE	BLAST RADIUS	VELOCITY
20mm M197	40	10	2m	1030m/s
20mm XM301	60	20	0.4m	1030m/s
25mm GAU-12 Equalizer	30	8	3m	1030m/s
30mm M230	90	15	4m	1030m/s
30mm GAU-8 Avenger	90	15	4m	1030m/s

20mm M197 - HE - Able to pierce armor on all BTR-series BMP-series vehicles. ZSU-23. MRAPs.
20mm XM301 - HE - Able to pierce armor on all BTR-series BMP-series vehicles. ZSU-23. MRAPs.
25mm GAU-12 Equalizer - HE - Able to pierce armor on all BTR-series BMP-series vehicles. ZSU-23 included. MRAPs.
30mm M230 - HE - Able to pierce armor on all BTR-series BMP-series vehicles. T-34/T-55. ZSU-23. MRAPs.

30mm GAU-8 Avenger - HEI/API - Able to pierce armor on all series of armored vehicles. T-100 excluded.

ORDNANCE

WEAPON SYSTEM	GUIDANCE	DAMAGE	INDIRECT DAMAGE	BLAST RADIUS	AVERAGE VELOCITY	LIFE	MAX RANGE
Hydra 70mm	Unguided	150	40	12m	720m/s	20	14.4km
DAGR 70mm	Laser	800	20	5m	720m/s	20	14.4km
AGM-114 Hellfire	Laser	800	20	2m	415m/s	30s	12.5km
AIM-65D Maverick	Infrared	850	20	2m	300m/s	120s	35.7km
AIM-9X Sidewinder	Infrared	200	85	10m	785m/s	40s	31.4km
AIM-132 ASRAAM	Infrared	200	85	10m	785m/s	40s	31.4km
MK. 82	Unguided	5000	1100	12m	X: Airspeed Y: 90m/s	120s	Variable
GBU-12 Paveway III	Infrared Laser	5000	1100	12m	X: Airspeed Y: 90m/s	120s	Variable

Hydra 70mm Rocket - Able to pierce armor on all BTR-series BMP-series vehicles. Four to six will pierce armor on main battle tanks.
DAGR 70mm - Able to pierce armor on all series of armored vehicles.
AGM-114 Hellfire Missile - Able to pierce armor on all series of armored vehicles.
AIM-65D Maverick - Able to pierce armor on all series of armored vehicles.
AIM-9X Sidewinder - Short-Range Anti Air Missile. Effective against light vehicles and cars. 500m arming distance.
AIM-132 ASRAAM - Medium Range Anti Air Missile.Effective against light vehicles and cars.
MK. 82 - Dumb bomb. Effective against armored vehicles with direct hit. Armored Fighting Vehicles will sustain damage within blast radius.
GBU-12 - Laser guided MK. 82 .Effective against armored vehicles with direct hit. Armored Fighting Vehicles will sustain damage within blast radius.

FIRE COORDINATION REQUESTS

Any unit coordinating both indirect fire and CAS is known as a Joint Fires Observer (JFO). The JFO serves as a trained liaison between the mission commander and artillery and air support assets. The JFO is critical in preventing fratricide, ensuring accurate weapons delivery on target, and the safety of all air crews involved. Given the availability of artillery observers, infantrymen are often in the best position to observe and adjust artillery fire. Accordingly, every infantryman should be capable of requesting and adjusting artillery fire should the need arise. Only a trained observer should attempt to coordinate with air support unless in an

emergency. Observers should be well versed in the operation of the Military Grid Reference System, (Micro)DAGR, Vector 21B Rangefinder, PEQ-1A SOFLAM, Military Radio Procedures. Certain key words, phrases, and

Three types of Artillery fire missions exist: **GRID**, in which a standard six or eight digit grid is reported and engaged. **SHIFT** from known point, in which reference points are predetermined and targets are reported given their relative location to these points. **POLAR**, the JFO's position is given as a reference points. All targets are reported based off their distance in meters and direction in milliradians.

CALL FOR FIRE - ARTILLERY

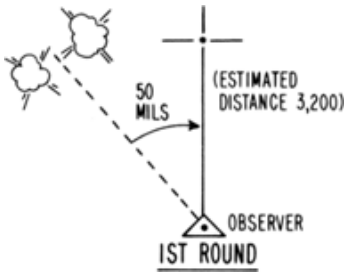
ELEMENT	***EXAMPLE***
Identification of Observer	Artillery, this is Observer.
Warning	Adjust Fire Fire For Effect
Location of target	Grid 734536. Shift From RP 1 Direction 1800, Right 600, Drop 400. Polar, Direction 120, distance 2100.
Description of target	School Bus filled with midgets
Method of engagement	HE/DPICM x12 Rounds Spread 100m. Danger Close (Within 600m)

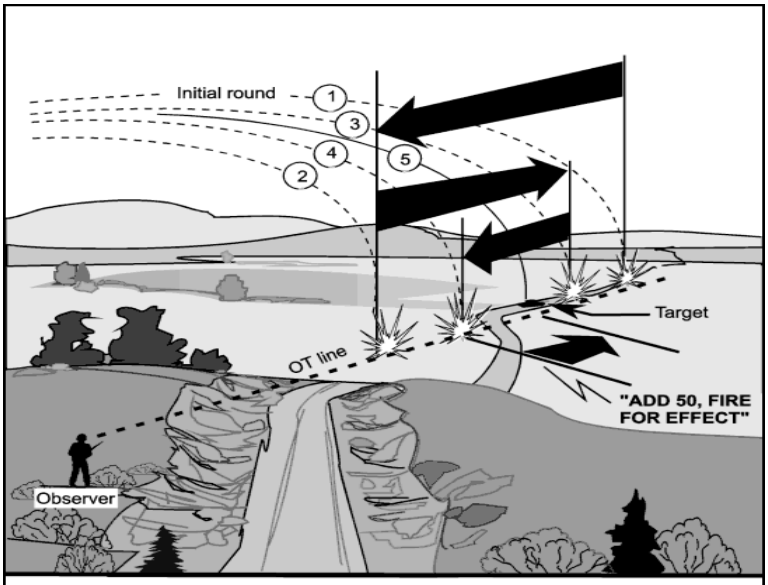
The Artillery or Fire Direction Center will repeat back each line of the call for confirmation, ending their transmissions via *Out.* The Artillery will announce *Shot* and *Splash Over* at the given times, while the JFO will reply *Shot* and *Splash Out*. Artillery will announce *Rounds Complete* between salvos. The JFO will measure the fall of shot and adjust as necessary or call for fire for effect with new method of engagement or call for a repeat of the previous fire mission. When the fire mission is complete, the JFO will announce *End of Mission.*

As the relative location of the Observer and Artillery will vary, adjustments should be given via the basic cardinal directions. The Observer should determine both the relative vertical range to target and the range of impact. He should then measure the relative horizontal range in milliradians. One mil is equal to a 0.1m per 100 meter distance. As an example, at 3200m 50 milliradians West corresponds to a 160m distance adjustment East.

Equation: (Range in meters ÷ 100) x 0.1 x Mils

Example: (3200m ÷ 100) = 32 * 0.1 = 3.2 x 50 = 160m.





When bracketing, the observer should use the following guide to determine the first range correction

If OT range is-	Add or drop a minimum of-
1,000 to 2,000 meters	200 meters
Over 2,000 meters	400 meters

The observer should call for fire for effect when a 100-meter bracket has been split

EXAMPLE:

"DROP 50, FIRE FOR EFFECT"

Due to terrain, such as on flat land when the target shares the same elevation as the observer, it may not be possible to acquire the vertical distance to the target. Vertical adjustments should be made by bracketing where rounds are fired short and long of the target forming a bracket which is slowly creeps towards the target. The target should be kept in line with the horizontal line of a scope or binoculars. The initial impact should be marked as being lower or higher than the horizontal axis and the user should add or drop as necessary. A bracket of 200 meters should be used initially, and such shortened in increments of 50 to 100 meters as required until the rounds impact at the desired location.

Video Presentation on Bracketing

AIR SUPPORT CHECK IN BRIEF

Element	**Example**
Identification	Observer, this is Aircraft
Position & Altitude	IP Cadillac Angels 3
Number and Type of Aircraft	2x A-10.
Ordnance	800 rounds 30mm. 3x GBU-12, 1x Maverick
Time on Station (Hours + Minutes)	1+30
Abort Code	Falcon

Example of a modified Check in Brief missing lines 2 and 6.

"Vulture, Cujo 2-1 Checking in a flight of two F-35s, orbiting west, 20 kilometers, at Angels 12. Ordnance to follow:... four Mavericks, six GBU 12s, 600 rounds apiece. 0+40 Time on Station."

Upon entering the Area of Operations, aircrews should perform a check in brief with the JFO. When multiple aircraft are present, the flight leader will perform the check in. This allows the JFO to acquire the aircraft, coordinate abort codes, and comprehend the weapon systems available to him. Depending on prior planning, some lines may be omitted for the sake of brevity.

The JFO will reply back with the type of control and for confirmation on tasking

"*Cujo 21, Vulture. Type 1 in effect. Advise when ready for tasking."*

Type 1 - JFO visually acquires attacking aircraft and target for each attack.

Type 2- JFO requires control of individual attacks within a single engagement when: JFO is unable to visually acquire the aircraft or target. The attacking aircraft is unable to visually acquire target prior to release.

Type 3 - JFO requires control of multiple attacks within a single engagement when: JFO is unable to visually acquire the aircraft or target. The attacking aircraft is unable to visually acquire target prior to release.

CALL FOR FIRE - CLOSE AIR SUPPORT - NINE LINE

LINE	**EXAMPLE**
Initial Point	IP Cadillac
Heading from IP in Milliradians	Heading 2345
Distance from IP in meters	Distance 3,200m
Target Elevation	Elevation 1012m
Target Description	School bus filled with midgets
Target Location	GRID 1234 5678
Type of Mark	Red Smoke
Location of Friendlies	400m South
Egress	West
Optional Remarks	30mm Gun Run. Danger Close.

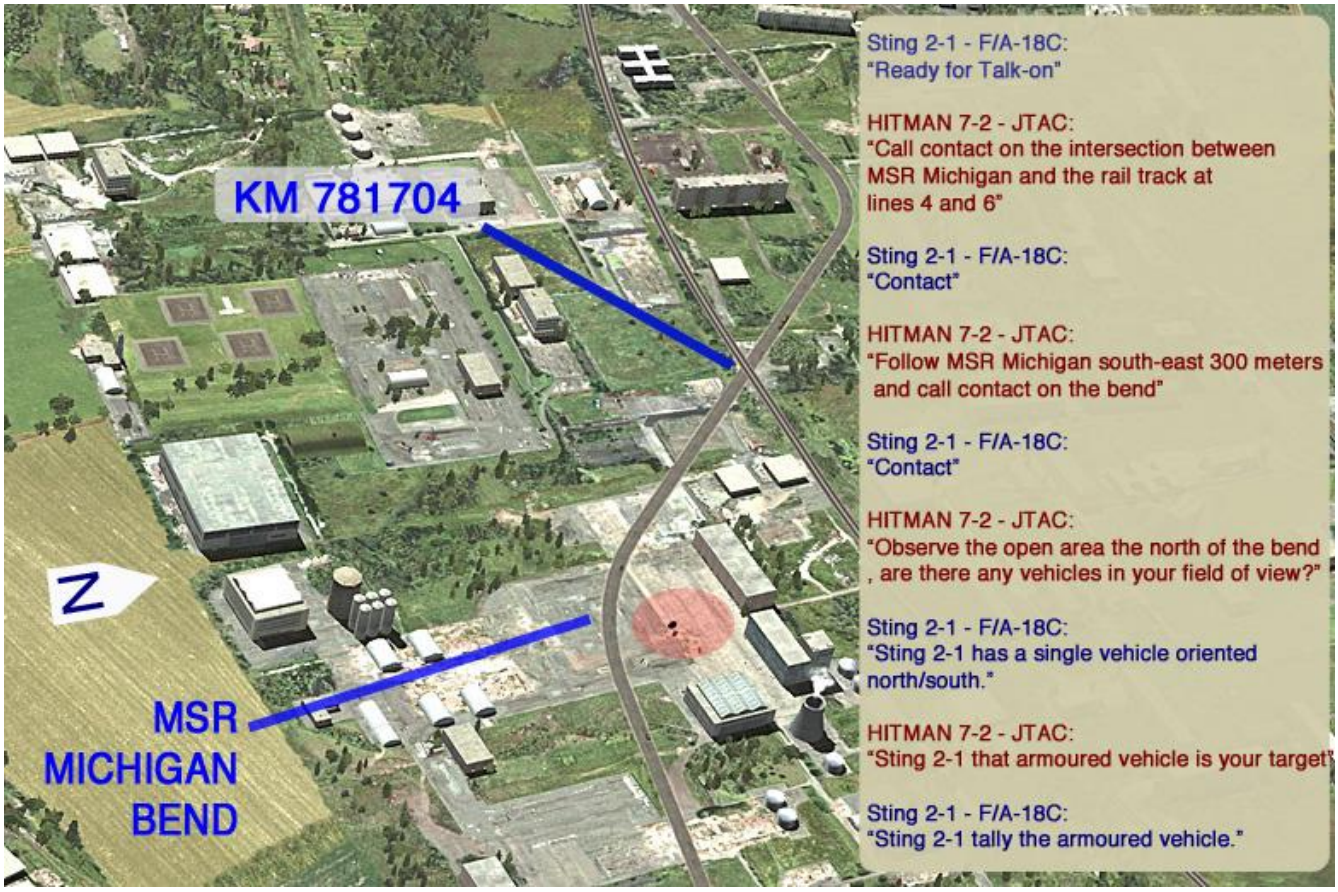
"Cujo 2-1, Stalker-2. Nine Line follows: IP Hammer. Heading: 2255 magnetic. Distance: 5 kilometers. Target elevation: 215 MSL. Three T-72s near a large green three story factory building. Grid: 257788. Marked with laser. Friendlies south; one kilometer. Danger Close. Egress north-west . End nine line. Over."

Close Air Support is coordinated via Nine Line. Lines 5, 6, 7, 8, and optional remarks are mandatory readback items. Aircrews should read back when the nine line is finished, and ask for clarification on any lines which were not readily understood. The JFO will reply *Readback Correct* upon successful readback.

TARGET MARKING

Various methods and equipment are available to mark targets. The JFO may talk the Aircrew onto the target, mark the target with smoke, laser, or IR devices. If using a laser, the JTAC will also pass the code he will use, default: 1001.

Talking the Aircrew onto the target entails acquiring key terrain or map features and coordinating with the Aircrew to ensure such features are properly acquired. Many airframes are equipped with either a LANTIRN or Pave Penny system which marks vehicles and lasers on the pilot's HUD with a green square. This can be use as a reference point to discriminate targets.

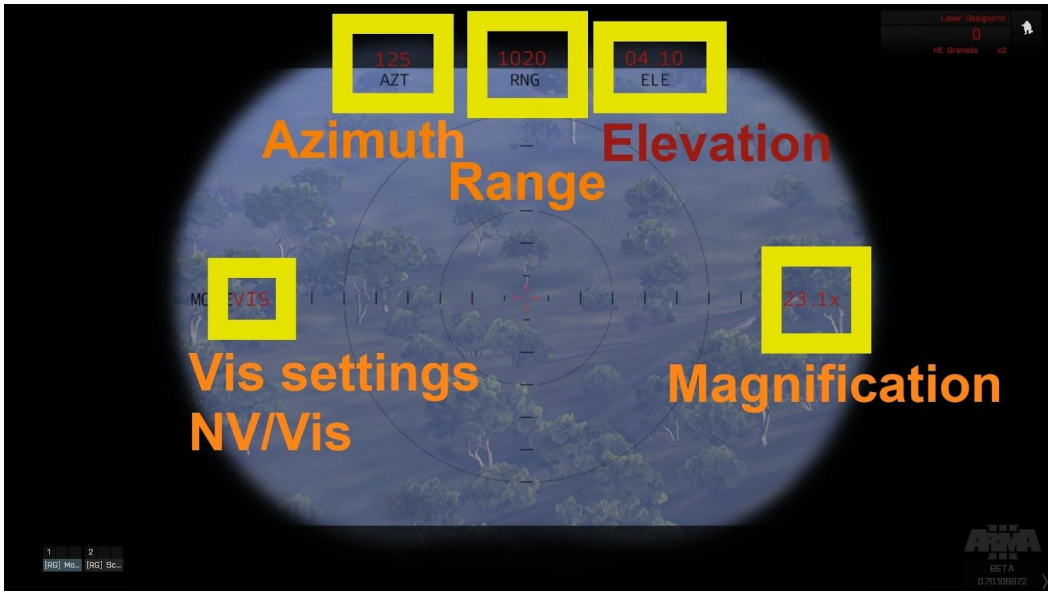


Infrared devices are only visible at night. Two such infrared devices may be used to designate targets: The IR Strobe/Grenade, or the AN/PEQ-15 Advanced Target Illuminator. The IR Grenade will be tallied by LANTIRN and Pave Penny systems and will appear on radar. It can be locked onto by various weapon systems such as GBU-12 Paveway III's or AGM-114K Hellfire Missiles. As such, it can be used in daylight conditions. The IR Grenade (NATO) will appear as a hostile NVG target. The IR Grenade (CSAT) will appear as a friendly BLUFOR contact.

The AN/PEQ-15 is an IR Laser which is only visible via night vision goggles. It can mark targets out to a maximum range of 1km. Aircrews should conduct a low altitude pass over if circumstances permit, ingressing from the origin of the laser and egressing at the target, in order to acquire the target and follow up with ordnance on subsequent passes. Tracers in combination with talking aircrews onto the target can be used in

the same manner as the AN/PEQ-15 IR Laser. IR-DIM rounds with aircrews that are NVG capable work best as they are easily visible from the air. Tracers may be difficult to see in daylight.

AN/PEQ-1A Ground Laser Target Designator (GLTD) II SOFLAM



REQUIRES DESIGNATOR BATTERIES.

DISPLAYS

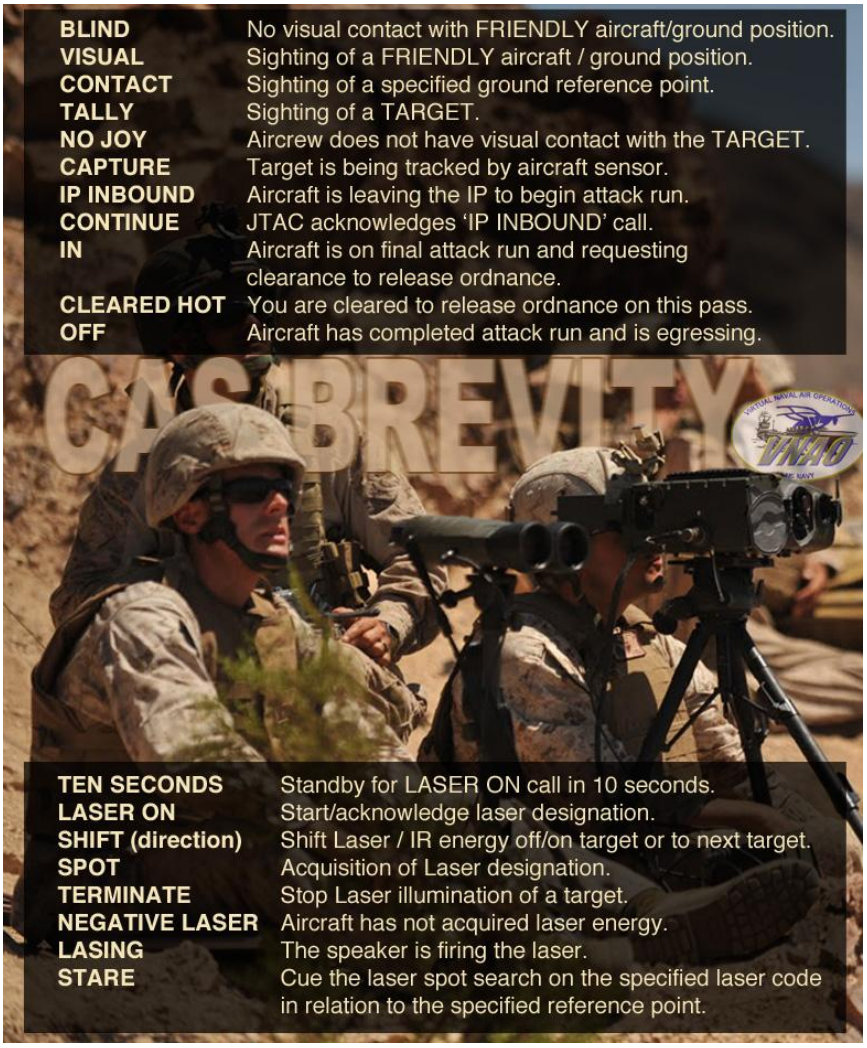
- Target Bearing in Azimuth.
- Range when Laser is on.
- Elevation Difference.
- Magnification between 2x - 20x.
- Night Vision available.

DEFAULT LASER CODE: 1001
Switching Laser Code UP: CRTL+ALT+Q
Switching Laser Code DOWN: CRTL+ALT+SHIFT+E
The Remote Designator operates identically to the SOFLAM.
All vehicle borne designators operate identically to the SOFLAM.
A change in Laser Code should be coordinated prior, or communicated to Aircrews. It is generally best to leave this unchanged unless multiple JFOs are operating in the same region.

In order to use colored smoke, the JFO or another friendly element must be within 600 meters of the target which is the maximum range a M203 launcher can fire a smoke round. Depending on the fall of shot, the JFO may decide to talk the aircrew into the target using the smoke as a reference point. Ex: "*Target North of Orange Smoke, 150m"* Smoke signals will usually be addressed in the OPORD. In its absence, universally accepted standard NATO signals should be used in order to prevent confusion.

FIRE DISCIPLINE

In addition to the aforementioned calls for fire, a series of brevity words and special language is used.



CHAPTER 4
COMMUNICATIONS

The basic requirement of combat communications is to provide rapid, reliable, and secure interchange of information. Communications are vital to mission success. This chapter helps the unit maintain effective communications and comms brevity.

UNIVERSAL RULES

- Before you transmit, gather your thoughts. Say what you need to say without unnecessary repeats or expletives.
- Give the call sign of the unit you are trying to contact with first, followed by introducing your callsign. IE: You, this is me, come in, over. - For replies, reverse this procedure and give number assessment of call clarity.
- Speak clearly and methodically. Pause after logical phrases.
- Use Over when you are done transmitting and expect a reply. Use Out to cease communications.
- Respond with Copy, Acknowledged, or Roger if you received and understood the message.
- Use the NATO Phonetic Alphabet to spell. Read individual numbers. 23 Two-Three. Not Twenty-Three.

COPY ASSESSMENT

IE: *Lima Charlie 5x5* or *Copy 3 out of 5.*

1 *= Bad (unreadable);*

2 *= Poor (readable now and then);*

3 *= Fair (readable but with difficulty);*

4 *= Good (readable);*

***5** = Excellent (perfectly readable).*

MILITARY RADIOS

Radios are simulated using the Advanced Combat Radio Environment module. Everyone should be familiar with the operation of both the module and the operation of various radios within it. TFAR simulates signal distortion/loss caused by range or obstacles. This should be taken into account when transmitting.

USAGE

Caps Lock: To talk on a radio.
CTRL + SHIFT + X
- Open your current radio GUI, if you have one

CTRL + SHIFT + A
- Hot-swap between the radios you are carrying as your active radio
CAPS LOCK
- Radio PTT (Push to Talk) Key
CTRL + SHIFT + UP
- Change the current radio to be in both ears
CTRL + SHIFT + LEFT
- Change the current radio to be in your left ear
CTRL + SHIFT + RIGHT
- Change the current radio to be in your right ear

AN/PRC-152

- The AN/PRC-152 is able to be programmed over a wide frequency of channels.
- **PROGRAMMING STEPS**: Hit CLR (Clear Frequency) - Type in desired frequency - Hit ENT (Set Frequency.)
- Speakers can be toggled between Speakers/Headset. When toggled to speakers, all incoming transmissions will be broadcast to your surroundings.
- Stereo settings will change which ear incoming transmissions are heard in. This is useful for command elements operating on multiple radios to differentiate which frequency is being heard.
- While on a specific channel, you may hit the "*Set Additional Channel"* arrow to monitor multiple channels and transmit on the set channel via **T**.

AN PRC 117F

- All backpack radios are able to be programmed over a wide frequency of channels.
- All vehicles come with a backpack radio.
- **PROGRAMMING STEPS**: Hit MENU CLR (Clear Frequency) - Type in desired frequency - Hit FREQ (Set Frequency.)
- Speakers can be toggled between Speakers/Headset. When toggled to speakers, all incoming transmissions will be broadcast in your surroundings.
- Stereo settings will change with ear incoming transmissions are heard in. This is useful for command elements operating on multiple radios to differentiate with frequency is behind heard.

Radio Name	Strength	City Range	Perfect Range
AN/PRC-343	100 mW	400 m	850 m
AN/PRC-148	5 W	3-5 km	5-7 km
AN/PRC-152(c)	5 W	3-5 km	5-7 km
AN/PRC-117F	20 W	10-20 km	Horizon
AN/PRC-77	4 W	1-3 km	3-5 km
SEM 52 SL	1 W	1-2 km	2-4 km
SEM 70	4 W	1-3 km	3-5 km
BF-888S	5 W	2-4 km	4-6 km

DOCTRINAL TERMINOLOGY

Abort: Terminate a mission or maneuver.
Actual: Term used after call sign designating team lead rather than the RTO. IE: Hunter-2-1 Actual.
Affirmative: Yes.
AO: Area of Operations
APFDS: Armor Piercing Fin Discarding Sabot
BDA: Bomb Damage Assessment.
Bearing: Compass angular reading out of 360.

IED: Improvised Explosive Device.
Interrogative: Used at the beginning of a transmission. Designating a question.
IP: Initial Point. CAS loiter area.
KIA: Killed in Action.
Lima Charlie: Loud and clear. 5x5.
Lima Delta: Line of Departure. Point of no return.
Mike: Minute.
Mike Mike: Milimeter.

Bird: Helicopter. **BP:** Battle Point. Attack Helo position. **Broken Arrow:** Radio code for friendly position being overrun. Divert all tactical air assets for support. **Contact:** Hostile enemy sighted and I am engaging or being engaged. **Copy:** I heard what you just said. Emphasis added: Solid Copy. **Delta Hotel**: Direct Hit. **Delta Tango:** Designated Targets. Preselected Artillery or CAS targets. **Dustoff:** Medical Evacuation via Helicopter. **EOD:** Explosive Ordinance Disposal **ETA:** Estimated Time of Arrival **Fast Mover:** Fixed-Wing Fighter Jet. **FOB**: Forward Operating Base. **Go Ahead:** Send your transmission. **HE:** High Explosive. **HEAT:** High Explosive Anti Tank. **Hesco:** A large tan barrier filled with dirt. Not a sandbag.	**MSR:** Main Supply Route or Road. **Notional**: In theory or in suggestion. A Possibility. **Oscar Mike:** On the move. **Over:** I have finished talking and I am listening for your reply. **Out:** I have finished talking to you and do not expect a reply. Never use "Over and out." **Phase Line:** A line utilized for control and coordination to measure progress and timetables. **QRF:** Quick Reaction Force. **ROE:** Rules of Engagement. **Say Again:** Repeat your last transmission. **Send Traffic:** Send your transmission. **SITREP:** Situation Report. **Visual:** Something is within sight. No engagement. **Willy Pete:** White Phosphorus. **UXO:** Unexploded Explosives.

NATO PHONETIC ALPHABET

Alpha **Bravo** **Charlie** **Delta** **Echo** **Foxtrot** **Golf**	**Hotel** **India** **Juliet** **Kilo** **Lima** **Mike** **November**	**Oscar** **Papa** **Quebec** **Romeo** **Sierra** **Tango** **Uniform**	**Victor** **Whiskey** **X-ray** **Yankee** **Zulu.**

NON-VERBAL SIGNALS

A variety of nonverbal visual signals exist which can aid in communication when audio communication is impossible or not desired. Smoke, light signals, and hand gestures are the three main components of non-verbal signals.

