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DEPARTMENT OF THE ARMY
Washington, DC, 29 April 1977

OPERATIONS

FM 100-5, 1 July 1976, is changed as follows:

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By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

Official:

PAUL T. SMITH
Major General, United States Army
The Adjutant General

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Field Manual
No 100-5

FM 100-5*
HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C. 1 July 1976

OPERATIONS

THIS MANUAL sets forth the basic concepts of US Army doctrine. These concepts form the foundation for what is taught in our service schools, and the guide for training and combat developments throughout the Army. Most important, this manual presents principles for accomplishing the Army's primary mission—*winning the land battle.*

FM 100-5, the capstone of the Army's system of field manuals, covers the relationships among operations. Details of those operations are described in other manuals. This manual is intended for use by commanders and trainers at all echelons.

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**This manual supersedes FM 100-5, 6 September 1968, including all changes.*

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CHAPTER 1

US Army Objectives

WIN

THE ARMY'S primary objective is to ***win the land battle***—to fight and win in battles, large or small, against whatever foe, wherever we may be sent to war. We cannot know when or where the US Army will again be ordered into battle, but we must assume the enemy we face will possess weapons generally as effective as our own. And we must calculate that he will have them in greater numbers than we will be able to deploy, at least in the opening stages of a conflict. Because the lethality of modern weapons continues to increase sharply, we can expect very high losses to occur in short periods of time. Entire forces could be destroyed quickly if they are improperly employed.

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Therefore, the first battle of our next war could well be its last battle: belligerents could be quickly exhausted, and international pressures to stop fighting could bring about an early cessation of hostilities. The United States could find itself in a short, intense war—the outcome of which may be dictated by the results of initial combat. This circumstance is unprecedented: we are an Army historically unprepared for its first battle. We are accustomed to victory wrought with the weight of materiel and population brought to bear after the onset of hostilities. Today the US Army must, above all else, *prepare to win the first battle of the next war.* Once the war is upon us, we shall aim at emerging triumphant from the second, third, and final battles as well.

FUTURE BATTLE

The US Army may find itself at war in any of a variety of places and situations, fighting opponents which could vary from the highly modern mechanized forces of the Warsaw Pact to light, irregular units in a remote part of the less developed world. Wherever the battle begins, the US Army is equipped, organized, and trained to undertake appropriate military missions. The purpose of military operations, and the focus of this manual, is to describe how the US Army destroys enemy military forces and secures or defends important geographic objectives.

Battle in Central Europe against forces of the Warsaw Pact is the most demanding mission the US Army could be assigned. Because the US Army is structured primarily for that contingency and has large forces deployed in that area, this manual is designed mainly to deal with the realities of such operations. The principles set forth in this manual, however, apply also to military operations anywhere in the world. Furthermore, the US Army retains substantial capabilities in its airborne, airmobile, and infantry divisions for successful operations in other theaters of war against other forces.

AUSTERITY

PREPARE TO FIGHT OUTNUMBERED, AND WIN

Our Army must expect to fight its battles at the end of a long, expensive, vulnerable, line of communications. Forward deployed forces, and those reinforcements immediately available, must therefore be prepared to accomplish their missions largely with the resources on hand. They must anticipate combat against forces with ultra-modern weapons, greater numbers, and nearby supply sources. Winning will rest predominately with commanders of engaged forces. *The US Army must prepare its units to fight outnumbered, and to win.*

WEAPONS AND MEN

To win, our soldiers will need the best weapons that industry and technology can provide. But weapons, no matter how powerful, are ineffective in the hands of inept, ill-trained, unsure operators. And even proficient crewmen can be rendered impotent if improperly employed by the battle leader. Overall battlefield effectiveness depends on weapons capability, the proficiency of teams or crews, and the tactics or techniques of the commander. Thus, the US Army must obtain powerful weapons, develop fully the proficiency of the men who man them, *and train leaders capable of employing weapons and crews to best effect.*

POWERFUL WEAPONS, PROFICIENT PERSONNEL, AND BEST EFFECTIVE USE OF BOTH

COMBAT DEVELOPMENT

US Army combat development seeks to increase the Army's ability to fight decisively by searching combat experience, experiments, tests, and technology for ways to provide better weapon systems, organizations, tactics and techniques. Success in combat developments is vital for our success in battle.

DOCTRINE

Success will also depend on our ability to assess correctly the dynamics of modern battle; to reassess them continually, in pace with the everchanging nature of the modern battlefield; and to communicate an effective battle doctrine throughout our forces.

TRAINING DEVELOPMENT

The service schools and training centers of the Army constitute a prime resource for readying our soldiers for combat. The service schools are the Army's source of combat development and doctrine, and an important means by which we inculcate leaders and trainers with the tactics and techniques which will contribute to battle success. The service schools express standards for training throughout the Army by the way they teach, by the manuals they write, by

STANDARDS AND TECHNIQUES THAT MATCH REALITIES

tests for evaluating individual skills of soldiers Army-wide, and by the Army Training and Evaluation Program (ARTEP). Training development must provide training standards and techniques *matched closely to the realities of the modern battlefield.*

UNIT TRAINING

The soldier receives most of his individual training in a unit. It is in his unit where he will have his greatest opportunities to gain confidence—with his weapons, as a member of a team, and by training under conditions approximating battle. Thus, his unit commander plays the preeminent role in developing the resolve and the competence to win outnumbered. The commander must assure each of his officers, noncommissioned officers, and soldiers, the opportunity to improve military proficiency and to prepare mentally and physically for battle. Every unit commander of the US Army is responsible for the progressive professional development of every soldier in his command.

BATTLE DEMANDS EFFECTIVE COMBINED ARMS TEAMWORK

Collective training in units should aim at maximum effectiveness with combined arms. Wherever possible, commanders should press beyond ARTEP standards. Consistent with a judicious regard for safety, training must simulate the modern battlefield. *Training for battle demands forging effective combined arms teamwork.*

READINESS

Since combat developments and doctrine are dynamic, since weapon systems are constantly evolving, and since tactics and techniques are continually changing, training methods must change apace. Readiness for modern battle means training aimed at payoff now. Constant readiness for the early battles changes the presumptions previously governing the US Army training: post-mobilization training, annual cycles, cadre development, and the like.

Rather, the commander must manage his training with a sure knowledge of the present state of individual and collective proficiency within his units, and with programs especially designed to bring them up to

prescribed individual and unit performance standards. To paraphrase Josephus on Roman training methods, our drills must be "bloodless battles" and our battles "bloody drills." Even in wartime, in the midst of combat, training must continue. Training must be a full-time job for all commanders, regardless of other operations or missions.

Moreover, US Army commanders must recognize that battlefield success is dependent to a major degree upon US Air Force, US Navy or US Marine Corps support, and our ability to work with our allies. In all of our 20th century wars, we have fought as a member of an international coalition, alongside the other US services, and so we are likely to fight again. *Teamwork in joint and combined operations is integral to readiness for land combat.*

The Army's need to prepare for battle overrides every other aspect of unit missions. This urgency derives from the danger present in the world scene, the lethality and complexity of modern war, and the everpresent possibility that a unit in training today may be in action tomorrow. *The commander's first concern* must be to order all the activities of his unit to meet his primary obligation to the Army, his unit, and his soldiers: *produce a unit ready to fight and win now.*

PRODUCE A UNIT READY TO FIGHT AND WIN NOW

CONFIDENCE

Success in the critical early battles of war will depend mostly upon the courage and skill of our soldiers, the quality of our leaders, and the excellence of our techniques and tactics. It will also depend upon our resolve: the US Army must be convinced that it will win. This confidence can only come from a thorough appreciation of the dynamics of modern battle; our soldiers must not only understand *what to do,* they must also understand *why it must be done.* With such an understanding embedded in the officer and non-commissioned officer, American leaders will emerge who can apply techniques and tactics apt for each unique situation of the battlefield, and who can tap the ingenuity and imagination of the American soldier.

THE US ARMY MUST BE CONVINCED IT WILL WIN

Additionally, success depends on the ability and willingness of leaders at all levels to operate independently, to follow mission-type orders, and to employ all available resources in pursuit of the objective. *Confidence is the cornerstone of success in battle:* each soldier's belief in his own competence, his trust in that of other members of his unit, and their collective pride, cohesion and effectiveness.

CHAPTER 2

Modern Weapons on the Modern Battlefield

OVERVIEW: NEW LETHALITY

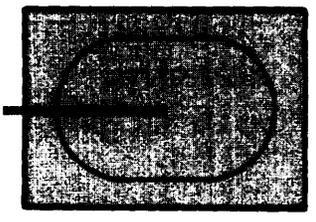
DURING the past several decades, the nature of battle has changed—not abruptly but nonetheless significantly. ***Today's battlefield presents challenges beyond any the US Army has ever faced.*** Great numbers of weapons of advanced destructiveness have been provided by major powers to client states; arms purchased by minor but affluent nations have further spread the latest military technology throughout the world. Recent wars between small nations have developed intensities formerly considered within the capabilities of large states only.

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The war in the Middle East in 1973 might well portend the nature of modern battle. Arabs and Israelis were armed with the latest weapons, and the conflict approached a destructiveness once attributed only to nuclear arms. Use of aircraft for close support of advancing armor, in the fashion generally practiced since 1940, was greatly reduced by advancing surface-to-air missiles and air defense guns. In clashes of massed armor such as the world had not witnessed for 30 years, both sides sustained devastating losses, *approaching 50 percent in less than two weeks of combat.* These statistics are of serious import for US Army commanders.

TRENDS: TANKS



ALL GREAT ARMIES REST THEIR LAND COMBAT POWER UPON THE TANK

All great armies of the world rest their land combat power upon the tank. The armies of the Warsaw Pact, fashioned on the Soviet model, incorporate masses of tanks, backed by an impressive industrial base producing large numbers of quality armored fighting vehicles. Warsaw Pact doctrine anticipates use of nuclear weapons in the future war, but teaches preparedness to fight without them. For both conditions, it *emphasizes heavy concentrations of armor.*

Similarly, tank strength is the foundation of NATO defense: the armies of the Federal Republic of Germany, the United States, Great Britain, and their Allies maintain strong tank forces in Central Europe. France, Sweden, Japan, the Chinese People's Republic, and nations of the Middle East and South Asia have all made significant investments in tank design, or procurement, or both. Few states, even among the poorer nations, are without armored forces.

Firepower. Modern tanks are significantly more lethal than the armored vehicles which fought in World War II. Trying to hit another stationary tank at a range of 1500 meters, the US Army medium tank of World War II could fire 13 rounds, and would still have only a 50-50 chance of hitting. The standard US medium tank of the mid-'70s commanded the same hit probability with a single shot.

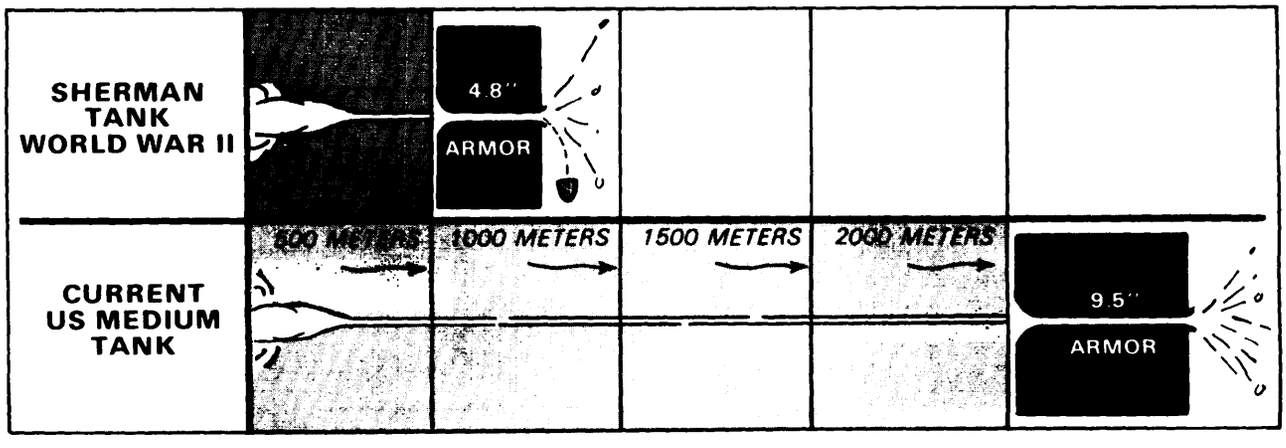
TO OBTAIN 50-50 PROBABILITY OF HIT ON STANDING TANK AT 1500 METERS:

WORLD WAR II MEDIUM TANK—HAD TO FIRE **13** *ROUNDS*

KOREAN WAR MEDIUM TANK—HAD TO FIRE **3** *ROUNDS*

MID-'70'S MEDIUM TANK—NEEDS TO FIRE* 1 *ROUND

ALSO...



The Sherman tanks of General Patton's Third Army had to close to within 500 meters of the German PzV Panther tank before the American 76mm gun could punch through the German's 4.8 inches of frontal armor. Current US medium tanks can penetrate nearly *twice* that much armor at *four times the range.*

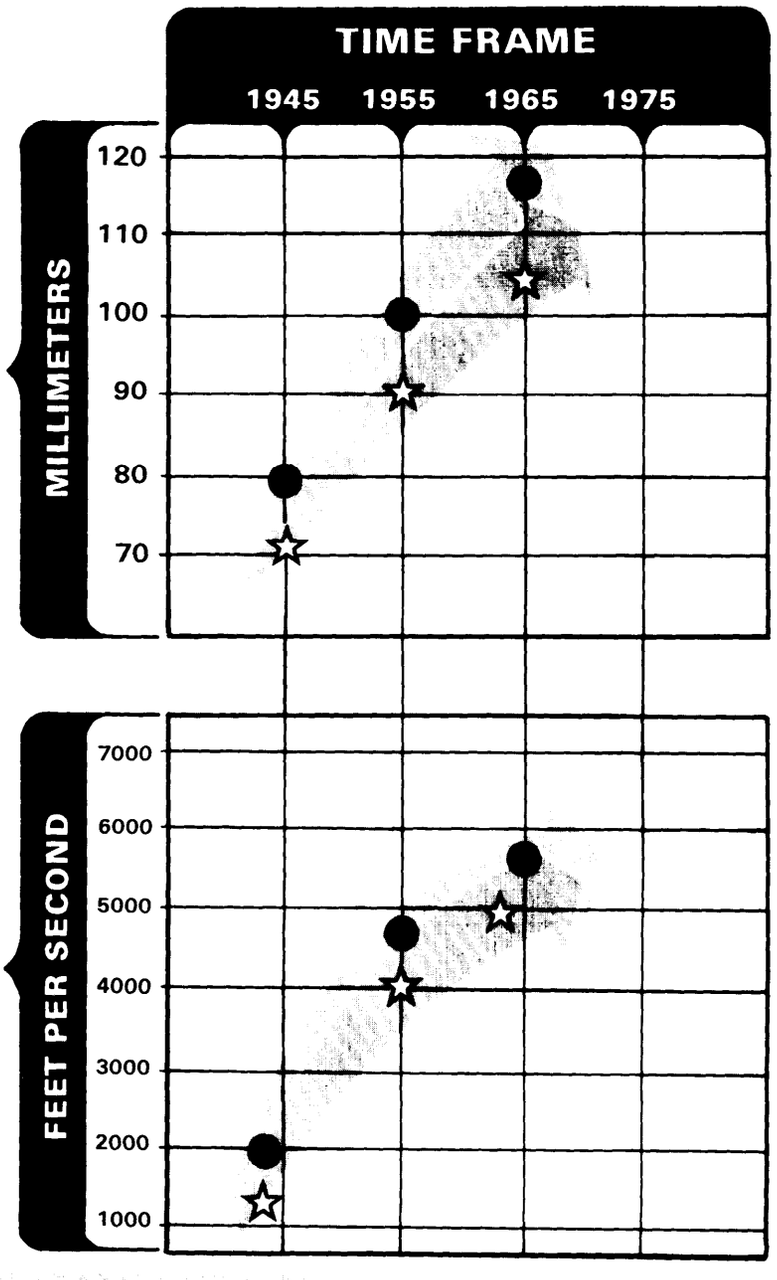
These charts plot characteristics of the main battle tanks of the major tank-producing nations over three decades. Each point records the year in which a significant improvement was introduced.

TANK GUN SIZE

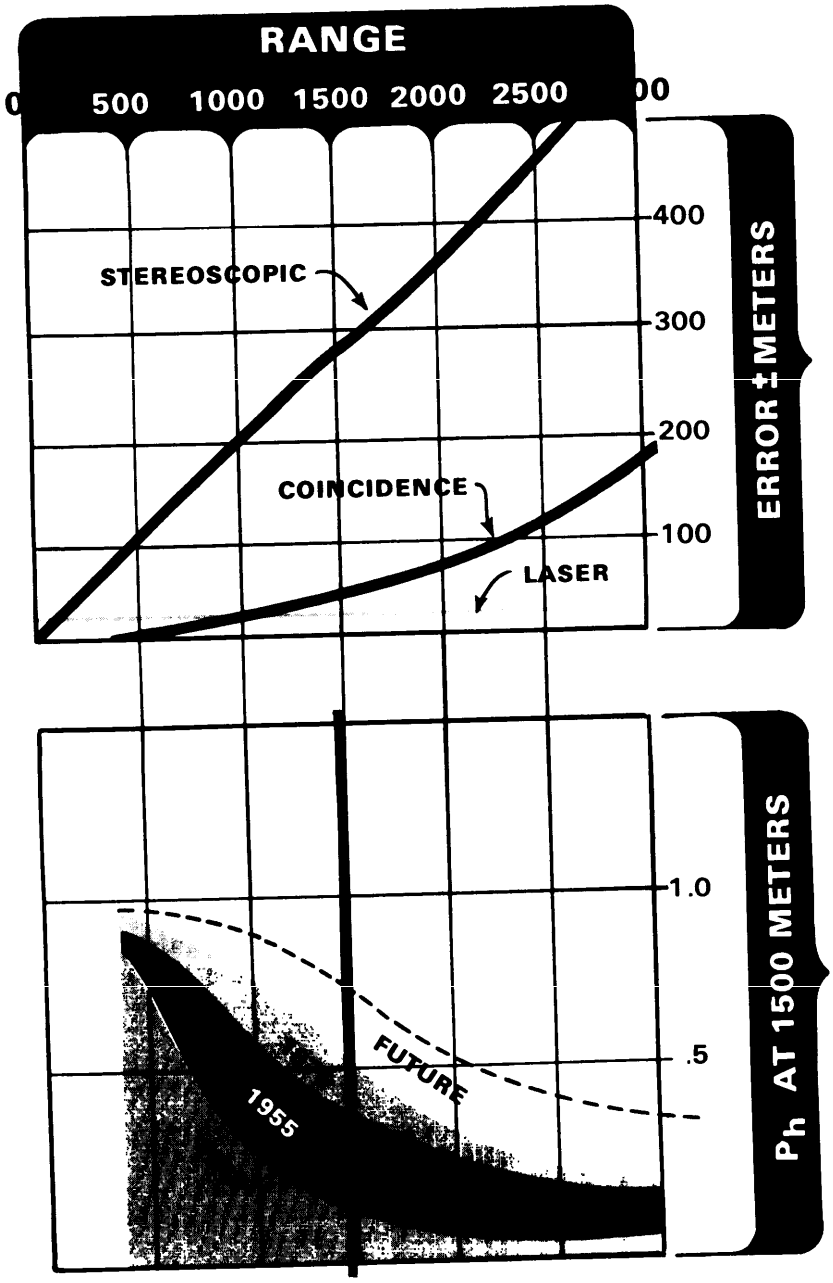
Modern tank guns are larger by one-third than the guns of 1945.

MUZZLE VELOCITY

The muzzle velocity of tank projectiles has more than doubled. Rounds travel nearly one mile per second.



Improvements in gun accuracy and range have been significant.



ACCURACY OF RANGE FINDERS

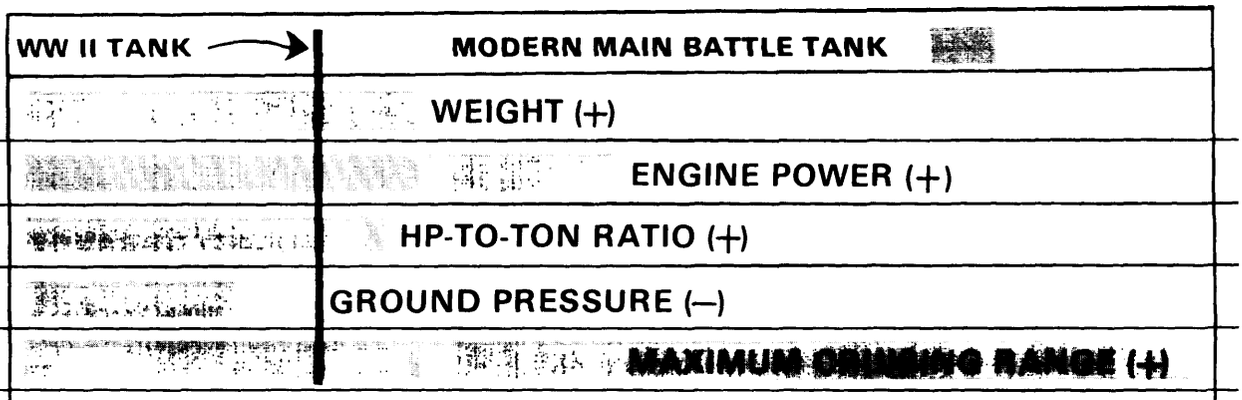
Since most tank misses are caused by inaccurate range estimation, the unaided optical sights of WW II were replaced first by stereoscopic range finders, then by coincidence range finders, and finally, in the mid-'70s by laser range finders.