Smoke can thrown or fired via M203 and used to mask or mark enemy and friendly positions. When smoke is employed to mark friendly positions, it should be done in such a way as to mask enemy observation while maintaining a wide field of view. Smoke should be employed 15-20 meters away from a friendly position. The M18 Smoke Grenade will burn for 60 seconds and will move in the direction of the wind. The OPORD/WARNO will assign signals to a given smoke color. The following table is based off of universal use which may be modified according to mission specifications.

COLOR	SIGNAL
GREEN	
RED	

<INCOMPLETE. NEED HAND SIGNAL GRAPHICS>

CHAPTER 5
DEMOLITIONS

This chapter introduces the characteristics of explosives, safety considerations, initiation, expedient explosives, and the usage of Anti-Armor Launchers.

SAFETY

As explosives have the capability to seriously injure an entire squad or deal irreparable collateral damage to mission asset, they should be employed with the following considerations.

- Loudly announce “Fire in the hole. Fire in the hole. Fire in the hole.” over the radio before detonation.

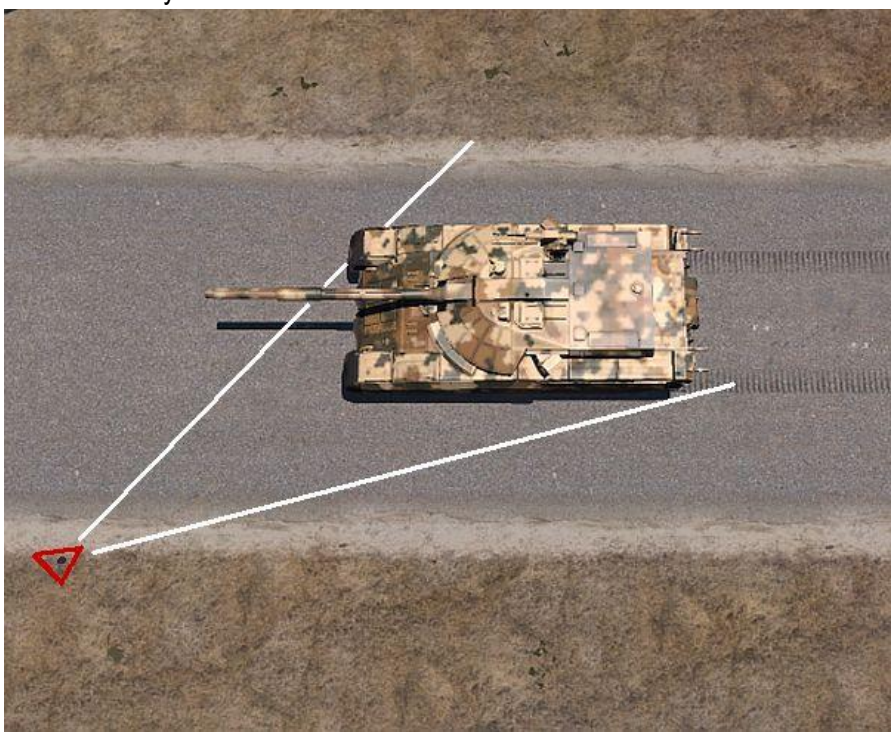
- Do not use timers under one minute as to allow yourself and other teammates to get to hard cover.
- Remember that vehicles have secondary explosions which may reach much farther than the initial charge.
- Collapsing buildings will send a shockwave and shrapnel out far exceeding the initial charges blast radius.
- When using Anti-Tank Launchers. Announce “Backblast Clear” and wait for “Clear!” to be called in response before firing.
- Remember the Daisy Effect: Explosives may set off other explosives caught in the blast.
- The maximum range a clacker will work is 300m depending on terrain.

EMPLOYMENT

Explosives can be accessed via the personal interaction key (Left Windows) under the tab explosives. Upon selecting the desired charge, place or attach it, then interact with it to set a timer or attach to a clacker/firing device. This chapter will detail the employment of commonly used explosives.

M4A1 SLAM

The M4A1 Selectable Lightweight Attack Munition is able to be deployed via IR Sensor (Below), Magnetic Bottom Attack, or operated via timer/clacker. When employed via IR Sensor, the SLAM should be rotated 45° to the left or right to ensure accuracy as the angular momentum of a vehicle can carry it out of the blast zone when they approach at a 90° angle. The M4 SLAM is effective against all Armored Fighting Vehicles. Against Armor, the M4 SLAM will deal effective damage against treads. The M4 Slam in IR Sensor configuration may be combined with a M112 Demo Block or a Satchel Charge as a crude roadside bomb via the Daisy Effect.



M112 C4 Block

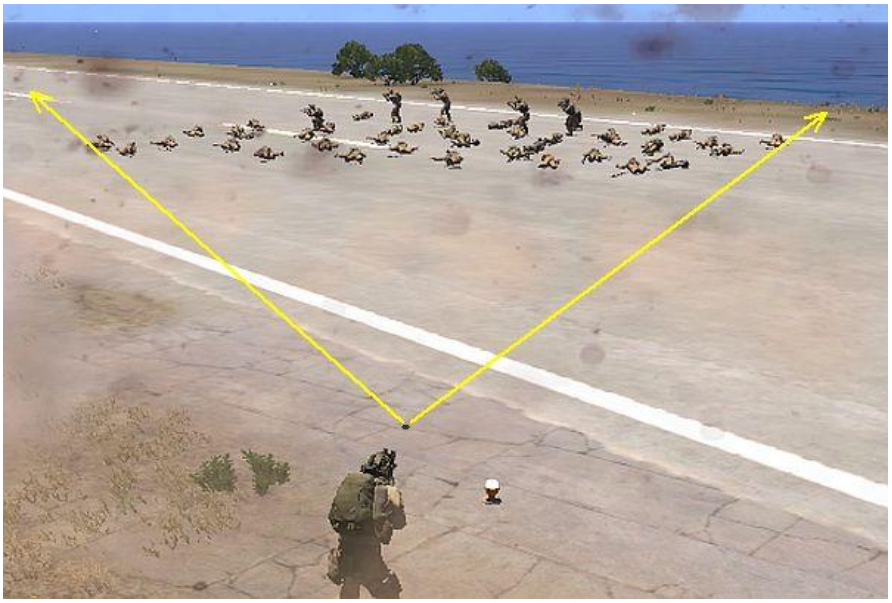
The M112 Demolition Block is primarily used as a defoliant and breaching charge. The M112 can clear trees to create a landing zone and knock down perimeter walls. It will destroy all series of Armored Fighting Vehicles and knock out both treads on Armor. It can be set to manual detonation or via timer. As a roadside bomb, the M112 will deal severe damage to the nearest tread.

SATCHEL DEMOLITION CHARGE ASSEMBLY

The Satchel Charge is the most powerful hand-held explosive device available. It is primarily used in the demolition of buildings and other fortifications. It has the combined explosive power of 4 M112 blocks and will destroy or disable all armored vehicles. It can be manually detonated or put on a timer

M18A1 CLAYMORE MINE

The Claymore fires a blast of ball bearings lethal to 30m. Will disable/destroy wheeled vehicles. It is manually denoted. Useful for perimeter defense as blast is directional.



APERS Mines

The APERS is pressure-activated and lethal out to 5 meters.

The APERS bounding mine will detect targets up to 10m and explode. Lethal up to 50 meters. Injuries up to 100 meters.

Anti-Armor

This section will cover the operation of various Anti-Tank launchers in addition to improvised ways to disable or knock out an enemy vehicle. The most effective way to disable a tank is a direct hit to the treads or engine. Many tanks have high frontal and turret armor. The sides and rear of the tank should be prioritized, the top armor is also extremely vulnerable. Most main battle tanks are highly resistant to any rockets under the 700 damage threshold. Light armored vehicles such as APC's and IFV's are easily destroyed by anything above 300 damage.

M136 AT4

The AT-4 is an unguided, portable, disposable, single-shot recoilless rocket launcher. It fires an 84mm HEAT rocket at 290m/s. It is a stand alone weapon system that weighs 14.5kg or 32lbs. It is capable of defeating light armor, however maintains minimal effect against heavy armor such as main battle tanks. Nevertheless, it will severely damage tracks on heavy armor forcing a crew bail. The M136 is equipped with a peep sight which can be zeroed to a maximum range of 400m. The post of the peep sight is proportional to the 100m drop of the rocket giving it a maximum effective range of 500m. As the rockets has a six second life time, its maximum range is approximately 1.6km. It is rated at 450 damage with an 1m blast radius dealing 11 damage.

M47 Dragon

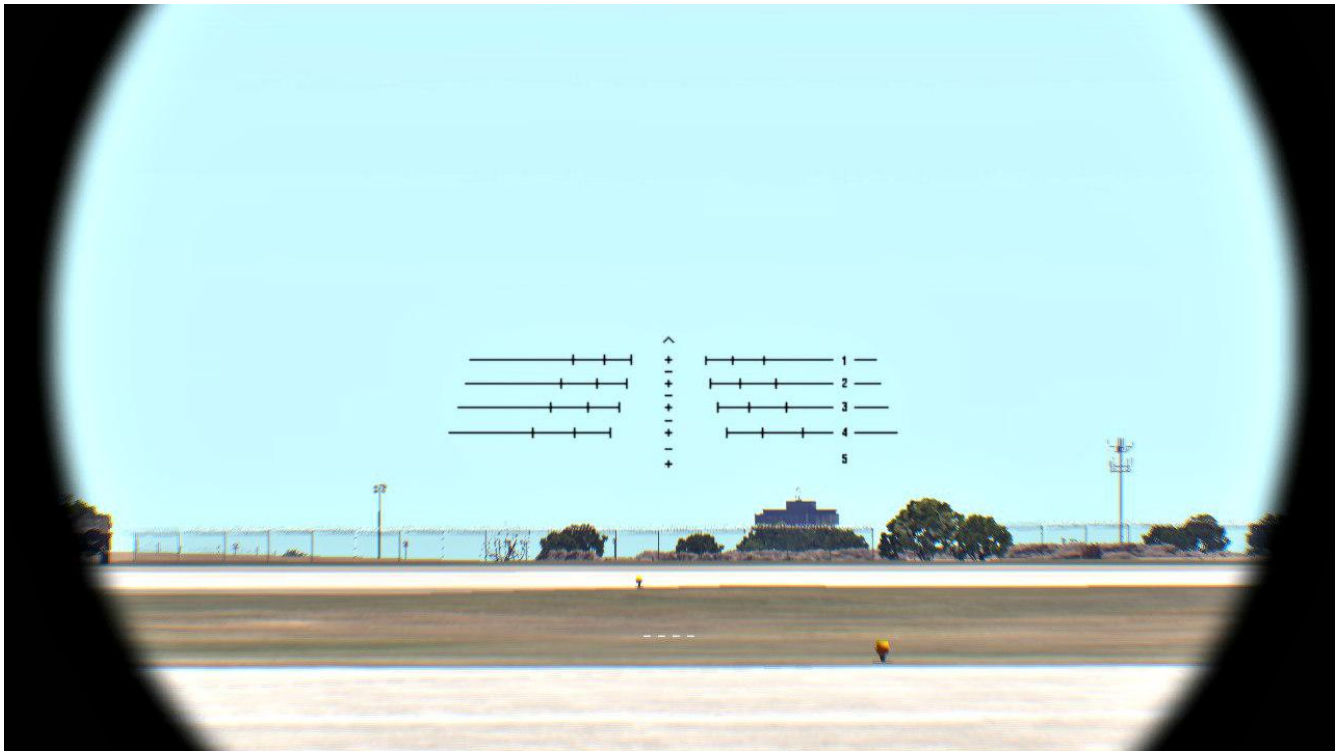
The M47 Dragon is a wire-guided reloadable recoilless missile launcher based on the BGM-71 TOW. It fires a 140mm HEAT warhead at 200m/s, however a bulk of its size is due to its guidance system. It has a maximum control range of 1.5km. As the missile has a 20 second life time, its maximum range is approximately 4km. It can be manually guided or locked onto infrared targets by pressing T and used in a fire and forget capacity. It is capable of defeating light armor, however maintains minimal effect against heavy armor such as main battle tanks. Nevertheless, it will severely damage tracks on heavy armor forcing a crew bail. The M47 has a stand alone weight of 15.2kg with a warhead weight of 30.1kg. Depending on the table of organization and equipment, the Dragon may be designated as a crew-served weapon. The M47 comes equipped with a day/night sight capable of 8x magnification. It is rated at 450 damage with a 1m blast radius dealing 9 damage.

FGM-148 Javelin

The FGM-148 Javelin is a guided fire and forget close combat missile system. It soft launches a 127mm Tandem HEAT warhead which is capable of defeating all forms of armor, including explosive reactive panels. It consists of two parts, the reloadable launch tube assembly, and the command launch unit or CLU. As the missile has a 30 second lifetime, it has a maximum range of 11km traveling at an average speed of 370m/s. In order to fire the weapon, the operator must use the CLU, switch the optics mode to thermal imaging, and may then acquire a lock by holding TAB. When a proper lock has been achieved audio cues will sound and a distinctive cross will form on the target. The CLU will acquire any target with an infrared signature such as vehicles, infantry, and buildings. Wearing IR emittance reduction uniforms will not prevent a lock, however will make target acquisition more difficult. The missile can be programmed to fire in either top or direct attack mode, this can be toggled via CRTL+Tab. The CLU weighs XXkg, while the launch tube assembly weighs XX. It is rated at 800 damage with a 2m blast radius dealing 20 damage.

M3 MAAWS Carl Gustav

The M3 MAAWS is a multi-role recoilless rifle capable of firing an 84mm HEAT/HEDP rocket at an average speed of 250m/s. It is capable of defeating light armor, however maintains minimal effect against heavy armor such as main battle tanks. The MAAWs is a multi-role weapon system which can be used to defeat vehicles, personnel, or bunkers or used in a direct-fire mortar fashion. It has a stand alone weight of XXkg with each rocket weighing XXkg. It comes standard with fixed iron sights at a 100m zero with a high level of drop. When equipped with the MAAWS optical sight, the rocket will experience minimal drop and does not need to be zeroed. The aiming reticle of the optical sight is the first plus + mark, the chevron mark ^ on top should not be used. The rockets have a life time of six seconds giving the MAAWs a maximum effective range of 1.5km. The HEAT rocket is rated at 480 damage with a 1 meter blast radius dealing 12 damage. The HEDP rocket is rated at 150 damage with a 12 meter blast radius dealing 40 damage.



BARRETT M107 LRSR (LONG RANGE SNIPER RIFLE)

The Barrett M107 .50 Cal Sniper Rifle can be used to great effect as an anti-material rifle. Users of the M107 should be familiar with its effectiveness against various armored fighting vehicles. This requires precise aim to key components to disable the vehicle's ability to move or shoot and force the crew to bail.

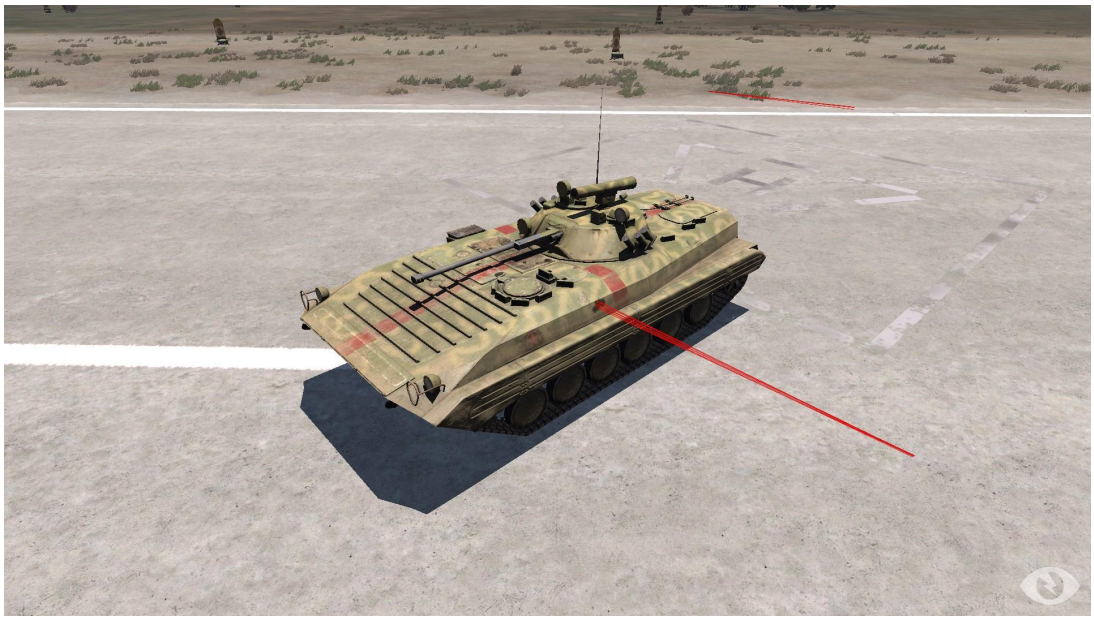
The M107 can also be used to detonate IEDs from a safe distance. Its lethality at range is unparalleled, however scarcity of ammo and its weight of 14.77kg limit its employment. It can be considered a crew served weapon operated by a team of two. The M107 will achieve true-zero when ranged to 400m. Hearing and eye protection must be worn at all times when operating this weapon. It generates a large cloud of dust in front of the weapon when fired. It has a muzzle velocity of 850m/s, an effective range of 2km, with a maximum range of 6.8km

BTR-series

BTR-60/70 series are susceptible to 12.7mm fires. BTR-90 series vehicles are impervious though their wheels are vulnerable. Five to ten rounds to the engine service hatch on either side will kill the engine. Four rounds are required to destroy a wheel. Four disabled wheels will induce a bail.

BMP-Series

All BMP-series IFVs are susceptible to 12.7mm fires. The engine is located in front of the turret. Ten to Fifteen rounds to the engine will disable it.



ZSU-23-4V Shilka

The ZSU-23 can be engaged in three separate areas. Two rounds to the gears to either side of the frontal tracks, two rounds to the barrels of the turret, or five to ten the rear-service hatch to the engine. Repetitive hits to multiple areas will destroy the vehicle.

Track Gears

Turret

Engine Hatch

BRDM-series

All BRDM-series vehicles are susceptible to 12.7mm. 5.56x45mm M995 AP, and 7.62x51mm NATO fires. Only the 12.7x99mm has the power required to damage the engine. Five to ten rounds to the rear service hatches on either side will disable the engine. Four rounds will pop a wheel. Two disabled wheels will induce a bail.

T-34

The T-34's sloped armor may produce ricochets. The T-34 can be engaged by either the front or rear hatches. Five to Ten rounds will destroy the vehicle.

Front

Rear

CHAPTER 6
FIRST AID

To survive on the battlefield everyone must know how to diagnose and treat injuries, wounds, and common conditions. This will improve squad readiness, reduce the effectiveness of enemy fires, and prevent unnecessary loss of life. All soldiers should have basic medical equipment as an operational standard.

Before providing combat life saving support, survey the area for small arms fire, detect any explosive devices, survey nearby buildings for structural stability, and determine the best route of access to the casualty in addition to the best route of egress. If you need to move the casualty, ensure that you select an area that provides optimum cover and concealment. Plan your evacuation route prior to exposing yourself to possible enemy fire. You may need to request covering fire to reduce the risk to yourself and the casualty during movement. You should anticipate the type of injuries received and the treatment required and decide what care you can administer to the casualty when you reach him and what care will have to wait until the casualty is moved to a safer location. Before movement, anticipate how your actions (movement, noise, light, etc) may affect the enemy's fire.

Whatever the injury, (1*) stop life-threatening bleeding with tourniquet; (2) stop the bleeding (3*) remove tourniquet (4*) transfuse blood if blood pressure is low (4^) administer epinephrine (5^) administer morphine

* Optional Steps based on circumstance*s. The Tourniquet may cause injury and death if left on for too long.*
^ *Warning. Overdose of Epinephrine or Morphine may cause death or hallucinations. If target does not wake, monitor heart rate and do not attempt to re-administer Epinephrine until it is safe to do so.*

ADVANCED

The following table shows the effectiveness of various bandages.

Bandage	Abrasions	Avulsions	Contusions	Crush Wounds	Cut Wounds	Lacerations	Velocity Wounds	Puncture Wound
Basic	highest	low	highest	medium	low	high	low	medium
Packing	highest	highest	highest	medium	lowest	low	highest	low
Elastic	highest	low	highest	highest	highest	low	medium	highest
QuickClot	high	lowest	high	high	high	high	high	medium

It is recommended that the user split between packing and elastic bandages as those posses the highest effectiveness over all types of wounds. Two rules of thumb apply to treating injuries:

- Use Packing Bandages for Velocity wounds and any wound ending in ion (Abrasion. Avulsion. etc) and use Elastic Bandages for everything else.
- Use Elastic Bandages for Puncture Wounds and any wound beginning with C (Contusion. Crush. etc) and use Packing Bandages for everything else.

COMMON WOUNDS

- **Abrasion:** Common/Low Priority. Occurs from rope burns falling, etc. when skin is rubbed away from a rough surface.
- **Avulsion:** Fairly Common/High Priority. Missing piece of flesh from shrapnel, gunshot, crashes, explosions.
- **Contusion:** Uncommon/Low priority: Forceful trauma under the skin/bruise, occurs via blunt force.
- **Crush Wounds:** Fairly Common/Low Priority: Splitting of the skin or shattering of bone. Occurs from falling, usually parachuting.
- **Cut Wounds:** Uncommon/Medium Priority: Slicing of skin. Occurs from grenades or explosions.
- **Lacerations:** Rare/Medium Priority: Torn wounds with uneven edges. Caused by shrapnel and crashes.
- **Velocity Wound**: Most Common/High Priority: Caused by high-speed foreign objects entering body, usually bullets/shrapnel.
- **Puncture Wound:** Common/Medium Priority: Deep narrow incisions by sharp implements, usually grenade shrapnel.

Casualty triage evaluation as follows: Treat Velocity Wounds and Avulsions first with Abrasions, Contusions, and Crush Wounds last in order of their severity.

Drugs and Heart Rate

Normal Heart Rate is 80 BPM (Beats per minute) Monitor the heart rate when applying the following medical drugs: Morphine. Epinephrine. Atropine.
WARNING: OVERDOSE OF THE ABOVE MAY CAUSE DEATH AND INDUCE COMAS.

Morphine: Used to suppress pain. Lowers heart rate. If patient heart rate drops below 60 BPM and is audible to themselves counter inject Epinephrine.
Epinephrine: Used when heart rate is 60 BPM or lower. Can produce consciousness in event of blackout. May produce cardiac arrest if over-administered. Counter inject with Atropine if heart rate rises above 110 BPM.
Atropine: Only used in extreme cases of Epinephrine-overdose. Lowers heart rate. Will also treat against nerve and chemical agents.

Blood Pressure and IVs

Standard blood pressure is 120/80. Various IVs are available in 250ml, 500ml, 1000ml increments for transfusion which will raise the blood pressure.
Blood & Plasma: Will spoil if left in inventory and must be refrigerated via crate or vehicle. Provides a permanent fix to blood loss.
Saline: Saline solution designed to be a filler. Able to be carried in inventory without risk of spoilage. Will temporarily fix blood loss with small improvements over time. Patient should be continually monitored.

Every 1000ml of IV will raise the blood pressure by 20/10.

Surgery and PAKs

A field surgical kit may be used to permanently stitch close wounds of any kind to prevent reopening.
In the event of serious injuries, an individual may not be able to walk or be unresponsive to all medical care, a Personal Aid Kit (PAK) may be applied, fully healing the individual and removing all wounds. It is recommended that all wounded personnel receive a PAK at all CASEVAC sites even if they are CAT Charlie.

Medical Terminology

CASEVAC: Casualty Evacuation site.	**MIST Report**:
MEDEVAC: Medical Evacuation by vehicle.	Method of Injury
PAK: Personal Aid Kit	Type of wounds
CAT Alpha: Most critical, unconscious,	Report on vital signs
CAT Bravo: Critical, conscious,	Report on treatment given. Bandages, drugs, IVs
CAT Charlie: Stable, specific details	administered.

KIA: Killed in Action **BP**: Blood Pressure	

CHAPTER 7
BATTLE DRILLS

Battle Drills are a staple in soldiering. The concept of Sua Sponte, acting without formal orders, is paramount in ensuring combat success. Soldiers should maintain a high standard of expertise in which they conduct battle drills and be tactically proficient in all of them.

React to Contact

- Unit takes fire or makes visual contact with enemy.
- Calls "*Taking Fire!*" "*Contact!*" or "*Visual."*
- Proceeds to give direction/bearing and distance to enemy. Optional description.
- Unit halts, crouches, and proceeds to cover. Prones if no cover is available.
- Unit deploys smoke grenades if available cover is limited.
- SAW gunner suppresses.
- Unit establishes base of fire. Key emphasis on suppressing enemy Auto Riflemen.
- Unit Leader coordinates with available Artillery/CAS.

Break Contact

- Unit Leader gives order to Break Contact.
- Unit Leader gives direction and distance to regroup at.

- Unit establishes base of fire on enemy positions.
- Unit peels conducting bounding overwatch.
- Bounding team deploys smoke.

Dismount a Vehicle

- Unit Leader gives call for soft or hard dismount.
- Individuals proceed 5m to cover, kneel or prone, and provide 360° security.
- When dismounting a chopper, individuals will provide 360° security in the prone position. Never maneuver to the rear of a chopper.

Provide Security at Halt

- At any halt, individuals will call sectors of fire of their own accord.
- Unit maintains dispersion finding cover and crouches. Digs trenches at leaders request.
- Unit rests weapons or deploys bipods and scans perimeter.

Enter and Clear a Room

- Lead Man will call stacking and entry type: Side Stack - Split Stack - Hook - Cross.
- Weapons will be put fully-automatic.
- Man opposite of door will flashbang/frag if required.
- Entry should be quick. Avoid blocking the door. Turn corners wide not sharply.
- Make appropriate calls *“Contact.” “Clear” “Sweeping left/right.”*

Hook: First man will go right. Second left. Third right. Alternating every man.	Cross: First man will crossover to the opposite side. Second man will go to the other side. Alternating every man.
SIDE STACK	SPLIT STACK
	

REACT TO INDIRECT FIRE/CAS

- Call is given *"INCOMING!"* if indirect, or "*ENEMY CAS!"* "*FAST MOVER!*"
- Unit spreads out maintaining 20 meter dispersion.
- Unit finds hard cover and goes prone. If CAS, unit finds cover and concealment perpendicular to the aircraft. Max dispersion is used.
- Unit conducts status report and evaluates casualties.

REACT TO VEHICULAR ASSAULT

- Call is given *"Incoming Armor!"* or "*Incoming Vehicle!"*
- Unit designated Anti-Tank readies launcher.
- Call is given that Launcher is up "*AT4 Up!"*
- Unit maneuvers appropriately so backblast is clear.

CHAPTER 8
MARKSMANSHIP

Delivering quick, accurate, fires is the key to winning firefights. This chapter will cover ballistic physics, rangefinding, and advanced marksmanship skills.

An understanding of ballistics is necessary in order to ensure accuracy and understand the complex group of variables which contribute to the trajectory of the round. A standard cartridge consists of the primer, brass, and bullet. The primer is a blasting cap which is struck by the firing pin igniting gunpowder within the brass which propels the bullet down the barrel. ArmA only accounts for the bullet assigning it a speed, a weight, an air friction coefficient, and a ballistics coefficient. The weight of the bullet is a factor which influences its stability depending on the barrel twist rate. Heavier weights allow for increased energy.

Ballistics

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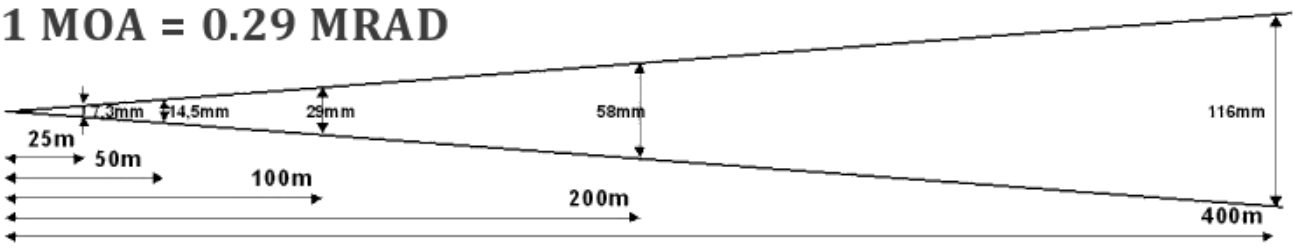
coefficient. The weight of the bullet is a factor which influences its stability depending on the barrel twist rate. Heavier weights allow for increased energy.

MOA

The accuracy of a rifle is expressed in minute of angle dispersion or MOA. A minute of angle refers to an angular arc of 360 degrees and its dispersion over range. One MOA is equivalent to a 25mm or 0.025m dispersion at 100m.

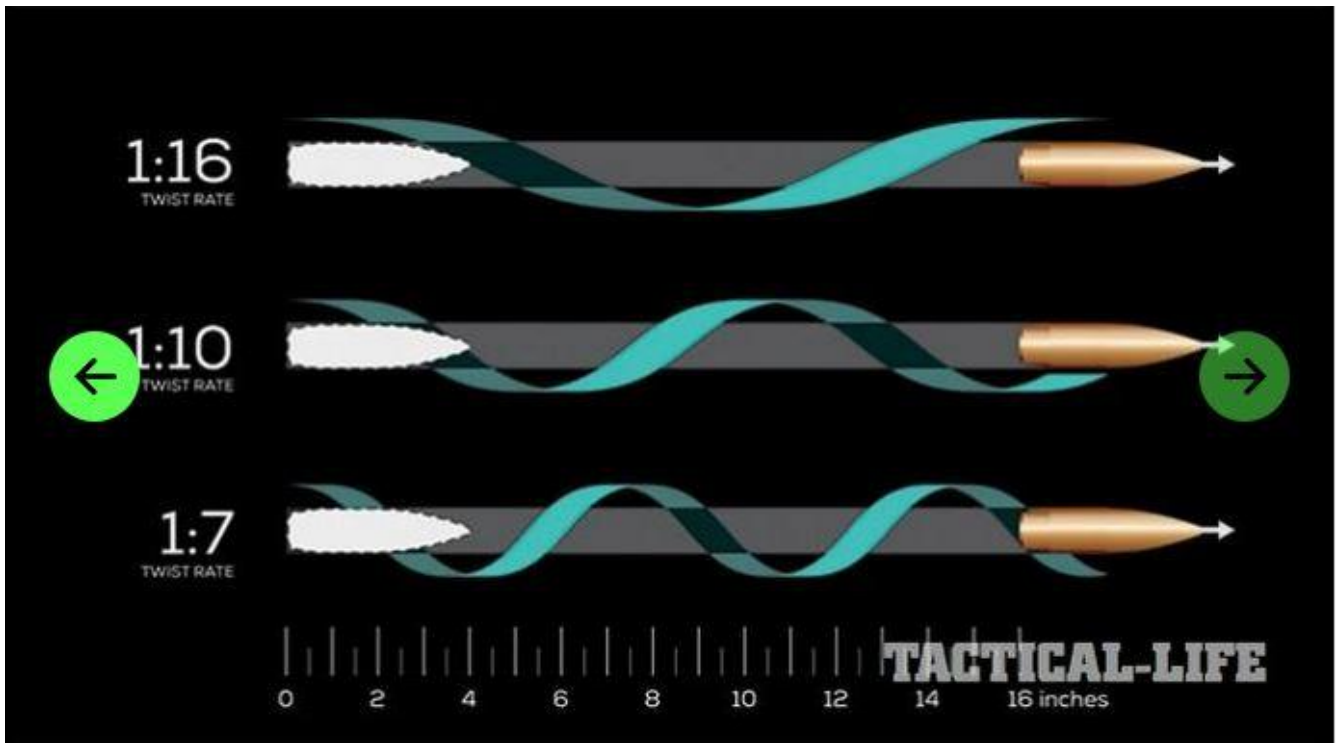


The mechanical accuracy refers to the rated accuracy of the rifle and the ammunition. For example, a rifle may be rated at 0.5 MOA, but the ammunition may be over stabilized and only capable of 1.1 MOA, the ammunition is a limiting factor. The intrinsic accuracy is the combination of the rifle, the ammunition, and the ability of a shooter. The intrinsic accuracy is determined by the worst of these components. Having a rifle rated at 0.5 MOA is superfluous if the shooter is only capable of 3 MOA.

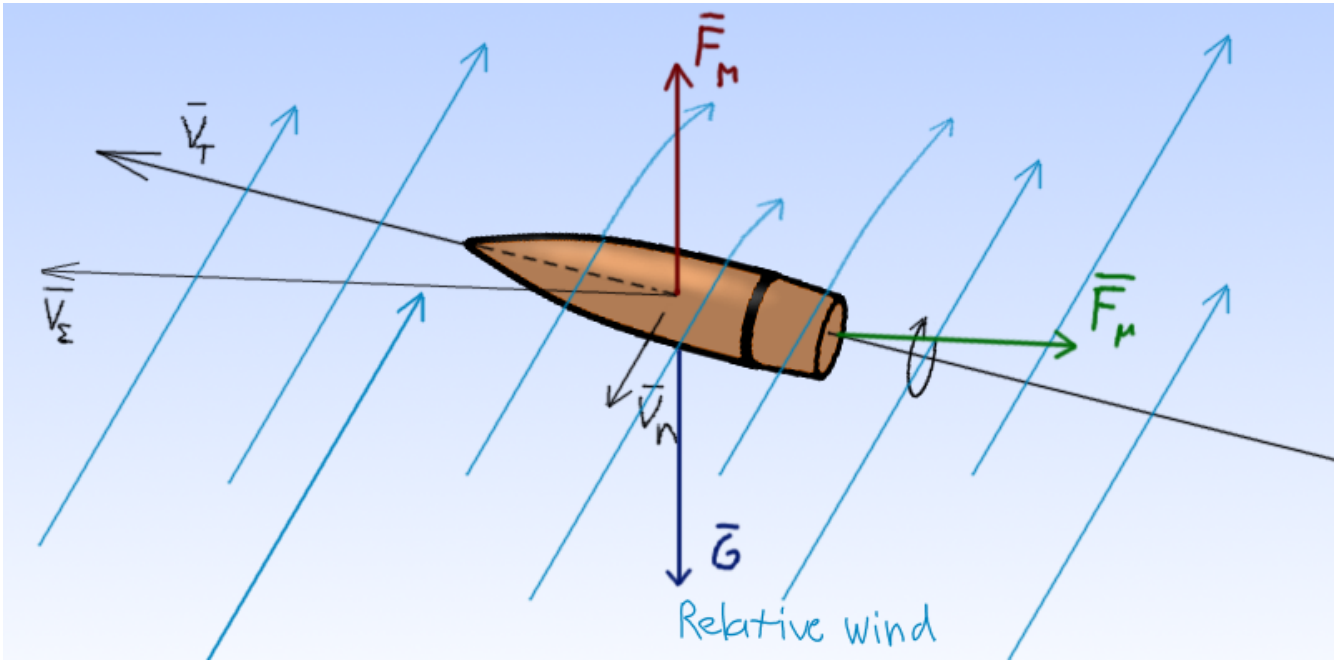
A rifle is considered ineffective beyond the distance a carefully fired shot is guaranteed to strike the target. For our purposes, we will measure the effective range of a given weapon system based off of the relationship between mechanical accuracy and the width of a human target, 500mm or ½ meter. Given a variety of atmospheric conditions, the cant of the firing position, and the shooter's own tendency to aim left or right of center mass, there is a fair chance that the shot will pass to either side of the target.

Gyroscopic Stabilization

The twist rate consists of rifled helical grooves in the barrel which imparts spin to the bullet. This spin gyroscopically stabilizes the projectile, improving its aerodynamic stability and accuracy. Twist rate is reported in terms of cycles per distance. A 1:7 twist rate refers to one revolution per seven inches of barrel length while a 1:12 refers to one revolution per twelve inches of barrel length. A higher twist rate means that the bullet will spin less over a given barrel length. Generally, a slower twist rate is suited for heavier rounds while higher rates are suited for lighter rounds. However, if a round is either under or over stabilized, it will experience greater dispersion, drag, and drop.



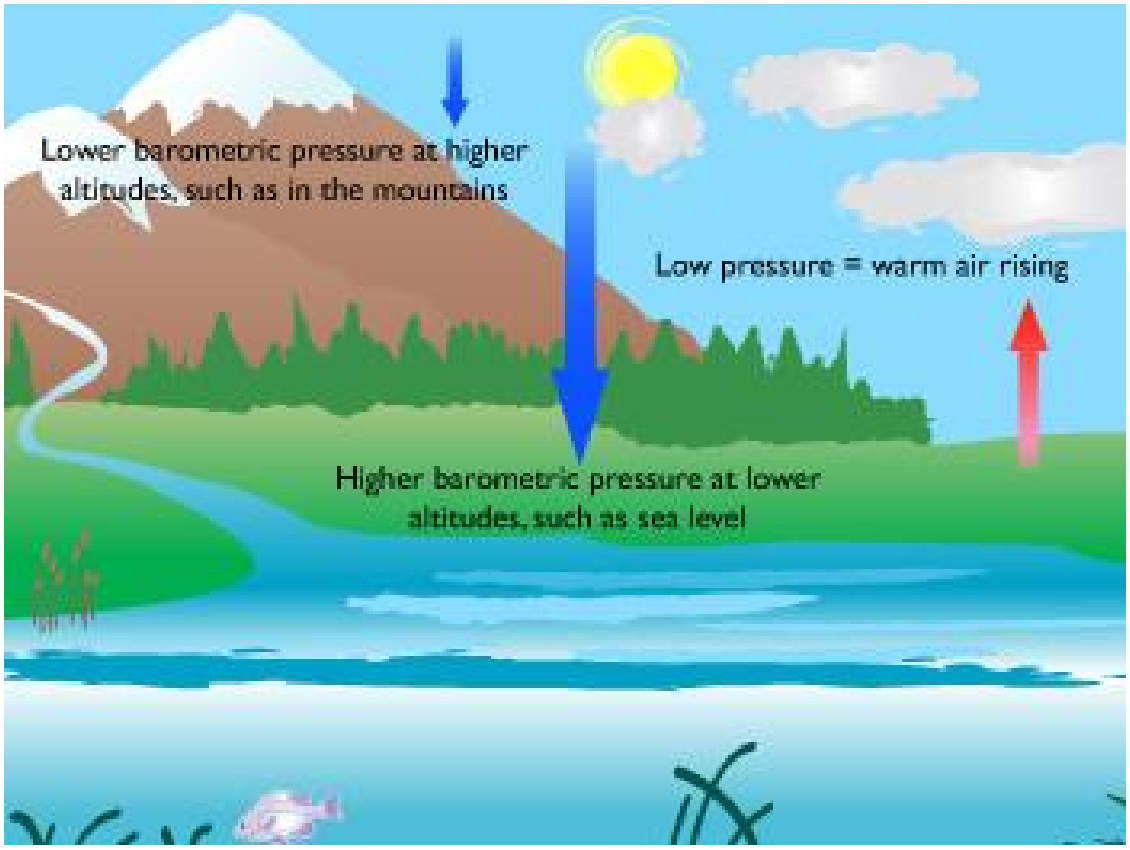
The Magnus effect is an observed deviation in trajectory caused by spin on a ball or cylinder causing it to yaw. A spinning bullet is sometimes subjected to crosswind blowing from either the left or right. Even without crosswind, under or over stabilization will cause the nose of the bullet to point in a slightly different direction than the direction of travel. Various factors add together to influence the yaw angle of the round. If the bullet twists towards the axis of flight it decreases yaw thus increasing stability, however if it twists away from the axis of flight it increases yaw thus decreasing stability.



Atmospheric Conditions

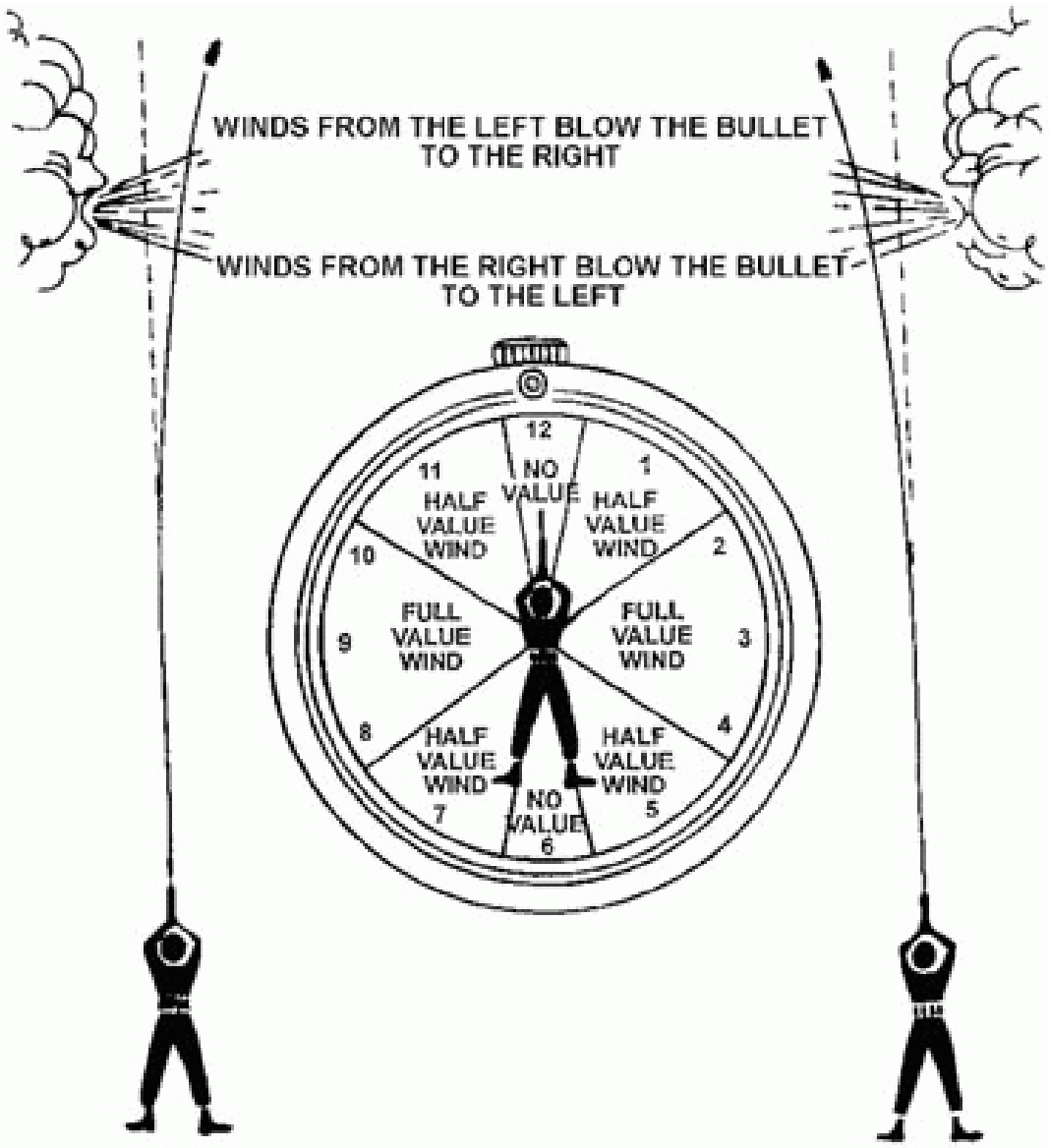
The ambient barometric pressure refers to the density of the air. A lower pressure will result in less drag increasing energy retention. This does not mean that muzzle velocity increases, but rather the bullet retains velocity at a greater rate. Barometric pressure is influenced by altitude, humidity, and the heat index. There exists less oxygen at higher altitudes and thus a decrease in air density and pressure.

A higher heat index can contribute to muzzle velocity increasing the rate at which the powder burns. ArmA compensates for this by assigning a muzzle velocity to the bullet. Thus in hot weather such as in the desert, rounds will travel faster and farther as the heat causes the air to expand decreasing barometric pressure. Generally, the higher in altitude, the lower the heat index. Between altitude, barometric pressure, and temperature, these three form a matrix which all influence one another at various rates.



An increase in relative humidity decreases air density as the molecular weight of dry air is greater than that of water. Humidity will also affect the burn rate of powder, increasing at lower values or decreasing at higher values, muzzle velocity.

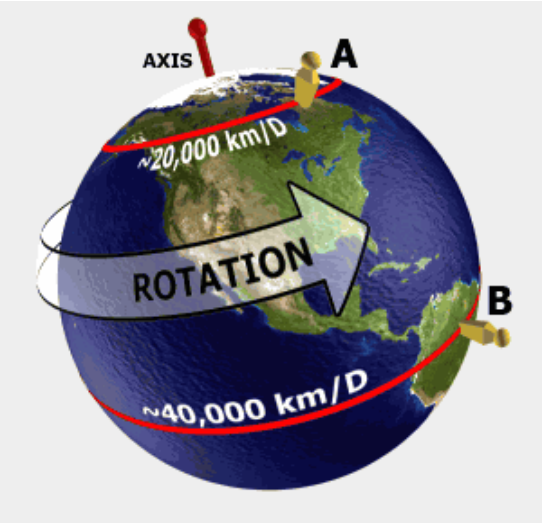
As earlier stated, wind will affect the trajectory of a round. A headwind can increase or decrease energy retention and influence yaw while a crosswind can push the round left or right and influence yaw. Wind speed varies with altitude and is not a constant static phenomenon. A round may exit the bore at a 3m/s east crosswind at the shooter's position and travel 200m down a street with no wind as it is blocked by buildings and then experience a 1m/s west crosswind the rest of the way to the target. Shooters should zero according to the relative wind speed at their position, observe the fall of shot, and adjust as necessary.



CLOCK SYSTEM

Gravity

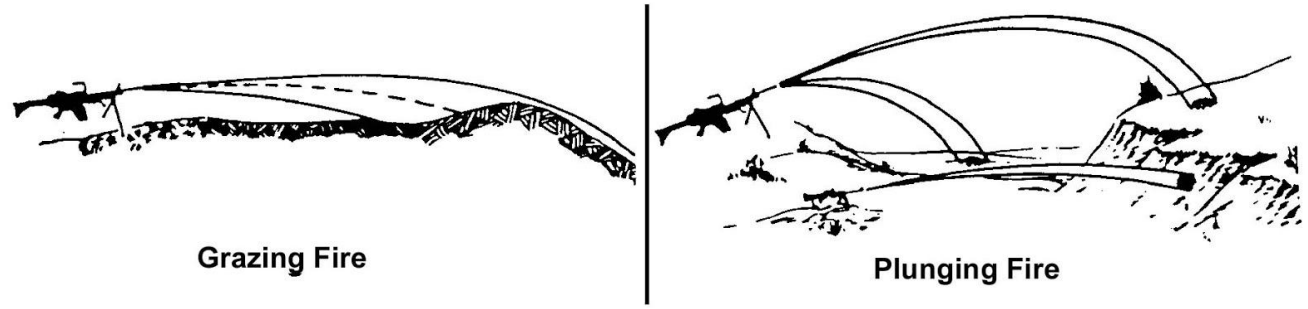
As the bullet exits the bore, ArmA immediately begins to apply the force of gravity causing the round to drop towards the ground. In colloquial terms, slower bullets will experience greater drop at range. This is not to say that gravity affects the round less, but rather in the given period it takes the round to drop a given distance, it will travel further. In theory, gravity affects all projectiles at the same rate. However, as the Earth rotates counter-cockwise from west to east there is a subtle change in gravity known as the Eötvös effect. Firing eastward in the direction of the Earth's spin will decrease the effect of gravity on trajectory making the round behave lighter, while firing westward will increase the effect of gravity making the round behave heavier.



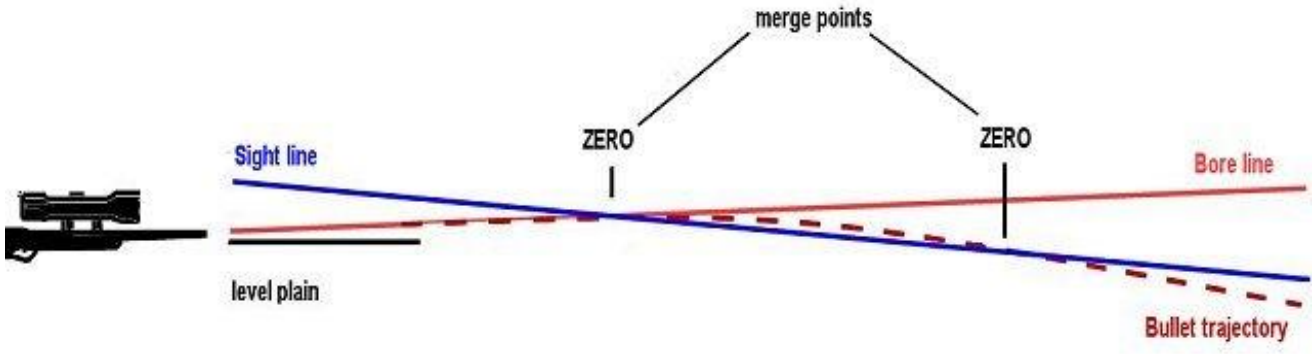
As the Earth is spinning, this means that all targets are co-rotating with the earth making relatively still targets, moving targets. Thus, the projectile must be aimed at the point where it and the target will arrive simultaneously in a rotating frame of reference. This is known as the Coriolis effect, the effect of the Earth's diurnal rotation on trajectory. This can cause the trajectory to shift parallel or perpendicular to the target.

All bullets travel in a parabolic arc thus acquiring a zero is a matter of determining and maintaining the correct elevation. While the arc tends to be flat at short to medium ranges, it dramatically increases at long ranges. This makes maintaining a proper zero extremely important as the round impacts vertically rather than horizontally. A 100 meter zero may accurately hit a target at 300m slightly lower of the point

of aim, however a 800m zero may fall at the feet of a target a mere 810m away. This is called grazing and plunging fire.

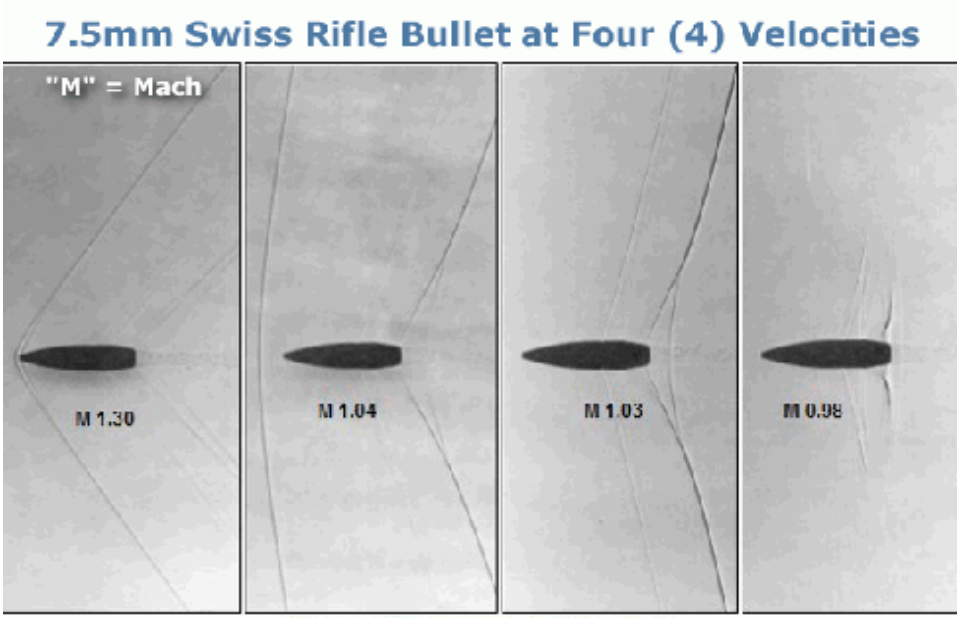


Parallax is the displacement or difference in the apparent position of an object viewed along two different lines. The bullet exits the barrel, however the shooter observes through the scope. Thus the goal of adjustment is to align the crosshair of the scope with the trajectory of the round at a given range to correct for this difference.



Transonic Region

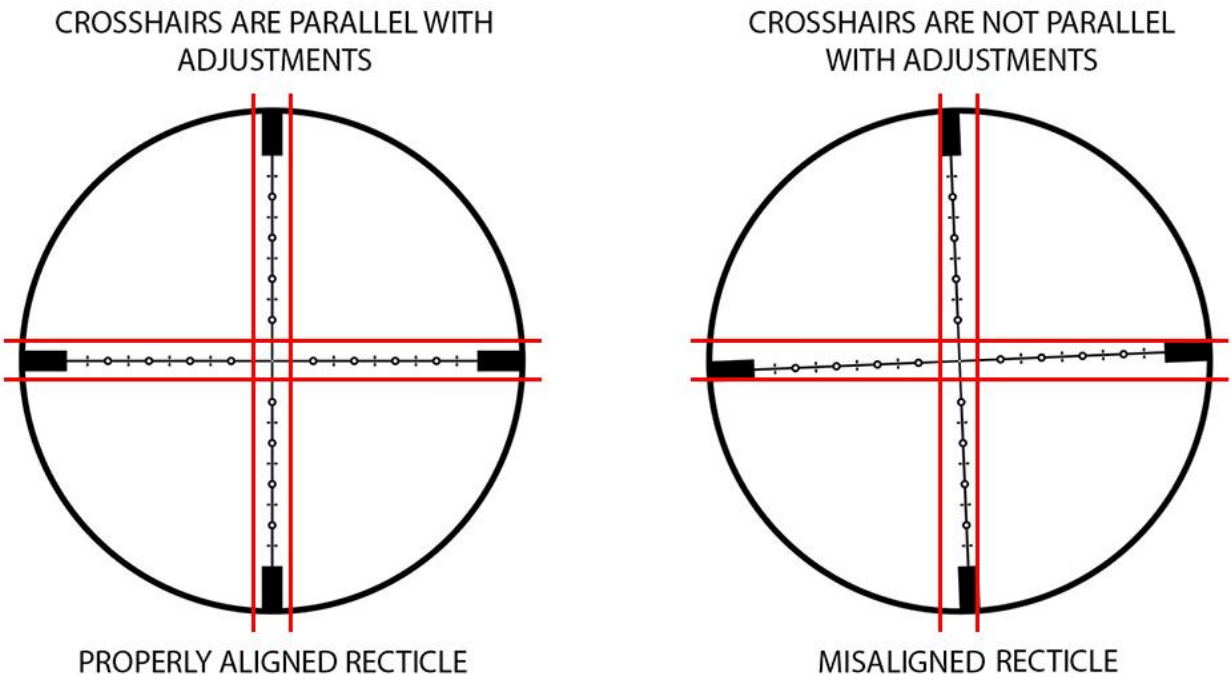
As the bullet experiences drag it will exponentially lose speed over time. When the round enters the transonic region near the speed of sound, 300-400m/s, the center of pressure will shift causing instability. Bullets will experience greater yaw and pitch and may slightly alter trajectory. Bullets which are gyroscopically stabilized at a faster twist rate will experience less instability. Typically bullets that are shorter and have shallow boat-tail angles will track better through the transonic range such as the M118LR round.



Principles of Marksmanship

Four factors are entirely dependent upon the shooter. The position and hold must be firm enough to support the weapon. The weapon must point naturally at the target without any undue effort. The sight alignment must be correct. The shot must be released and followed through without disturbance to the position.

When firing from the prone supported position the shooter will be positioned according to the inclination angle of the terrain. This can result in a crooked sight picture which is skewed either to the right or left which dramatically affects the trajectory of the round given that the parabolic art is proportional to the adjusted parallax between the bore and the scope. This is referred to as canting. The slope angle of the terrain may also prevent the shooter from raising his weapon up high enough in order to engage targets. A SSWT Kit, a portable shooting stand, may be deployed to provide a stable firing position on uneven terrain. Otherwise, the shooter should adopt the most stable stance, generally the most lowest stance possible, resting his weapon on anything that is available. The shooter should be aware that while his scope may clear a given obstacle, the bore may not, resulting in the round impacting the ground or an obstacle in front of the shooter.