ADVANCE IN TANK CANNON TECHNOLOGY

Taken together, these advances have increased hit probabilities ten-fold—and future tanks will mount guns of even greater range and accuracy.

* P_h = Probability of hit.

Armor Protection and Mobility. Modern tanks have not only bigger guns, improved ammunition, and more sophisticated fire control apparatus, but armor protection roughly double that of World War II tanks. Nonetheless, the chief tank-producing nations have designed their main battle tanks to constrain bulk, and to balance increases in engines, track and suspension systems.



While the modern US main battle tank is one-third heavier than its World War II predecessor, it's equipped with an engine more than 2 times as powerful. Its agility has actually increased: its horsepower-to-ton ratio has increased by one-fourth, its ground pressure has decreased by one-fourth, and its maximum cruising range has increased by three times.

MISSILE-TANKS CAN SCORE HITS 9 OUT OF 10 TIMES AT 3000 METERS

Tank development accelerated in the '70s with emphasis on increasing firepower and improving armor protection. Tanks appeared which can fire antitank guided missiles as well as cannon rounds. The missiles have much higher accuracy and greater range than cannons—*50-100 percent greater.* Such missile-tanks can hit tank-size targets 9 out of 10 times at a range of 3000 meters.

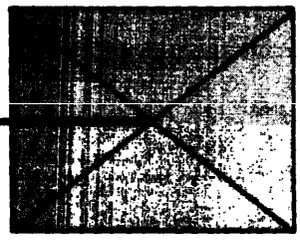
Also, most modern tanks have been equipped with night vision devices. Active sights let soldiers see targets illuminated with *invisible* infrared beams out to ranges of 1500 meters. More significant, there are passive sights, with comparable range capability, that let the operator see targets by natural light; e.g., starlight, or by detecting the heat emitted by the target (thermal imagery sights). Thermal imagery sights are effective out to and beyond 3000 meters.

Not the least of modern developments are tanks with stabilized turrets which materially aid gunners acquiring a target, and facilitate firing on the move.

In sum, the capabilities of modern tanks have been extended to as far as the tanker can see. What he can see, he can hit. What he can hit, he can kill. The tank, with its cross-country mobility, its protective armor, and its formidable firepower, has been and is likely to remain the single most important weapon for fighting the land battle. Armored or mechanized forces (organized around tanks, infantry, field artillery, air defense artillery and tactical air) have demonstrated on the modern battlefield the capability to mass and maneuver rapidly, to break through defenses, to strike deep into the enemy's rear, to encircle his flank, and *to win decisive battles.*

THE TANK, WITH ITS CROSS-COUNTRY MOBILITY, ITS FORMIDABLE FIREPOWER, HAS BEEN AND IS LIKELY TO REMAIN THE SINGLE MOST IMPORTANT WEAPON FOR FIGHTING THE LAND BATTLE

TRENDS: INFANTRY



Modern infantry is significantly more capable than its World War II counterpart. Through new weapons, equipment, techniques, and tactics, the infantry remains a versatile fighting force.

INFANTRY CAN INFLICT HEAVY LOSSES ON ARMORED FORCES AT LONG AND SHORT RANGES

Antiarmor Weapons. Tanks were invented to defeat the infantry defenses of World War I, and remained, for nearly 50 years, the nemesis of infantry. During World War II, shoulder-launched rockets with shape-charge explosives (e.g., bazooka, panzerfaust) began to erode the tank's invincibility. Now, *well-trained infantry can inflict heavy losses on armored forces at both long and short ranges.* Mechanized infantry equipped with TOW and Dragon can fight in both the offense and defense against tank-heavy enemy forces.

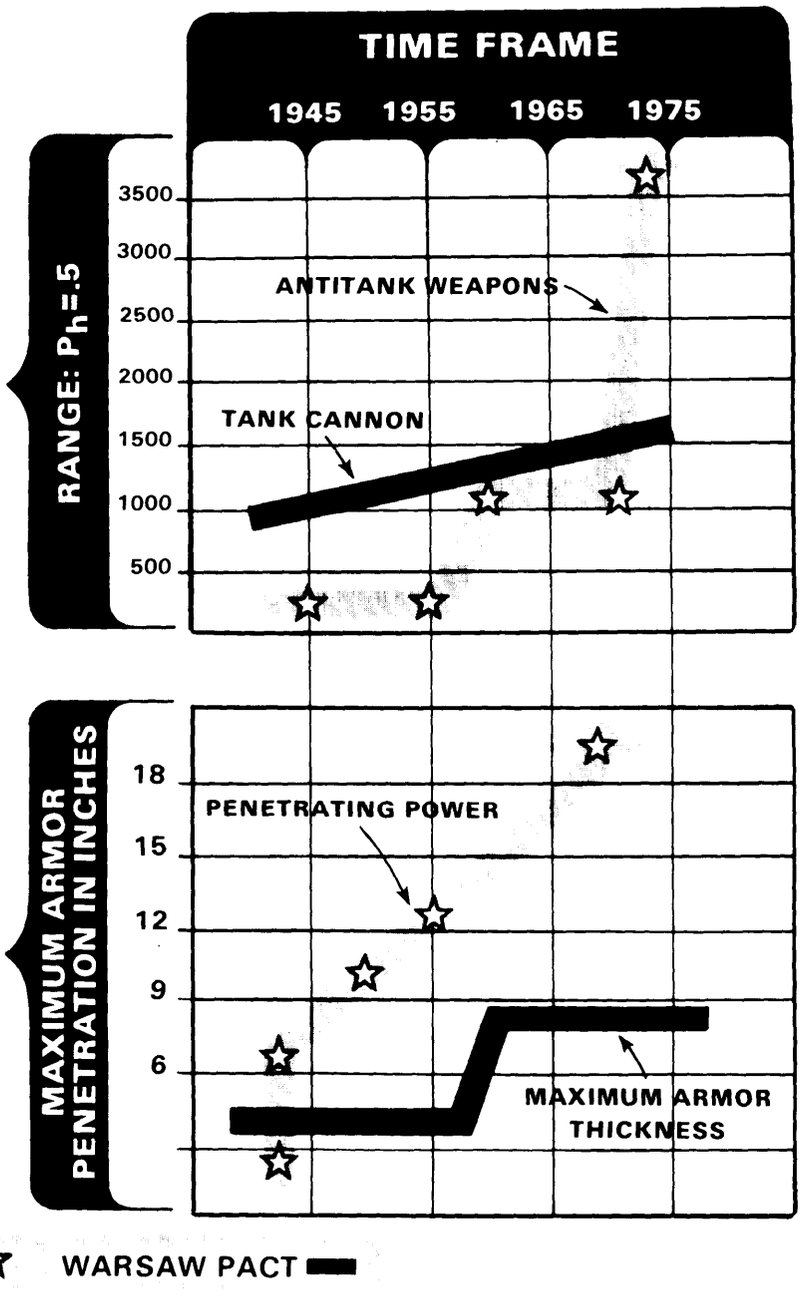
US infantry antitank weapons have not only increased in range but, as of the mid-'70s, their ability to penetrate armor has outpaced armor development.

ANTITANK vs. TANK RANGES

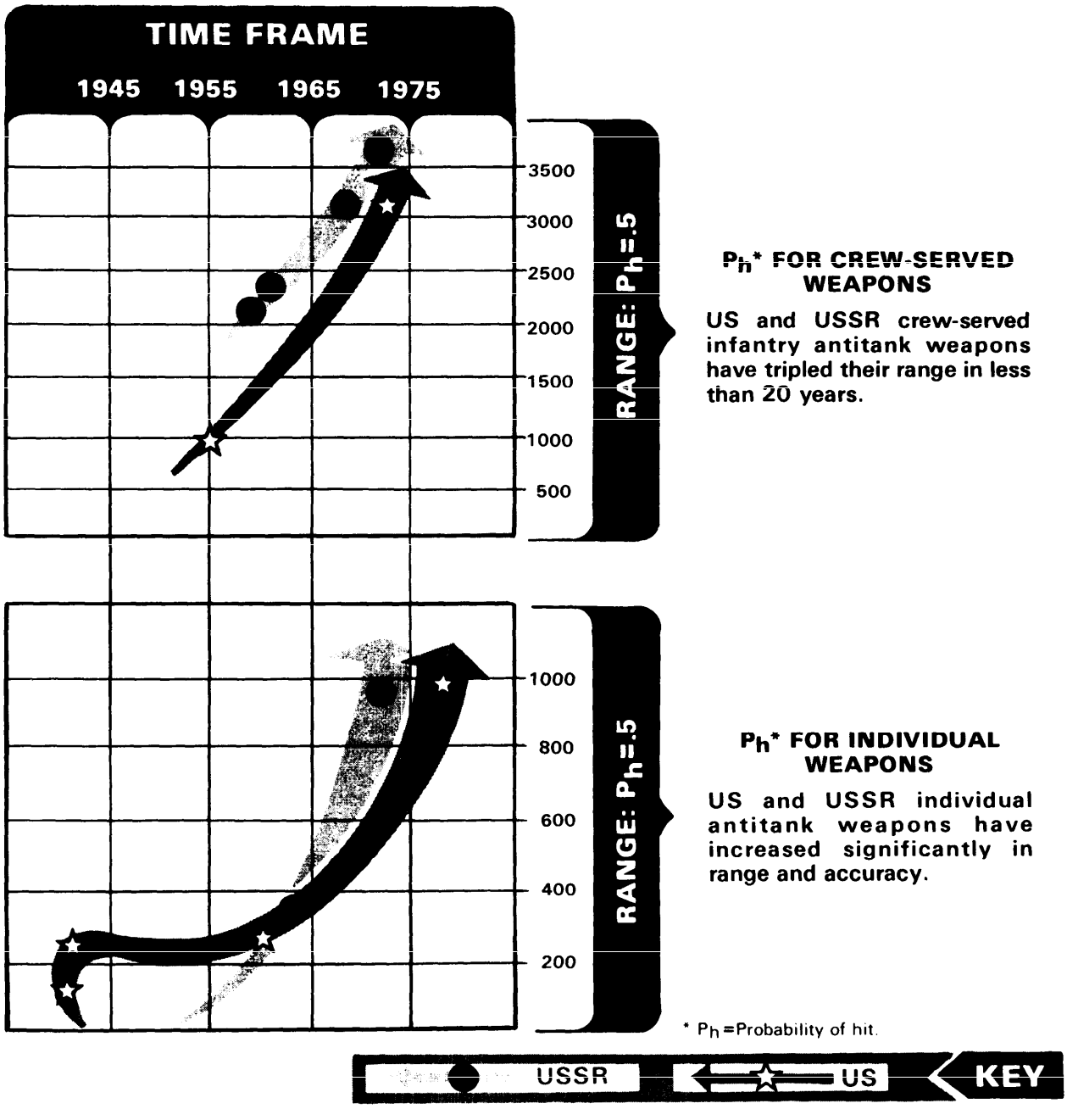
The line across the middle of the chart shows the trend for the principal Warsaw Pact medium tanks. The other line shows the trend in range capability for the antitank weapon of the US Army infantry in the same time frame. The leaping crossover was the result of introducing the tube-launched, optically-tracked, wire-guided (TOW) missile in the early '70s.

PENETRATION vs. ARMOR THICKNESS

Increases in armor penetrating capability kept pace with the increases in range and accuracy. This chart shows the trend in penetrating power of US weapons compared with the growth in the maximum thickness of armor of the Warsaw Pact tanks.



Other nations, notably the USSR, have progressively fielded infantry weapons of comparable range, accuracy, and hitting power. Additionally, both the US and the USSR have improved shorter range weapons, so as to achieve high accuracy with light, man-packed, hand-held weapons.



P_h* FOR CREW-SERVED WEAPONS

US and USSR crew-served infantry antitank weapons have tripled their range in less than 20 years.

P_h* FOR INDIVIDUAL WEAPONS

US and USSR individual antitank weapons have increased significantly in range and accuracy.

* P_h = Probability of hit.

MECHANIZATION OF INFANTRY

By the mid-'70s, one out of every two infantrymen in the US Army active forces was a member of an armored personnel carrier mounted force.

●

In Soviet-equipped forces, armored personnel carriers were 37 times more numerous than in the 1945 Red Army.

Mobility. By the end of WW II, most armies had concluded that armored vehicles for carrying infantry into battle had limited utility on the battlefield. However, as the tank increased its mobility—its operating range, its agility, its ability to cross soft ground—the inability of infantry on foot (or even in trucks) to keep up with tanks began to inhibit exploitation of the tank's full combat power. Moreover, as armies considered the use of nuclear weapons on the battlefield, it became apparent that infantry on foot or in trucks were much more vulnerable than those in armored vehicles.

Additionally, advances in conventional artillery munitions, particularly those which cause casualties among unprotected personnel from air-burst weapons, indicated a need for overhead armor protection for advancing infantry. In the '50s, a pronounced trend developed toward "mechanization"—armored vehicles especially designed for carrying infantry.

By the early '70s, these vehicles were equipped with both the new antitank guided missiles and large automatic weapons capable of suppressing enemy infantry at ranges of 1,000 meters and beyond. Doctrinally, emphasis shifted from armored vehicles for taxiing troops into battle to an infantry combat vehicle which fights as part of the mechanized infantry squad throughout its operations.

GREATEST ADVANCES IN INFANTRY MOBILITY DUE TO COMBAT USE OF THE HELICOPTER

Mechanization provides infantry units advantages in tactical mobility over foot or truck-borne units. But the greatest advances in infantry mobility have been brought about by the helicopter emerging as a fully capable member of the combined arms team.

The US Army, which has had more experience with helicopters in battle than any other army in the world, has exploited the helicopter in its organizations, weapons system design, tactics, and techniques. Provided helicopters, the commander on the modern battlefield possesses tactical flexibility, command means, and logistics markedly better than those at the disposal of his predecessors in WW II or Korea.

HELICOPTER IMPACT

INFANTRY SQUAD	TIME TO COVER 30 Km	DISTANCE COVERED IN 1 HOUR
[redacted]	5 HOURS	6 Km
[redacted]	2 HOURS	15 Km
[redacted]	15 MINUTES	120 Km

Today, heliborne infantry can move about the battlefield 20 times as fast as foot-mobile troops, and 8 times as fast as mechanized forces.

Flexibility. During the past decades, infantrymen have developed battlefield techniques and tactics enabling them to survive against the most lethal conventional weapons and to continue as a versatile component of the combined arms team. In fact, in compartmented places where armored or mechanized forces cannot maneuver freely (sections of swamps, mountains, jungles, or cities), and where observation and fields of fire are limited, infantry maintains the central role.

WHERE ARMORED OR MECHANIZED FORCES CANNOT MANEUVER FREELY, INFANTRY MAINTAINS THE CENTRAL ROLE

The infantryman of airmobile, airborne, or infantry type divisions fights afoot, but, in some cases, *his mobility can be greater than that of his mechanized counterpart.* Strategically, he is easier to deploy. Airborne forces can be introduced directly into the battle area over very long distances by parachute. On the battlefield, he and his weapons can be moved about by helicopter. He can often achieve surprise more readily than armored task forces, and more quickly develop critical mass. Dug in, he is difficult to dislodge. He can ambush advancing armor, seize and hold key terrain, block against a breakthrough, and slow and canalize a penetration.

The mechanized infantryman can fight from his armored carrier while maneuvering across the battlefield, adding his suppressive fires and observation to armored task forces. When tanks cannot advance, he often takes the lead. He can, by fire and movement, eliminate antitank gunners concealed in woods or buildings, breach minefields, and employ stealth or airmobility to seize key terrain.

TRENDS: FIELD ARTILLERY



ARTILLERY CAUSED MORE THAN HALF OF THE CASUALTIES DURING WORLD WAR II

During WW II, the necessity for massed and sustained firepower closely integrated with large and mobile maneuver forces accelerated artillery developments. Artillery emerged as the greatest casualty producer of that war, causing more than half of the casualties sustained by all armies. Modern artillery weapons and munitions and techniques for their employment have significantly improved in the last thirty years, and all major armies hold substantial artillery inventories. And almost all of the smaller nations have been provided modern artillery weapons by the larger world powers.

SOVIET ARTILLERY DENSITIES IN DIVISION ZONES OF ATTACK

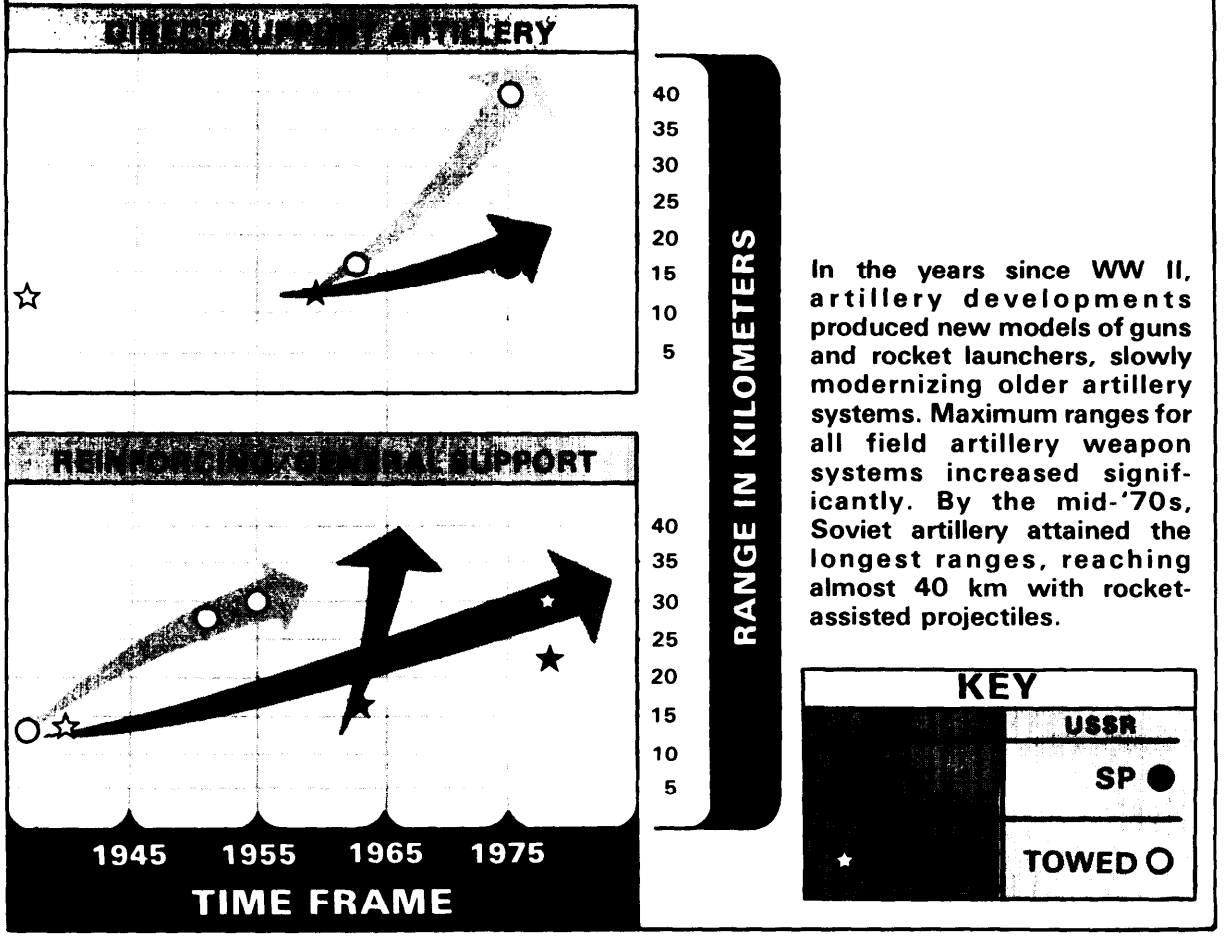
YEAR	BATTLE AREA	ATTACK ZONE IN KILOMETERS	TOTAL GUNS IN ZONE	GUNS PER KILOMETER
1941	MOSCOW	10	30	3
1942	STALINGRAD	2	340	170
1943	KURSK	2	460	230
1945	VISLA-ODER	2	500	250

In WW II, the Soviets relied increasingly on massive concentrations of towed artillery of simple and rugged design, backed by rocket launchers equally simple and inexpensive to produce. As the Soviets developed their breakthrough offensive tactics, they began to increase their artillery in support of breakthrough areas.

Soviet doctrine continued to stress offensive breakthrough tactics into the '70s, requiring artillery densities of 70-100 tubes per kilometer in support of the leading maneuver forces. Nations using Soviet equipment and doctrine have adopted similar techniques, as evidenced in the 1973 Middle East War.

US techniques for concentrating artillery during WW II relied on fire control procedures to mass the fires of separated units onto a single target area. With these techniques and improved radio communications, one forward observer could request and receive the fires of all of the artillery battalions operating within the corps and in range of the target. Time on target (TOT) surprise fire techniques produced high shock effect among unprepared and exposed infantry. Responsiveness and lethality were significantly increased in 1943 with the introduction of the variable time (VT) fuze. And US artillery increasingly emphasized self-propelled weapons to maintain the fast tempo of mobile warfare. These developments were further refined following WW II and remain significant elements of US artillery doctrine.