A proper sight picture must be established as the round will impact at the point of aim. In the event that a proper zero is not achieved, the round will impact at a point otherwise than the point of aim. Before firing, the shooter should take a mental image of the sight picture. This ensures proper follow through on subsequent shots. The shooter should immediately aim at the prior point of aim and observe the fall of shot. If the shooter observes that the shot impacted two mils left and one mil up, the shooter can use the mil-dots to visualize the true point of aim. The shooter's focus should not be on the crosshair, but instead on the target. Each target has two critical kill zones, the head/neck and the pelvis. Contrary to popular belief, shots to the pelvis will produce greater damage than shots to the head. The head may also be protected by a helmet, however there is no body armor that covers the pelvic region. In order to ensure maximum accuracy, the shooter should generally aim center mass as if the round falls short or high it will impact a critical kill zone.

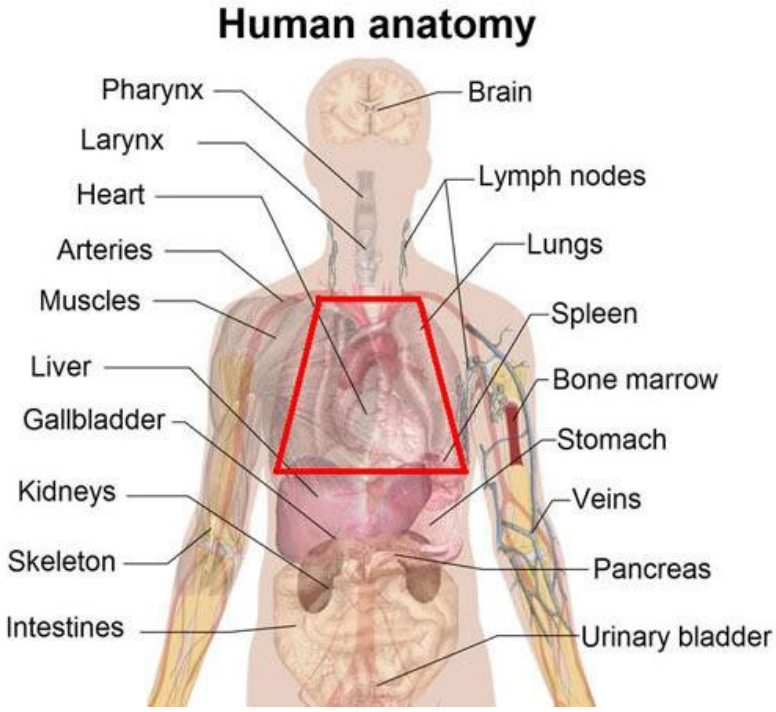
The user's stamina, influenced by breathing, will affect ambient sway. When the shooter breathes in the sight will rise, when he breathes out the sight will fall. By holding the right mouse button, the shooter will hold his breath thus stabilizing his sight picture and negating sway. The shooter should hold his breath at the natural respiratory pause immediately after exhaling. If the user is injured, he will experience greater weapon sway until properly treated.

The shooter should make sure that his mouse is properly adjusted. His elbow is comfortably wrested on an armrest, with his thumb and pinky finger resting gently on the sides of his mouse. The shooter should remain calm and click using the tip of his finger rather than the whole finger. He should avoid the tendency to move his hand and thus moving the mouse as he fires, skewing the point of aim. He may also assign a keyboard key as a secondary fire button. Though it can take time to get used to, the human brain works more effectively when both the right and left hemispheres are engaged.

Anatomy & Shot Placement

Just as important as hitting the target is how the target is hit. For general purpose, shooters should aim at the Sternocostal Triangle outlined below which contains the heart, lungs, lymphatic nodes, and two major arteries. Direct hits to the Sternocostal Triangle will induce death in unarmored targets. In the event that the shot hits lower or higher than expected, it will impact the neck/head or the exposed pelvic region.

Many body armor systems protect the Sternocostal Triangle, however leave the pelvis, stomach, and face exposed. Headshots should always be aimed between the eyes at the brainstem. Any shots impacting higher than this will produce severe wounds, but may not be fatal, or mitigated by a helmet. When firing at a target from the side, aiming for the top of the ear will produce a fatal shot. The pelvic region bordered by the groin and the stomach contains numerous arteries including the femoral artery. There is no body armor which protects the pelvis. Even with small caliber rounds, shots to the pelvis are instantly fatal. The Sternocostal Triangle, the Head, and the Pelvic Region are known as critical kill zone.



Ammo Config Table

ROUND	SPEED	MASS	DAMAGE	AIR FRICTION	BALLISTICS COEFFICIENT
5.56x45mm Ball	750m/s	4.0176g	8	0.00126466	0.151
5.56x45mm MK262	836m/s	4.9896g	11	0.00109563	0.361
5.56x45mm Mk318	886m/s	4.0176g	9	0.00123318	0.307
5.56x45mm M995AP	869m/s	4.5359g	6	0.00123272	0.310
5.45x39mm AK74	880m/s	3.4279g	7	0.00114744	0.168
7.62x51mm Ball	883m/s	9.4608g	9	0.001000957	0.2
7.62x51mm M118	790m/s	11.34g	16	0.00082828	0.243
7.62x51mm Mk316	790m/s	11.34g	16	0.00082029	0.243
7.62x51mm Mk319	900m/s	8.424g	14	0.00102338	0.377
7.62x51mm M993AP	910m/s	8.2294g	11	0.00107148	0.359
7.62x51mm Subsonic	320m/s	12.96g	6	0.00049899	0.235
7.62x39mm Ball AK47	716m/s	7.9704g	12	0.00151621	0.275

Energy Retention Table

ROUND	75% ENERGY	50% ENERGY	25% ENERGY
9x19mm Parabellum	150m	350m	600m
5.56x45mm NATO*	200m	550m	1100m
5.56x45mm Mk. 262	250m	600m	1200m
M249 Belt	200m	700m	1400m
7.62x51mm Mk. 17	400m	700m	1400m
7.62x51mm M118LR	350m	850m	1700m
7.62x51mm M993AP	250m	650m	1300m
7.62x51mm Mk. 316	350m	850m	1400m
7.62x51mm Mk. 319	300m	650m	1700m
M110 7.62x51mm	300m	700m	1400m
M240 Belt	300m	700m	1400m
5.45x39mm AK-74	250m	600m	1200m
7.62x39m AK-47	250m	700m	1400m

***Includes G36 Mag, 30rnd STANAG, BETA-C Mag, Mk. 318, etc**

Barrier Penetration

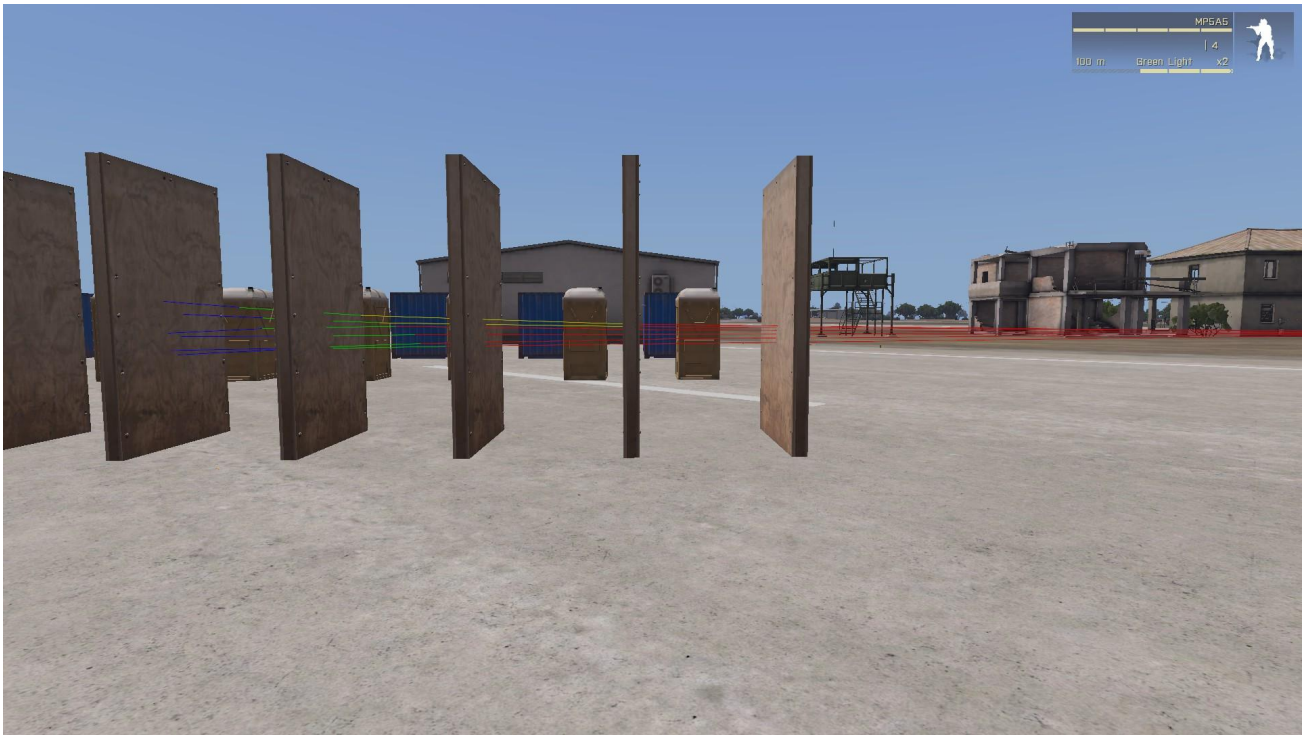
It is an intrinsic response to seek cover when taking fire. Many individuals are unaware of the penetration values of various rounds and their capability to defeat cover.

Many houses found on Stratis and Altis can be easily pierced by 5.56x45mm M995 AP or 7.62x51mm rounds. A single sandbag will not stop either of these, however double insulated sandbags will protect against M995 and 7.62 but not 7.62 M993 AP rounds. A distinct advantage that a trained designated marksman has is the ability to deliver accurate fire through cover. Shooters should be aware of the capabilities of their weapon system and may choose to include a magazine of barrier penetrating AP rounds in their standard loadout.

As AP rounds have a tungsten or steel core, they are significantly heavier than rounds of the same cartridge, they experience more drag, and thus deal less damage.

PENETRATION VALUES TABLE

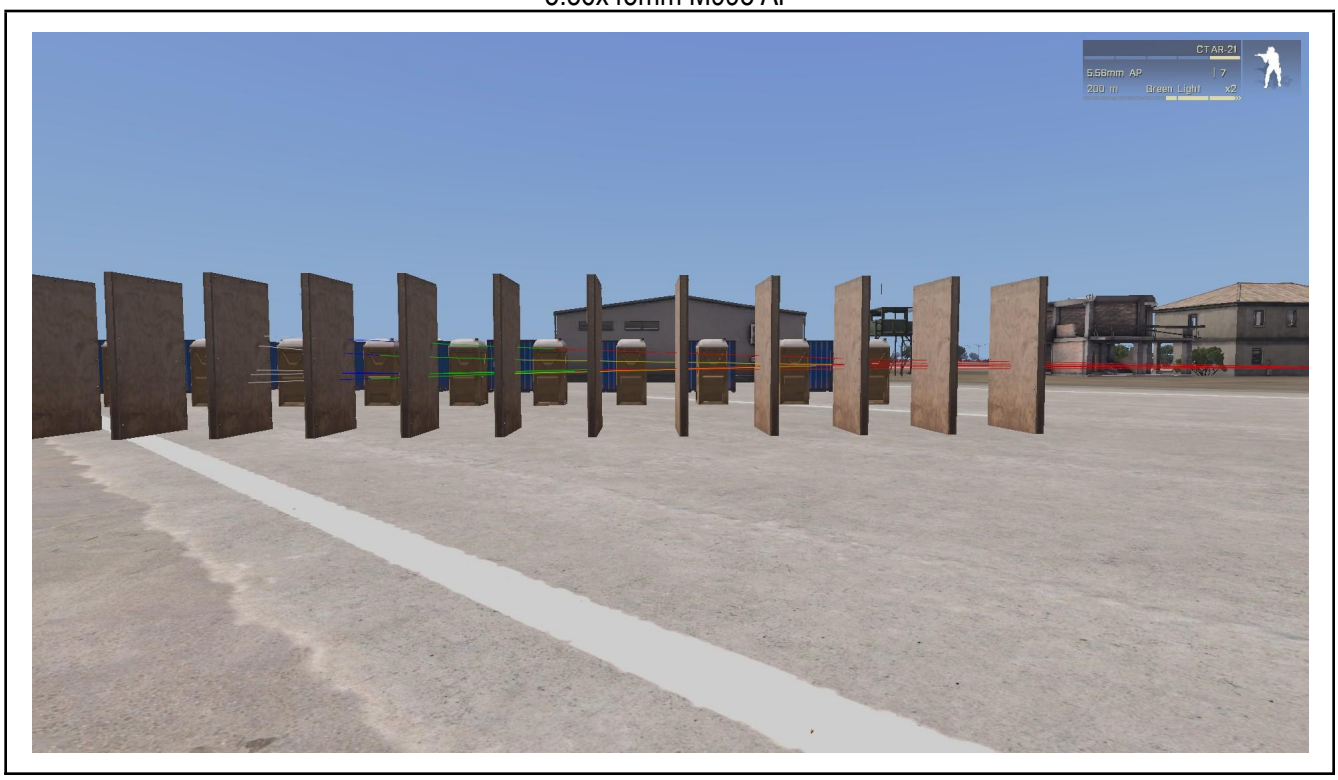
9x19mm Parabellum



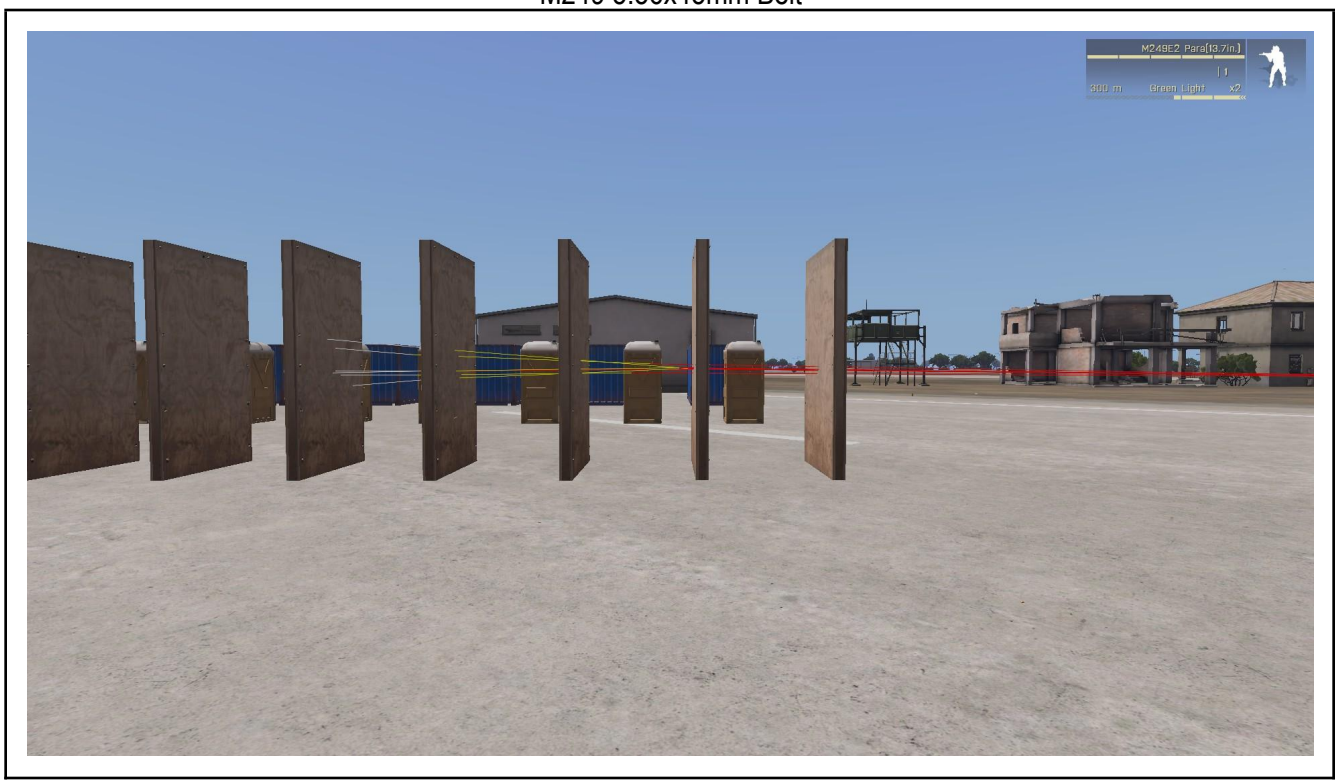
.45 ACP

5.56x45mm NATO - Mk.262/318, IR-DIM, Beta-C, G36, etc.

5.56x45mm M995 AP



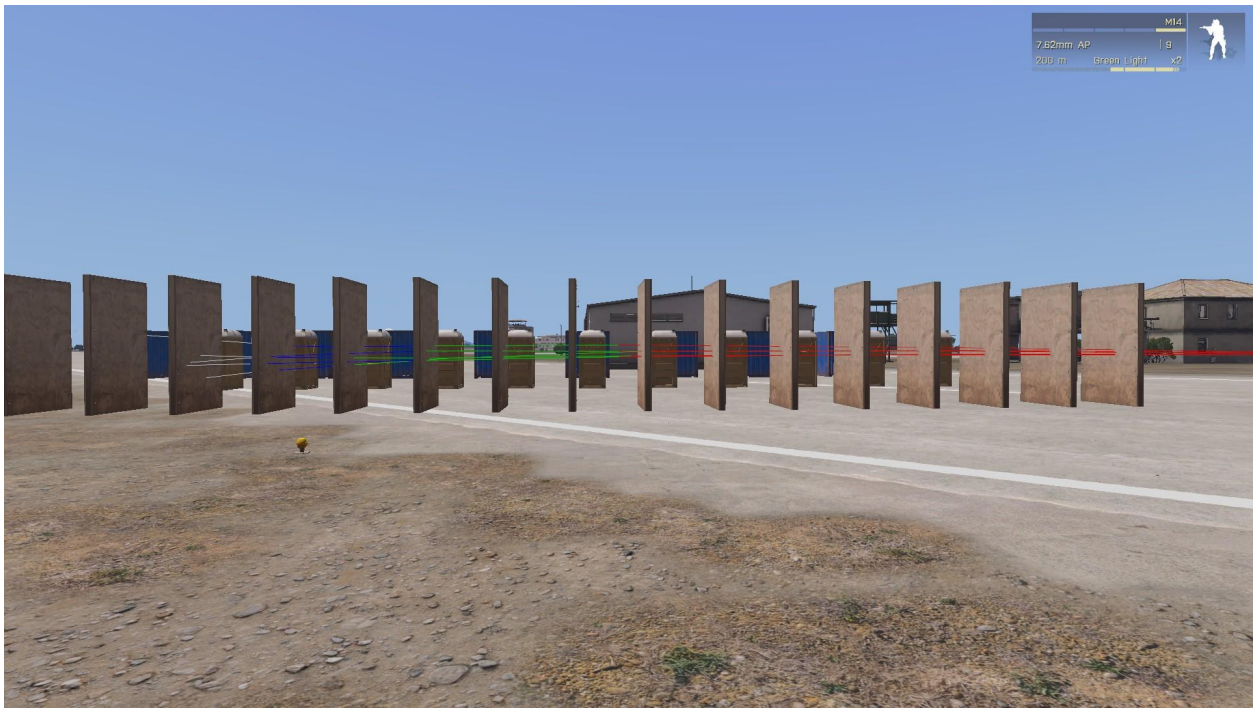
M249 5.56x45mm Belt



7.62x51mm NATO

7.62x51mm Match (M118LR, Mk316/319, M110, M24.)

7.62x51mm M993 AP



M240 7.62x51mm Belt

5.45x39mm AK-74/RPK

7.62x39mm AK-47

PKM/PKP 7.62x39mm Belt

12.7x99mm NATO / .50 BMG

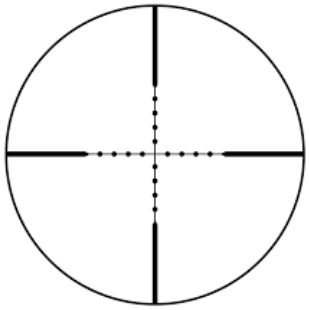
Rangefinding

Range can be found using the Vector 21B Rangefinder, or manually via the use of a MilDot Scope.

To use the Vector 21B, hold R for a few seconds until the range is found. For target bearing, hold tab.

The MilDot reticles on various scopes can be used to determine the range to target.

Example of MilDot Scope



Calculations Table

The following equation can be used to find the range to target.
TARGET HEIGHT IN METERS x 1000 / # of Mils

All infantrymen are a standard height of 1.8 meters - To measure the range to a man, simply divide 1800 by the number of mills.

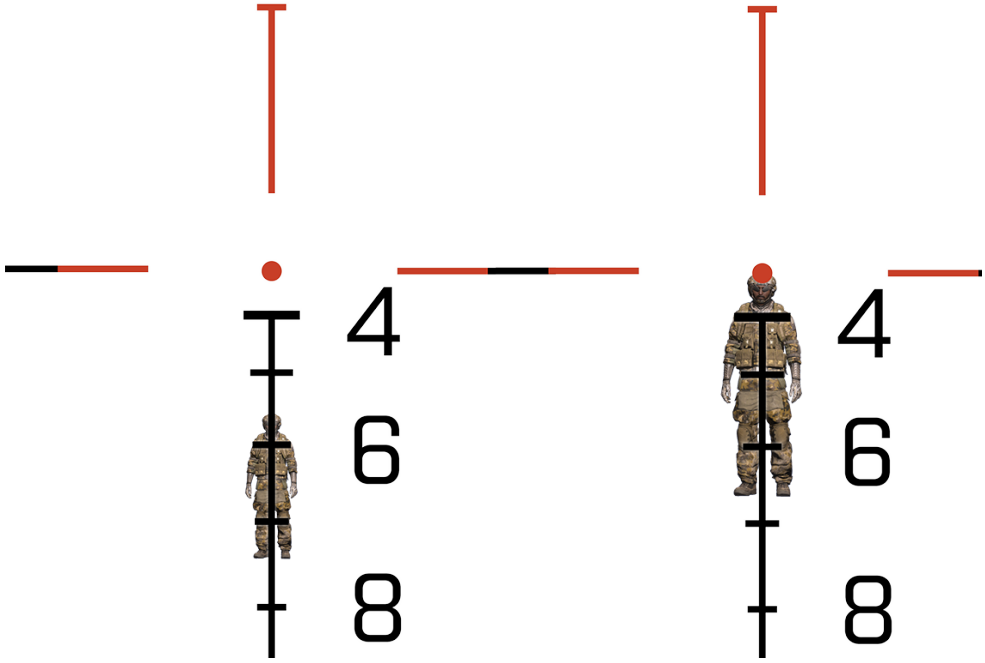
For example, an infantryman three mildots tall will be 600m away.
On several scopes the distance between MilDots is not exact and a factor must be added to the equation.
LPRS - 1.31
Khalia - 1.31
Leupold Mk. 4 - 1.2
MOS - 0.44
Nightforce - 0.5 (Or 1.0 using the larger rungs)

For example: Using the LPRS scope, the equation to find the distance to an infantryman 3 mills tall would be 1800/3 giving us 600 * 1.31 = 786 meters. Zooming in does not change the MilDot range.

ACOG

The ACOG scope comes with its own manual zeroing. Each rung represents the shoulder width of a man and holdoff at a given range. This may not be precisely accurate with non-5.56mm weapon systems. Each rung represents 0.5m at the given range.

For example: an infantryman at 600m, his shoulder width will fill the rung next to the 6 in the graphic below.

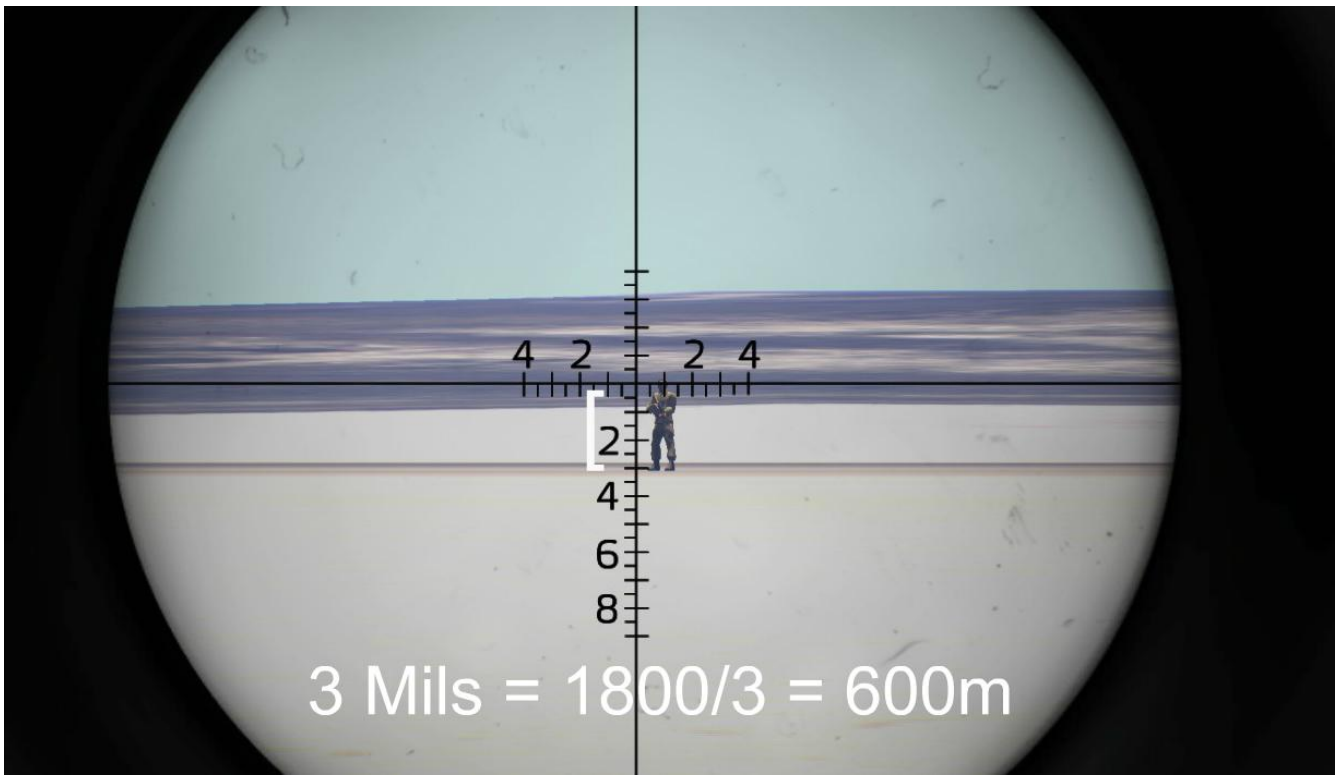


Laser Rangefinding

The most simple way to determine range to the target is by use of a laser rangefinder. The laser should be aimed precisely at the target to prevent a reflection off of the foreground terrain. The shooter may wish to take multiple readings to ascertain correct measurements. At longer ranges, it may be necessary to lase a nearby large object such as a building or vehicle.

Stadiametric Rangefinding

A variety of stadiametric techniques exist in order to determine the range to target. As previously noted, the AMS optic has ½ mil increments. One can determine range by dividing 1800 by the number of mills in proportion to the height of the target. For example, a distant target which is 3 mils tall is 600 meters away.



Cheat Sheet

RANGE	**MILS**
200m	9
300m	6
400m	4.5
500m	3.5
600m	3

Acoustic Rangefinding

Sound and muzzle velocity can be used to determine the range to target. Sound travels at approximately 350m/s. By observing through an optical device the enemy's muzzle flash and then counting in seconds the time it takes to hear the report of the rifle, range to target can be determined. For example: If I observe the enemy firing but hear the report of the rifle three seconds later, I know the target is 1000m away.
If the muzzle velocity is known, the supersonic crack or impact of the bullet may also be used. The most commonly used round is the 5.45x39mm AK74 rated at a muzzle velocity of 880m/s. It enters the transonic region, where the supersonic crack is no longer heard, at 600m. For example, If I observe the muzzle flash and a half second later I hear the supersonic crack, I know the target is 400m away. If I observe the muzzle flash and a full one second later see the impact, I know the target is roughly 800 meters away. At such a range, the 5.45 round is no longer supersonic.

Observational Rangefinding

By determining which features are distinguishable on a human target, the range may be approximated according to the following table.

100m: Facial features, arms, and feet are clearly distinguishable.
200m: Head, torso, and legs are seen. Minor gap between legs visible.
300m: Upper and lower bodies distinguishable.
400m: Upper and lower bodies indistinguishable. Color indistinguishable.

Coincidence Rangefinding

By using basic trigonometry, the range to the target can be found through parallax coincidence by two observers. Coincidence refers to the point at which two observers intersect. In order to determine range via coincidence, determine the range between observers, this is the value of C. Through use of a lensatic compass, determine the angle between the target and the other observer, this is the value of A. Communicate with the other observer to determine the value of B.

For example, Observer 1 measures a bearing of 50 to the target and a bearing of 138 to the other observer. The difference between these is the angle of A: 138 - 50 = 88 degrees.
Observer 2 measures a bearing of 44 to the target and a bearing of 318 to the other observer. As the compass restarts after 360 degrees, by adding 44 to the difference between 318 and 360 you can determine the value of B. 360 - 318 = 42 + 44 = 86 degrees.

The distance between observers is 45m, the value of C. By plugging in A, B, & C into the Angle-Side-Angle calculator, the range can be determined which is 430m.

Angle-Side-Angle Calculator

Point of Reference Rangefinding

Many movements and engagements occur in the vicinity of roads. Many modernized areas feature regular intervals of power lines and mile markers. Both, illustrated below, are always 100m apart from adjacent objects of the same type. Given the targets relationship with either of these markings, one may simply count lines or markers to approximate the range to a given target.

Cartography

While viewing a map is fairly straightforward, understanding how to effectively utilize all available features requires specialized knowledge. The Military Grid Reference System is the geocoordinate standard used to locate specific points in space. These grids are arranged in a standard XY coordinate plane with the horizontal axis known as Easting and the vertical axis known as Northing. Grids should be read with the Easting first followed by the Northing. Depending on the level of detail, grids will be arranged according to numbered digits representing the area in which they cover. The smallest level of detail available are eight digit grids. Ten digit grids can be approximated by heuristics, or determined using an advanced GPS receiver.

Explanation of Digit Grids

2 digits - 10 km - 11

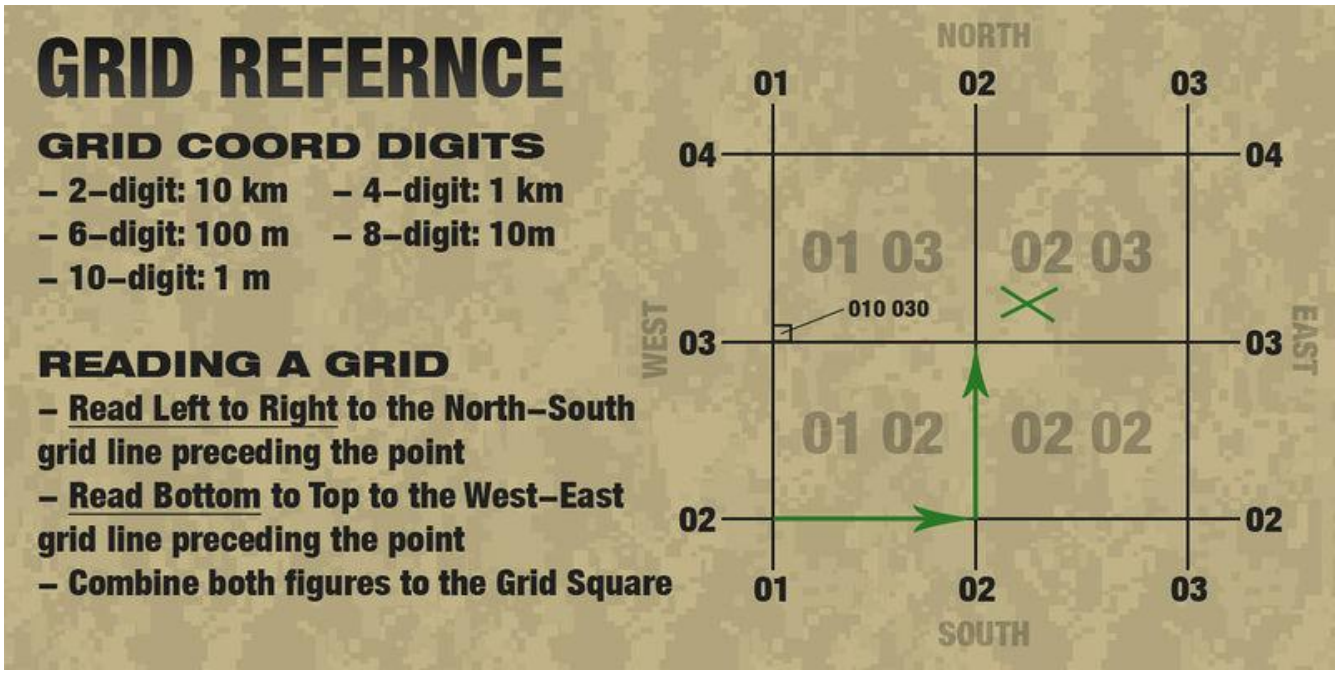
4 digits - 1 km - 1812

6 digits - 100 m - 183126

8 digits - 10 m - 18351266

10 digits - 1 m - 1835512666

Instead of a ten digit grid, one can give an eight digit grid with a corresponding numpad designation.
EX: Grid 18351266 numpad 9 would refer to the top right corner of the grid. Numpad 1 corresponds to the bottom left.



Various symbols exist to designate key structures and road conditions. Contour lines are solid or opaque red lines showing terrain relief and elevation. Contour lines represent an approximate ten meter increase in altitude over a given range. The closer contour lines are located, the steeper the incline. Two types of contour lines exist:

- Index Lines: Starting at zero elevation or mean sea level, every fifth contour line is a heavier index line.
- Intermediate Lines: The four contour lines falling between the index contour lines are called intermediate contour lines and are spaced at the contour interval.

At various intervals, the elevation of various points will be displayed and can also be used to determine the exact spot elevation.

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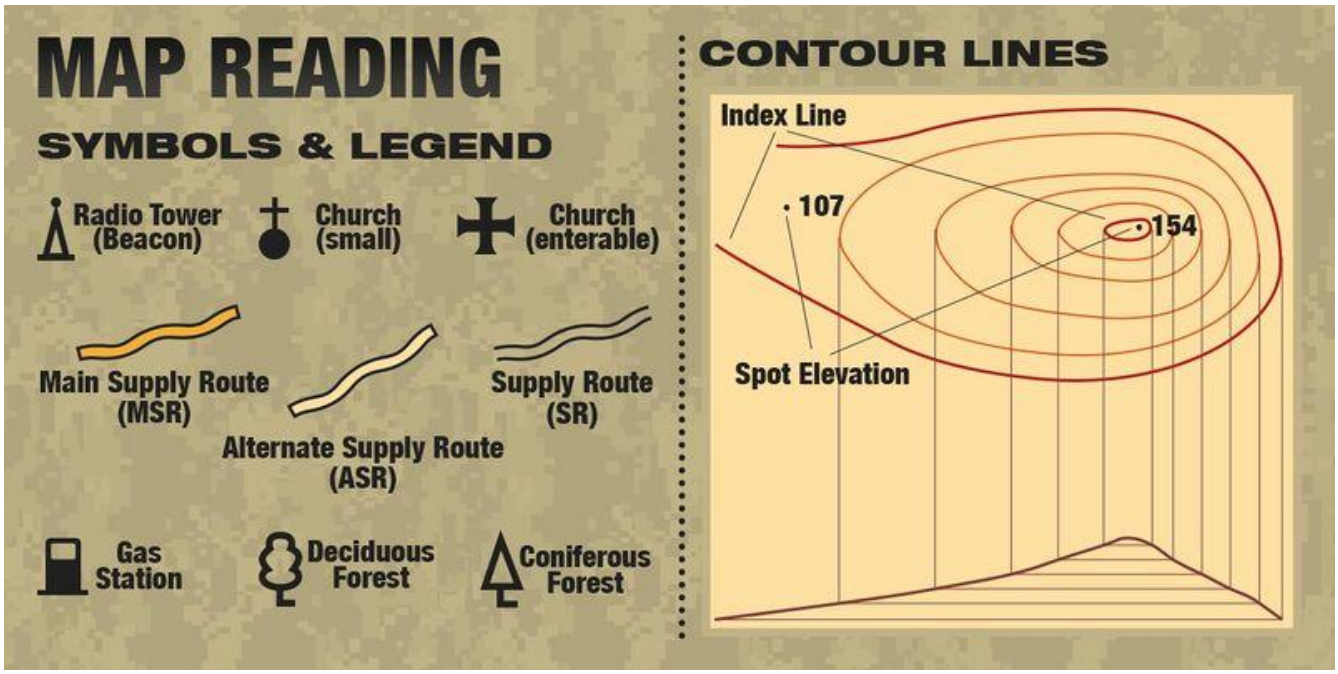


Iron Sights

Many iron sight posts tend to obscure the target at ranges over 400m. This can prevent the shooter from acquiring a proper sight picture and accurately strike a critical kill zone. A technique to overcome this is to aim at the feet of the target and zero 100m past the target. This allows the round to strike high from the point of aim thus impact center mass. In the picture below, a 500m target is engaged by aiming at his feet and zeroing for 600m.

Compensation at 500m

ATRAGMX

The ATRAGMX is an advanced ballistics calculator which synchronizes with various advanced optics. The ATRAGMX is capable of giving an accurate zeroing provided that the input is correct.

USAGE

[USER MANUAL]

- Ensure that M is highlighted in black in the top right corner. This sets the calculations to Metric.
- Hit GunList in the bottom left and select your weapon system.
- Hit TARGET in the upper right and input range, windage, and hit done. Windage is 1. Headwind. 2. Crosswind.
- Input Wind and Elev in the bottom left to your scope.
- Fire and adjust as necessary.

In the upper right, RC can be used to view the range card for quick range calculations.
NOTE: The ACE team has scrambled the rounds. We are working on a comprehensive list to clear confusion.

M16 / M4 Rifle

The M16A2/A4 and M4A1 are standard issue 5.56x45mm NATO assault rifles. The M16 sports a 20in barrel and a muzzle velocity of 945m/s, while the M4 sports a 14.5in barrel and a muzzle velocity of 905m/s. Both are rifled with a 1:7 twist. The M16A2 is rated at 4.5 MOA accuracy at 100 meters. The M16A4 at 3.5 MOA accuracy. The M4A1 at 4.83 MOA accuracy. A specialized version designated the M4A3 exists with a 1:9 twist, a 16in barrel, and is rated at 4.38 MOA with a muzzle velocity of 934m/s. Given that the average man is 1.8m tall and 0.5m in shoulder width and 1 MOA is equal to 0.025m at 100m, the M4A1 will have a 0.5m dispersion at 400 meters meaning that shots may pass to either side of the target. The maximum effective range of the M16A2 is 420m, the M16A4 is 540m, and the M4A3 is 430m. The M16 is a select fire weapon between semi-automatic and burst-fire and is rated at 90rpm. The M4A1/A3 is a select fire weapon between semi and fully automatic and is rated at 853rpm. The weapons possess innately low recoil, however an initial muzzle rise is present. When fired on burst or fully automatic, the muzzle will rise dramatically after the first shot and then stabilize. At 30-60 meters, both the M16/M4 will rise a full meter and stabilize, thus initial shot placement should be aimed at the pelvis, allowing the rifle to stabilize in a center mass hold and preventing an overshoot. At 100 meters with the M16 on burst fire, aiming for the left foot of the target will produce a center mass hold due to the tendency for the recoil to move up and to the right. With the M4, aiming between the feet of the target will produce a center mass hold. In fully automatic fire, the initial round will strike the point of aim while subsequent rounds will stabilize one meter above. This is not to say that the weapon sights are misaligned, but rather after the second shot, the sights will be aligned one meter above the target during recoil. Burst or fully automatic fire should not be used past 100 meters unless a stable firing position is obtained to mitigate recoil. During fire, the recoil of the M16 pulls up and to the right approximately 1m by 0.25m respectively. The M4 pulls up one meter with minor dispersion to the left or right and is not as easily predictable.

M249 Squad Automatic Weapon

The M249 SAW is a light machine gun based upon the FN Minime. It has a cyclic rate of fire rated at 800rpm and is primarily used in a suppressive role. The muzzle velocity is 753m/s and its rated accuracy is 3.82 MOA giving it a maximum effective range of 500 meters. It should be noted that suppressive range far exceeds the effective range. For every 500m, the dispersion of the M249 increases by 0.5m. EX: At one kilometer dispersion is one meter. The M249 has a 1:12 twist and accepts 200/100 round boxes of standard M855 5.56x45mm ball. Regular 30 round STANAG style magazines are also accepted, however this increases the chance of jams. The M249 can cyclically fire up to 400 cyclic rounds before overheating may induce jams. Operators should continually check the barrel temperature and swap out as required. Despite differences in barrel length, all variants of the M249 have the same barrel twist and muzzle velocity. During suppressive fire, users of the M249 should fire in short, controlled, five round bursts in the vicinity of the targets. Fully automatic fire without pauses decreases accuracy. If the target is behind cover, rounds should be fired over/around the cover rather than into it unless penetration is possible. Sustained suppressive fire should be maintained at a rate of fire of 100rpm, with rapid suppressive fire at a rate of 200rpm.

M203 40mm Grenade Launcher

The M203 is an underslung 40mm grenade launcher normally attached to the M4/16 rifle. It has a minimum arming range of 15 meters. The standard M441 HE round has a kill radius of 15 meters with a wound radius of 30 meters. The M443 HEDP round has a kill radius of 5 meters with a wound radius of 15 meters. The M443 offers no additional penetration against armored vehicles than the M441. The M203 should not be employed within 30 meters of the operator or friendly positions. It has a maximum angular trajectory of 400 meters and can be zeroed in 25 meter increments from 50-100m, and in 50 meter increments from 100-400m. Differences in elevation and windage may affect trajectory and should be accounted for. Point targets such as windows, bunkers, vehicles, or targets with a single aiming point can be accurately engaged out to 150m. Area targets such as dispersed infantry may be engaged accurately out to 300m.

The M203 is employed tactically on the fireteam level by the Grenadier and Fireteam leader as an area suppression weapon and as a means to defeat cover. It is extremely effective in Urban Environments as streets and alleyways will canalize the blast radius and increase its effectiveness. It can also be aimed above the target at the walls of buildings to produce an airburst effect thereby increasing its lethality.

The M203 may launch a variety of smoke rounds to mask friendly movement, enemy positions, or to direct fires. These have a high chance of bouncing from the point of impact. Smoke should only be fired from a 50m zero in which it will travel an additional 100m past the point of impact. Every 50m increment from then on will increase the trajectory by 100m. Thus smoke can only be employed at a minimum range of 150m in the open, however it may be deployed at closer ranges if terrain features can halt the round.

Flares may be employed with the same trajectory as standard HE rounds. Care should be taken when deploying flares to ensure that they properly illuminate hostile positions or deny them use of NVGs and not blind or illuminate friendly positions. Cluster rounds are primarily used for signalling and will only burn for seven seconds.

The M203 can be used in the indirect fire role. Through use of a protractor and a compass, operators can engage targets via high angle out to 400m. The operator should position himself appropriately, align himself to the target with the compass, and measure his vertical inclination and fire with the protractor. The protractor can be accessed by default via CRL+SHIFT+K. For ease of use, proper alignment is achieved when the red bar is placed on top of the previous number and in the center of the desired angle. The protractor's measurements are not accurate, but are fixed points and serve their function for indirect fire adjustment. At a 50m zero, for every 5° above zero add 100 meters. As an example, a 20° holdoff is required to engage a target at 400m. A 10° holdoff is required to engage a target at 200m.

M9 Beretta

The M9 Beretta is a standard issue 9x19mm Parabellum sidearm primarily given to officers, operators of crew-served weapons, and advanced marksman. It should be employed in a defensive manner as the low stopping power of the round combined with short range accuracy and rate of fire put it at a sharp disadvantage in offensive maneuvers. Users should always fire in two round bursts, primarily aiming for the target's pelvic area, an exposed region between the groin and belly button not normally covered by body armor. A hit to the groin is instantly fatal, while two shots in the region will produce temporary incapacitation. All targets should be assessed if they are either unconscious or dead. Headshots with the M9 are not always lethal and should be avoided in combat aiming.

CHAPTER 9
URBAN OPERATIONS

A wide variety of engagements will involve close quarters combat in built-up urban areas. Due to the nature of the terrain, obstacles, and the presence of non-combatants, Urban Operations will be some of the most demanding and risky operations undertaken. Urban areas mainly consist of man-made features such as buildings that provide cover and concealment, limit fields of observation and fire, and block movement of forces, especially mechanized or armored forces. Thick walled buildings provide ready-made, fortified positions. Urban environments may also complicate, confuse, and degrade the commander's ability to identify and control his forces. This chapter will cover fireteam movement and maneuver techniques, command and control tactics, and other factors necessary for safety and successful operations.

Principles

A common mistake is attacking urban environments at standoff range with significant firepower. This can result in unnecessary collateral damage and a wasteful expenditure of time and resources. Due to the presence of hardened concrete structures, this will negate the effectiveness of indirect and close air support fires and may later inhibit ground operations by providing additional vantage points to enemy combatants. Commanders should only consider such an approach when circumstances require. If collateral damage or non-combatants are not a factor, indirect and air support fires can be used to great effect provided that ground elements circumvent the urban area.

Many modern urban areas are too large to be completely occupied or effectively controlled. Establishing footholds along key MSRs, strategic buildings, or vantage points will allow the commander to focus combat power in mission critical areas. As the Urban environment hosts a plethora of ambush positions, the less you are exposed will decrease the chances of ambush or boobytraps. As you occupy essential areas, this will shift the operations focus from offensive to defensive operations. Defensive operations in urban terrain are much easier to conduct and allow you to establish a significant firepower advantage while maintaining adequate cover. Units should use precision fires to the greatest extent possible while minimizing collateral damage. Usage of high explosives, indirect fires, and anti-tank munitions should be restricted based on the rules of engagement and employed strategically at the commander's discretion. The presence of noncombatants may place additional limitations on the method of engagement warranting non-lethal means such as CS Gas, flashbangs, or decisive placement of smoke in order to separate noncombatants from combatants.

As urban operations are lengthy and time consuming, isolating the area of operations is essential to limit the enemy's capability to reinforce or use the surrounding terrain to maneuver towards your flank. Establishing a security cordon by air or ground will give you control of the battlefield and allow you the greatest freedom in maneuvering your forces. Engaging hostile quick reaction forces in open fields or roads will prove much more effective than in narrow alleyways and tight streets. Even partial isolation provides conditions favorable to the attacker. One must also keep in mind not be isolated themselves as they work to establish a foothold within an urban environment.

Battlespace

The urban environment is split into four separate spaces: Airspace, supersurface, intrasurface, and the surface. Commanders can increase their situational awareness by maintaining a clear understanding of their battlespace.

Urban Airspace provides a rapid avenue of approach into an urban area as aviation assets are unaffected by common obstacles such as vehicles, rubble, or constructed barriers. Though they must consider things such as power lines, towers, poles, and billboards when flying. Contour flight will provide cover from anti-aircraft fires but will increase the risk presented by small arms fire. In many cases, aviation assets are capable of inserting ground teams to otherwise unreachable areas and vantage points.

The supersurface refers to the tops of building, notably the roof or apex of a structure. These areas can provide cover and concealment, limit or enhance observation and fields of fire, and depending on the situation, enhance, restrict, canalize, or block movement. Supersurface areas can also provide concealed positions for snipers, automatic weapons, and anti tank

and anti air weapon systems. In most cases, supersurface areas are highly exposed and are killzones, especially from the air.

The intrasurface refers to the interior floors of a building from the ground level up to but not including the structures roof or apex. Intense combat engagements often occur in this area and a majority of time will be spent breaching and clearing intrasurface areas. The intrasurface of a building greatly limits what can be accomplished by reconnaissance and surveillance systems, but concurrently enhances cover and concealment. Due to the natural confines of structures, intrasurface areas are especially vulnerable to explosives as the structural framework increases concussive force from the blast.

The surface refers to the ground or street level. Streets and other open areas provide rapid approach for ground movement in urban terrain, but will canalize movement and are mainly killzones. Streets also expose forces to observation and engagement by enemy elements. Obstacles on streets in towns are more effective than those on roads in open terrain as they are more difficult to bypass and may be boobytrapped. GPS can be used to great effect to improve situational awareness.

WARNING

Protecting personnel from backblast or fragmentation effects must be considered when fighting in urban areas.

Engagement

Urban engagement ranges are close; 90% of all targets are located within 50 meters of the identifying soldier. Only 5% of all targets are more than 100 meters away. Very few personnel targets will be visible beyond 50 meters and they are usually acquired at 35 meters or less. Engagement times are short and enemy personnel present only fleeting targets. Depression and elevation limits for some weapons can create dead space, while tall buildings form deep canyons that provide cover from indirect fires, while also allowing precision weapons airburst capability. Many rounds may ricochet behind or penetrate cover to inflict casualties. Smoke from burning buildings or grenades, dust from explosions, shadows, or ambient light with night vision goggles may combine to reduce visibility. There is also an increased risk of fratricide which must be considered during the planning phase of the operation. Soldiers and leaders must maintain a sense of situational awareness. FLIR systems on helicopters or Spectre gunships at varying angles and altitude will greatly improve awareness in urban operations. A commander's best course of action is to integrate both ground and above ground level observers to obtain the most complete picture. Mortars are the most effective indirect fire weapon in urban combat. Their high angle of fire gives mortars an increased flexibility over its direct fire counterpart to clear structures. The smaller bore-diameter also emphasizes precision placement and reduced collateral damage. Anti-Aircraft Artillery such as the ZSU-23-4 or the M113 VADs may be used to great effect due to their high rate of fire and destructive potential.

CAUTION

Goggles or ballistic eye protection should always be worn to protect soldiers from debris caused by explosives, tools, weapons, grenades, and so forth.

Operations Phases

Phase 1. Reconnoiter the Objective Phase 2. Move to the Objective Phase 3. Isolate the Objective	Phase 4. Secure a Foothold Phase 5. Clear the Objective Phase 6. Consolidate/Reorganize

High Intensity vs. Precision Clearing

The presence of non-combatants will indicate a shift in the operation tempo and tactics used. Specifically, the presence of non-combatants will require precision clearing techniques as opposed to high intensity clearing involving overwhelming firepower and the usage of fragmentation or concussion grenades. High intensity operations will consume high amounts of munitions and will require open logistics lines or a ready source to replenish expended ammo. From a conceptual standpoint, high intensity room clearing can be thought of as a deliberate attack with the intent to seize control of the room and neutralize the enemy. Grenades or direct fires are used as as the preparatory fire used before the assault. A rapid, violent assault overwhelms and destroys the enemy while seizing the objective. Precision techniques are conceptually similar to reconnaissance in force or an infiltration attack. During reconnaissance, the friendly unit seeks to determine the hostile elements size, location, and strength. The friendly force retains the options of not employing preparatory fires, ie: frag and clear, and may choose to use other options. Precision clearing conserves ammunition, reduces damage, and minimizes the chance of noncombatant casualties. Unfortunately, such is hazardous for friendly troops as it exposes them to enemy fire while limiting their own capability to employ maximum firepower. Generally if a room or building is occupied and clear of noncombatants, high intensity overwhelming firepower should be used to avoid friendly casualties. Supporting fires, demolitions, and grenades should be used to neutralize a space before friendly troops enter.

Principles of Precision Room Clearing

All engagements in close quarters, such as within a room or hallway, must be planned and executed with care. It requires proper training, practice, and rehearsal of precision room clearing techniques until the fire team can execute clearing techniques smoothly. Three principles govern room clearing: surprise, speed, and controlled violence of action.

Surprise is key to a successful close quarters assault as streets, doorways, and hallways can canalize movement and turn into fatal funnels. By deceiving, distracting, or startling the enemy, the assault team may achieve surprise if only for a few seconds. If such is not possible, usage of smoke or stun grenades may achieve surprise.

Speed provides a measure of security to the assault team. It allows the assault team to capitalize on the first few seconds of surprise. Speed is not measured by entry speed, rather the time it takes to eliminate the threat and the room is cleared. Usage of automatic fires, CQC optics, and proper movement techniques will ensure speed.

Controlled violence of action neutralizes the enemy while giving him the least chance to inflict damage upon friendly units. It is not limited simply by the application of firepower but a mindset of complete domination. Each of these principles form a synergistic relationship. Controlled violence coupled with speed increases surprise. While successful surprise allows increased speed.

Precision Clearing Fundamentals

- Move tactically and silently while securing the corridors to the room being cleared.
- Carry only the minimum amount of equipment. Excess weight will decrease speed and increase weapon sway.
- Arrive undetected at the entrance to a room in the correct order of entrance, be prepared to enter on a single command.
- Enter quickly and dominate the room. Move immediately to positions that allow complete control of the room and provide unobstructed fields of fire.
- Eliminate all hostile elements with fast, accurate fires.
- Gain control of the situation and all personnel in the room.
- Confirm whether enemy casualties are wounded or dead. Disarm and treat the wounded.
- Perform a cursory search of the room for mission objectives, boobytraps, or other clues.
- Mark the room as cleared using simple, clearly identifiable markings in accordance with SOP.
- Maintain security and be prepared to react to contact. Do not neglect rear security.

Fireteam Composition

Due to the confined space of urban environments, anything larger than a squad becomes unwieldy. The perfect composition is a four man fireteam consisting of a team leader, automatic rifleman, grenadier, and a rifleman. If manpower is lacking, room clearing can be accomplished with two or three man teams, however this greatly increases combat strain and risk. The Team Leader will be responsible for the training and supervision of those under his command, in addition to coordinating with other fireteams, the squad leader, and higher command. The Automatic Rifleman is the suppressive element of the fireteam and together with the team leader is the fixing element. The Grenadier provides the fireteam with the ability to defeat targets within hard cover, he may also fulfill the role of EOD, Demolitions, or be assigned as a Combat Engineer. The Rifleman is a multi-role position, he may be a combat life-saver, an assistant automatic rifleman, or another role as mission circumstances dictate.

A standard fireteam is broken into two elements: Alpha 1, consisting of the Team Leader and the Automatic Rifleman; Alpha 2, consisting of the Grenadier and the Rifleman. For the sake of brevity, only the Team Leader and the Grenadier will operate the radio and are the leader of their respective elements. This organization allows the fireteam needed flexibility to cover wide areas, maintain radio discipline, and bound over considerable distances.