MAJOR TRENDS IN RANGE AND MOBILITY OF CANNON ARTILLERY



Artillery Munitions. Since 1945, new explosives and munitions have greatly increased the firepower lethality per shell. Improved conventional munitions, when compared to ordinary high explosive rounds, provide up to *4 times the amount of casualty effect against personnel targets.* Projectiles with time-delay submunitions extend the suppression capability of a single round over a considerable period of time after impact, and small scatterable antitank mines can be employed by indirect artillery fire.

In the mid-'70s, US artillery made revolutionary advances in lethality, and will soon add a point destruction capability to its traditional role of suppression. *Precision guided projectiles fired from standard cannon will be able to kill single tanks with a very high probability of first round success.* These projectiles are guided to either a moving or stationary target by a forward observer illuminating the target with a laser designator. Multiple targets can be hit in quick succession.

Mobility. Improvements in artillery ground mobility, particularly in Western armies, increased the capability of artillery to keep pace with the increasing tempo of modern mechanized warfare. Artillery in US armored and mechanized divisions is entirely self-propelled, enabling it to move with fast armored thrusts, or displace laterally to concentrate fires quickly in a threatened defensive sector. The Soviets, in contrast, support their mechanized forces with extensive numbers of towed cannon and motorized rocket launchers. In the early '70s, the Soviets recognized the mobility limitations of towed artillery to support their doctrine of fast and deep offensive operations, and began to increase their inventories of self-propelled guns.

ARTILLERY IN US ARMORED AND MECHANIZED DIVISIONS IS ENTIRELY SELF-PROPELLED

Fire Control and Coordination. Since WW II, advances in fire direction, observation, and coordination have similarly added to the responsiveness, flexibility, and accuracy of modern artillery firepower. In the '60s, small tactical fire direction computers in US battalions and batteries eased the massing of surprise fires and the transfer to new targets. In the '70s, laser range finders used by US forward observers reduced initial

target range estimation errors from 400 meters, common to earlier map and binocular methods, down to as close as 10 meters. Since the forward observers range estimation is the key to fast and accurate adjusted fire, *laser ranging produces significant increases in first round effect.*

Also in the '70s, the US Army devised new techniques to improve responsiveness. Response times to provide suppressive fire against ATGM or other infantry weapons were reduced from minutes to seconds by streamlining fire control procedures in the fire direction center (FDC) and at the guns, and by dedicating batteries to maneuver companies moving to contact.

RESPONSE TIMES TO PROVIDE SUPPRESIVE FIRE WERE REDUCED FROM MINUTES TO SECONDS

Soviet artillery continued to rely on older fire direction techniques and coordination procedures. Fire planning and coordination was centralized at very high levels, reducing responsiveness to the maneuver units, but providing very effective massed firepower in support of breakthrough operations. US fire planning techniques were more decentralized and adaptable to rapid and unexpected changes in the course of a battle.

Automated fire control systems, like TACFIRE, will play an increased role in artillery gunnery, planning, and coordination. The TACFIRE system will improve US artillery support to the maneuver forces significantly. TACFIRE automates most of the procedures which were previously accomplished manually, and provides greater accuracy, reduces firing data computation times, and speeds the flow of intelligence, survey and metrological data.

SYSTEMS LIKE TACFIRE PLAY A SIGNIFICANT ROLE IN IMPROVED SUPPORT TO MANEUVER FORCES

Artillery Suppression. Increased ranges, improved firepower, and better fire control underscore the importance of artillery as a prime suppressive weapon against opposing infantry weapons, tanks, artillery, and air defense artillery. Artillery suppresses antitank guided missiles by using high explosives to drive the gunners from their sights or smoke to block or obscure their vision. Smoke munitions can also block the vision of attacking tanks; HE (high explosive) fired at tanks causes them to button-up, reducing the crews' effectiveness by as much as 50 percent. Artillery can now

reach farther to suppress air defense weapons. Artillery improvements joined with better locating systems also increase the potential of modern artillery to counter opposing indirect fire weapons, particularly those that shoot indiscriminately or do not take measures to avoid detection.

Counterfire. Field artillery counterfire is the attack of enemy indirect fire systems and includes all activities necessary to direct the attack of enemy mortar, cannon, and rocket or missile systems. During WW II and the Korean Conflict, the counterfire function was performed at the corps artillery level. On the modern battlefield, greatly increased corps frontages, extended communication requirements, and the expected density of targets make the division artillery a more logical echelon to conduct counterfire. Divisions have been given the assets required to do this job in the form of a *target acquisition battery* organic to division artillery and by habitual assignment of corps cannon battalions to support the division. Types and amounts of FA allocated the division will be in accordance with the tactical situation and the opposing threat.

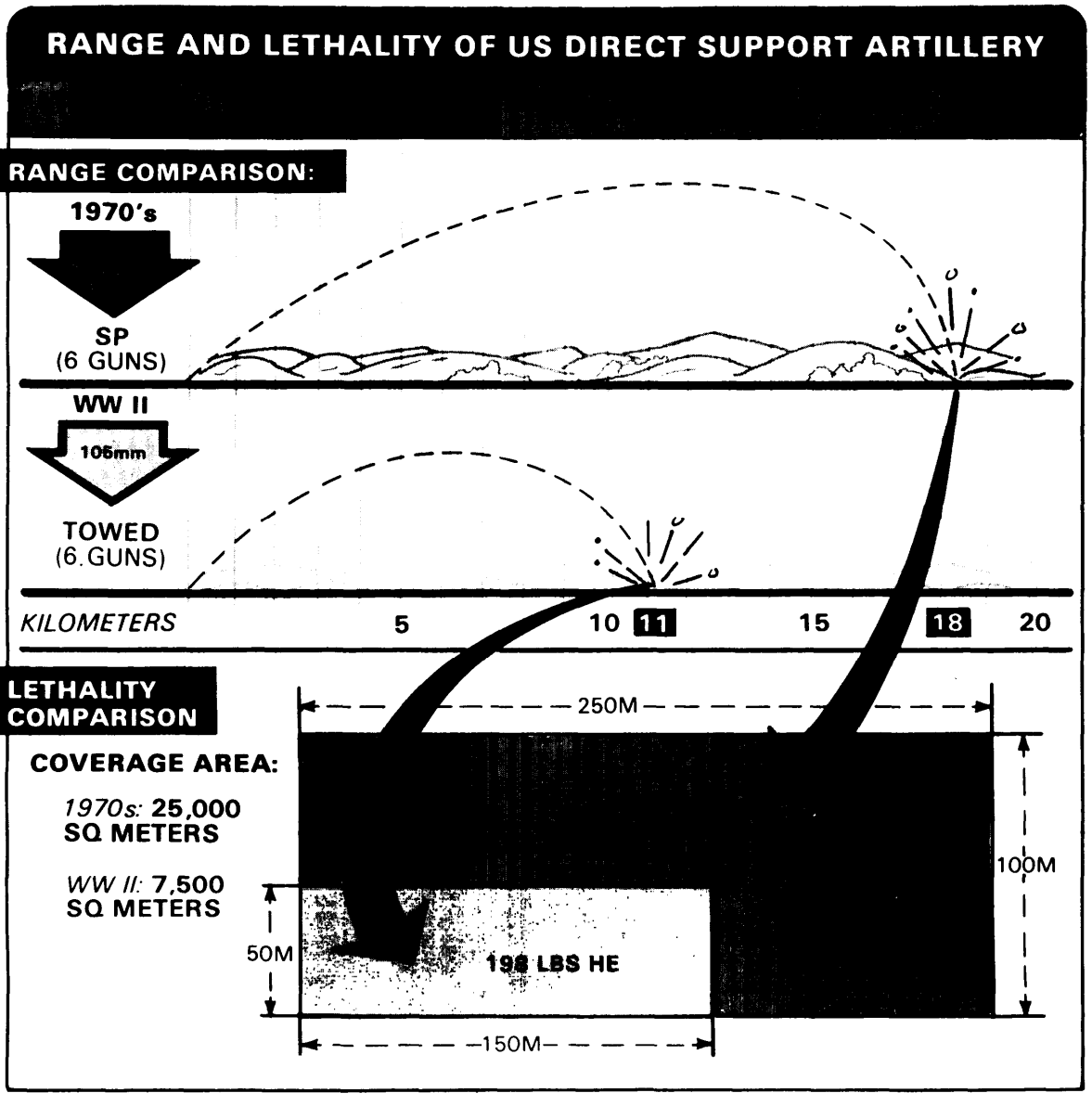
Direct Support Fires. Larger weapons introduced at the direct support level in US armored and mechanized divisions moved the lethal reach of the maneuver commander beyond that of his WW II or Korean War counterpart.

DIRECT SUPPORT WEAPONS

Soviet equipped armies use smaller caliber direct support weapons, but they have higher rates of fire, and are available in greater numbers.

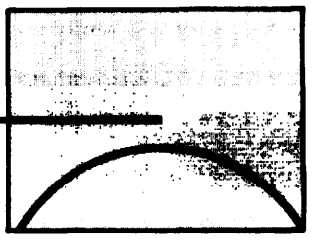
UNIT	AMT	WEAPON
USSR BATTALION	18+	122mm TOWED

Firepower immediately responsive to the maneuver battalion has doubled in lethality, while range has increased almost 60 percent.

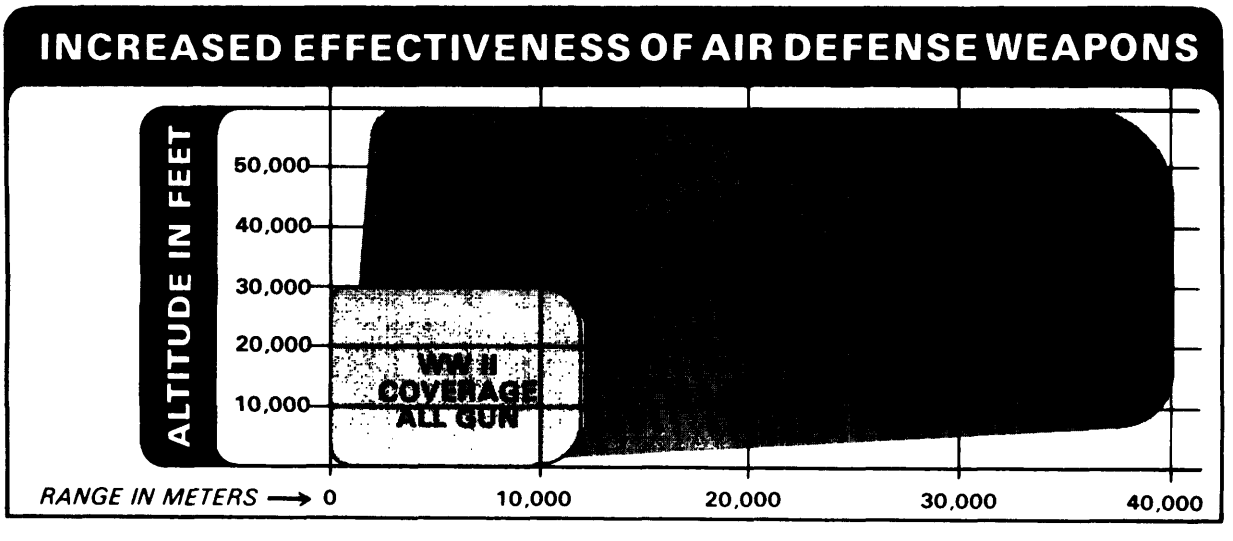


Overall, the increased numbers and capabilities of artillery weapons in all armies indicate that, when compared to past conflicts, the modern battlefield will be greatly expanded in size, lethality, and complexity.

TRENDS: AIR DEFENSE ARTILLERY



Since World War II, the range, accuracy, and lethality of air defense weapons has increased dramatically. The antiaircraft weapons of 1945 were guns, some radar controlled, but all limited in range to about 10 km. In contrast, today an air defense complex in a forward divisional area is made up of gun and missile systems covering the battle area forward and behind the area of contact for as much as 40 kilometers *(an increase of 36 times as much volume of air space controlled).* Moreover, these weapons are mobile, capable of moving with maneuver units, and providing a continuous air defense umbrella.

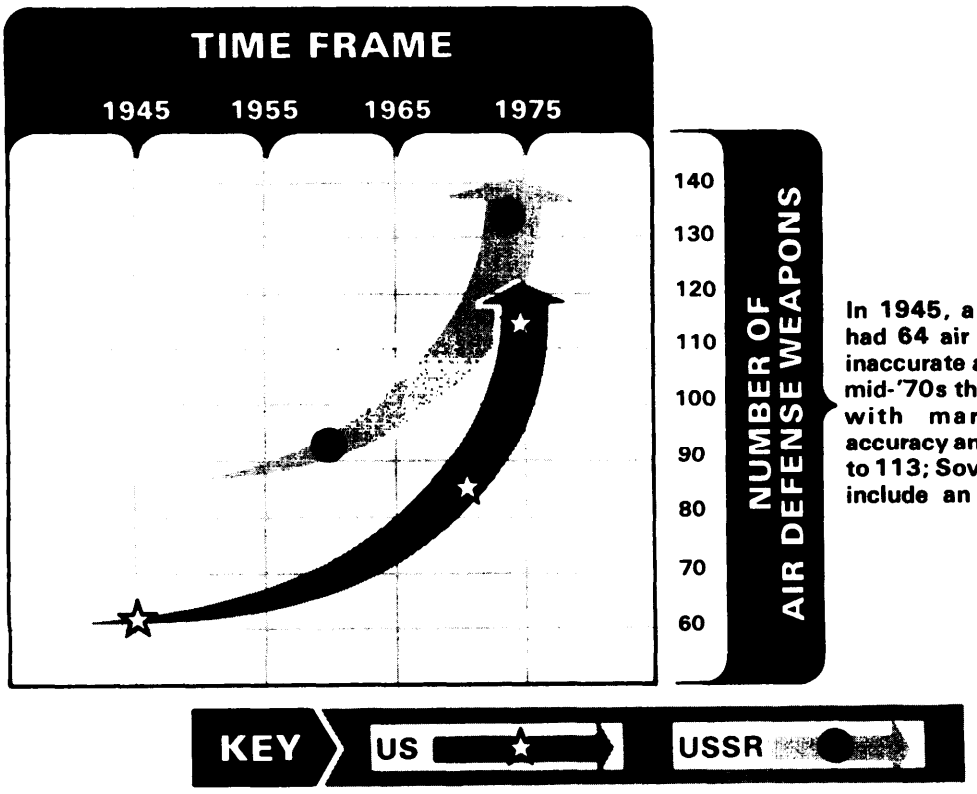


MODERN SURFACE-TO-AIR MISSILE SYSTEMS ARE HIGHLY ACCURATE AND RELIABLE

Modern air defense artillery weapons are controlled by automatic guidance systems, plus improved radar and optical sights. Probabilities of hit have increased greatly. Modern gun weapons are automatic cannon (aided by radar), some capable of firing from 40 to 60 rounds in a single one-second burst. Surface-to-air missile systems are highly accurate and reliable.

In all advanced armies, infantry, armor, and artillery units are equipped with weapons which can knock jet aircraft out of the sky. Therefore, besides the air defense artillery weapons and a multitude of direct fire weapons in maneuver units, *attacking air forces must contend with soldier-operated, surface-to-air missile systems.* Weapons such as the US Redeye and the Soviet SA-7 are relatively simple to use and, although small and light, have high hit probabilities against low-flying, high-performance aircraft or helicopters.

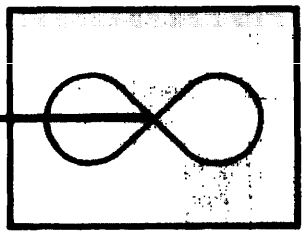
The addition of such weapons to maneuver units significantly increases the capability of modern air defenses.



In 1945, a US division typically had 64 air defense weapons, all inaccurate and short range. In the mid-'70s the number of weapons with marked advances in accuracy and range had increased to 113; Soviet-equipped divisions include an even larger number.

Air defense is integral to the combined arms team. All means to prevent suppression of our air defense weapons and ways to suppress enemy weapons must be sought. *No modern army can expect to win in battle unless its maneuver forces operate under a cohesive, extensive, and mobile umbrella of modern air defense.*

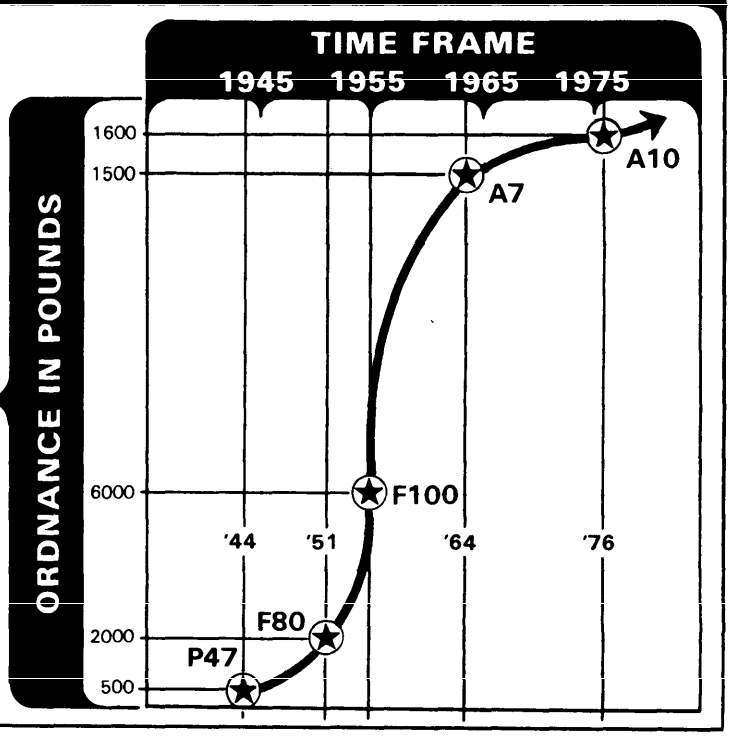
TRENDS: AIRPOWER



Close Air Support. Experience of three decades has changed the concept and practice of close air support. In some advanced forces, including those of the US, aircraft are dedicated to the support of the maneuver arms in recognition of the fact that the battlefield will provide an abundance of targets that can be destroyed by close air support.

TREND IN CAS AIRCRAFT ORDNANCE LOAD

US tactical aircraft are far more powerful than those of 1945. The USAAF *P47* of WW II, for instance, could fly 100 miles to a target, stay for less than half an hour, deliver .50 cal. machinegun fire and two 250 pound bombs, and return to its air base. Today, the USAF *A10* carries 30 times as much ordnance—about 16,000 pounds of cannon ammunition, bombs or missiles. The A10 can fly to a target 250 miles from home base, monitor the target areas for as much as 2 hours, deliver its ordnance, and return. In addition, the ordnance itself is far more lethal. The GAU-8 Gatling Gun in the A10 for example fires a 1.5 pound projectile capable of destroying tanks, armored personnel carriers, and other armored targets. The GAU-8 is 7 times more lethal than conventional 20-mm guns and for the first time combines the accuracy and flexibility of a gun with a true tank-killing capability.

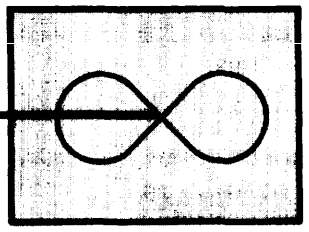


Modern Air Force tactical aircraft carry a variety of ordnance including guided and unguided bombs and missiles. Guided bombs, those with electronic steering, and guided missiles, such as the Maverick, can achieve high probability of hit and kill. Operational tests clearly demonstrate the effectiveness of the most modern fighters against tanks. Moreover, both guided missiles and guided bombs provide standoff capabilities which combine their greatly increased accuracy with sharply reduced exposure of the attacker to opposing air defenses.

MODERN AIRCRAFT ARE COMPONENTS OF THE COMBINED ARMS TEAM

Modern tactical aircraft with improved ordnance are now considered components of the Army/Air Force combined arms team. In addition to close support missions for ground units, the aircraft of today permits rapid deployment of destructive force beyond the immediate battlefield to deep-lying targets.

TRENDS: ARMY AIRCRAFT



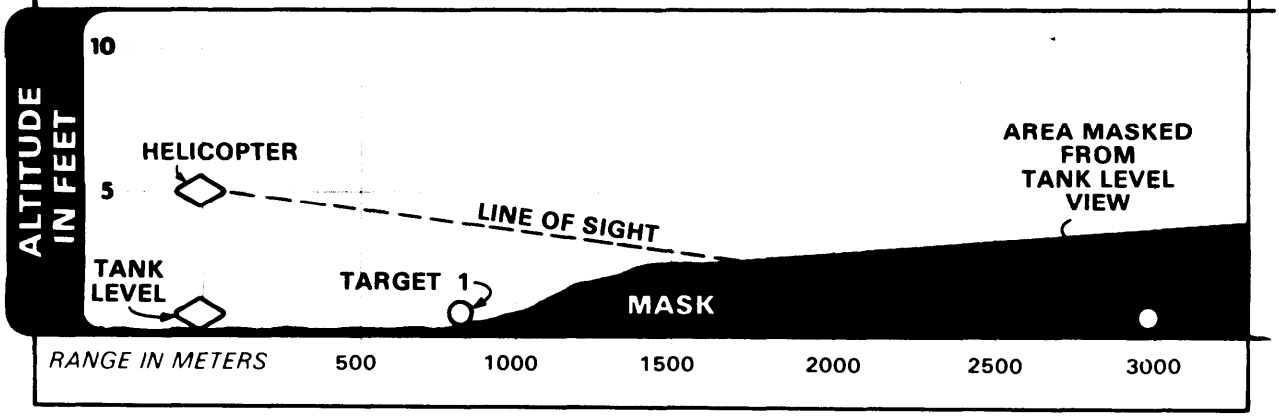
INTEGRATION OF ARMY AVIATION UNITS INTO THE COMBINED ARMS TEAM PROVIDES A NEW CAPABILITY TO THE LAND BATTLE

Firepower. The high mobility and armor-killing capability of attack helicopters makes them unique to the battlefield. *Their weapon systems are capable of defeating the entire spectrum of battlefield targets.* Ongoing development of the advanced attack helicopter (AAH) includes an advanced fire control system to provide extended range target acquisition and engagement and a laser HELLFIRE missile system which will have commonality with cannon-launched guided munitions and USAF/Navy missiles and bombs. In addition, product improvement of the existing 2.75-inch aerial rocket and the introduction of the 30mm

cannon will further enhance the staying power and killing capability of the attack helicopter. These improvements spell greater accuracy against point and area targets on the future battlefield.