Fireteam Movement

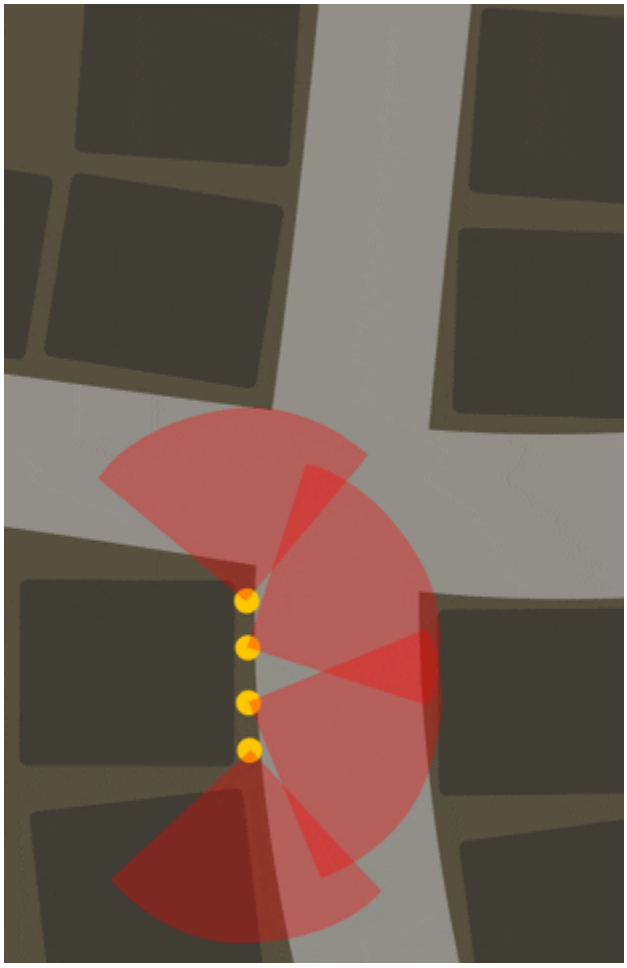
A fireteam will generally move from the corner of buildings down the wall to the opposite corner. The Automatic Rifleman and Team Leader will post up on the corner in the high-low position, while the Grenadier and Rifleman will provide rear security in the high-low position. A common error made in firing around corners is firing from the wrong shoulder. This exposes more of the soldier's body to return fire than necessary. By firing from the proper shoulder, the soldier can reduce exposure to enemy fire and prevent muzzle blockage. Another common mistake is firing around corners from a full standing position. The soldier exposes himself at the height the enemy would expect a target to appear and risks exposing the entire length of his body as a target. The soldier should be in the low-standing position just short of a full crouch, with the forward soldier in the low crouch position. Avoid flagging or exposing your muzzle around the corner while stacked up against it.

Corner Fireteam Example

When firing from a wall, units must fire from around cover and not over it. When firing from windows, units should position themselves far back from the window with adequate relief so that the muzzle is not flagged and the muzzle flash can only be seen from inside the room. Units should avoid crossing windows at full height and should instead go under them when possible. Firing from a roof is much the same as firing from a wall, the unit should seek to fire around rather than over cover. A chimney, smokestack, or other features can be used to reduce exposure and should be used.

Open areas such as streets, alleys, and parks, should be avoided as they are natural kill zones for enemy crew-served weapons or snipers. If a unit must move parallel to a street, they should conduct their movement on the sidewalk, but far enough towards the street as to prevent buildings from canalizing rocket or grenade launcher blasts. Streets may be crossed safely only when employing smoke as an obscurant or by establishing a base of fire on enemy positions. Beware as the enemy may choose to engage with suppressive fires into the smoke cloud.

Before moving to another position, the soldier should make a visual reconnaissance of the area and select the position offering the best cover and concealment and determine the route and speed. The fireteam may consider moving with the bounding overwatch technique with Alpha 1 on point and Alpha 2 some distance to the rear on walking speed.



Breaching and Clearing Buildings

Clearing a building from the top down is the preferred method and should be used when the supersurface of structures can be reached by air or via tactical ladder. Gravity and the buildings floor plans become assets when moving or throwing grenades. A hostile forced to ground level may choose to abandon the building exposing himself to fires from surface elements. M203 HE/DP launched through windows can be an effective means to neutralize a building without crossing open areas. Fragmentation grenades through doorways or windows can be used to great effect. Grenades produce substantial overpressure when used inside buildings and coupled with shrapnel, can be extremely dangerous to friendly soldiers. If the

walls of a building are made of thin material such as wood or aluminum sheeting, soldiers should either lie flat on the floor with their feet towards the area of detonation or move away.

WARNING

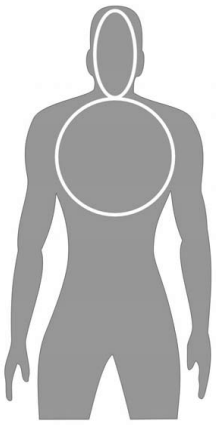
If stealth is not a factor, after throwing the grenade the soldier must immediately announce frag out to indicate that a grenade has been thrown. He then takes cover since the grenade may bounce back or be thrown back, or the enemy may fire at him. Diving on a live grenade will absorb the blast and prevent friendly casualties. This should only be done as a last resort.

While climbing stairs, the soldier should throw a grenade to the head of the stairs. Once detonated, another grenade should be thrown over the staircase banister to remove exposed enemies in the room/corridor. When the second hand grenade has detonated, the fireteam should proceed up the stairs and clear according to procedures.

CAUTION

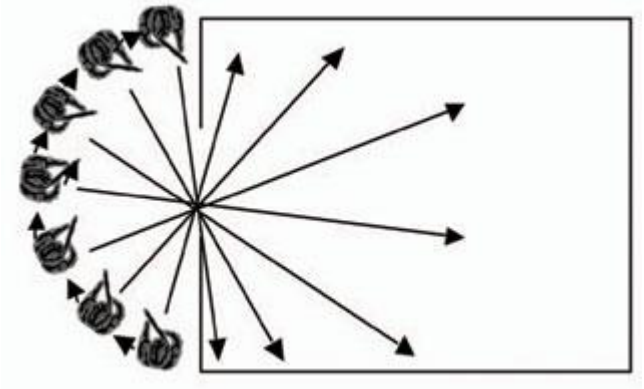
Throwing fragmentation grenades up a stairway has a high probability for the grenades to roll back down and cause fratricide. Soldiers should avoid clustering at the foot of the stairway and ensure that the structural integrity of the building permits the use of either a fragmentation or concussion grenade.

Enemy combatants must be incapacitated immediately. Shots that wound the target, while better than misses, will allow the target to return fire. Shot placement should be according to the Failure Drill also known as the Mozambique Drill. Two shots to the upper-chest, determine if the target is still active and if so, take aim for the more difficult headshot. Enemies should be assessed to determine if they are KIA or simply incapacitated.

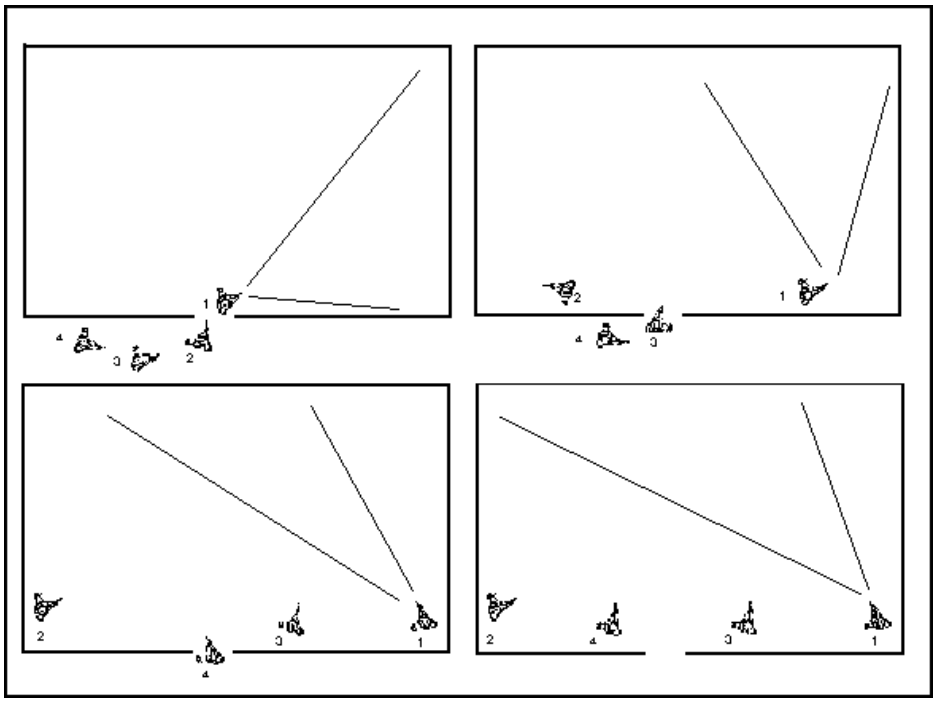


Dynamic Entry Techniques

While stairways, doorways, and other points of entry are commonly designated a fatal funnel. This is not necessarily so if there is no immediate threat. By pieing the entryway, a rough assessment of the room can be obtained and targets may be identified and engaged by direct fires or with grenades without having to enter the room. This is known as tactical clearance and may be used in preparation for other dynamic entry techniques.

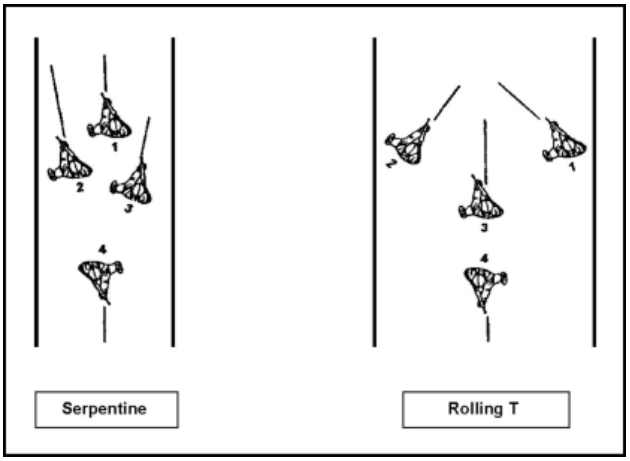


In a standard situation, the fireteam will stack up on the doorway in a split stack or side stack formation. Soldiers will be careful that they are not exposed in the door or are flagging their weapons. The team leader will announce the entry method: Hook, Cross, Heavy. In Hook, the pointman will *hook* right, with the second left, alternating every man. In Cross, the pointman will cross over to the opposite side, usually left, with the second man opposite of him. In Heavy, the pointman will proceed with his attention towards the larger side of the room, the second man will proceed in the opposite direction.

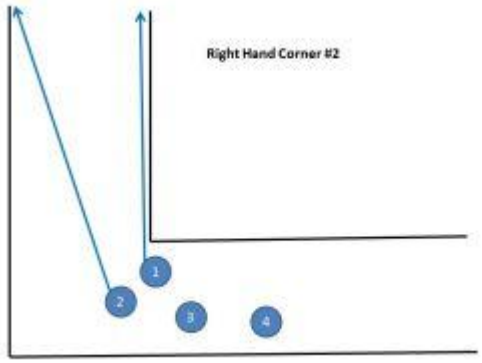


A common mistake is for the first and second men to ignore immediate threats to the front and proceed towards an (unoccupied) corner. This exposes the rest of the entry team to enemy fire and will result in friendly casualties. An open doorway to the left or right will also expose elements of the entry team to additional fires. The principle of dynamic entry is to ensure that all sectors are clear and to prevent masking fields of fire and fratricide. If at any point ideal dynamic entry conditions prove to be a hazard, units must be prepared to adapt their fires and maneuvering to compensate. In buildings with multiple rooms, the element of surprise will be lost and may only be artificially obtained via flashbangs. Continuing to use dynamic entry techniques and stacking up may waste valuable time, decrease speed, and leave you open to additional hostile fires.

While moving down hallways, corridors, or the center of streets, the following formations may be used. Serpentine's advantages are maximized frontal firepower, however reduced visibility around corners or intersections. Rolling T allows for better visibility around corners, however direct frontal firepower is reduced. The #1 man is able to gain an increased visibility on corners to the left, while the #2 man gains increased visibility on corners to the right.



When encountering a corner in an intrasurface environment, such as in the graphic below; the lead element will post in the high-low position on the corner, while the rear element either holds back or proceeds into the hallway to engage targets.



Weapon Penetration

Standard 5.56x45mm NATO and 7.62x39mm AK-47 rounds lack sufficient power to penetrate most fortifications such as sandbags, shipping containers, walls, or wrecked vehicles. The penetration of the 5.56x45mm NATO round can be improved by the M995 AP Steel Core Penetrator giving it the ability to penetrate sandbags, walls, wrecks, etc. All 7.62x51mm rounds will penetrate said fortifications, M993 AP rounds will offer the best conservation of energy. Targets identified behind walls, corners, or windows, can be engaged without exposing friendly units. Units in an intrasurface area can fire though floorboards or the ceiling. Fires horizontal to your position should be directed in a circular vertical fashion from prone to standing height. Vertical fires should be spread out horizontal fashion with minimal vertical movement. The best option is a crew-served or vehicle mounted M2 .50 Cal as other rounds may wound, but not incapacitate an enemy target.

Counter-Sniper Procedures

An Urban Environment offers a multitude of vantage points with cover and concealment for snipers. Counter-Sniper Countermeasures can either be proactive or reactive. Observation posts or aerial observers can monitor likely positions and allow friendly elements to engage the sniper before he fires. If a sniper fires and displaces, observers can also locate him and allow fireteams to fix and engage him. The following principles will help to reduce sniper lethality.

- Use covered and concealed routes. Most high-powered scopes do not have NVG capability. Staying out of ambient light will significantly reduce your visibility.
- Avoid open plazas and intersections.
- Stay away from doorways and windows.
- Move along the side of the street, not down the center.
- Move in a dispersed fashion using traveling or bounding overwatch.
- Avoid being silhouetted against lights or the skyline.
- Move quickly across open areas that cannot be avoided.
- Remain crouched or prone behind cover or concealment whenever possible.
- Avoid gathering together in large groups.
- Avoid saluting, badges of rank, or any action that designates you as a leader.

- Wear protective equipment. A helmet or vest may not always stop a bullet but will significantly reduce the severity of wounds.
- Move around in armored vehicles when possible. Avoid dismounting.
- Deny the enemy use of overwatching terrain. If you control the area around towers or the high ground, you can significantly limit enemy effectiveness.

If you take sniper fire, the unit should immediately disperse and seek to ascertain the direction of the shot. Employ smoke to mask your position and return fire. Suppressive fires will induce exaggerated scope sway and prevent further accurate shots. While returning fire, do not expose yourself for long periods of time. Fire a quick burst, return to cover, and alternate fire with team members. If cover permits, do not peek out around the same areas as you continue to return fire. Fireteam members should check the status of each individual member, carry or drag wounded into cover, and communicate with nearby friendly elements. The fireteam may choose to employ the M203 to neutralize the sniper, or to mask his position with smoke allowing friendly units to advance and isolate the position. Precision direct or indirect fires may also be used if collateral damage is not a concern.

Verbal Commands and Signals

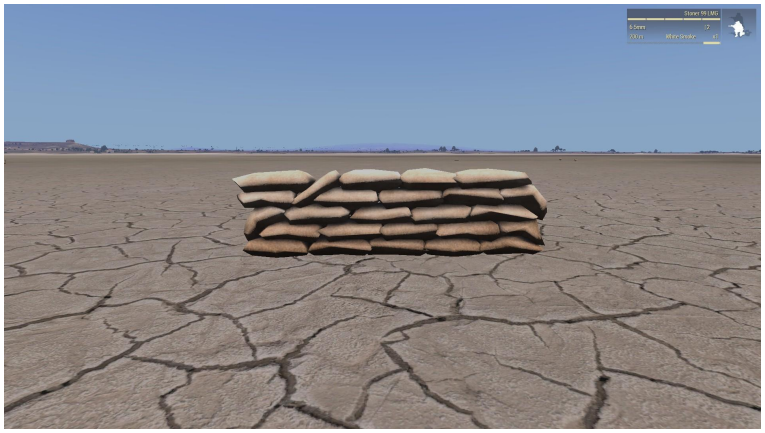
"COME UP (DOWN)!" Reply given by security element that it is safe to ascend or descend a stairway.
"MAN DOWN!" Signal given when an individual has been wounded or injured and cannot continue his mission.
"SHORT ROOM!" Signal given by either the number 1 man or the number 2 man to indicate a small room, and that all team members should not enter.
"GRENADE!" A command given by any soldier, when an enemy grenade has been thrown. All soldiers need to take immediate actions. Although difficult, the soldier should identify the location of the grenade, if possible.
"GO LONG!" A command given by one member of the team to tell another team member to take up security farther into the room or farther down a hallway.
"GUN DOWN" A signal given when an individual's weapon has malfunctioned and is being corrected.
"GUN UP" A signal given when an individual has corrected a malfunction and is ready for action.
"RELOADING" A signal given when an individual is reloading any weapon system.This signal is followed by "GUN UP" when ready

CHAPTER 10
FORTIFICATIONS

Designing and constructing hardened firing positions will give units an increased advantage when on the defense and prevent unnecessarily casualties. This chapter will discuss common military fortifications, the protection their offer, and the synergistic relationships that can be formed to create dynamic structures.

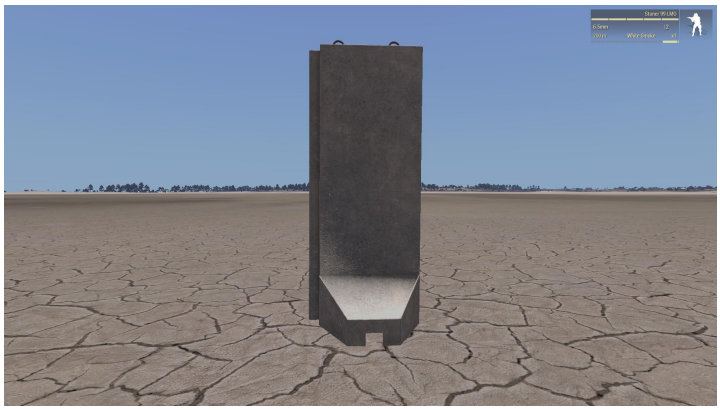
Sandbags

Sandbags are the most common type of fortification to provide light cover to infantry. They will withstand 5.56x45mm NATO and 7.62x39mm/5.45x39mm AK rounds. However 7.62x51mm NATO and 5.56x45mm M995AP will penetrate a single layer. A double layer will insulate against M995 and 7.62x51mm. A triple layer is required to protect against 7.62x51mm M993AP.



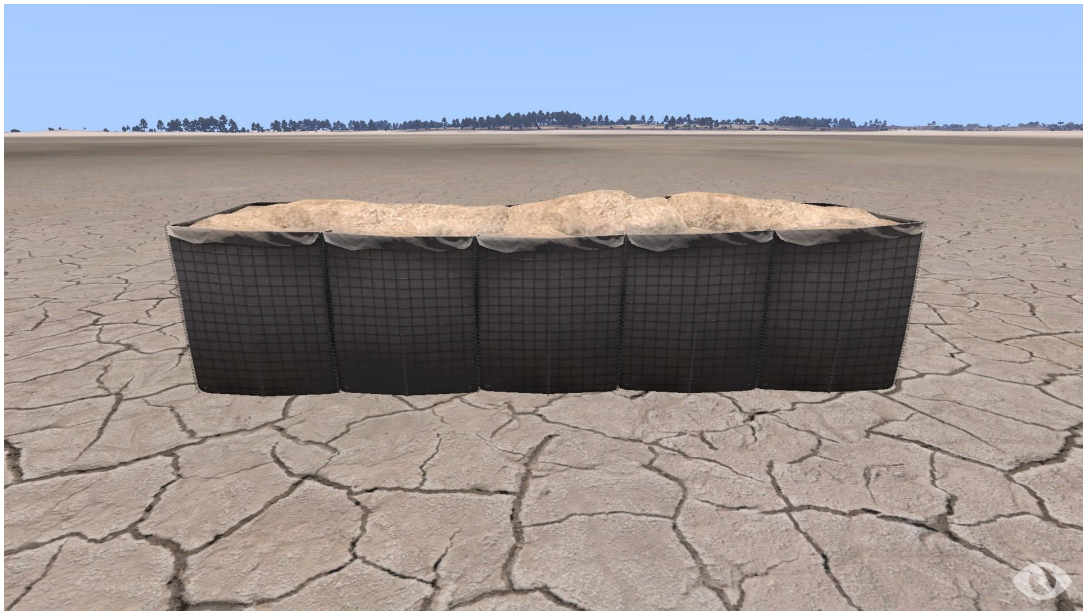
Bremer Wall / Texas Barrier

Bremer walls are made of hardened concrete and will provide considerable protection against ordinance. It is ram proof and incapable of being penetrated. It stands two head heights high with options of medium barriers at head height.

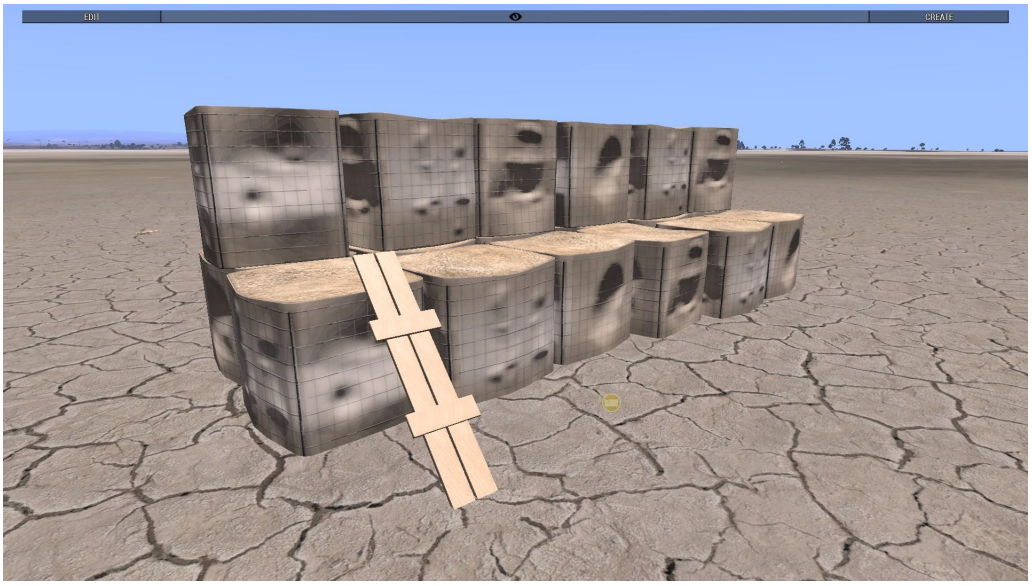


HESCOE Bastions

Hescoes are larged reinforced wire-mesh filled with sand and dirt. They are normally head height and are the most common fortification used in the building of Forward Operating Bases. They can be stacked to various heights to create a rampart and used with an obstacle ramp to form various structures. They will withstand all types of munitions but can be penetrated by projectiles around the corners of the barrier.

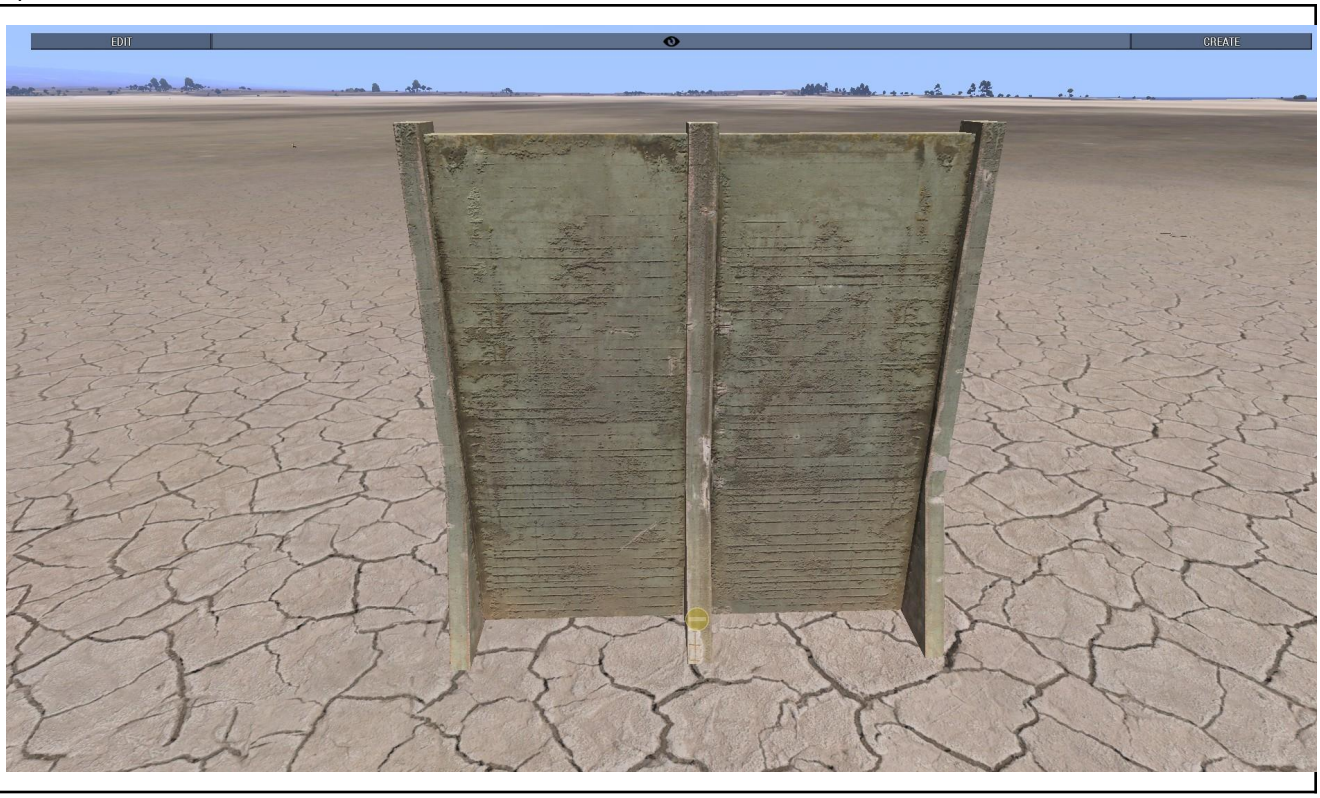


Example of a Two-Story HESCOE Wall



Military Walls

Military Walls are common along static compounds. They offer the same level of protection as sandbags. They stand approximately 2 ½ head heights tall. They are highly susceptible to ram breaches by vehicle. They should be reinforced by Bremer Walls whenever possible and should only be used if the extra height afforded by it over the Bremer Wall is required.



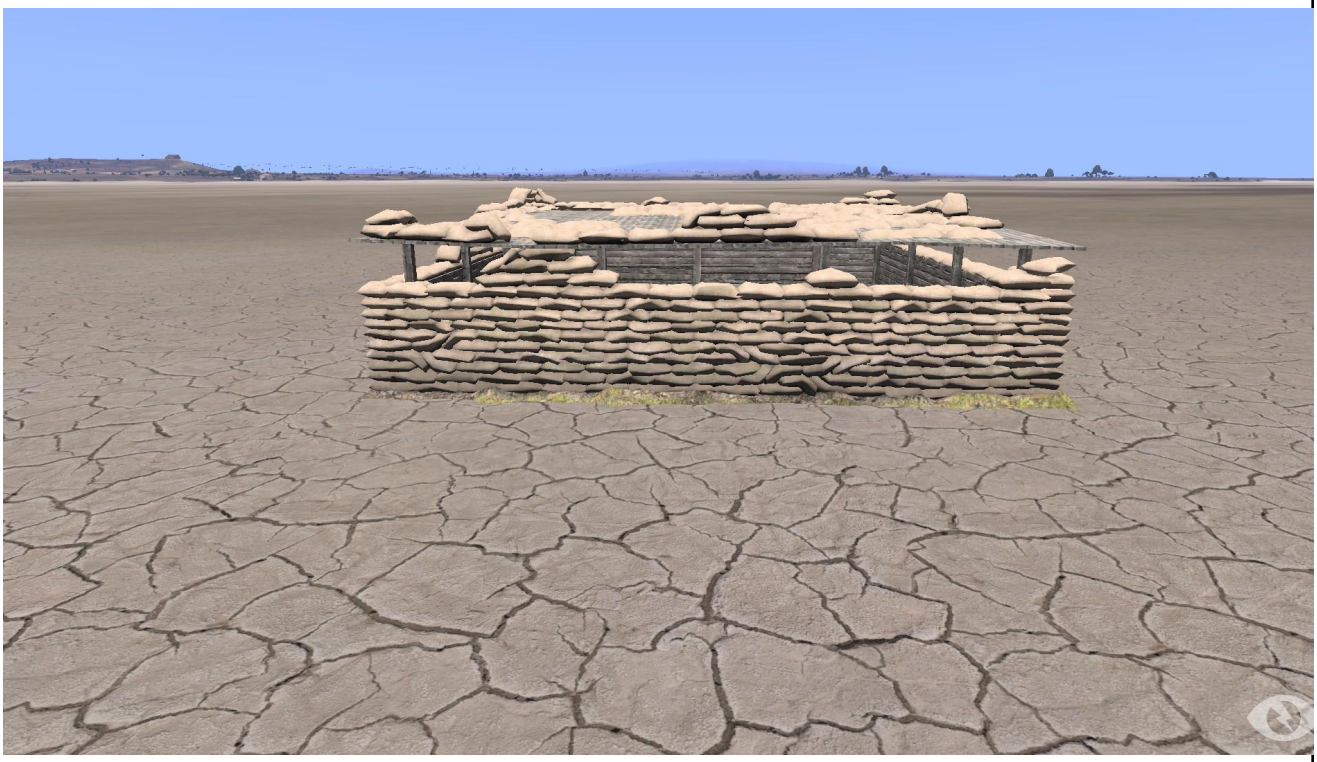
Sandbag Bunkers

Sandbag Bunkers offer pre-made fortified firing positions and ready overhead cover. They are best manned from a crouched or kneeling position as they are highly exposed at torso level. This can be countered by the additional placement of sandbags. Obviously, they offer the same protection as sandbags.

Small Sandbag Bunker

Reinforced Sandbag Bunker

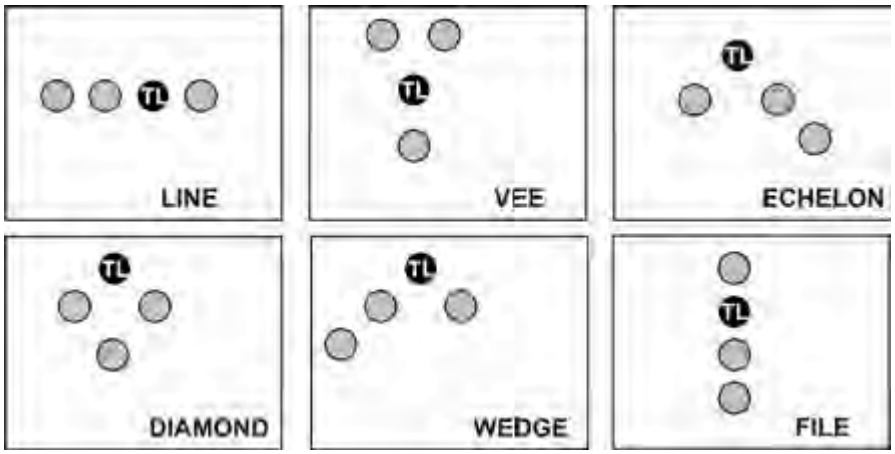
Large Sandbag Bunker



CHAPTER 11
MOVEMENT

To survive on the battlefield, stealth, dispersion, and security must be enforced in all tactical movements. Soldiers must be skilled in all movement techniques and able to execute them smoothly in a tactical setting.

Formations

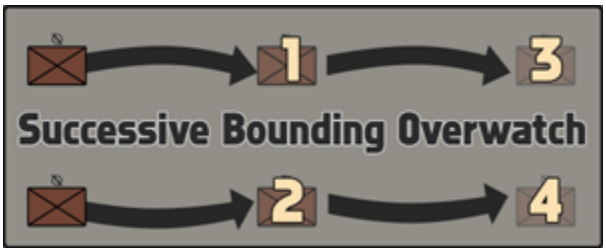


Formations are used to provide overwhelming firepower in the direction of threat, facilitate situational awareness, and prevent fratricide. Four principles of movement formations are: dispersion, sectors of fire

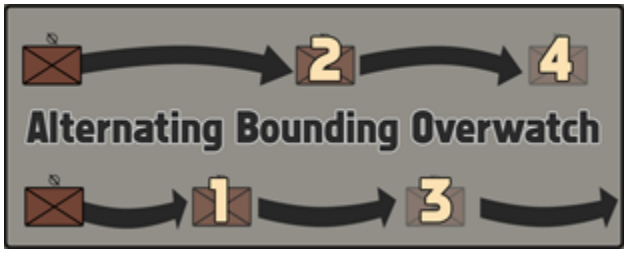
Bounding

Bounding is a traveling technique used to provide the highest level of security while directing firepower towards the supposed direction of threat.

In successive bounds, one element moves into position, usually 25-50m forward; the overwatch element will then move to the position of the forward element. This is useful for long distance high intensity travel as it preserves stamina, allows for breaks, and will always have the lead element as pointman. This is normally used in the fireteam level to cross open areas safely.



In alternating bounds, one element moves into position, usually 25-50m forward; the overwatch element will then overtake their position and assume a position 25-50m in front. This is useful for long distance high intensity travel as it preserves stamina and allows for breaks. However the distance between bounds is increased compared to successive bounds. Both elements will be on point as they overtake the lead elements position.



In traveling overwatch, a lead element moves forward flanked by a rear element. This dispersion is maintained at all times at walking pace. This allows for increased room to maneuver ad decreases density of friendly forces limiting casualties from explosives thus increasing security.

The extra space allows for more room to maneuver and decreases the density of friendly forces, which in turn increases the security of the unit by making it harder for an enemy to inflict large casualties via a sudden ambush or explosive trap.

When moving via traveling overwatch, particularly as in a squad or platoon line formation, one element is designated as the lead or "guide-on" element. This element controls the rate of movement or speed of advance, with other elements "guiding" off of them. If this element halts, the whole formation halts. If they move, the formation moves. This helps to ensure that the overall group formation does not overrun itself or get far out of formation.

Skylining

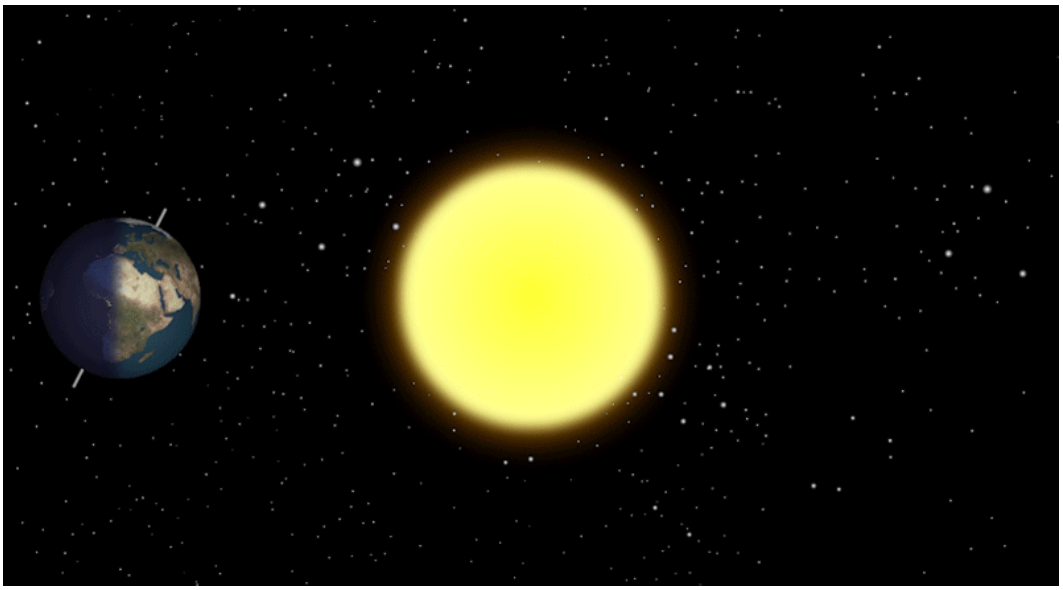
While making lateral movements to hills and cliffs, always stay several meters below the crest. Movement along the crest will result in skylining. Displaying your figure against the high contrast backdrop of the sky. Movement should always be below the crest and care should be taken to advance in a low or prone position.

CHAPTER 12
FIELDCRAFT

There are various techniques which can be used in a survival setting to improve situational awareness or navigate without the aid of a compass or other devices.

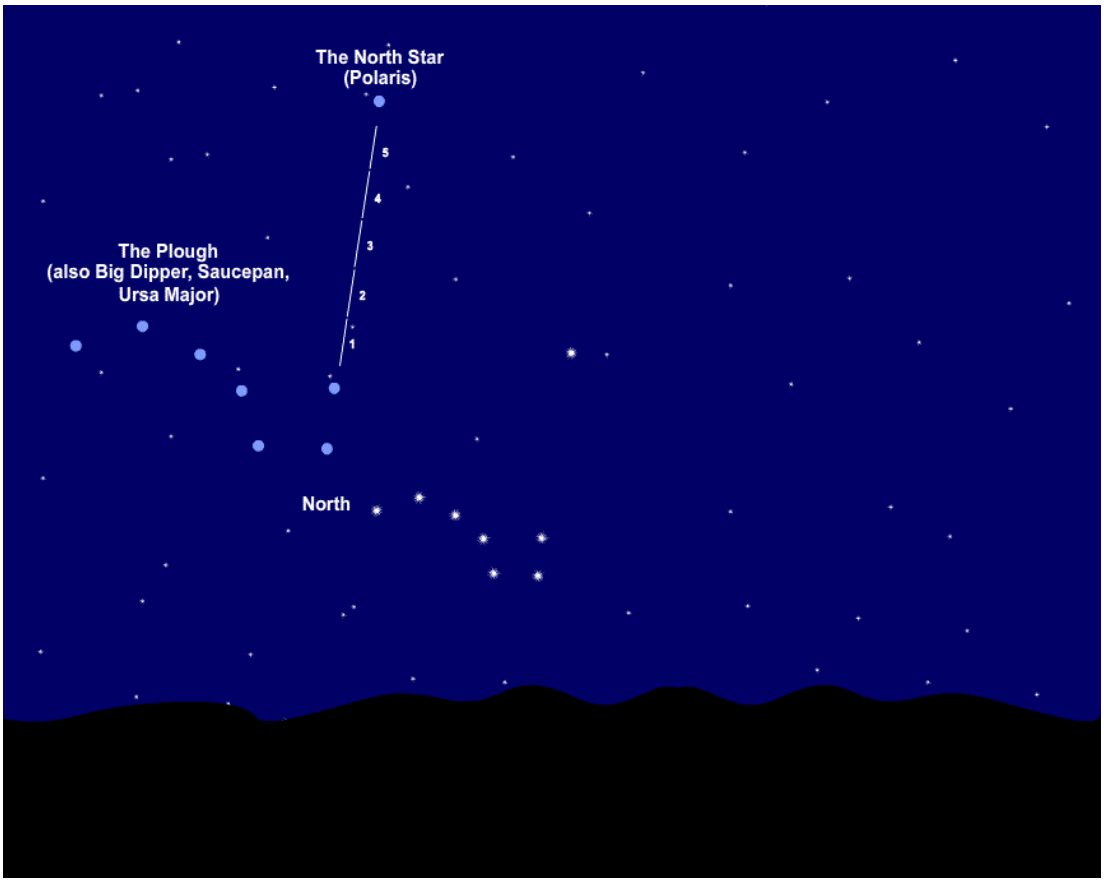
Celestial Navigation

The movement or presence of celestial bodies can lend an aid to navigation. ArmA 3 is modeled in the southern hemisphere. The sun rises from the east, sets in the west, and at noonday will be overhead in a southerly direction. However, depending on the scripted date of the mission, the sun will not always be in this position. In fact, the sun rises due east on only two days of the year, the equinoxes, near March 21 and September 22. Between June 21st and December 22nd, the North Pole will be tilted towards the sun. Consequently, between December 22nd and June 21st, the South Pole will be tilted towards the sun. If you take it to the extreme, then in the Arctic Circle in June the sun rises so far north of east and sets so far north of west that these points actually overlap – in other words the sun doesn't set.



Navigating via the stars is a safe, effective, and incredibly simple method of navigation. The North Star, Polaris, is located on the Axis Mundi of the Earth giving it the unique attribute of being the only celestial body which does not move with the passage of time.The Big Dipper, also known as Ursa Major, forms a dipper/shepherd's cane and by aligning the top of the constellation, it can be used to locate the north star. The stars forming Ursa Major will always be greater in brightness than those around it. Even though Ursa Major rotates counter-clockwise to Polaris, its relationship will remain the same. Night Vision Goggles may reduce your ability to discern constellation from other stars.

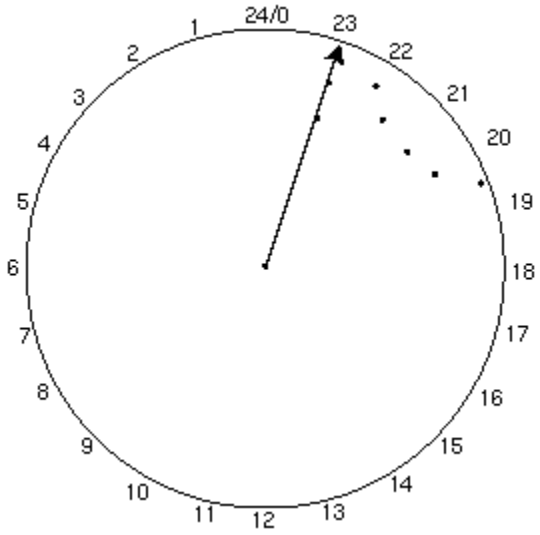
The rotation of the northern stars can also be used to tell time. The line bisecting Polaris with the top of Ursa Major will form a 24 hour clock in a counterclockwise direction.



This 50 question test will show various pictures of the night sky and can be completed in ten minutes to pinpoint the location of Polaris in relation to Ursa Major. The constellation Cassiopeia is also visible.

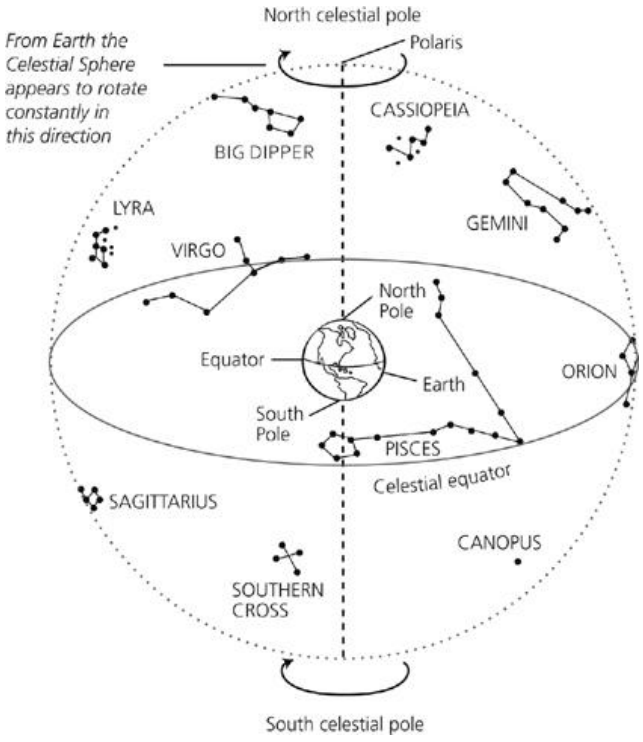
SWEDGE'S STAR NAVIGATION TEST

24 Hour Ursa Major Clock

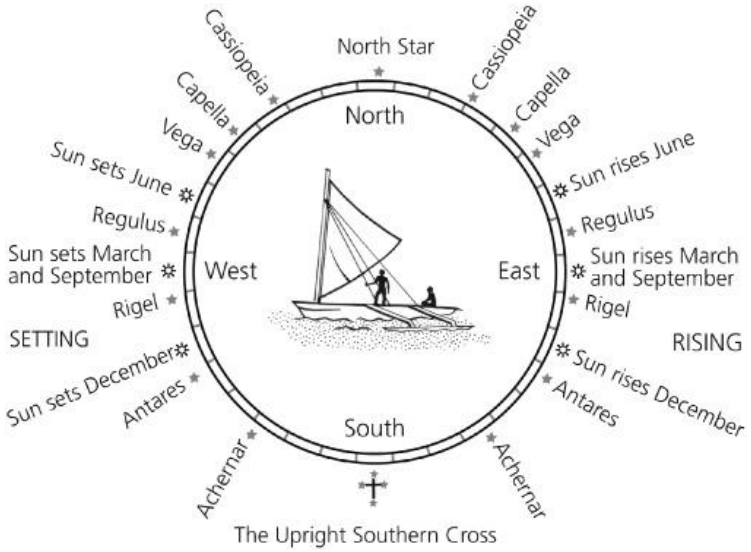


Various other constellations can be used to find specific directions provided that their movements are tracked. For example, the constellation Orion will rise in the east and set in the west. The Southern Cross's long end in addition to the two pointers below it, will point the way to the South Celestial Pole at approximately 4½ times the length of the Southern Cross.

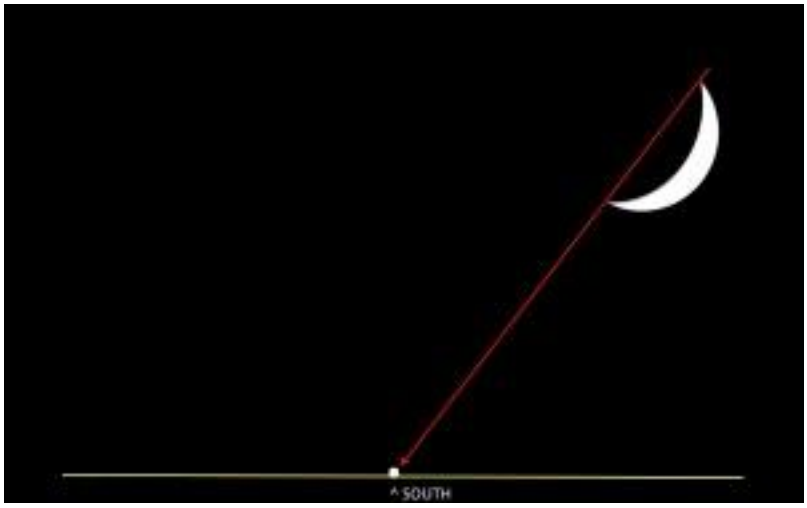
STARMAP OF NOTABLE CONSTELLATIONS

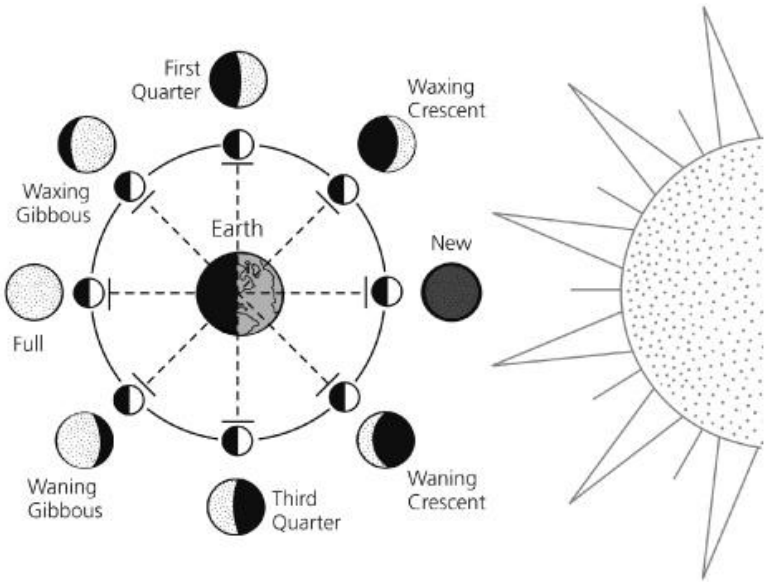


Rising and Setting Chart



The moon orbits the Earth roughly in a plane from west to east and completes this orbit in a little over 27 days. The rotation of the Earth becomes the dominant apparent motion however when viewing the moon. The moon appears to move from east to west, even though it is actually orbiting in the opposite direction. When we put these two motions together the result is that the moon rises in the east and sets in the west, but it is also moving slowly eastward relative to everything else in the sky, about its own width or half a degree per hour compared to the Earth's rotation of 15 degrees per hour. The moon will enter various phases and will cycle through them roughly every 29.5 days. While additional calculations are required over star navigation, overcast weather may obscure constellations, while the moon will always be visible. When the moon reaches its highest point, it is also crossing over the meridian of the observer. Depending on the phase of the moon, it will either be due south or due north.
By drawing a straight line between a crescent moon's two points and down to the horizon, one can establish south. Alternatively, if the moon rises before the sun has set, the illuminated side will face east. If the moon rises after midnight, the illuminated side faces west.





Analog Watch

Depending on the hemisphere, an analog watch (Default: O) may be used to locate north in relation to the presence of the sun.

Northern Hemisphere: Point the hour hand at the sun. Visualize a line bisecting the hour hand and 12:00. This is your north-south line with south between 12:00 and the hour hand.

Southern Hemisphere: Point the 12:00 mark at the sun. Visualize a line bisecting 12:00 and the hour hand. This is your north-south line with north between 12:00 and the hour hand.

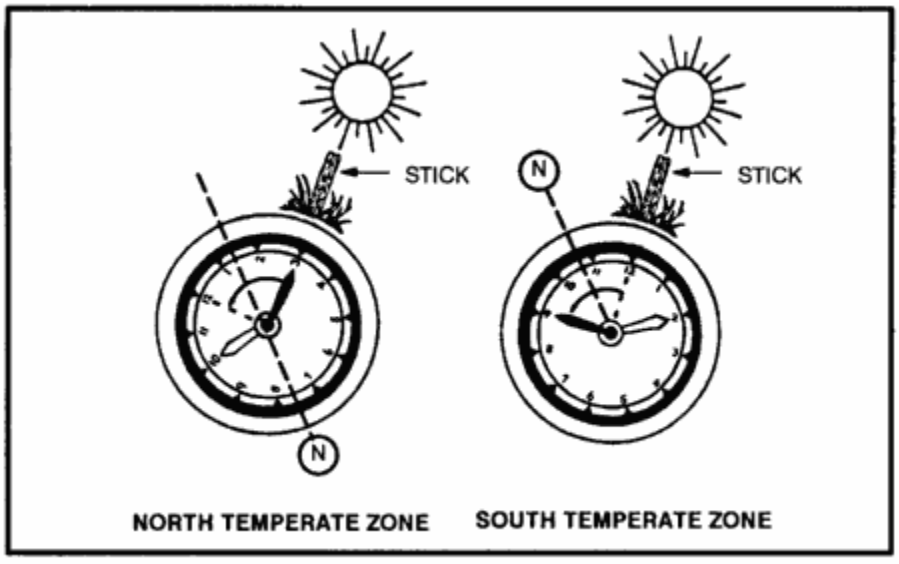


Figure 18-2. Watch method.

Dead Reckoning

Dead Reckoning is an intuitive navigation system involving keeping track of bearing and speed, calculating your movements, and fixing yourself at a given location. Many vehicles come equipped with a speedometer and an odometer along with other navigational aids.
Dead Reckoning while dismounted is a matter of counting your steps. The following chart shows the distance traveled in meters at various speeds.

TYPE	DISTANCE/SEC	DISTANCE/MIN
Walk	1m	70m
Combat-Stance Jog	3m	190m
Jogging	3½ m	220m
Sprinting	5m	300m

GPS Receivers

The DAGR, Defense Advanced GPS Receiver, and microDAGR are the greatest navigational aids available. They can be connected to a Vector 21B Rangefinder for use in reconnaissance and when acting in the role of forward observer. They may be accessed via the personal interaction key, CRTL+Windows, under the equipment. tab.

The MicroDAGR can be quickly accessed via the HOME key, and stowed via CRTL+HOME. It displays time and date, bearing, speed, elevation, and a ten digit grid. The signal bars in the top left may be used to mark points or waypoints, connect to a Vector21B, or change settings. It also displays a compass integrated to the waypoint system, and a topographic/satellite map.

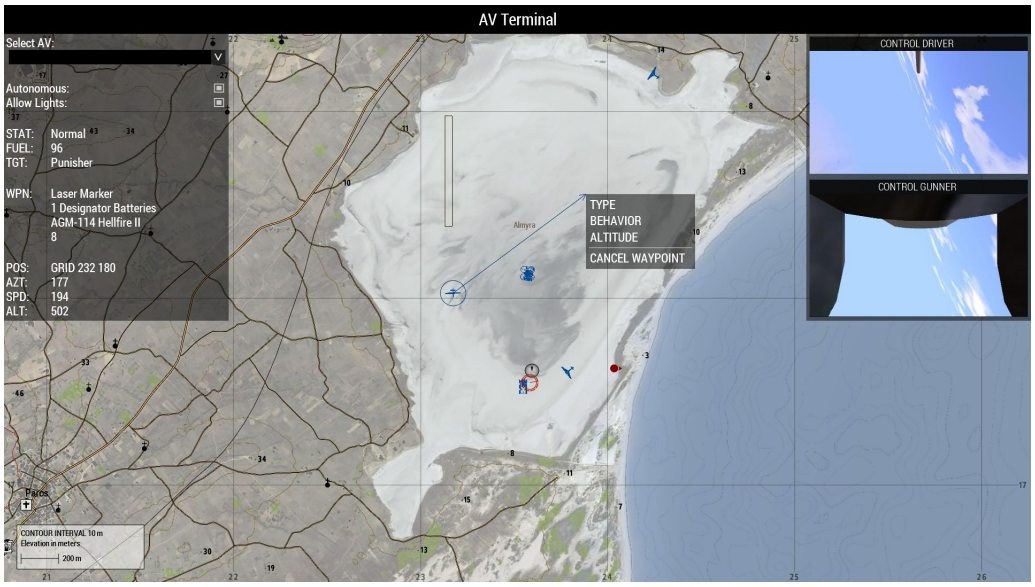
The DAGR is the less advanced and functional of the two. It can be connected to a Vector 21B Rangefinder to obtain target coordinates. It displays an 8 digit grid, speed, elevation, bearing, and time. It is operated via the arrow, HELP SEL, and BAT MENU buttons. It also has waypoint functionality.

Unmanned Vehicle Operation

Unmanned Aerial/Ground/Sea Vehicles can be an incredible logistics, ISR, or CAS asset. They are also a force multiplier as they allow one soldier to be in multiple places at once. They may also be used as area denial systems. A UAV Terminal is required to remotely operate them. They can be connected manually by walking up to them and selecting connect, or by clicking on their map icon with the terminal open. There are currently three UAV Terminals in the arsenal. The middle, or second terminal, is the only one with functionality. All UV's come with FLIR. CRTL+T will lock the camera to follow a stationary point or moving target.

The UAV Terminal offers live camera feed of the driver and gunner. You may manually take control by clicking on the appropriate buttons above the camera feeds or via the scroll menu. By shift-left clicking, you can set a waypoint which the UV will move towards. By right clicking the end of the waypoint, you may select the type of order: Move. Guard. Search and Destroy, etc. - By selecting loiter, you will be prompted to select the diameter of the loiter. The behavior, and the altitude of flight. Right clicking targets on the map will prompt you to either follow or destroy the target. A UV set to autonomous may automatically engage hostile targets based on programming. You may cycle through connected vehicles in the top right.