AERIAL vs. GROUND RANGES

Attack helicopters can fire at extended ranges more often than their ground counterparts since they can rise above the mask to increase both target acquisition and firing range. The difference of only 5 feet in elevation could convert an 800-meter shot on the ground to a 3,000-meter kill from the air.

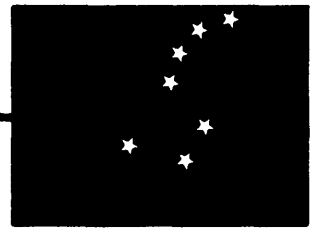


Mobility. Firepower and mobility are inseparable. By increasing the mobility of ground forces, helicopters simultaneously extend the ground forces area of influence. Examples of increased mobility include moving ground firing units and air assaulting maneuver forces. When speed is essential, distances great, and terrain about the battlefield restrictive, air assault forces make a significant contribution toward winning the battle.

Intelligence, Command, and Control. To win battles, awareness of enemy capabilities and intentions is a prerequisite. Intelligence-gathering aircraft, to include air-cavalry, provide a source for this essential information. Observation helicopters can provide commanders an aerial look at the terrain on which the battle may take place so that they may more rapidly evaluate and plan the effective use of the combined arms team and directly influence the flow of the battle.

Combat Service Support. Modern forces with their unprecedented mobility and complex equipment consume vast quantities of supplies. Therefore, a highly responsive, yet flexible logistics system is a necessity and is indispensable. One medium lift helicopter, for example, can carry almost two times the load of a 5-ton truck, five times as fast. Further, aerial resupply is not affected by road trafficability or congestion. Using external loads makes loading and unloading almost instantaneous at the point of need. Responsive logistics lighten the basic combat loads of maneuver units and increase their mobility.

TRENDS: NIGHT COMBAT



Thirty years ago the most advanced aids to infantry vision at night were infrared devices which required an infrared light source to illuminate the target area. Such devices were employed for pointing infantry weapons (and for driving at night as an aid to mobility), but their range was limited. They also suffered the disadvantage that an enemy equipped with infrared detectors could see the light source.

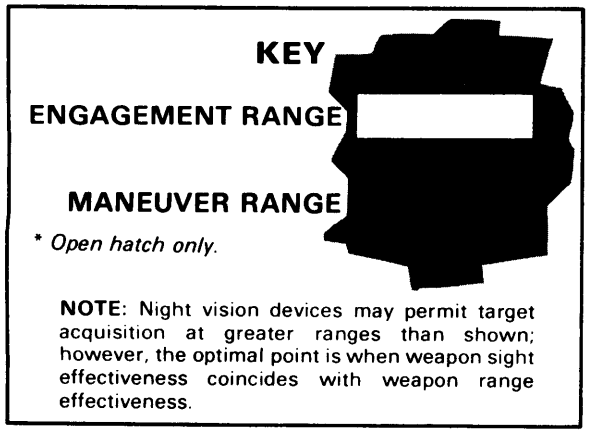
In the mid-'60s, image intensifiers became available which operated with existing light—starlight, moonlight, sky glow from cities, or battlefield fires. At about the same time, the US Army fielded crew-served weapon sights using image intensifiers with capabilities of 1200 meters under starlight, and 2,000 meters under moonlight. And for the same weight, these devices had over 4 times the range of earlier infrared equipment.

NIGHT VISION AIDS PERMIT NIGHT MANEUVERS AND ENGAGEMENT SIMILAR TO DAYTIME

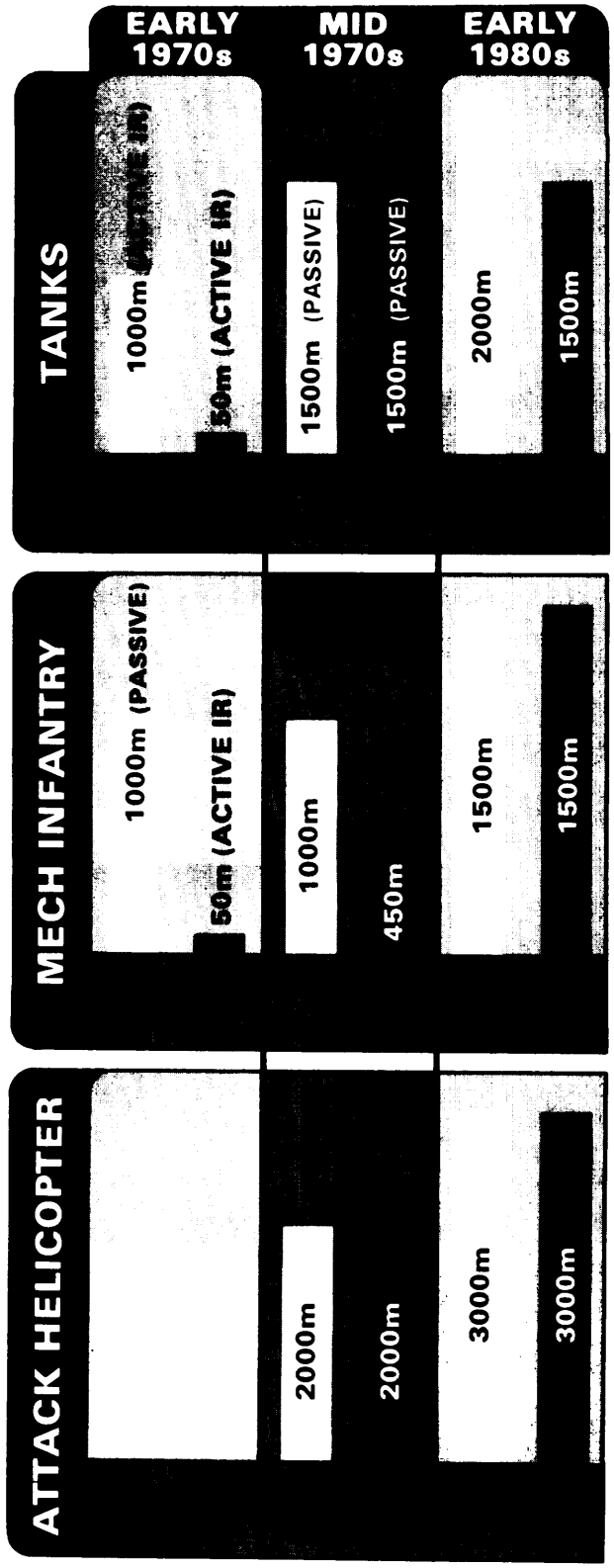
Image intensifiers are completely passive; that is, *it is impossible for the enemy to detect them in use.* By the mid-'70s, this technology led to small, night vision aids so that soon tanks, mechanized infantry, and helicopters will be able to maneuver and engage the enemy at night much as they can in the day.

Also emerging in the mid-'70s were thermal sights, entirely passive like the image intensifiers, but which detect heat radiation and construct images based thereon. These sights are particularly useful in penetrating smoke, atmospheric haze, fog, snow or rain clutters, light foliage, and camouflage. These devices are small, relatively lightweight, and can be used at night or in daylight. The detection capabilities of these sights for use in the dark or limited visibility corresponds to the effective range of their weapons.

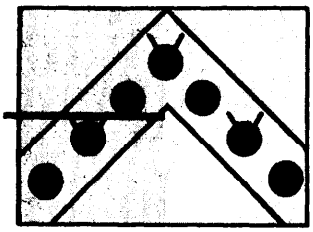
The US Army is transitioning from a night combat capability oriented on both active and passive weapons sights with ranges less than weapons capability to a full maneuver and engagement capability for armor, mechanized infantry, and attack helicopter units. The Army will further expand this night combat capability to conditions of adverse visibility such as smoke, fog, rain and haze. The nature of night combat is changing from static weapons employment in the defense to battle in which integrated combined arms teams will fight at night as they can in the day. *Among the technological races the US Army must run and win against potential enemies, few will have higher combat payoff than an edge in night-fighting capability.*



NOTE: Night vision devices may permit target acquisition at greater ranges than shown; however, the optimal point is when weapon sight effectiveness coincides with weapon range effectiveness.



TRENDS: MINE WARFARE

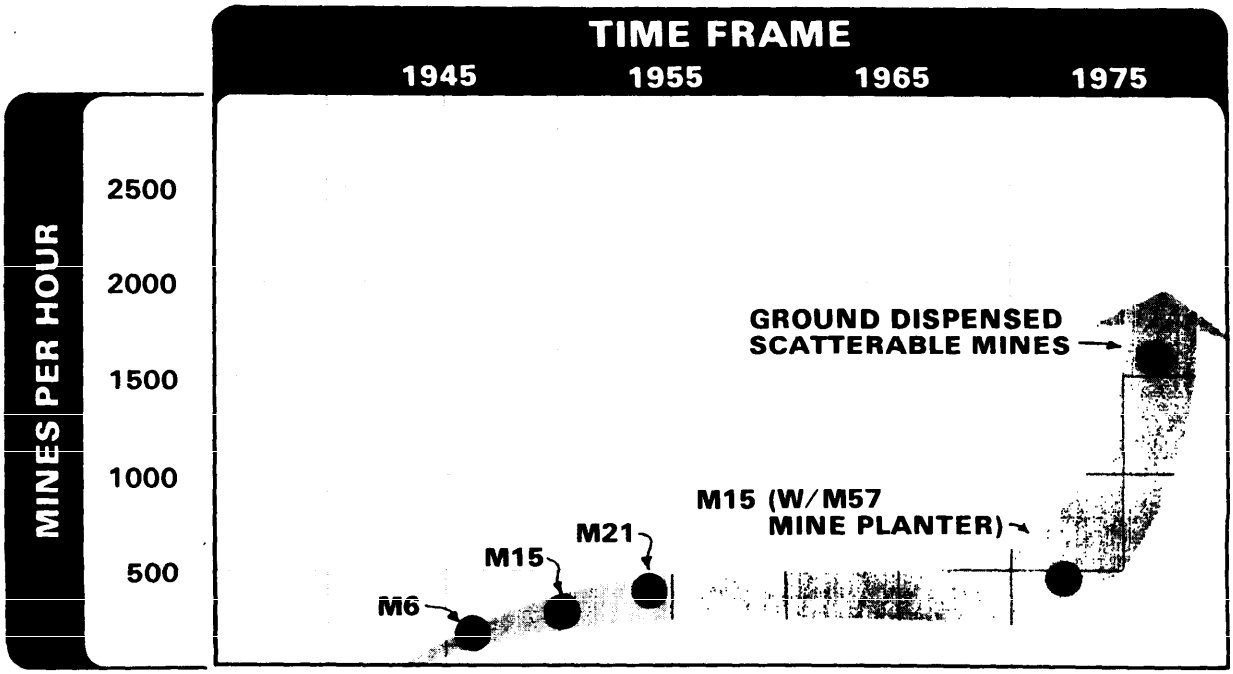


During WW II, extensive use of mines by defending forces contributed significantly to the destruction of attacking tank forces. However, the requirement to hand-emplace mines severely hampered tactical employment. Because of the time, manpower, and logistic support required, mines were emplaced before an enemy attacked and minefield locations were based on the commander's analysis of how the enemy would attack and use the terrain, rather than on the enemy's actual movements.

During the past few decades, mines were relatively inefficient because of the large amount of explosives required to impair the mobility or destroy a tank. In the mid-'70s, however, the US made dramatic advances in increasing mine lethality while decreasing size. This decreased size now permits the rapid delivery of scatterable mines by ground dispensers, artillery, and helicopter systems. Using hand-emplaced mines, the average infantry company takes nearly eight hours to lay a 350 by 250 meter minefield. Using scatterable mines, this same minefield can be layed in a matter of minutes. This rapid delivery system allows the tactical commander to quickly emplace mines directly in front or on top of an advancing enemy.

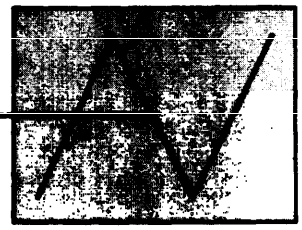
As enemy forces approach and come within range of our ATGM and tanks, mines can be delivered to canalize and slow the attack. Thus, the use of mines now provides needed time for our tank and ATGM gunners to engage the massive array of targets.

These improvements in mines have made them a more dynamic part of modern battle, and have significantly enhanced our anti-armor capability.

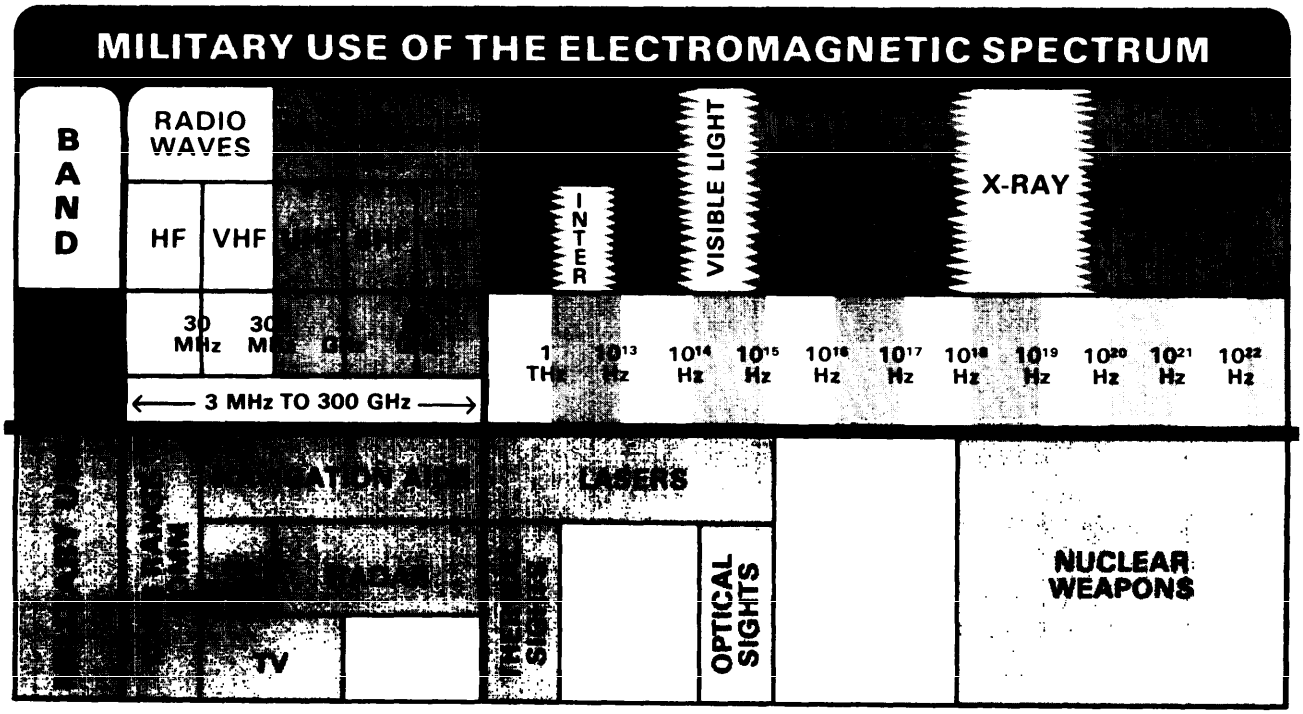


This chart depicts almost a fourfold increase in the mine laying capacity of one engineer platoon.

TRENDS: WAR IN THE ELECTROMAGNETIC SPECTRUM



In the mid-'70s, there were very few weapon systems or military organizations which were not dependent to an extent upon using portions of the electromagnetic spectrum. As modern armies strive for more efficient command and control, better battlefield surveillance, and increased target acquisition capabilities, they have both opened new opportunities for battle success and created new vulnerabilities. The following diagram illustrates how extensively the military uses the spectrum:



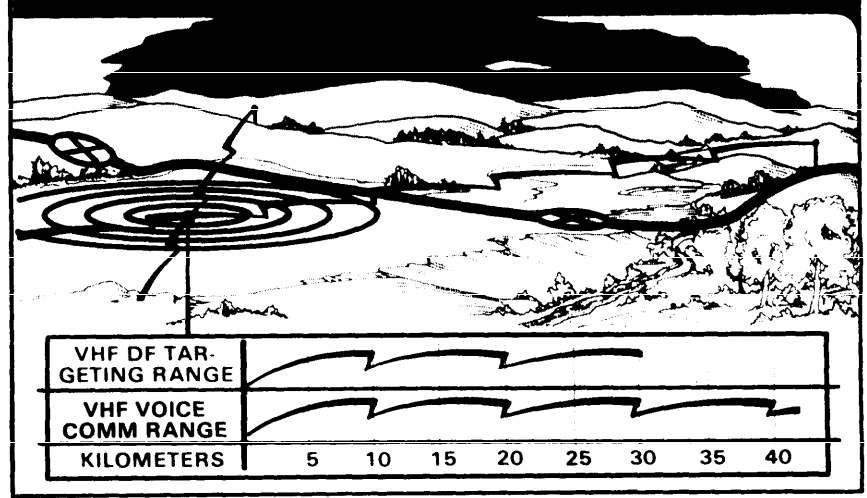
Use of the electromagnetic environment *has added* a new dimension to battle—**electronic warfare (EW).** The lessons of World War II, and every military action since, stress that combat power is useless unless it can be brought to bear quickly—at the right point, and at the right time. In the future, an invisible, yet crucial struggle will be waged to attack or defend the means of command—the key to concentrating forces—or to suppress or to deceive weapons and surveillance systems. Countermeasures will be met by countermeasures. *Battles may be won or lost by the fight in this medium.*

ACQUISITION SYSTEMS CAN BE TOTALLY DISRUPTED THROUGH DECEPTION AND JAMMING OF EMITTERS

The effects of EW can result in significant casualties among an enemy force. In the attack and defense, EW can locate and jam enemy communication emitters associated with CPs, maneuver battalions, and fire request nets, thereby disrupting command and control movement of reserves, and reducing effective fire support. Other enemy emitters associated with acquisition systems, such as radar and lasers, are equally vulnerable to total disruption through jamming and deception. EW can reduce friendly casualties by locating attacking enemy elements so they can be fired upon, and by countering enemy target acquisition and jamming.

All modern armies possess powerful transmitters for deliberate jamming or blocking parts of the spectrum. Moreover, all have equipment for locating an emitter. Using direction finding (DF) procedures, it is possible to pinpoint a radar emitter within 50 meters and a UHF communications emitter within a CEP of 1 km. Effective DF target acquisition range tends to be less than US VHF radio communications ranges, but *all radios operating within a US forward brigade are vulnerable to DF.* If there is an unobstructed line-of-sight between the DF stations and any radio in the brigade area, that radio can be intercepted and located.

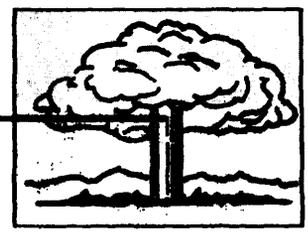
THE DIRECTION FINDING THREAT



The Middle East War of 1973 showed the payoff for EW. Both sides were well-equipped, and both used electronic measures and countermeasures in conjunction with combat power. For example, suppression of air defenses featured concerted direction finding, extensive electronic jamming, and use of homing missiles to eliminate the radar systems which controlled opposing surface-to-air missiles. Electronic sensing devices, radar, and infrared were used to locate ground forces, even foot patrols, and to take them under fire. Tank attacks were met with barrages of radio jamming designed to block effective use of tactical radios for coordinating movement and fires.

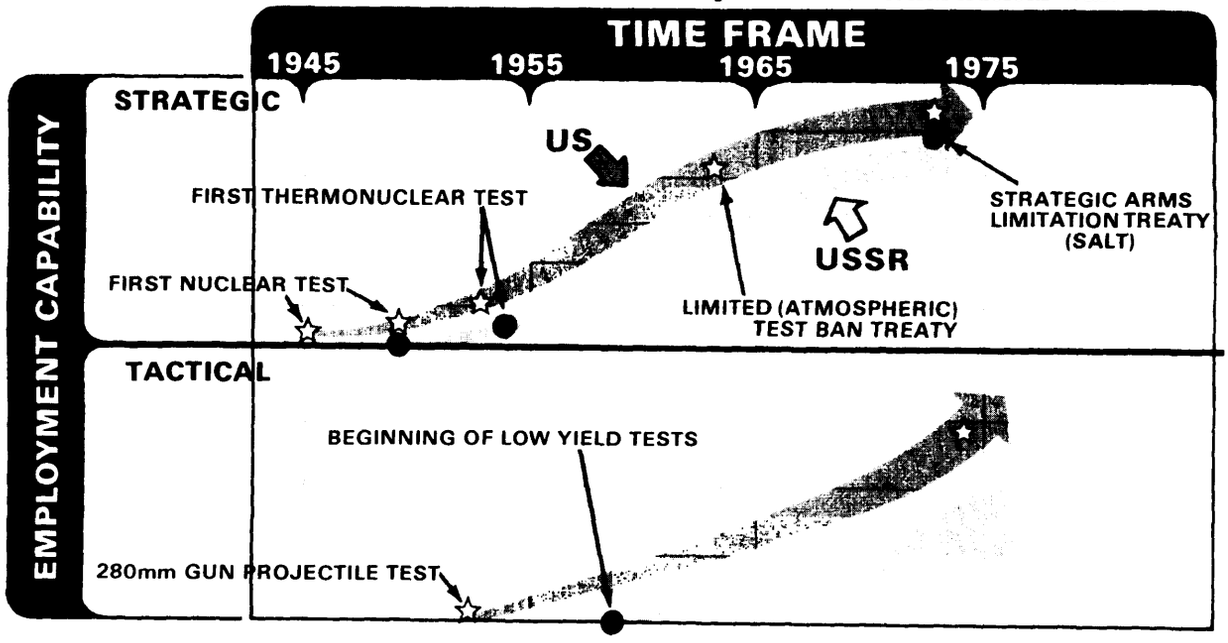
Any commander is prone to defeat, whatever his strength in numbers and weapons, if EW denies him the means to convey orders, provide for fire support, or to arrange for logistics and administration. *EW is now a form of combat power.*

TRENDS: TACTICAL NUCLEAR WEAPONS



FROM CONVENTIONAL WAR TO NUCLEAR WAR TO CONVENTIONAL-NUCLEAR WAR

At the close of WW II, the US became the first nation to develop and employ nuclear weapons. Following the war and into the '50s, many persons thought that all future wars would be strategic nuclear conflicts. As more nations became nuclear capable and a viable second strike option became a reality, the advantage to be accrued from the use of strategic nuclear weapons diminished. Recognizing this transition and to meet the needs of lower levels of conflict and flexible response, the US began to focus on the development of battlefield nuclear weapons to support the forward defense and flexible response strategy. With these developments, the pendulum has swung from conventional war to nuclear war and now to the present concept of conventional-nuclear war.



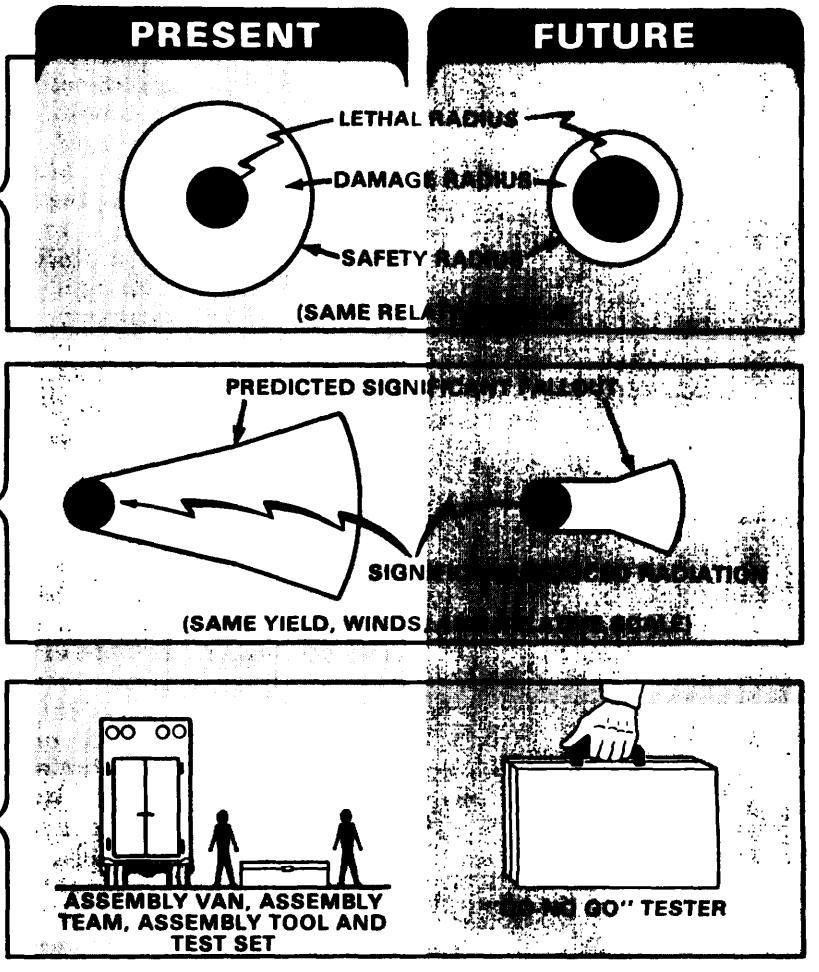
This chart depicts the strategic and tactical employment capability of the US and the Soviet Union. While parity exists in the strategic weapons, the US retains superiority in the capability to tactically employ nuclear weapons.

The current US arsenal of nuclear weapons includes numerous medium to very low yield weapons delivered by short and mid-range systems. To provide for maximum utility on the battlefield, while at the same time minimizing risk to friendly forces, civilian personnel and structures, the development trend of battlefield nuclear weapons is toward tailored effect weapons.

New battlefield nuclear weapons are being developed which will enhance the effect of initial radiation to incapacitate enemy forces. These weapons reduce the damage radius for blast and thermal casualties and present less potential for damage to friendly force or nearby communities.

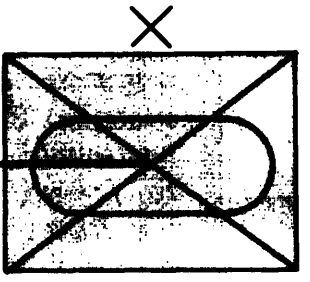
Other weapons being developed for attacking materiel and fixed, hardened targets will produce increased blast, while decreasing the production of radioactive debris and fallout.

To improve the responsiveness of nuclear weapons on the modern battlefield, new weapons will require fewer personnel, less support equipment, and will facilitate more rapid assembly and check out by delivery unit personnel.



Advances are being made in nuclear weapons survivability in a conventional, chemical, or nuclear environment. Command and control systems and devices are continually being improved. These improvements permit a safer, more secure dispersal of battlefield nuclear weapons to delivery units. Over the past decade, the tremendous increase in terrorist activity has resulted in increased requirements for weapons security. These requirements are being met while retaining availability and responsiveness of nuclear weapons to the tactical commander.

TRENDS: MOBILITY AND TEMPO



Tactical Mobility. Since World War II, all armed forces have pursued heightened mobility through advanced technology and organizational forms adapted to new means of moving, shooting, and communicating. By the mid-'70s, there was a pronounced organizational trend toward increasing the percentage of armored and mechanized troops in Soviet-equipped ground forces. Airmobility was also being stressed, although less prominently than in US doctrine. There are, however, increasing indications of added reliance on attack helicopters in an antitank role in direct support of maneuver elements.

THE "AIRMOBILE" CONCEPT IS THE MOST DRAMATIC ORGANIZATIONAL ADVANCE IN THE US ARMY

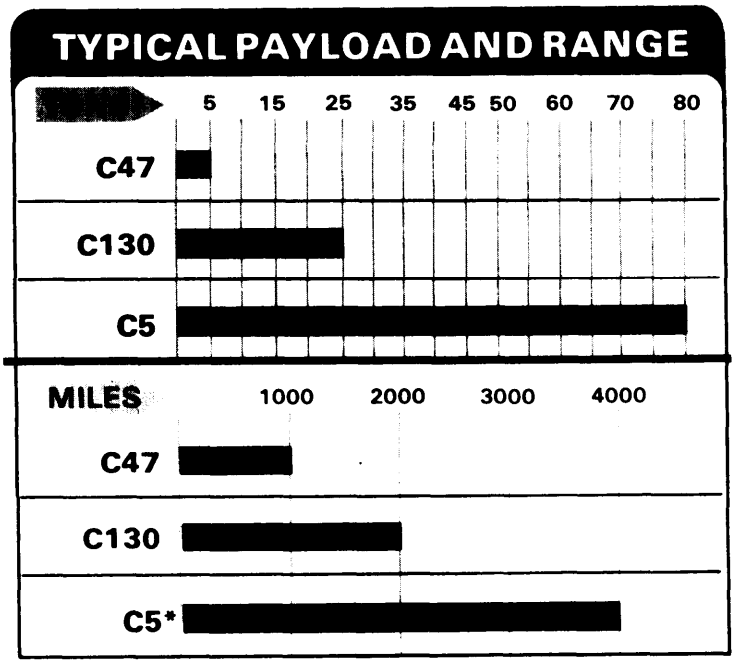
US organizational trends since 1945 have evidenced an army striving to increase tactical mobility. While the percentage of armored or mechanized forces has risen in the US Army, the most dramatic organizational advance has been the adoption of the "airmobile" concept. With combat experience in Southeast Asia, *the US Army is the world's foremost exponent of airmobility.* By the mid-'70s, the US had fielded organizations designed to move infantry and artillery about the battlefield rapidly by helicopter, plus air cavalry and attack helicopter forces. The US, almost uniquely, regarded air cavalry as being important for reconnaissance and economy of force, a way for a commander to exert influence over large areas. *Attack helicopter units provided a ground commander an aerial antitank force with a day and night mobility differential 10 to 20 times greater than armored reserves.*

Strategic Mobility. A nation's ability to project combat forces rapidly to any place in the world may shape its national power. Since future conflicts are likely to be short

and violent, the need for a swift build-up of combat units is greater than ever before. *Forces must not only be trained for immediate commitment to battle, but they must be provided the means to transport them to the scene of the conflict.*

Sealift has long been the traditional means for projecting US combat power abroad. And it remains today the backbone of strategic mobility. Without it, very large forces cannot be deployed or continuously resupplied. The advent of modern roll on/roll off shipping and containerization has significantly reduced the time required to deploy large forces. The US Navy, responsible for keeping the sea lanes open, and American and allied shipping can provide US land forces significant capabilities to operate overseas.

The most dramatic increase, however, in strategic mobility for US land forces has come about via airlift.



Aircraft designed for inter-theater airlift have a 13-fold increase in payload and a 6-fold increase in capacity over their WW II predecessors. With the C5, tanks, APCs, artillery pieces, and helicopters can be airlanded overseas in hours. All in all, considering payload, range, and speed, the C5 is 100 times more productive than its World War II counterpart, the C47.

**SPEED MORE THAN 500 MPH—More than twice that of the C47.*

Fifty years ago, a highly trained army division was considered capable of advancing only 2 to 4 km per day. In 1939, the German Army introduced the world to "lightning war," the *Blitzkrieg*. In France, after three days spent penetrating the thick Ardennes forest and closing up to the River Meuse, Guderian's XIX Corps covered 250 km to the English Channel in 8 days, averaging 30.5 km a day (its best drive in one day was 90 km). Rommel's 7th Panzer Division covered 177 km in 8 days at 22 km average per day. In Russia, German initial rates of advance were similar. Guderian's 2d Panzer Group covered 665 km in 24 days, averaging 28 km per day (its best advance in one day was 120 km).

DEPTH OF DIVISION OBJECTIVES FOR THE SOVIET ARMY

PERIOD	DEPTH OF OBJECTIVES IN KILOMETERS		
	INITIAL OBJECTIVE	INTERMEDIATE OBJECTIVE	FINAL OBJECTIVE OF THE DAY
	8 — 12	—	2 — 4
WORLD WAR II			
1941	1.5 — 2.5	—	3 — 4
1942	2 — 3	—	4 — 6
1943	2 — 4	—	5 — 7
1944	3 — 5	5 — 7	10 — 12
1945	3 — 5	6 — 8	18 — 20
CURRENT	**15 — 20**	—	**35 — 40**

The Soviet Army in WW II quickly learned the value of maintaining high rates of advance and of driving for deep objectives. This table, taken from a mid-'70 Soviet source, shows the trend toward the greater depth of objectives assigned to Red Army divisions.

As can be seen from the table, the Soviets perceive division objectives ten times deeper than they sought at the outset of World War II.

Soviet Army doctrine strongly holds that mobility and a high tempo of combat operations bring success in battle; they hold this to be especially true in nuclear warfare—*a high rate of advance reduces the danger of troop destruction by enemy nuclear strikes.* Forces opposing Soviet equipped and trained troops must expect intense, highly mobile combat. Battle will be fought on a scale and at a tempo rarely seen in all history.

The commander who seeks a greater understanding of a specific modern battlefield must first appreciate the potential of the world's first line armies. The leader on the modern battlefield must be an expert in weapons effects and employment—both his own and those of the enemy. War is becoming increasingly complex. Morale and motivation must be backed up in weapons and tactical proficiency.

CHAPTER 3

How to Fight

FUTURE BATTLE

IN CHAPTER 2, the impact of modern weapons on the modern battlefield was discussed in detail. Changes in intensity and lethality of modern battle and the need to fight outnumbered present the US Army with challenges greater than those faced on previous battlefields. The objective, however, remains unchanged—***to win the land battle.*** Therefore, the US Army must obtain the maximum combat effectiveness of all forces in the combined arms team. To achieve this effectiveness our Army depends on sound doctrine. This doctrine must be derived from an accurate assessment of the dynamics of modern battle, and an understanding of all its implications. Then to be effective, *this doctrine must be communicated throughout our forces.*

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The most demanding mission that could be assigned the US Army remains *battle in Central Europe against the forces of the Warsaw Pact.* How to fight the conventional battle in that environment is the purpose of this chapter. The forces of NATO may, however, be called upon to conduct conventional-nuclear as well as purely conventional operations. Chapter 10 discusses these operations and the associated weapons effects and implications. Additionally, the problems, tactics and techniques associated with the conduct of tactical nuclear warfare will be treated in a separate manual of the 100-series.

LEADERSHIP

Modern combat can be sustained at high levels of intensity, day and night, for prolonged periods. At the outset, let us recognize that winning in such battle demands courage, audacity, confidence, and stamina. But tactical and technical proficiency is equally important—*we must not compensate for a lack of competence among our leaders with the bravery of our soldiers.*

Troops in combat at any echelon need a strong, cool, thoughtful, resourceful leader capable of welding his followers into a cohesive unit. Such a leader promotes cohesion by inculcating discipline, a sense of duty, a conscious pride of unit, and a feeling of mutual trust and obligation among its members. Such a leader is prepared to exploit any opportunity on the battlefield with energy and boldness. Because command communications may be sparse, intermittent, or at crucial times, nonexistent, he must act responsibly and intelligently on his own. The strength of our Army lies in the decentralization of responsibility and authority to the commander on the ground. We cannot afford to lose that additional combat effectiveness which derives from the intelligent actions of trained leaders operating under a flexible system of mission-type orders. Thus, each officer must be imbued with the idea that success will depend upon the skill, initiative, and imagination with which he seeks to accomplish the assigned mission within the intent and concept of his commander. Our success in finding and training such leaders will determine how well we are able to fight.

OUR FIGHTING ABILITY WILL BE DETERMINED BY HOW WELL WE TRAIN OUR LEADERS

TERRAIN

Land battle takes place amid the variances of the ground and the works of man upon it. Relief, surface conditions, drainage, vegetation, highways, cities and farms—these and countless other features of the earth's surface profoundly affect combat. For Generals, terrain is mainly a matter of communications: how the ground and man-built facilities influence strategic ingress, large scale troop movements, and logistics.

For Colonels, Captains and other leaders, terrain is mainly a matter of weapon systems employment: observation, fields of fire, cover and concealment. Corps and division commanders consider road and rail networks, airfields and ports, major terrain compartments, large bodies of water, and extensive built-up areas. Brigade, battalion, and company commanders look for dominating heights, weapon sites, fields of fire, shielding hills, depressions, buildings, and terrain aids or impediments to movement.

FAILURE TO MAKE FULL PROTECTIVE USE OF TERRAIN CAN PROVE FATAL

The range, accuracy, and destructive effects of weapon systems employed on the contemporary battlefield impose fatal penalties upon units and individuals failing to make full protective use of terrain. For example, we must move via covered and concealed routes to mask friendly forces from enemy observations and fires and fight from skillfully camouflaged battle positions with frontal cover in the suspected or known direction of the enemy.

The tactical leader visualizes what terrain can do for the enemy. He then positions or maneuvers his forces on the ground to outwit and outfight the enemy. Terrain, therefore, provides a combat equalizer or multiplier when the tactician uses its strengths and reinforces its natural advantages through mining, barriers, and other obstacles.

BATTLEFIELD DYNAMICS

To win a battle, four prerequisites must be met:

1. Adequate forces and weapons must be *concentrated* at the critical times and places. The combination is combat power.

2. The battle must be *controlled and directed* so that the maximum effect of fire and maneuver is concentrated at decisive locations.

3. The battle must be fought using *cover, concealment, suppression,* and *combined arms teamwork* to maximize the effectiveness of our weapons and to minimize the effectiveness of enemy weapons.

4. Our teams and crews must be *trained to use the maximum capabilities of their weapons.*

If all these functions are performed correctly and on time, and if the resulting combat power is skillfully applied by aggressive, confident leaders and cohesive units, then the enemy will be destroyed or defeated—the mission of the force will be accomplished.

GENERALS—CONCENTRATE THE FORCES

In the division of responsibilities on the battlefield, Generals commanding corps and divisions *concentrate the forces.*

COLONELS—CONTROL AND DIRECT THE BATTLE

Colonels and Lieutenant Colonels of brigades and battalions *control and direct the battle.*

CAPTAINS—FIGHT THE BATTLE

Captains and their companies, troops, and batteries *fight the battle.*

The defender has many advantages: full use of cover and concealment, selection of the ground on which to fight, weapons sited for maximum effectiveness, reinforcement of terrain with mines and obstacles, and the choice of firing first. Because of these advantages, the defending force should be able to defeat an attacker superior in combat power by a ratio of about 3:1.

The attacker, on the other hand, must expose his force by moving to contact, must fight on ground selected by the defender, must clear mines and obstacles while under fire, and must destroy or suppress weapons which have taken full advantage of cover and concealment. Therefore, *the weapons of the attacker are not as effective as the weapons of the defender,* and his forces are more vulnerable. For these reasons, the attacker should seek a combat power ratio of at least 6:1 at the point of decision. If he is short on forces, he must make it up in firepower, surprise, deception, or superior skill.

THE SKILLFUL COMMANDER SUBSTITUTES FIREPOWER FOR MANPOWER WHENEVER HE CAN DO SO

Whether on the offense or the defense, US Army forces must exploit to the maximum the mobility of our weapons systems. Swiftly massed field artillery, totally mobile tank and mechanized infantry battalions, airmobile antiarmor weapons, attack helicopters, close air support aircraft and, in some circumstances, tactical employment of nuclear weapons offers us the means to concentrate overwhelming combat power and to decisively alter force ratios when and where we choose.

GENERALS: CONCENTRATING THE FORCES

The Employment of Large Units. There are many things Generals ought to do. But there is one thing they **must do:** deploy their forces so that on the defense they are never outnumbered or outgunned more than 3:1 at the point and time of decision, and so that in the attack they have concentrated combat power of about 6:1 superiority. Obviously, these ratios are not fixed, but they convey a realistic approximation of the requirement. There are many ways to achieve the necessary superiority, including surprise, shock, and speed. Regardless of strength, a sleeping, bewildered, or terrified enemy does not comprise an effective force. Colonels and Captains attack or defend when ordered, regardless of force ratios. But they *always* seek to develop the maximum combat power within their capabilities. Nonetheless, a concern with force ratios and the means of altering them in our favor is central to the responsibilities of the Generals.

MASSIVE AND VIOLENT FIREPOWER IS A CHIEF INGREDIENT OF COMBAT POWER

FIREPOWER SAVES MANPOWER AND THUS SAVES LIVES

It is almost inevitable that initially we will be outnumbered in the theater of war. But, whether the mission is to crush an enemy attack or to launch an offensive operation, it is the job of the corps and division commanders to *bring about a winning concentration of force at the point of actual combat.* Concentration of force—or combat power—includes provision of logistic support for maneuver elements (ammunition, POL and forward maintenance). To concentrate at the right place, everytime, corps and division commanders must be prime intelligence operators. To concentrate in time also requires continuous, instant communications. Concentrating forces at the critical place at the right time is of course, a two-sided game. The enemy will endeavor to beat us at this game by matching our buildup as we concentrate to attack, or by overmatching our buildup as we concentrate to defend.

TO CONCENTRATE AT THE RIGHT PLACE EVERYTIME, COMMANDERS MUST BE PRIME INTELLIGENCE OPERATORS

Intelligence. In the defense, the corps and division commanders must ascertain the location and direction of the enemy's main or breakthrough effort. He must do this as soon as possible because the defense is a race for time. Only corps and division commanders have the resources to "see" into the enemy rear far enough to detect his major thrust before it overwhelms the initial defenders.

THE DEFENSE IS A RACE FOR TIME TO DETECT THE ENEMY'S MAIN THRUST AND TO CONCENTRATE COMBAT POWER

In the attack, the corps and division commanders must select a time and place where the enemy is weak, and by the use of *mobility* and deception, overwhelm him there. Intelligence from all sources will be required. Some sources are tactical and some are strategic or national in nature. He will need them all.

Defense: Covering Force.