UAV Terminal



UV Types

Stomper UGV/RCWS

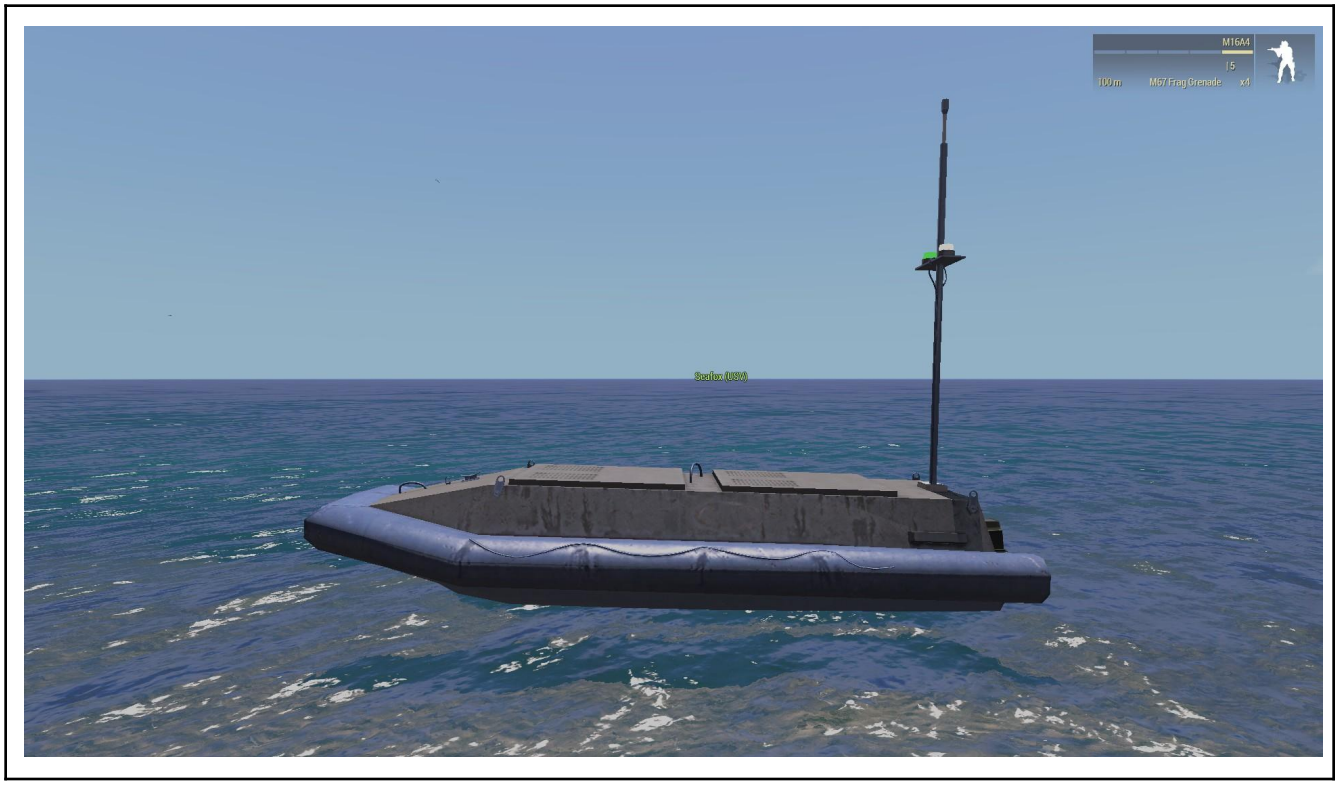
AR-2 Darter

The AR-2 Drone's fuel can be recharged in the field via the UAV Battery item. A chemlight can be attached to improve night-vision capability in third-person flight. Explosives may also be attached turning it into a guided bomb.

MQ-9 Predator

YABHON R-3

SEAFOX



Night Vision, Infrared, and Illumination Devices

Various items exist which can only be seen or operated in the infrared spectrum. Various generations of night vision goggles exist with varying image qualities and fields of view. Several scopes such as the AN/PVS-4, AN/PVS-10, and the Nightstalker scope have night vision capability. Several scopes such as AN/PAS-13 TWS and the Nightstalker have thermal imaging capabilities. Various uniforms and equipment may mask body heat, thus improving concealment. Some scopes may restrict night vision capacity.

The color red will preserve night vision and is the most difficult light to see at range.

Night Vision Goggles will amplify various sources of light. Their brightness can be modified by ALT+PG UP/PG DOWN. They also allow individual soldiers to see into the infrared spectrum. IR Strobes, IR Grenades, IR-DIM tracers, and reflective panels on clothing will be visible.

IR-DIM rounds are tracer rounds that are only visible when wearing night vision goggles.

Rail-mounted laser pointers such as the AN/PEQ-2 are only visible in the infrared spectrum. They can be used by team leaders to direct fires or as an aiming module. They can be activated via the L key.

Chemlights emit visible light in various colors and can be attached to men or vehicles. They are excellent markers for landing or drop zones and may be used for ambient lighting. A chemlight will increase general visibility well beyond its illumination range.

Flares emit light in all directions and come in various colors. They should be employed as such that natural cover blocks light on friendly positions while highlighting enemy positions. They may be used offensively to blind hostile forces with night vision capacity or used for signaling. They may be thrown as grenades or launched into the air.

Small-handheld flashlights may be used for map-reading. They can be turned on/off via the ACE self-interaction key, CRTL+Windows. Rail-mounted flashlights will provide 15m of frontal vision. They can be activated via the L key.

IR Strobes and Grenades emit a strobe light in the infrared spectrum. The IR Grenade should never be used in place of a strobe and may inhibit night vision visibility. However an IR Grenade (CSAT) will appear as friendly on most vehicles Radar Identification Friend or Foe systems and can be used to mark a position.

All CUP uniforms and vests with the exception of Ghillie Suits will mask your thermal signature. Default Bohemia Interactive Ghillie suits will mask your thermal signature while prone, however while standing, the exposed uniform underneath will emit a thermal signature.

Human eyesight is not photographic but centrally focused. The brain automatically fills in the dead space outside of this focal point. This is especially true during the night where even brightly contrasted objects can be faded out of existence by the brain. The graphic below demonstrates this night time blindspot. Cover the right eye with your hand and look at the X with your left, slowly the Sniper will disappear. This blind spot becomes significantly larger at range being capable of obscuring a tank at 400 meters.

Obedience to the following principles will ensure successful night operations.

- Avoid backlighting yourself with light sources, this will silhouette your position.
- Remove sunglasses/tinted goggles prior to entering a dark area.
- As light level decreases, color perception also decreases. Light and Dark colors at night can be distinguished only by the intensity of reflected light. The human eye will identify them as shades of gray.
- Perception of fine detail is impossible at night
- ID of objects at night is based on perceiving general contours and outlines, not on small distinguishing features.
- In a low-light situation, do not stare at objects, scan with your eyes, employing your peripheral vision and look around objects instead of staring directly at them. This will reduce the effects of the night time blind spot.
- By scanning in a horizontal figure 8 you increase your ability to identify threats and pick up on movement. It is more effective to scan prone or from a lower position than the area being observed. This will create a silhouetted view of any objects.

- If you are suddenly illuminated on accident, freeze or drop to the ground unless the light is less 50 meters. Flares are usually deployed when movement is detected, under no circumstances should you freeze, but immediately find cover or drop to the ground.
- Engage targets with the moon at their back, illuminating, silhouetting, and skylining them.

Comparison of IR Grenade vs. Strobe

Grenade

Strobe

Thermal Signature Comparison

Default NATO Equipment

CUP MARPAT Uniform

Reconnaissance

Reconnaissance operations are undertaken to obtain information about the activities and resources of an enemy or potential enemy. They are designed to secure data concerning the geographical characteristics of a particular area. Reconnaissance is conducted to provide leadership with information that has tactical value concerning the enemy, terrain, weather, and civil considerations within an area of operations.

The follow items should be evaluated when conducting reconnaissance.

● What avenues of approach will the enemy use and when? ● Which fixed or rotary-wing assets will the enemy use? ● How will the enemy deploy in their attack? ● Where will the enemy commit their reserves? ● Where is the enemy main supply route? ● With what strength will the enemy counterattack and where? ● Where are enemy observation or listening points? ● Where are enemy tactical command posts, radar, and communication sites?	● Where are enemy tactical command posts, radar, and communication sites? ● What effects of weather provide a key advantage or disadvantage to you or the enemy? ● Where are the enemy main defensive positions? ● Where are the enemy Anti-Tank assets? ● Where are the enemy Anti-Air assets? ● Where are the enemy Crew-Served Weapons? ● Where is the enemy artillery? ● Who is the enemy?

Due to the high intensity of modern conflicts, modern warfare is not isolated static positions which seek to overcome each other, but rather an orchestra of coordination to bring all available assets to bear. If a force takes contact, they will call for reinforcements via a quick reaction force. If the situation grows desperate, they may employ artillery or air support fires. A vital element to reconnaissance is judging how the enemy will react.

Identifying Anti-Tank, Anti-Air, and Crew-Served Weapon positions is paramount. These rank highest on the threat matrix and will pose as the largest obstacle for sustained operations. Properly identifying various weapon systems is key.

Factions

Various factions maintain unique equipment and skill levels. The average aiming, command, and spotting skill is dependent upon which level of proficiency the enemy is at. The level of proficiency is listed according to the following tiers:

Tier 1: Special Forces - Highest Proficiency

Tier 2: Soldiers - Average Skill Level

Tier 3: Milita - Lowest Proficiency

CSAT

The Canton Protocol Strategic Alliance Treaty (CSAT) is made up of Iran, China, and several other East Asian, North African, South American, and Middle Eastern nations. It is the most technologically advanced faction. CSAT Soldiers wear no body armor. However, they wear an armored uniform printed in a brown hexagonal pattern which protects their entire body. The standard issue Defender helmets wrap around the head providing considerable protection. They possess NVGs. All personnel are at Tier 2 proficiency. CSAT Revolutionary Guards wear an urban hexagonal uniform and are at Tier 1 proficiency. They are armed with 6.5mm Katiba Rifles, 7.62 Zafir machine guns, unguided RPG-42 Alamut launchers, the Titan MPRL Launcher, the Rahim 7.62mm DMR and 12.7mm GM6 Lynx sniper rifle. The Sting 9 mm is issued to crewman.They are easily recognized by the metallic collar around their neck and brown skin.

Russian Federation

The Russian Federation is an equivalent force to NATO. Russian soldiers are Tier 2 and wear Flora woodland pattern uniforms and armored load-bearing vests. They possess NVGs. They are armed with AK-107 assault rifles, PKM machine guns, RPG-18s and RPG-7s. The SA-16 Igla MANPAD is also used. Spetsnaz are Tier 1, wear Gorka fatigues, and use silenced weapons. All Russian Soldiers are equipped with IR emittance reduction technology minimizing their thermal signature.

ChDKZ

The ChDKZ is an Tier 3 militia force consisting of uniformed soldiers and irregular militia in civilian attire. Their logo is a distinct large red star. They wear no body armor. They are armed with AKM/AK-74 type rifles and PKM machine guns. They operate a variety of USSR Eastern Bloc equipment. Their uniforms are IR emittance resistant minimizing their thermal signature.

Takistani Army

The Takistani Army use a variety of NATO and Eastern Bloc equipment. They wear the Vietnam era olive OG-107. They wear no body armor. Their Tier 1 soldiers wear a distinct black shemagh. An irregular Tier 1 militia is present wearing civilian attire. They are are armed with an M16A2 (M203), Tier 2 soldiers are armed with the 7.62 FN-FAL rifle, while the Tier 3 Militia use a variety of AK-type rifles. The RPG-7, RPG-18, guided AT-13 Metis, and SA-16 Igla launchers are utilized. The Dragunov SVD and .50 Cal KSVK are also employed.

Sahrani Liberation Army

The Sahrani Liberation Army is a regular force with Tier 2 Soldiers and Tier 1 Especas Special Forces. They wear no body armor, but the Especas wear a distinct green beret. They use a variety of Eastern Bloc equipment such as AK-type rifles, PKM machine guns, Dragunov SVDs, .50 cal KSVKs, and RPG 7/18, Metis AT-13, SA-16 Igla launchers.

Weapons Identification

AKM

7.62x39mm assault rifle rarely used by Militia. Black finish and magazine. 30rnds.

AK74

5.45x39mm assault rifle commonly used. Differentiate from AKM by orange magazine. 30rnds.

AKS

5.45x39mm assault carbine used by Tier 1 Spetznaz. Differentiate from AKS with open stock. 30rnds.

AKSU

5.45x39mm assault carbine used by crewman, pilots, and officers of the Russian Federation, CHdKZ, Takistani Army, and Sahrani Liberation Army. Differentiate from AKS by open stock and short barrel. 30rnds.

AK107

5.45x39mm standard issue assault rifle used by soldiers of the Russian Federation. Boasts advanced optics, black matte finish, underslung 40mm GP-25 launcher optional. 30rnds.

Lee Enfield

7.7×56mmR bolt action rifle used by Takistani guerilla sharpshooters. 10rnds.

FN FAL

7.62x51mm NATO standard issue assault rifle used by soldiers of the Takistani Army. 20rnds.

Katiba

Standard Issue bullpup 6.5mm assault rifle used by CSAT Soldiers. 30rnds.

Zafir

7.62x51mm machine gun used as a squad automatic weapon by CSAT soldiers. 150rnds.

Scorpion EVO3

9x19mm Parabellum submachine gun used by CSAT pilots, crewmen, and officers. 30rnds.

Rahim

7.62x54mm semi-auto designated marksman rifle used by CSAT sharpshooters. 10rnds.

GM6 Lynx

12.7x99mm semi-auto Anti-Material rifle used by CSAT snipers. 5rnds.

PKM

7.62x54mm machine gun used by the Russian Federation, CHdKZ, Takistani Army, and Sahrani Liberation Army as a standard issue squad automatic weapon. 100rnds.

SVD

7.62x54mm semi-auto sniper rifle used by sharpshooters of the Russian Federation, CHdKZ, Takistani Army, and the Sahrani Liberation Army. 10rnds.

KSVK

12.7x99mm Anti-Material rifle used by snipers of the Russian Federation, Takistani Army, and Sahrani Liberation Army. 10rnds.

RPG-7

The RPG-7 is a man portable rocket launcher capable of firing single-stage, tandem, fragmentation, and thermobaric warheads. It is used by the Russian Federation, Takistani Army, and Sahrani Liberation Army.

PG7-VL Single Stage Warhead

PG7-VR Tandem Warhead

OG-7V Fragmentation Warhead

TBH-7V Thermobaric Warhead

RPG-18

The RPG-18 is a 64mm disposable rocket launcher used by soldiers of the Russian Federation and Sahrani Liberation Army.

RPG-32

The RPG-32 is a 105mm rocket launcher used by CSAT soldiers. It is capable of firing thermobaric HE or single stage HEAT warheads.

SA-16 Igla

The Igla is a man portable surface to air missile system used by the Russian Federation, CHdKZ, Takistani Army, and Sahrani Liberation Army.

Titan MPRL

The Titan Multi Purpose Rocket Launcher is used by CSAT soldiers, it is capable of engaging both ground and air targets with a 75mm guide rocket. The AP rounds are guided via a zenith IR sensor.

Compact (AT)

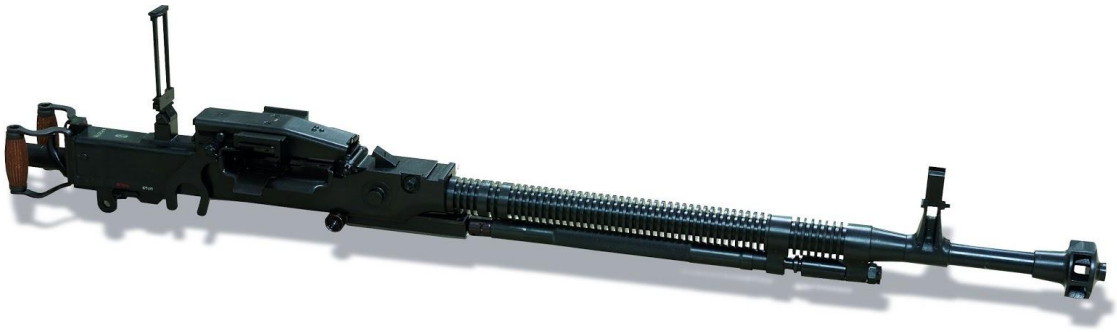
Extended (AA)

KORD HMG

The KORD is a 12.7x99mm crew-served weapon used by the Russian Federation and Takistani Army.

DSHKM HMG

The DSHKM is a 12.7x99mm crew-served weapon used by the CHdKZ and the Takistani Army. It is differentiated from the KORD by its lack of a stock.



AGS-30 GMG

The AGS-30 is an automatic crew-served 40mm grenade launcher used by the Russian Federation, CHdKZ, and the Takistani Army. It is easily recognized by its large olive drum magazine.

SPG-9

The SPG-9 is a 73mm crew-served recoilless rifle used by the CHdKZ and Takistani Militia forces.

XM312 HMG

The XM312 is a 12.7x99mm crew-served weapon with advanced optics used by CSAT soldiers.

XM307 GMG

The XM312 is a crew-served automatic 40mm grenade launcher with advanced optics used by CSAT soldiers. It is differentiated by the XM312 by its shorter, fatter, barrel.

ZU-23-2

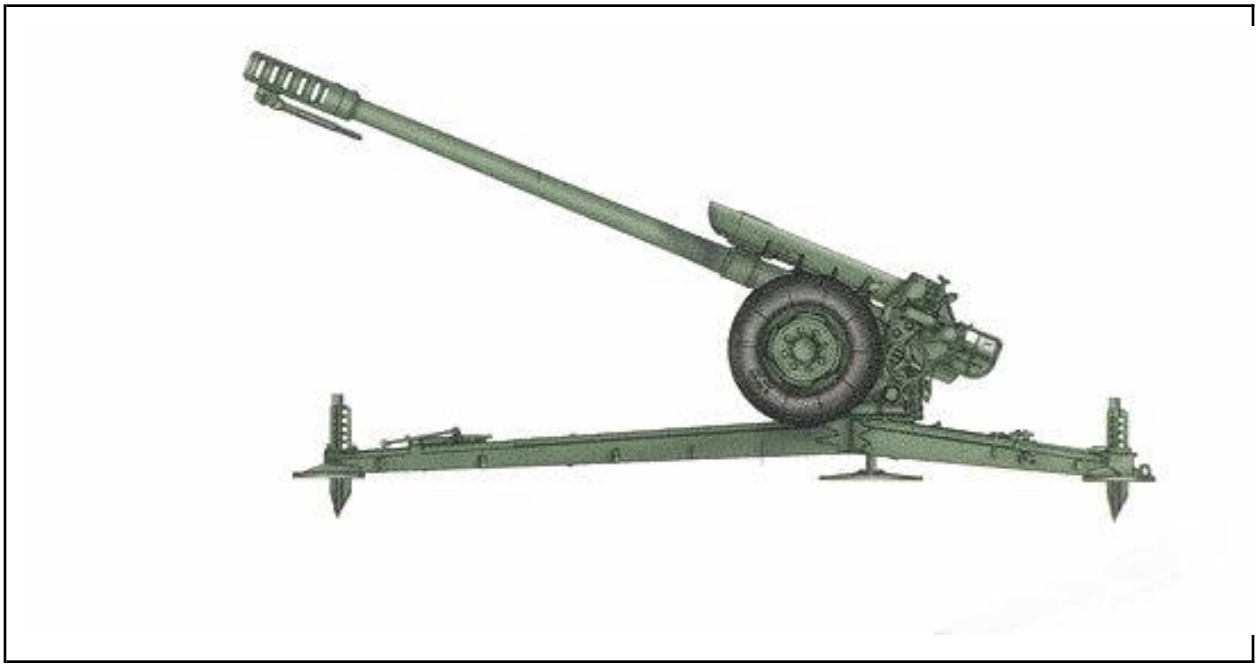
The ZU-23 is a crew served double barreled 23mm anti aircraft cannon used by the Russian Federation, CHdKZ and Takistani Army.

MK6 Mortar

The MK6 Mortar is an 82mm Mortar used by CSAT Soldiers. It is capable of firing HE, SMOKE, or ILLUM rounds.

D-30

The D-30 is a 122mm howitzer used by the Russian Federation, CHdKZ, and the Takistani Army. It is capable of being used both as an artillery piece or an anti-tank gun. It is capable of firing HEAT, HE, WP, SMOKE, and ILLUM rounds.



Vehicle Identification

Properly identifying various vehicles is key to prompt, effective communication. Understanding subtle differences between vehicles can be the deciding factor between life and death. Correct identification will also ensure that correct countermeasures are employed.

As an example, calling out an "*Incoming BTR!"* when in reality, a BMP-2 is closing on your position will result in casualties as unit members will seek hardcover against 14.5mm fires, but be exposed to the blast radius of the BMP's 30mm HE Autocannon.

Vehicle Identification Chart

Ural ZU-23 - Reporting name: Zeus

Six-wheeled dual 23mm anti-aircraft system on the Ural truck platform. Exposed gunner and driver. Used by Russian Federation, CHdKZ, Takistani Army, and Sahrani Liberation Army.

ZSU-23-4M - Reporting Name: Shilka

Self-propelled anti-aircraft system with quad 23mm cannons. Large circular radar over turret. Used by Russian Federation, CHdKZ, Takistani Army, and Sahrani Liberation Army.

2K22 Tunguska - *Reporting Name: SA-19 Grouse*

Tracked Surface-to-Air missile system. Quad 30mm autocannons. Central radar in front of turret. Used by Russian Federation.

ZSU-39 - Reporting Name: Tigris

Tracked Surface-to-Air missile system. Dual 35mm autocannons. Radar on rear of turret. Used by CSAT.

Otokar Arma - Reporting name: Marid

Six wheeled armored personnel carrier with dual .50 Cal/40mm HMG/GMG Crows turret. Used by CSAT.

BM-2T Stalker - *Reporting Name: Kamysh*

Tracked infantry fighting vehicle with 30mm autocannon on a CROWS-like turret. Used by CSAT.

BMP-2 - Reporting Name: BMP-2 (HQ) (ZSU)

Amphibious Infantry Fighting Vehicle w/ 30mm Autocannon. ATGM. Differentiated from BMD due to size and long rectangular shape. HQ variant with no autocannon, forward mounted PKMT, and additional antennae ZSU variant with dual 23mm cannons.

BMP-3 - Reporting Name: BMP-3

Tracked infantry fighting vehicle with large 100m gun capable of firing ATGMs. Square box like shape. Short antennae located on back right. Used by the Russian Federation.

BRDM-2 - Reporting Name: BRDM (HQ) (ATGM)

Four-wheeled personnel carrier. Turret mounted 14.5mm gun. Amphibious. HQ variant with antennae. ATGM variant. Used by the Russian Federation, CHdKZ, Takistani Army, and Sahrani Liberation Army.

BTR-60 - Reporting Name: BTR-60

Eight wheeled armored personnel carrier with 14.5mm gun. Amphibious. Used by the Russian Federation, CHdKZ, Takistani Army, and Sahrani Liberation Army.

BTR-90 - Reporting Name: BTR-90 (HQ)

Eight wheeled APC with 30mm Autocannon. ATGMs. Increased armor over previous variant. Do not confuse with BTR-60. Amphibious. Used by the Russian Federation.

M113 - Reporting Name: M113

Tracked APC with covered 12.7x99mm gun. Square box like shape. Head of gunner exposed. Single antennae. Used by the Takistani Army.

T-34/85 - Reporting Name: T-34

WWII-era tank. 76mm gun. Fuel cylinders on the rear sides. Machine gun on lower frontal hull. Used by the Takistani Army.

T-55 - Reporting Name: T-55

100mm gun. Blob-shaped turret with bullnose barrel. Rear mounted barrel fuel tanks. Used by the Takistani Army.

T-72 - Reporting Name: T-72

125mm gun. Flat transversal frontal hull with V-design mark. Rear mounted barrel fuel tanks. Commander DSHKM on top of turret. Smoke grenade launchers to either side of gun. Used by the Russian Federation & Takistani Army.

T-100 Varsuk - Reporting Name: Armored Satan

125mm gun. Square blockish design. Enhanced Reactive Armor plating panels on side, frontal sloped hull, and turret. Commander DSHKM. Used by CSAT.

2S9 - Reporting Name: Sochor

155mm tracked self propelled howitzer with CROWS HMG/GMG turret. Sloped armor equivalent to main battle tanks. Used by CSAT.

BM-21 - Reporting Name: Grad

Six-wheeled 122mm rocket artillery on the platform of a Ural utility truck. Used by the Russian Federation, Takistani Army, and Sahrani Liberation Army.

Otokar Arma - Reporting Name: Marid

Eight wheeled armored personnel carrier armed with dual .50/40mm CROWS turret. Used by CSAT.

Armed Toyota Pickup - Reporting Name: Technical

Technical is a nickname given to the armed pickup trucks used by the Somali militia during the Battle of Mogadishu. It comes from the fact that charitable organizations hired out local gangs who operated them as “Technical assistance.” the term technical does not refer to any armed car such as a UAZ, but a modified pickup truck armed with a .50 Cal HMG in the bed. Variants also exist with a PKT. Used extensively by guerilla militia forces.

GAZ Vodnik - Reporting Name: Vodnik

The Vodnik is an amphibious wheeled high mobility multi purpose vehicle used by the Russian Federation. It is normally armed with front/rear facing PKTs, but may also be armed with a forward facing AGS-30, or a 30mm Autocannon.

UAZ-469 - *Reporting Name: UAZ*

The UAZ is a light military off road vehicle operated by the Russian Federation, CHdKZ, Takistani Army, and the Sahrani Liberation Army. It can be armed with an AGS-30, a DSHKM, a AT-13 Metis, or a SPG-9.

ZiL Punisher - Reporting Name: Ifrit

The Punisher is an armored mine resistant ambush proof vehicle used by CSAT. It can be equipped with a CROWS system boasting either an a XM307 40mm GMG, or a XM312 .50 Cal HMG.

Land Rover Defender - Reporting Name: Land Rover

The Takistani Army operates a variety of land rovers armed with either a M2 .50 Cal HMG or an SPG-9. They are differentiated from the UAZ-469 by their longer body, full body cage, and side mounted fuel tanks.

Mil Mi-48 Kajman - Reporting Name: Hornet

The Mi-48 is an attack helicopter with transport capabilities operated by CSAT. Due to the contra-rotating co-axial rotor system, it has no need for a tail rotor. The Mi-48 is a twin seated craft with a 30mm traversable autocannon, ATGMs, and artillery saturation rockets.

KA-50 Black Shark - Reporting Name: Hokum A

The KA-50 is an attack helicopter operated by the Russian Federation. Due to the contra-rotating co-axial rotor system, it has no need for a tail rotor. The KA-50 is a single seat craft armed with a 30mm autocannon with minimal traversal, ATGMs, and folding fin aerial rockets. It is differentiated from the KA-52 by its square blockish shape.

KA-52 Alligator - Reporting Name: Hokum B

The KA-52 is an attack helicopter operated by the Russian Federation. Due to the contra-rotating co-axial rotor system, it has no need for a tail rotor. The KA-52 is a dual seat craft armed with a 30mm autocannon with minimal traversal, ATGMs, and folding fin aerial rockets. It is differentiated from the KA-50 by its softer smoother design.

Mil Mi-8 - Reporting Name: Hip

The Mi-8 is transport helicopter operated by the Russian Federation, Takistani Army, and the Sahrani Liberation Army. It features folding fin aerial rockets, PKT door gunners, and a forwarding facing PKT operated by the copilot.

Mil Mi-24 - Reporting Name: Hind

The Mi-24 is an attack helicopter with transport capabilities. It is operated by the Russian Federation, Takistani Army, and the Sahrani Liberation Army. It features a 12mm autocannon, folding fin aerial rockets, and ATGMs. A variant known as the Superhind exists featuring an enhanced sensor suite, thicker armor, a 30mm autocannon, folding fin aerial rockets, and ATGMs. It can also be equipped with a variety of bombs and gunpods.

Mil Mi-6 Reporting Name: Hook

The Mi-6 is a large transport helicopter used by the Russian Federation, CHdKZ, and the Takistani Army. It is capable of airlifting various armored vehicles and transporting entire platoons of infantry.

Ka-60 Kataska - Reporting Name: Swallow

The KA-60 is a light transport gunship operated by CSAT. Various variants exist featuring a 40mm GMG door gun, folding fin aerial rockets, and M134 miniguns.

UH-1H Iroquois - Reporting Name: Huey

The UH-1H is a light transport helicopter operated by the Takistani Army and Sahrani Liberation Army. It is armed with two door mounted 7.62mm machine guns

SU-25 - Reporting Name: Frogfoot

The SU-25 is a close air support attack aircraft operated by the Russian Federation, Takistani Army, and the Sahrani Liberation Army. It is armed with a 30mm autocannon, folding fin aerial rockets, ATGMs, and 500lbs bombs.

SU-34 - Reporting Name: Fullback

The SU-34 is a twin seat multi role strike fighter used by the Russian Federation. It is armed with a 30mm autocannon, folding fin aerial rockets, ATGMs, Air-to-Air missiles, and guided 500lbs bombs. It is capable of self designating bombing targets.

Yak-130 - Reporting Name: Mitten

The Yak-130 is a single seat multi role strike fighter used by CSAT. It is armed with a 30mm autocannon, artillery saturation rockets, ATGMs, Air-to-Air missiles, and unguided 500lbs bombs.