Corps and division commanders in the defense may use strong covering forces, at least in the initial battle. The chief mission of these forces must be to fight with sufficient strength and tenacity to force the enemy to disclose the size and direction of his main attack, and to buy time while defending forces concentrate in front of the main thrust. Reinforced cavalry is well suited for employment as covering forces.

Defense: Main Battle Area.

Once the corps or division commander ascertains the area of enemy concentration, *he must move swiftly.* The attacker is seeking a decisive superiority, and will win if he achieves it. The defender must reinforce rapidly and continuously until he has concentrated an adequate defensive force.

In mounted warfare, armored and mechanized elements must be set in motion toward battle positions in the path of the enemy thrust. Artillery must be concentrated. The terrain must be reinforced by means of barriers and obstacles. Attack helicopters and US Air Force aircraft can concentrate heavy firepower even before reinforcing ground elements can be committed in reinforcement.

DECISIVE RESULTS REQUIRE SKILLFUL CONCENTRATION OF COMBAT POWER

Soviet doctrine calls for the concentration of forces of up to six divisions echeloned in depth on a 10 to 12 kilometer front. For example, the attack could involve three successive echelons of two divisions each. This would put 20 to 25 battalions and up to 600 tanks in the first echelons. Army division commanders must be prepared to shift firepower to meet this thrust, and to concentrate up to 6 or 8 heavily supported maneuver battalions in such narrow sectors, accepting risks on the flanks.

The Army is increasingly mobile. Bold, skillful and quick thinking commanders can concentrate combat power where they need it to win.

Offense: Surprise and Deception.

If a smaller force is to win against a large force, it must eventually take the offensive. It may be necessary first to weaken the enemy by defensive operations, but decisive results require that the smaller force go over to the attack, penetrate or outflank the enemy, and destroy his support, his command and control, and, eventually, his disorganized combat elements.

OUTNUMBERED FORCES CANNOT AFFORD MISTAKES

If a smaller force is to concentrate superior combat power at the point of decision, corps and division commanders must employ surprise and

deception as well as the full mobility of the force. Just as in the defense, the concentration of forces for the attack is a race for time. If we concentrate slowly or openly, the enemy will match our buildup in the critical area and we will not achieve the necessary superiority for a successful attack. Worse still, we will take heavy losses with no follow-on success. Outnumbered forces cannot afford such mistakes. Movement at night over long distances, electronic deception, diversions, camouflage, and communications security—these and other countermeasures against all enemy intelligence collectors and sensors are required.

Offense: Shock Effect.

In the attack, corps and division commanders must concentrate overwhelming forces and firepower where and when the enemy is relatively weak. To do so, the commander must attack on very narrow fronts in great depth, and sustain his attack by committing follow-on echelons as soon as the momentum of the attack shows any signs of slowing. The cumulative effect on the enemy of such tactics are often shock and paralysis. If it is possible to attack at night, the shock effect is increased. In the daytime, smoke, artillery, and air delivered mines can isolate the point of penetration from enemy reserves and adjacent forces. Such isolation of small enemy units faced by overwhelming force also induces shock and panic. *The greater the violence the attacking force can generate in the immediate battle area, the lower its casualty rate will be.*

If, in addition to mass, attacking forces utilize the cover of the terrain, and suppress or obscure the enemy gunners while maintaining forward momentum, the attack will succeed.

Fire Support. A principal component of combat power is indirect fire. The field artillery provides:

- Fires in support of the scheme of maneuver, including destruction or suppression of direct fire weapons.
- Counterfires to suppress or destroy the enemy's indirect fire weapons.
- Fires to suppress enemy air defense weapons.
- Interdiction and deep fires on enemy logistic installations, reserves, command posts, and communications.

Adequate fire support means must be ready for massing at the critical point in the battle. Massed fires, especially when delivered with surprise, are devastating, and a primary method of countering enemy mass. Corps and division commanders must allocate field artillery resources to provide for massing fires. They must also:

- Establish target engagement criteria specifying what and when to shoot, and the target priority.
- Insure that the counterfire mission receives adequate target acquisition means and weapons.
- Coordinate fire support of all types, including tactical air, to insure mutual support and to avoid duplication.
- Provide for control of ammunition expenditures and resupply of ammunition.

Air Support and Air Defense Suppression. In addition to concentrating adequate forces and fires at the right places and times to defend or attack, corps and division commanders must plan and conduct joint operations with the US Air Force (USAF), leading to effective air support of all critical operations. The US Army relies upon the USAF for air superiority over the battlefield and for reconnaissance support, particularly in deeper zones. The Army expects the USAF to penetrate enemy air defenses and to attack reserve and

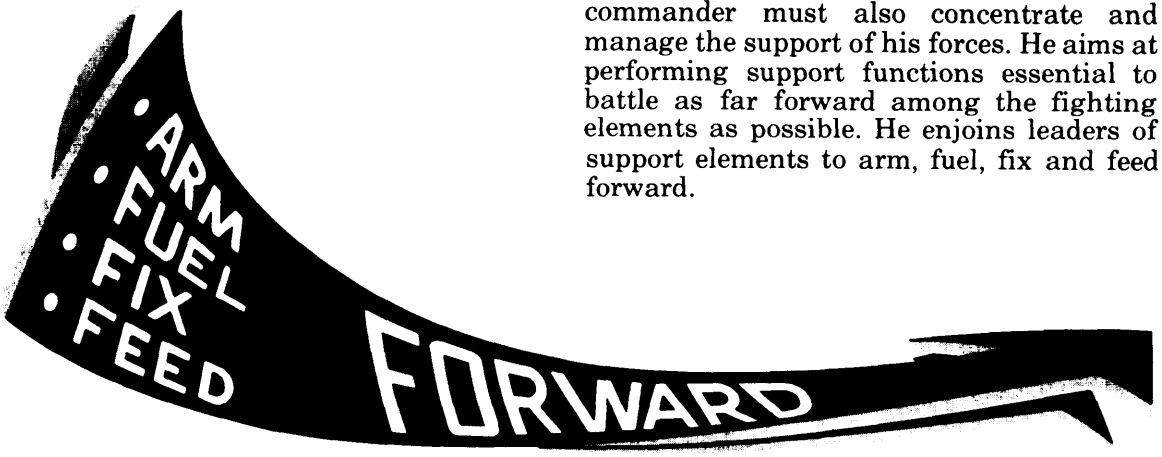
reinforcing units, fire support sites, command and control facilities, and logistic activities. The Army recognizes that air forces are most effective against the larger, more vulnerable targets deep in the enemy's rear.

However, at critical times and places where victory or defeat may hang in the balance, *the Army requires close air support of engaged ground forces.* In the main battle, the Army wants and needs close air support directed against targets and forces selected by the Captains and Colonels on the immediate battlefield. In the face of heavy sophisticated air defenses, the Army can contribute to this effective close air support if it wages with the USAF a successful air defense suppression battle in the area of the ground fighting. To this battle, the Army must contribute intelligence collecting capabilities, target designator capabilities, and both EW and firepower suppression of enemy air defense systems.

ARMY AND AIR FORCE OPERATIONS REQUIRE JOINT PLANNING AND SYNCHRONIZED EMPLOYMENT

Electronic Warfare. As with firepower, EW means can be concentrated to influence the ratio of combat power. Enemy aviation, fire support units, and maneuver control headquarters above company, being particularly dependent upon electronic emitters of various kinds, are vulnerable to our EW. Therefore, our EW systems should be deployed forward and EW commanders must integrate them into our total combat power.

Support Forward. The higher commander must also concentrate and manage the support of his forces. He aims at performing support functions essential to battle as far forward among the fighting elements as possible. He enjoins leaders of support elements to arm, fuel, fix and feed forward.



The commander sees to it that his combat service support moves men and materials forward to the fighters. They, in turn, insure that support is properly protected, efficiently sited and managed. Supplies are throughput—moved to the forward areas without off-loading. Maintenance teams (including higher echelon technical experts when appropriate) undertake maintenance, repair, and cannibalization forward on the fringe of the battle.

The commander checks repeatedly to see that combat service support operations:

- **RESPOND to demands for critical supplies and essential maintenance.**
- **MOVE to and with the forward elements.**
- **ADAPT to changing situations (tailor resources to combat posture, and provide support from any base arrangement).**
- **APPLY support resources properly.**

He sets priorities and insists they be observed. He provides for realistic replacement and expenditure rates, full use of local resources, security for stocks and lines of communications, and sound materiel management. When necessary, he assumes prudent logistic risks.

COLONELS: DIRECTING THE BATTLE

After the corps and division commanders have set in motion the necessary concentration of power, provided for air support through joint suppression operations, and established the systems of maintenance supply and other support, they must turn over the immediate direction of the battle to brigade and battalion commanders. The brigade and battalion commanders then must fit the forces to the ground and maneuver against the enemy as the battle develops, and coordinate the concentration of firepower.

THE BASIC BUILDING BLOCK IN MOUNTED DEFENSIVE WARFARE IS THE CROSS-REINFORCED TANK OR MECHANIZED COMPANY TEAM OR BATTALION TASK FORCE

In the defense, the brigade commander in the critical area may assign battalion areas and sectors of defense, or he may simply order the occupation of designated battle positions by battalion task forces or combined arms company teams. In mounted defensive warfare, the cross-reinforced tank or mechanized company team or battalion task force is the basic building block. Both have a combined arms capability when supported by field artillery and air defense artillery and can move independently on the battlefield. During critical phases of the defensive battle, either brigade or battalion commanders may move these task forces or teams from battle position to battle position, or call upon them to counterattack alone or in concert with other elements operating in a deep sector of a highly active defense. When the situation requires heavier concentrations of force on narrow sectors, the battle may be fought by battalions rather than companies. This is particularly true of tank battalions, which may sometimes be massed for decisive attacks or counterattacks.

In the attack, the brigade or battalion commanders assign objectives, coordinate or conduct suppressive fire operations, and supervise the conduct of operations by battalions or companies.

In heavy combat, the battalion commander participates directly in control of combat operations. He deals personally with problems of cover, concealment, suppression, and teamwork. He controls or supervises weapons employment, suppressive fires, maneuver, and battlefield resupply. *The battalion commander puts the combined arms team together and keeps it together until the job is done.*

COMBINED ARMS TEAMWORK

No single weapon, no single arm, no single service can hope to win on the modern battlefield. In order to concentrate, fight, and win, *Army forces must move.* To move in the face of lethal modern weapons, we must cover and conceal ourselves from them or suppress them. To suppress them, we need all the weapons of the combined arms team, and we need leaders who can use each and every weapon system at peak efficiency. Each element of the combined arms team has special capabilities for the destruction or suppression of enemy weapons. Commanders must elicit the full capability of each. Combined arms teamwork on a fast moving battlefield requires highly developed and often practiced systems of standard operating procedures for command, control, and coordination. These systems, called **troop leading procedures,** facilitate rapid dissemination of orders, conduct of necessary reconnaissance, early movement of troops, and the fastest, most effective execution of the mission. The best troop leading procedures permit the commanders and the troops of several echelons to work concurrently so that the troops themselves have the maximum amount of time on the defensive position or in detailed preparation for the attack.

The commander who employs his weapons at their full effectiveness, reduces his vulnerability by using cover, concealment, and suppression, and moves decisively on the battlefield to accomplish his mission, has mastered the command of the combined arms team.

Infantry can destroy or suppress enemy infantry and ground-mounted antitank weapons by dismounting and attacking or by using cannons and automatic weapons from mechanized fighting vehicles. In the defense, infantry can employ long-, medium-, and short-range antitank weapons and missiles. It can hold ground where fields of fire are short and terrain is compartmented or jumbled. Infantry can organize strong points, and, when equipped with appropriate antitank weapons, infantry is extremely difficult to dislodge or overcome.

Field artillery can destroy or suppress infantry at short ranges, antitank guided missiles at medium ranges, and enemy artillery or air defense weapons at long ranges. Suppression, of course, gives a high probability of destruction of enemy weapons if their gunners or crews fail to take evasive or protective action. Artillery can destroy light-armored vehicles, and can cause enemy tanks to lose a high percentage of their effectiveness by forcing them to button-up. Artillery can smoke enemy tanks and ATGM gunners, thus rendering their long-range fires ineffective. And artillery can deliver scatterable mines to impede movement of enemy forces or deny specific areas for their use.

Tanks can kill or suppress infantry with their machine guns, and kill enemy tanks with their main guns.

Attack helicopters can similarly destroy enemy tanks at long range.

Air Force aircraft can destroy or suppress infantry ATGM, tanks and armored vehicles, artillery and air defenses.

Engineers can assist the movement of friendly forces and also degrade enemy mobility through the use of barriers and obstacles.

Air Defense weapons can destroy or suppress fighter aircraft.

Electronic Warfare units can destroy the enemy's ability to command, control and communicate.

CAPTAINS: FIGHTING THE BATTLE

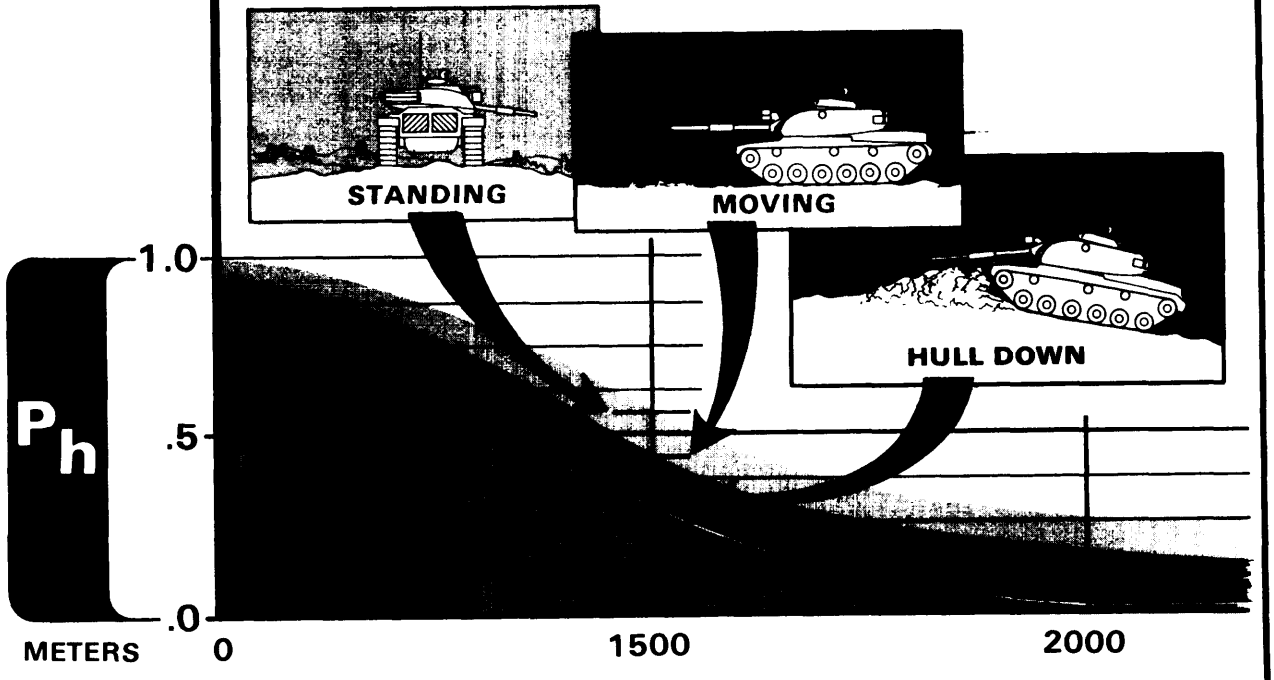
The company commander, the platoon leaders, and the squad leaders or tank commanders fight the battle. At these echelons, **cover, concealment, suppression,** and **teamwork** are the rules by which the battle is fought. For example, the company commander decides on a reverse slope defense—the platoon leader places his tanks in selected hull down positions—and the tank commander fires the first shot.

At the fighting level, success depends upon the proficiency of the crews or individuals who serve the weapons and the skill of the commanders who employ and emplace them. *The Captain must understand completely the capabilities and limitations of his weapons, and those of the enemy, and how they interact with other weapons and the terrain.*

Above all, he must lead and train his men decisively, so that they know he will accomplish the unit mission by inflicting maximum casualties on the enemy while minimizing his own losses. Soldiers will follow such a leader.

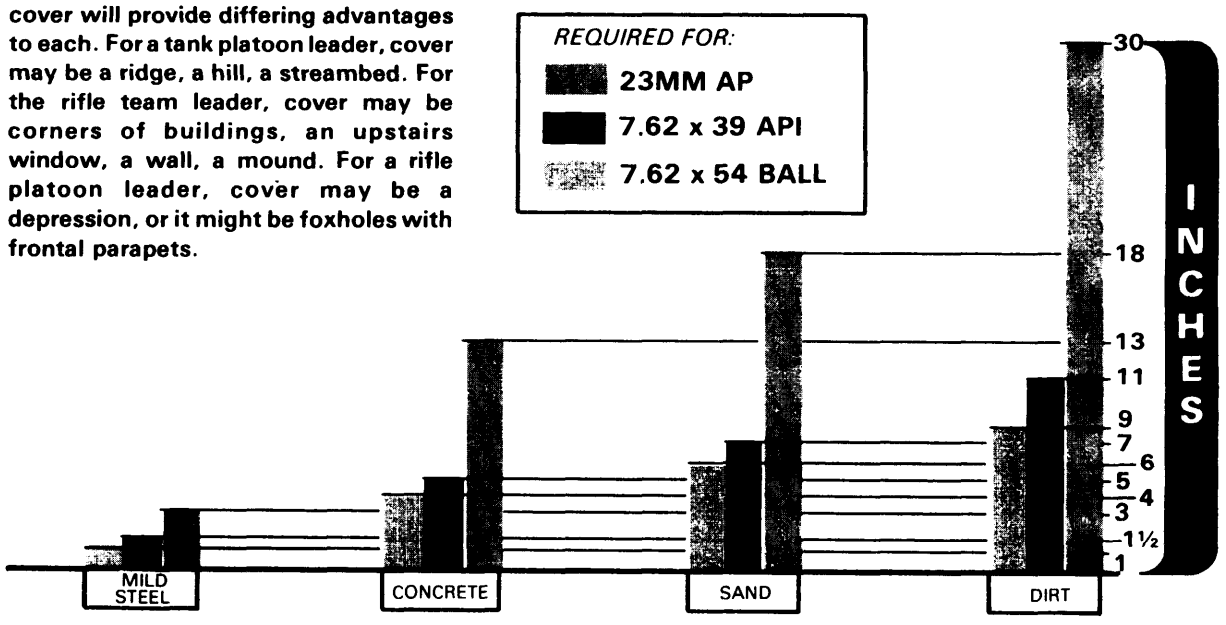
Cover. Enemy weapons which are not suppressed can hit and destroy our forward elements within their range capabilities—if we expose ourselves to the view of the enemy gunners.

For example: a Soviet T62 tank has a better than 50-50 chance of hitting an M60 tank standing in the open at a range of 1500 meters (about 1 mile) and just less than a 50-50 chance of killing it. However, if the M60 is moving at 12 miles per hour, it is 25 percent less vulnerable. If it is hull down so that all but the turret is behind cover, it is 50 percent less vulnerable.



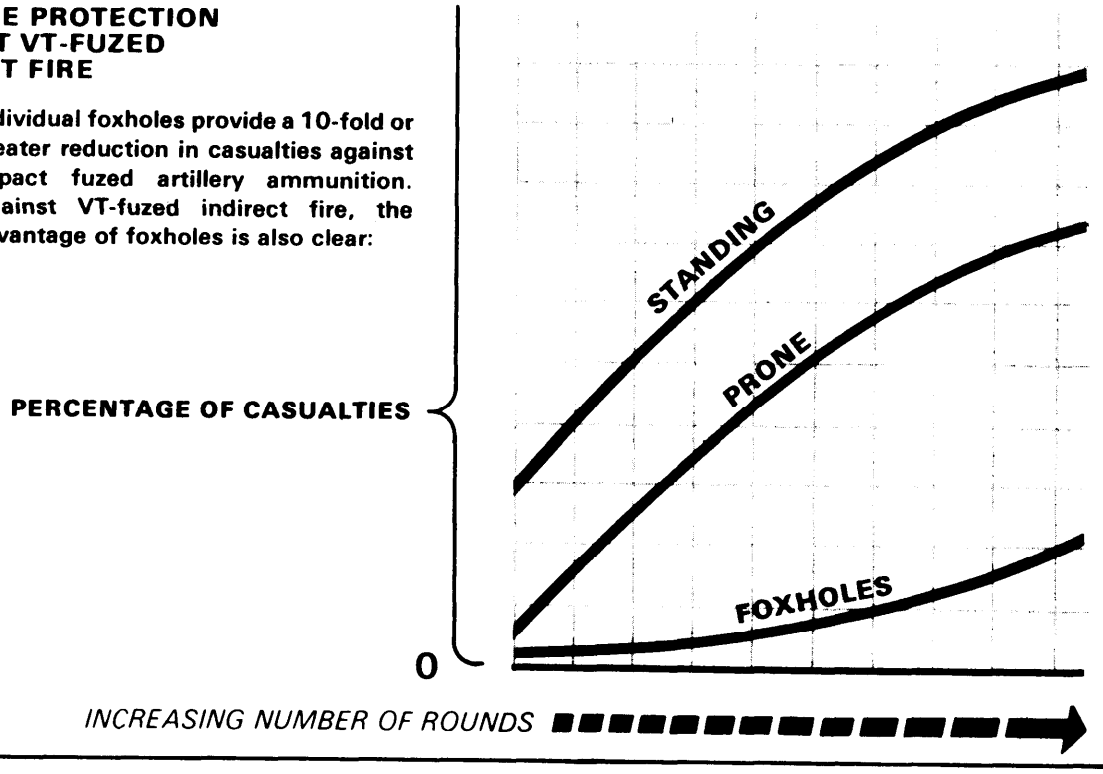
Each weapon system will have its own peculiar requirements for cover, and cover will provide differing advantages to each. For a tank platoon leader, cover may be a ridge, a hill, a streambed. For the rifle team leader, cover may be corners of buildings, an upstairs window, a wall, a mound. For a rifle platoon leader, cover may be a depression, or it might be foxholes with frontal parapets.

QUANTITY OF PROTECTIVE MATERIAL REQUIRED TO PROVIDE PROTECTION FROM INCOMING ROUNDS AT MAXIMUM VELOCITY



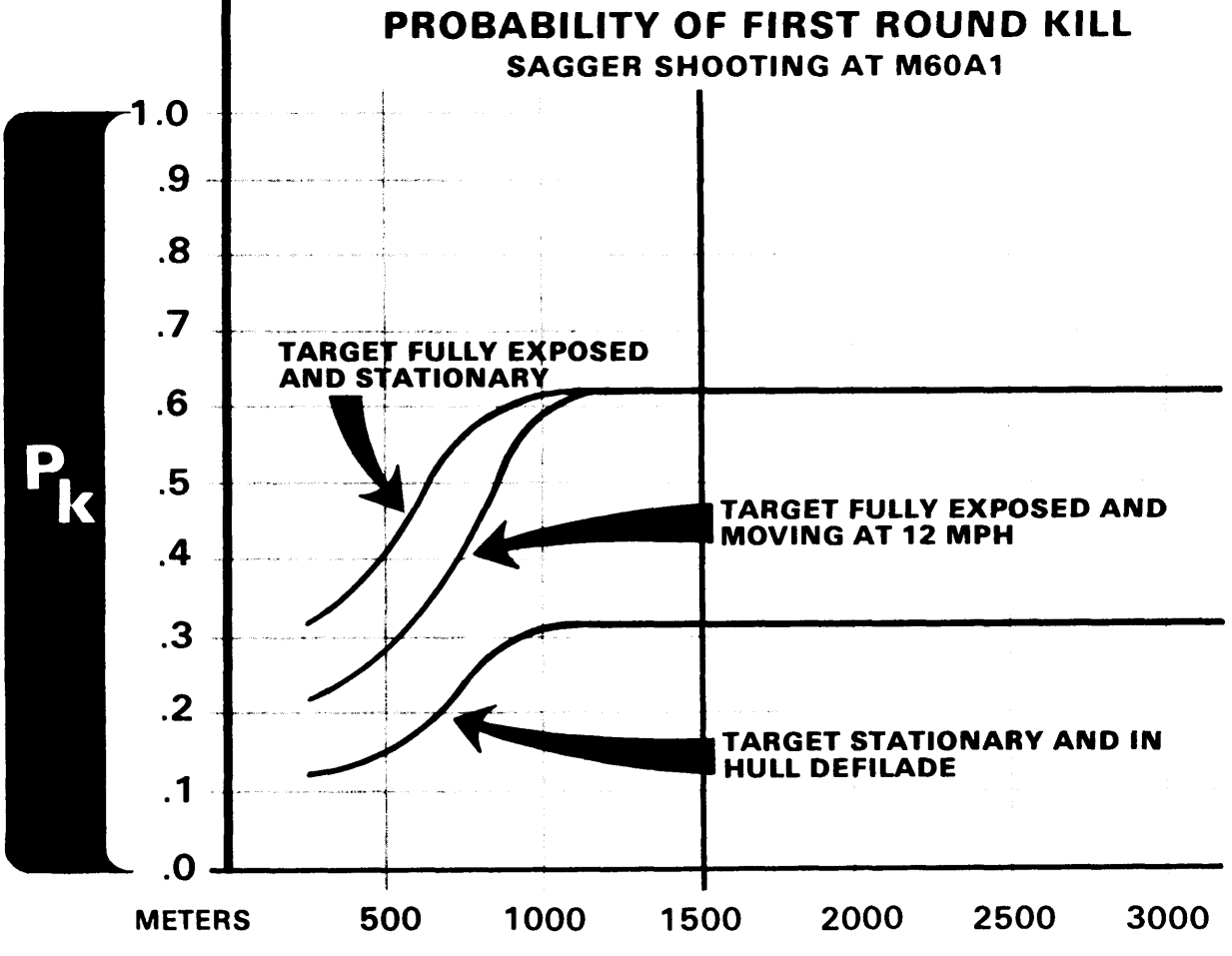
RELATIVE PROTECTION AGAINST VT-FUZED INDIRECT FIRE

Individual foxholes provide a 10-fold or greater reduction in casualties against impact fuzed artillery ammunition. Against VT-fuzed indirect fire, the advantage of foxholes is also clear:



Concealment. Modern weapons have very high hit and kill probabilities against point targets at long ranges.

Antitank guided missiles are particularly accurate even against moving targets. Therefore, forward fighting elements should remain concealed until it is necessary for them to break into the open in the attack or counterattack. Even then, overwatching or suppressing elements should remain covered and concealed to the maximum extent possible; forward moving elements should move by covered routes. Every wrinkle of the terrain should be used to decrease vulnerability.



Suppression. The proper use of cover and concealment, both natural and man-made, greatly reduces the vulnerability of forces and weapons; measures such as firing first and the coordination of obstacles and fires greatly increases the effectiveness of forces and weapons. When it is necessary to break cover and move in the open on the battlefield, there is one other fundamental technique upon which success of failure is almost wholly dependent: *suppression.*

It is, of course, desirable to destroy enemy weapons whenever possible, but a well-

trained, well-positioned enemy force is hard to destroy. When under tank, artillery, mortar or automatic weapons fire, his infantry can simply "go to ground." His tanks can pull back into defilade or button-up. His ATGM gunners can leave their weapons and go into shelter. His artillery can cease fire and take cover.

SUPPRESSION REQUIRES COMBINED ARMS TEAMWORK OF THE HIGHEST ORDER

Armored forces are more difficult to suppress than dismounted forces, and armored forces can often continue to deliver effective fires despite attempts to suppress them. However, the use of smoke to blind the gunners in armored vehicles is effective. Artillery-delivered smoke is extremely effective against ATGM as well. Certain enemy weapons, such as radar-directed air defense weapons, can be suppressed by electronic countermeasures (ECM)—jamming is one example.

Forward maneuver elements must be trained to suppress enemy weapons or they will suffer unacceptable losses every time they break cover or shed concealment. The conduct of effective suppression over all the ranges, and against all the weapons which pose a threat to Army forces moving on the battlefield requires combined arms teamwork of the highest order.

Teamwork. The Captain must know how to combine his maneuver with suppression. He must know that tanks should not seek duels with ATGM at ranges beyond 2000 meters. Conversely, he should not permit enemy tanks to close with his ATGM where the tank has the advantage through armor, mobility, and a high rate of fire. He must know how to site his weapons and place his obstacles to increase the effectiveness of both. He must train his gunners to fire first and fire accurately. He must be able to distribute his fires across many simultaneously appearing targets. When tanks, ATGM, artillery, attack helicopters, and close air support are all available, firm control of fire distribution will be essential. Multiple kills on one target resulting in the

THE CAPTAIN MUST TRAIN HIS GUNNERS TO FIRE FIRST AND TO FIRE ACCURATELY

absence of coverage of all targets will spell defeat. This is one of the greatest challenges on the modern battlefield and techniques must be devised to solve the problem at platoon, company, and battalion level.

COMMAND AND CONTROL AND COMMUNICATIONS (C^3).

If the smaller force is to win against a larger force, it must be more agile and more in tune with the flow of the battle. It cannot afford to be in the wrong place at the wrong time. It cannot afford to be surprised, tricked, or by-passed by large forces. This means our commanders must know more about their own units and the enemy actions than the enemy commanders know about the battle situation. The prime requirement is for commanders to be forward where they can *see, feel,* and *control the battle.* The staffs must feed essential, and only essential, information on friendly, enemy, and fire support matters to these forward commanders. Not since the war between the North and the South, will commanders of brigades and divisions as well as battalions be so personally and closely involved in the battlefield direction of combat elements.

COMMANDERS MUST BE FORWARD TO SEE, FEEL, AND CONTROL THE BATTLE

Obviously, the conduct of any active highly mobile operation, as set forth in this manual, demands continuous reliable communications. *Commanders must be able to communicate with each other, within their units, and with fire support elements and supporting staffs.*

At battalion and brigade level, the problem will be compounded by the necessity for the commander to operate far forward, in armored vehicles. Battalion and brigade tactical command groups will consist of only two or three vehicles; the division tactical command post will not have many more. There will be greater losses among commanders; deputies and executive officers must be informed and ready to take command.

DEPUTY COMMANDERS AND EXECUTIVE OFFICERS MUST BE READY TO TAKE COMMAND

Commander to commander communication from division down will normally *be eye-ball* to eye-ball or FM secure voice. Fire support communications will be FM secure voice; communication from staff to staff will often be telephone multichannel and teletype.

It is necessary to understand the priorities of communication. First is commander to commander—real time—all the time. Second is fire support. Third is combat information (information on enemy actions which requires an immediate operational response) which always travels on command or operational nets from corps level and below. Fourth, is combat service support of the major combat weapons systems.

METHODS AND USE OF COMMUNICATIONS	IN PERSON	FM VOICE	TELEPHONE	TELETYPE
COMMANDER TO COMMANDER	X	X		
FIRE SUPPORT COMMUNICATIONS		X		
STAFF TO STAFF COMMUNICATIONS			X	X

PRIORITIES OF COMMUNICATIONS
(1) COMMANDER TO COMMANDER
(2) FIRE SUPPORT
(3) COMBAT INFORMATION
(4) COMBAT SERVICE SUPPORT

Staffs support commanders. They provide 24 hour radio links to higher and adjacent headquarters; they channel intelligence information up to the levels where it can be assembled with all other information, analyzed, and put to operational use. This analysis takes place no lower than division and is mainly at corps. They support the commander's decisions by arranging or directing the movement of reserves, fire support, or service support. They take all actions required to support the plan.

The division directs the counterfire program. The division and corps direct EW operations. The division and corps, in concert with the Air Force, direct intelligence, surveillance, and reconnaissance operations. The corps directs air defense suppression, again in concert with the Air Force. The Air Force directs non-divisional air defense weapons and coordinates divisional weapons. Corps, divisions, and, sometimes, brigade and air defense units participate in the management of air space.

RESPONSIBILITY FOR DIRECTION AND COORDINATION	AD UNITS	BRIGADE	DIVISION	CORPS	AIR FORCE
COUNTERFIRE PROGRAM			X		
EW OPERATIONS			X	X	
INTEL, SURV, RECON OPNS			X	X	X
AIR DEFENSE SUPPRESSION				X	X
AIR DEFENSE OPERATIONS	X				X
AIR SPACE MANAGEMENT	X	X	X	X	

All of these latter responsibilities require multichannel communication between staffs and headquarters. They must all expect jamming and deception and train to work through or around it.

NIGHT OPERATIONS

Passive viewers and sights will soon enable the US Army to fight at night almost as we do in the day. This equipment will have sufficient range and clarity that tanks, mechanized infantry, cavalry, and attack helicopters can conduct both offensive and defensive combat operations at night and during reduced visibility. Fundamental tactics—cover, concealment, suppression, and teamwork—will not be restricted to daylight operations. Night sight ranges will be equivalent to weapons ranges. Night maneuver speeds will approach daylight maneuver capability. Armor and mechanized forces will be able, at full effectiveness, to attack and to maneuver with supporting fires. Continuity of operations through night and poor visibility will provide commanders a decisive advantage over enemy forces less well-equipped and less prepared for these conditions.

OPERATIONS SECURITY (OPSEC)

In the battlefield area, OPSEC is the art of application of signal security (SIGSEC), physical security, information security, and deception to deny the enemy knowledge of our operations and activities. OPSEC must be considered both before and during the battle to conceal potentially revealing training, logistical, personnel, and other administrative and support activities. For Generals, OPSEC includes stragetic deception, large scale feints, and major demonstrations to deceive the enemy, as well as stringent security measures to protect or provide cover for those operations. For Colonels, Captains, and other leaders, OPSEC includes strict attention to communications security (COMSEC) and electronic security (ELSEC), avoidance of stereotyped activity patterns, strict control of classified information, and the correct use of camouflage, noise and light discipline, and other countersurveillance techniques.

The Battle Must Be Fought Using:

- **COVER**
- **CONCEALMENT**
- **SUPPRESSION**
- **TEAMWORK**

CHAPTER 4

Offense

PURPOSE

OFFENSIVE OPERATIONS are undertaken to:

- ☐ Destroy enemy forces.
- ☐ Secure key terrain.
- ☐ Deprive the enemy of resources, demoralize him, and destroy his will to continue the battle.
- ☐ Deceive and divert the enemy.
- ☐ Develop intelligence.

By taking the offensive, we gain the initiative, carry the fight to the enemy, fight in his positions, and ***seek decision on our terms.***

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WHEN TO ATTACK

THE COMMANDER ATTACKS WHEN HE BELIEVES HE CAN INFLICT DISABLING LOSSES ON THE ENEMY

The commander of larger forces weighs carefully the ability of his force to overcome enemy defenses and to cope with enemy counterstrokes. He undertakes the offensive whenever he believes his maneuver and fires will inflict disabling personnel and materiel losses on enemy units, neutralize major forces, or accomplish some lesser effect for a specific purpose.

The goal of some attacks is to establish control over key terrain, airlanding or water-crossing sites, ports, oilfields or other natural resources, roads, railways, or political, population, or communication centers. Capture of these features denies them to the enemy, controls them for our own purposes, and positions our forces for future operations.

Attacks are a prime source of information about enemy strengths, dispositions, weapons, morale, supply, and intentions. Some attacks are launched exclusively to gain information. Some may have other limited objectives—to divert enemy reserves, to relieve other forces, or to spoil an enemy attack.

ATTACKS SET THE TEMPO OF BATTLE

If the commander prepares his attack skillfully, the enemy will not readily know whether the attack is for a limited objective or represents the onset of a major offensive. Therefore, attacks can be a means of deception whereby the commander can tie-down enemy units in defensive or blocking positions while he concentrates major forces elsewhere. Attacks are central to setting the tempo of the battle. A commander can, with a quick thrust, break up an impending enemy attack or a congealing defense, while the enemy is concentrating. In an offensive, attacks delivered in rapid succession help gain and maintain momentum, increasing pressure on enemy command-control, and heightening trauma among enemy personnel.

INITIAL LOSSES CAN BE HIGH WHEN FIGHTING ON ENEMY-SELECTED GROUND

A commander must know well the advantages which normally accrue to the defender, and recognize that initial losses may be high in an attack against a concealed and protected enemy fighting on ground of his choice. If a commander fighting outnumbered estimates the cost of success to

be high, he should attack *only if he expects the eventual outcome to result in decisively greater enemy losses than his own, or result in the capture of objectives crucial to the outcome of the larger battle.*

FUNDAMENTALS OF OFFENSE

Attacks are planned around six basic concepts:

1. See the battlefield.
2. Concentrate overwhelming combat power.
3. Suppress enemy defensive fires.
4. Shock, overwhelm and destroy the enemy.
5. Attack deep into the enemy rear to destroy his system of defense.
6. Provide continuous mobile support.

1

See the Battlefield. Knowledge of the enemy is prerequisite to success. We must know how the enemy intends to defend. The commander planning an attack must know as much as possible about:

- The number, type, location, and strengths of units opposing him.
- The capabilities and vulnerabilities of weapons in enemy hands, and how he normally employs these weapons.
- The morale and physical condition of the enemy force.

To acquire this information, commanders and staffs at all echelons must develop a thirst for information about enemy tactics and weapons. They must relentlessly seek out their enemy's weaknesses. The enemy cannot be equally strong everywhere; therefore, the commander must find where the enemy is least strong or most vulnerable. The commander must expect to launch intelligence, reconnaissance, or even combat operations to locate main enemy forces and weapons, and identify areas where the enemy is weak or can be weakened. The main purpose of these operations is to determine where an attacker might succeed, and to find covered and concealed avenues into the enemy's weak area. That knowledge is unlikely to come to any commander solely out of intelligence staff work by his own, higher, or supporting staffs. The severe penalties that can result from poor intelligence about the enemy or terrain demand that each commander actively seek from all sources the information he needs to attack and win.

The coordination of intelligence gathering operations and utilization of all-source intelligence is the commander's personal responsibility. *The better he sees the battlefield, the more surely he will concentrate his forces at the right time and place.*

SEEK ROUTES AFFORDING COVER AND CONCEALMENT

■

UTILIZE EVERY MEANS POSSIBLE FOR GATHERING INTELLIGENCE

2

Concentrate Overwhelming Combat Power. The attacker must develop superior combat power where and when he wants it; if he does this correctly, the time and place of his choosing becomes the decisive point and critical time.

DECEIVE THE ENEMY AND FRUSTRATE HIS ABILITY TO COLLECT INFORMATION

To succeed in the attack, the commander must concentrate on a narrow front at a site where the enemy is weak. Ordinarily an

attacker can assemble the required forces only if he thins out his forces opposing the enemy elsewhere. This means he must move forces to the point where his attack is to be launched. To do this with tolerable risk, he must deceive the enemy concerning the location, timing, direction, and strength of his attack. *No means of deception and operational security can be neglected.* The attacker must frustrate the enemy's ability to collect information about his force by careful use of terrain, camouflage, movement during periods of reduced visibility, decoys, electromagnetic countermeasures, and other means of countering or spoofing enemy surveillance.

THE COMMANDER MUST CONSIDER ALL MEANS OF OPERATIONAL SECURITY

The mobility of armored, mechanized, airborne and airmobile forces, and the flexibility of field artillery, Army aviation and tactical airpower, permit the commander to redispose rapidly, mass at the last possible moment, and so achieve surprise. Infantry forces might infiltrate by stealth through urban areas, across difficult terrain, or move at night or in bad weather to seize critical terrain in advance which, if held by the enemy, could seriously affect the probability that the attacker could succeed.

3

Suppress the Enemy's Defensive Fires. As forces concentrate, they become increasingly vulnerable to enemy fires. Accordingly, maneuver must coincide with suppressive strikes against enemy weapons which can interfere. These strikes must be of such intensity and duration as to destroy or substantially degrade the effectiveness of enemy weapons in the critical area. Each commander should express his priorities for suppression so supporting field artillery and tactical air forces will know where to allocate resources and how to time the strikes or countermeasures.

THE EFFECTIVENESS OF ENEMY WEAPONS IN THE CRITICAL AREA MUST BE NULLIFIED

Air defense suppression is a prerequisite to close air support. The suppression of enemy artillery—by air attack or counterbattery—is essential to avoid high losses. Suppression of ATGM and tanks at the point of attack by direct fire, artillery and mortars, smoke, or

air attack is essential. Darkness can be a form of suppression as it reduces the ability of enemy gunners and combat vehicle crews. *Coordination of suppression with the maneuver of forces is the essence of success.*

4

Shock Overwhelm and Destroy the Enemy. Once the attack is launched, the commander coordinates action to ensure maximum speed, surprise, and violence. Maneuver elements cross exposed areas as rapidly as possible, their advance timed to coincide with intense suppressive fires, supporting attacks, close air support, electronic warfare, air defense support, and other operations. These actions build up in intensity for maximum effectiveness during critical moments of the attack. *The attack must be narrow and in depth.* Attacking units which become stalled or disorganized must be bypassed by fresh formations pressing on to deeper objectives. *Once the initial attack takes effect on the enemy, he must be allowed no let-up.* Initial successes should cause dislocation and redisposition of enemy forces, and this in turn destroys the integrity of his defensive system.

THE ATTACK MAXIMIZES SPEED, SURPRISE, AND VIOLENCE

The attacker must be alert to these changes, for in them lie new opportunities. The attacker, retaining his initiative, shifts his forces to exploit each weakness that is revealed to him. The pace of new attacks delivered on the enemy should exceed his ability to react, so as the offensive progresses, teamwork among enemy forces deteriorates, his defenses disintegrate, and his units lose cohesion. Foremost, advancing units must bypass points of resistance, striking deep and fast.

INITIAL SUCCESS SHOULD BE REINFORCED. THE ATTACK MUST STRIKE DEEPLY—FAST

5

Attack the Enemy Rear. Enemy combat support units, engineers, signal, artillery, and enemy command and control facilities are often less well protected and usually less capable of self-defense than maneuver units. Least likely to be protected, least well armed, and weakest overall are enemy combat

service support elements—supply, maintenance, transportation, and administration. Once enemy forward combat elements have been penetrated, the attacker should seek out the enemy rear, destroying headquarters, combat support and combat service support units. Attacks should aim at wide destruction among these elements. Disrupting enemy command and control; interrupting the flow of fuel, ammunition, repair parts, food, and other necessities; and interfering with enemy air defense and artillery support weakens or destroys the whole system of defense and makes it possible to overpower the enemy with fewer forces. Successful attack into the enemy's rear will often force him to abandon the advantages of prepared defensive positions, and to commit his maneuver units to hasty countermoves where they are significantly more exposed. In general, *the most decisive offensive is one which strikes with overwhelming force into the enemy's rear, and destroys or captures his service support, combat support, and command and control.*

DISRUPT ENEMY COMMAND, CONTROL, SUPPORT, AND SUPPLY

6

Provide Continuous Mobile Support. A successful attack requires continuous combat support and combat service support to sustain the weapon systems essential for the momentum of the attack. Field artillery, engineers, air defense, and other combat support and combat service support elements must carefully plan movement to keep pace with the maneuver elements. The weapon systems must not run out of ammunition or fuel. When those systems break down in use, or are damaged in combat, they must be repaired quickly or replaced. The deeper the attack strikes into enemy controlled territory, the more difficult it is to maintain support and keep lines of communication open, and to keep the weapons and the men serving them in action. Imaginative planning, vigorous execution, and flexibility of response must be as characteristic of support commanders as of combat commanders—*and they must work together as a team.*

COMBAT SUPPORT AND COMBAT SERVICE SUPPORT ELEMENTS MUST KEEP PACE WITH MANEUVER UNITS

COMBINED ARMS IN THE ATTACK

In mounted offensive combat, the basic element of the combined arms is the battalion task force. Battalion task forces are organized from tank or mechanized infantry battalions, supported by field and air defense artillery, engineers, attack helicopters, and close air support. Battalion task forces can be tank-heavy, mechanized infantry-heavy, or pure, depending on the concept and plan of the brigade commander. Within the battalion task force, company teams may be formed. Like task forces, company teams can be tank-heavy, mechanized infantry-heavy, or pure, depending on the scheme of maneuver and plan of the battalion commander.

THE BASIC COMBAT ELEMENT OF THE COMBINED ARMS IS THE BATTALION TASK FORCE

In dismounted battle, infantry battalions, supported by tanks, field artillery, air defense artillery, engineer, attack helicopters, and close air support, are the basic building blocks of the offense.

In mounted warfare, the tank is the primary offensive weapon. The tank has the firepower, protection, and mobility to carry the battle to the enemy and destroy him; however, the tank cannot move alone on a modern battlefield without unacceptable losses. Therefore, *all other elements on the combined arms team must be employed to support and assist the forward movement of the tanks.*

THE TANK IS THE PRIMARY OFFENSIVE WEAPON IN MOUNTED WARFARE

TANKS. Tanks can fight other tanks, punch through suppressed defenses, create shock and panic, and wreak havoc against soft targets. But tanks are vulnerable in close terrain, woods, cities, and when visibility is reduced by bad weather or smoke; they cannot cross most rivers or swamps without bridging and they cannot climb steep hills or mountains.

INFANTRY. In dismounted operations, airborne, airmobile or other light infantry leads the combined arms attack. **All the arms, including any tanks available, support the infantry attack.** Airborne and airmobile infantry have "long legs" and can be employed on missions requiring very rapid movement over relatively long distances. A few examples are:

- Seizure of airfields and airheads thousands of miles distant.
- Deep airmobile penetration or raids.
- Wide-area surveillance and denial operations.
- Assaults in towns, forests and mountains.

Notwithstanding the differences inherent in these operations by lighter forces, the concept of the combined arms team remains valid. Support of the infantry by the other arms and the USAF is simply adapted to the different modes of movement, the different terrain, and distances. The principles and functions are unchanged.

MECHANIZED INFANTRY. *As tanks move forward, mechanized infantry supports and assists by:*

- Dismounting and clearing mines and obstacles blocking the way or supporting engineer troops so involved.
- Suppressing by fire enemy infantry close enough to engage tanks with RPG-7 type rocket weapons mounted or dismounted.
- Suppressing ATGM within range.
- Dismounting and eliminating enemy infantry or ATGM positions which cannot be suppressed.
- Infiltrating on foot in advance of or in support of tank attacks to seize terrain from which the defender could stop the attack.
- Protecting tanks from enemy infantry during bad weather, in smoke, or at night.
- Protecting tanks in urban areas.
- Providing long-range ATGM support from overwatching positions during the attack.

FIELD ARTILLERY. *As tanks move forward, field artillery supports and assists by:*

- Providing planned massed fires at the critical time and place.
- Destroying or suppressing enemy ATGM which could destroy the tanks.
- Destroying and suppressing enemy infantry who could destroy tanks with RPG.
- Suppressing enemy tanks by causing them to button up, or by smoking their positions; and in the future by destroying them with precision guided munitions.
- Isolating the breakthrough area by smoke on flanking defensive positions and deeper battle positions.
- Destroying and suppressing enemy artillery and mortars by counterfire.
- Destroying and suppressing enemy forward area air defense to assist friendly close air support.
- Preparing to support ensuing offensive actions by moving with or close behind the deep penetrating armored forces.

AIR DEFENSE. *As tanks move forward, air defense weapons support and assist by:*

- Destroying enemy high-performance aircraft.
- Destroying enemy attack helicopters.
- Causing enemy aircraft to lose effectiveness (releasing ordnance at other than optimum altitudes, ranges, speeds, and attitudes).
- Providing, on order, suppressive fire against ground targets.

COMBAT ENGINEERS. *As tanks move forward, combat engineers support and assist by:*

- Breaching and clearing minefields, obstacles, barriers, and fortified positions.
- Assisting in river crossing operations.
- Assisting the forward movement of fuel and ammunition.
- Laying mines and creating obstacles on flanks of the attack.

  Operating as infantry if required.

ATTACK HELICOPTERS. *As tanks move forward, attack helicopters support and assist by:*

- Guarding open flanks.
- Reinforcing in the case of enemy counterattacks.
- Deepening penetration.
- Sweeping around flanks to engage reserves.
- Overwatching, or firing on enemy tanks or ATGM.

USAF AIRCRAFT. *As the tanks move forward, USAF aircraft support and assist by:*

- Destroying or suppressing enemy tanks and ATGM at the point of breakthrough.
- Attacking enemy reserves and reinforcements.
- Spotting and engaging enemy counter-attacks.
- Interdicting enemy supplies.
- Defeating enemy fighters.
- Destroying enemy artillery and air defenses.

ELECTRONIC WARFARE. *As tanks move forward, Army and USAF electronic warfare (EW) units support and assist by:*

- Jamming enemy command and control communications.
- Jamming enemy air defense radars.
- Jamming enemy weapon systems which rely on electronic guidance or control.

NIGHT OPERATIONS. Current night vision equipment provides armor and mechanized forces an offensive capability at night. Thermal devices will extend that capability to other conditions of reduced visibility such as smoke, fog, and haze and will permit full utilization of effective weapons range. Night offensive tactics for these forces will almost equate to day tactics. Armor and mechanized forces will be able to:

- Concentrate forces and maneuver at speeds approaching those achievable in daylight.
- Take full advantage of cover and concealment offered by terrain.
- Detect and engage enemy targets at ranges near the weapons capabilities.
- Employ suppressive fires on known and suspected enemy locations.
- Fight as an integrated, coordinated team.

Except for selected small elements, dismounted mechanized infantry and light infantry will continue to be restricted while maneuvering at night unless full and continuous artificial illumination is employed.

Night offensive capabilities allow commanders to continue the tempo of operations from day into darkness. Success can be followed through to destroy enemy forces, continue pressure, and prevent his disengagement or reorganization of his defenses. Concentration of forces and initiation of attacks at night against an enemy not prepared or equipped to conduct night operations on a similar scale offers the attacker significant advantages. The attacker can gain a momentum at night to which the defender cannot fully respond with maneuver or the full potential of his fire power. Once momentum has been achieved, day and night offensive operations are continued without respite throughout that phase of the attack.

OFFENSIVE OPERATIONS

Movement to Contact. When a combatant force moves on the battlefield against an enemy equipped with large numbers of modern weapons, it must be guided by several principles:

- It should move so as to meet the enemy with the least force possible, thus avoiding excessive casualties in those first few confusing moments of battle which take place on ground selected by the enemy.
- Particularly at task force and team level, the moving force should always move along covered or concealed routes from one covered or concealed position to another, using terrain to minimize its own vulnerability to enemy weapons. Further, *the moving*

element should always be covered by an element in position to bring fire on whatever enemy weapons may open upon the moving force.

■ The force should use movement techniques designed to take advantage of the terrain, and to adapt to the likelihood of enemy contact. Terrain and enemy dictate how movement to contact is conducted. Movement to contact is a tactical operation to find and engage the enemy. The attacker, unsure of exactly where or when he will fight, *moves aggressively* toward the enemy. All sources of intelligence are used to obtain information of the enemy. The commander holds back the bulk of his combat power to permit flexible maneuver and decisive fires upon contact. He decentralizes tactical execution to leaders on the front and flanks, but maintains sufficient control to assure effective use of long-range supporting fires and prompt followup by succeeding echelons upon contact.

FORCES IN A MOVEMENT TO CONTACT MUST SKILLFULLY USE THE TERRAIN

For larger units such as corps or divisions, movement to contact is normally conducted in multiple columns. The command is usually organized into a covering force or an advance guard and a main body. Flank and rear security forces may also be employed. The composition, size, and operation of the covering force or advance guard may influence the entire course of the battle. The mission assigned this force is to *develop the enemy situation and prevent unnecessary delay of the main body.* Its operations may include attacking to destroy enemy resistance, securing or controlling key terrain, or containing large enemy units. The force should be a highly mobile, well-balanced force prepared to accomplish its mission well forward of the main body. For smaller units, most offensive action begins as a movement to contact.

The defender always has a potential advantage since he can ambush the advancing force. Therefore, the attacker must avoid blundering into enemy killing zones with a large part of his force. As the advancing unit approaches suspected enemy positions or defended areas, its leader must

select covered and concealed routes, and keep a part of his force in positions to deliver prompt suppressive fire. Upon contact, he initiates swift , hard-hitting fire and maneuver.

Hasty Attack. Once contact with the enemy is made, the commander deploys his force, coordinating maneuver, fires, air support, and other means in an attempt to destroy the enemy in contact or develop the enemy situation sufficiently to determine what to do next. Generally, if the leading task force(s) of a division cannot fairly quickly defeat, bypass, or fight through the enemy with which they are in contact, the commander must decide whether to conduct a **hasty attack** or, alternatively, to take the time to more carefully develop the situation and then conduct a **deliberate attack.** Maybe the intelligence available to the commander will indicate clearly which course he should follow. However, he may find it necessary to conduct a hasty attack to be sure that he is not being held up by inferior forces and being lured into an unnecessary delay. This is a tough decision.

Conduct of a hasty attack is a difficult and challenging operation. Ideally, there should be no pause in the forward momentum of the force upon initial contact. Maneuver units swing into action using movement techniques appropriate to enemy and terrain. The commander must summon and bring into the battle, air defense and field artillery, aerial fires of attack helicopters and USAF aircraft, and all other available support, coordinating and maneuvering all resources so as to apply the maximum combat power against the enemy. The hasty attack must try to fix forward enemy elements in place with fire power, find gaps, weak spots, or open flanks, and move through them rapidly. *Speed is essential. If momentum is lost, the hasty attack will fail.*

Deliberate Attack. When the commander of a force determines that he has encountered a strong enemy force in well-prepared defensive positions, he may conclude that it will be necessary to conduct a deliberate attack. A deliberate attack is characterized by greater and widely distributed knowledge of enemy positions, by more extensive preparation, by greater volumes of more effectively delivered supporting fires, by more extensive deception, by full exploitation of EW, and by other measures beyond those possible in a hasty attack. *A deliberate attack aims at breakthrough on a narrow front, seeking penetration deep into the enemy's rear.*

Exploitation. If an attack succeeds, exploitation and pursuit should ensue. Exploitation is an operation undertaken to follow up success in the attack. Following the principle of reinforcing success, it is advisable to use a previously uncommitted force to exploit. In this way the forces achieving the penetration remain to hold the shoulders of the penetration; they follow on as part of the exploiting force as the enemy defense system breaks up. The exploiting force drives swiftly for deep objectives, seizing command and control facilities, severing escape routes, destroying reserves, and denying the enemy an opportunity to reorganize his defense. Such an exploitation force should be large, reasonably self-sufficient, and well-supported by tactical air, air cavalry, and attack helicopters. *It would not pause to achieve minor tactical successes against isolated enemy units; it should bypass them and drive for deep objectives.* The commander must provide mobile support including full use of helicopters for emergency supply of POL and ammunition, and insure sufficient follow-on forces to establish control over the battlefield behind the exploiting force.

The commander holds out only those reserves necessary to insure flexibility and continued momentum. He uses airmobile and airborne forces to leap ahead to objectives critical to the advance, and conducts raids, hasty attacks, or feints to prevent enemy escape or reorganization. The exploiting force commander must be alert to prevent dissipation of his combat power. His aim must be to reach his assigned objective in

maximum strength as rapidly as possible. His operations must be characterized by boldness, prompt use of all available firepower, and firm leadership to offset fatigue among subordinate leaders and troops.

Forces following and supporting the exploiting force widen or secure the shoulders of the penentration, open lines of communication, and eliminate bypassed enemy forces.

Pursuit. Pursuit is an offensive action against a retreating enemy. Normally its purpose is to cut off and annihilate a hostile force. It does this by maintaining pressure with an exploiting force and encircling with sufficient force to cut escape routes and destroy the enemy. It culminates successful penetration and exploitation. As enemy demoralization begins, exploitation may develop into pursuit. A pursuit may develop in any operation in which the enemy has lost his ability to operate effectively and attempts to flee. Pursuit requires great energy and the resolution to press on despite fatigue, dwindling supplies, or the approach of darkness. Nighttime pursuit increases enemy confusion and speeds his disintegration.

THE PURSUIT MUST BE RELENTLESS AND PLACE UNREMITTING PRESSURE ON THE ENEMY

As in the exploitation, there are the same requirements and command relationships for forces which follow and support. In conducting a pursuit, the commander maintains unremitting, direct pressure against the enemy, while trying to envelop him to cut his line of retreat. He orders double envelopments of the retreating enemy when conditions permit. He makes maximum use of field artillery and tactical air, airmobile, and airborne forces, and offensive electronic warfare.

OTHER OFFENSIVE OPERATIONS

The Dictionary of United States Army Terms (AR 310-25) defines several additional types of offensive operations: raids, diversions, feints, demonstrations, reconnaissance-in-force. Generally, all these are limited-objective, limited-scale, or specially designed operations which follow the basic considerations set forth earlier in describing hasty and deliberate attacks.

CHAPTER 5

Defense

PURPOSE

DEFENSIVE OPERATIONS are undertaken to:

- ☐ Cause an enemy attack to fail.
- ☐ Preserve forces, facilities, installations, activities.
- ☐ Retain tactical, strategic, or political objectives.
- ☐ Gain time.
- ☐ Concentrate forces elsewhere.
- ☐ Wear down enemy forces as a prelude to offensive operations.
- ☐ Control essential terrain.
- ☐ Force the enemy to mass so that he is more vulnerable to our firepower.

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WHEN TO DEFEND

While it is generally true that the outcome of combat derives from the results of offensive operations, it may frequently be necessary, even advisable, to defend. Indeed, the defender enjoys many advantages. Among these are the opportunity to know the terrain, to site and carefully emplace weapons and units so as to minimize their vulnerabilities and maximize their capabilities, and to reconnoiter and prepare the defensive area in depth. In fact, the defender has every advantage but one—he does not have the initiative. To gain the initiative he must attack. Therefore, ***attack is a vital part of all defensive operations.***

FUNDAMENTALS OF THE DEFENSE

1. Understand the enemy.
2. See the battlefield.
3. Concentrate at the critical times and places.
4. Fight as a combined arms team.
5. Exploit the advantages of the defender.

1

Understand the Enemy. In Europe, Army forces, together with the NATO allies, face the combined armies of the Warsaw Pact. Elsewhere in the world, we may face forces organized, trained, and equipped by the Warsaw Pact countries. Every Army commander must study those weapons and the tactics and techniques for using them. The Soviet Army, for example, attacks on very narrow fronts in great depth, with artillery massed at 70 to 100 tubes per kilometer in the breakthrough sector. Against a US division in Europe, Warsaw Pact forces might throw as many as 600 tanks into the leading echelon, followed by an equal number shortly thereafter. This doctrine had its origins in World War II. It is deeply ingrained in the Soviet Army and if we should go to war in Europe, those are exactly the tactics we would face. Based on the battles of Kursk and Kharkov, the Soviet Army prefers deep converging penetrations to cut off and destroy large opposing forces. In any event, the enemy in battle is always worth studying. His strengths as well as his weaknesses must be known. Army forces, fighting outnumbered, cannot afford to learn these things after the battle starts. *The time to study and think is now.*

2

See the Battlefield. The outnumbered defender must know where to concentrate. If he does not—if he is surprised—he may be overwhelmed. In order to offset the numerical superiority of the attacker, our Army must see the whole battlefield more accurately than the enemy and see it continuously from before the attack starts until the attack is defeated. Smaller unit commanders do not have the capability to see far in front of the line of contact nor do they have the sensors and platforms necessary to do the whole job. However, each commander must do all he can and report promptly all he knows. The higher commanders—division and corps—have the chief responsibility, for it is they who must order the concentration of forces and order it in time. These commanders have a variety of sensors at their disposal and can call on even more from the USAF and from national level agencies and assets.

COMMANDERS MUST BE ABLE TO MAKE CRITICAL DECISIONS BASED ON INCOMPLETE EVIDENCE

Ideally, the intelligence, surveillance, and reconnaissance operation would be in full operation long before the enemy started his concentration of force. His radio nets would be continuously monitored. His electronic emitters identified and located, his movements monitored and recorded, his logistic

actions followed, and his posture kept under close scrutiny. In the real world of deception, countermeasures, and inadequate resources, only part of this program can be undertaken and only part of that will be successful. Thus, the corps and division commanders must make tough critical decisions based on incomplete evidence. The more the commander knows about enemy weapons, tactics, psychology, and the more he has studied the terrain, the better his decisions will be. *Bad or slow decisions at this stage of the battle can be fatal.* The staff can help, but the commander decides.

3

Concentrate at the Critical Times and Places. Generals must decide exactly when and where they will concentrate their forces based upon the results of their intelligence operations and their analysis of that information. They must also decide how much force will be required to cope with the enemy attack within the terrain and space limitations of the defensive area. As a rule of thumb, *they should seek not to be outweighed more than 3:1 in terms of combat power.* With very heavy air and field artillery support on favorable terrain, it may be possible to defend at a numerical disadvantage of something like 5:1 for short periods of time. In any event, the purpose of the defense must be to concentrate enough force, and the right kind of force, to destroy the masses of enemy armored vehicles in the assault.

BE WILLING TO TAKE RISKS ON THE FLANKS

To defend against breakthrough tactics, division commanders must not only concentrate at the right time and place, but they also must take risks on the flanks. A defense which spreads two brigades thinly across a wide area and holds one brigade in reserve for counterattack will be defeated by a breakthrough attack. It will in effect be defeated piecemeal because everywhere it will be too weak and thus overwhelmed.

Thus, for example, division commanders in Europe must be willing to concentrate firepower and up to six to eight of their maneuver battalions on one-fifth of their front to meet breakthrough forces of 20-25 battalions. They must cover the remaining ground with air and ground cavalry, remaining battalions, and attack helicopter units. If the forces and firepower are inadequate to achieve these combat power ratios, then an effective defense is not possible, and division commanders must trade space for time by going to the delay. Corps commanders can assist division commanders who face a main thrust by reducing the division's area of operation or providing more fire support and air support.

THE DECISION TO CONCENTRATE MUST BE TIMELY

The high mobility of armored and mechanized forces allows the division commander to reinforce rapidly, by using reserves from the rear and by moving units from less threatened flanks—if he decides early enough. The high mobility of attack helicopters and airmobile antitank teams permits the commander to move boldly. If he makes a mistake and starts to concentrate at the wrong place, he can countermarch his mobile elements quickly and rectify the error. *In fast-moving mounted warfare, the requirement for continuous, reliable, secure communications is absolute.*

Concentration of field artillery is equally important. Unlike tanks and infantry, field artillery fire can often be concentrated without moving batteries. In extended areas, however, field artillery also must be moved to positions within range of the enemy's main effort. Division commanders would certainly concentrate the fires of at least three of their four battalions and would expect to be reinforced by the bulk of the corps artillery.

Air defense batteries and platoons pose a special problem of judgment. Soviet doctrine generally calls for the use of front aviation (fighters and light bombers) beyond the area

covered by Soviet artillery. Thus, the first priority for deployment of divisional Chaparral/Vulcan in the defense should be the division command and control and the division support area, plus any reserves that may be held back. However, *Soviet fighters can be used against forward forces, and their aircraft are now being equipped with guided munitions which presumably will increase such use.* Additionally, armed helicopters will operate in forward areas. Therefore, some coverage of forward brigade areas by Vulcan units will be necessary. Air defense weapons must be echeloned forward to match the enemy's actual use of his close support aviation.

AIR DEFENSE PRIORITY SHOULD BE TO RESERVES, COMMAND AND CONTROL, AND SUPPORT FACILITIES

Under certain operational circumstances at the outset of hostilities, short range air defense systems (SHORAD), such as Chaparral/Vulcan, might be deployed to complement high and medium altitude (HIMAD) systems, such as Hercules/HAWK, defending the highest priority theater targets in the rear area.

PROVIDE MASSIVE CLOSE AIR SUPPORT

Close air support will be required for forward engaged elements in the area of the breakthrough attack. It must be provided massively, in time, at the critical point. The decision to provide massive close air support must be taken jointly by Army and Air Force commanders or by the Joint Force commander, and must include a jointly planned and conducted air defense suppression operation.

4

Fight As A Combined Arms Team. Colonels must organize their forces for combat according to the size and density of the enemy attack, the characteristics of the terrain to be defended, and the mix of the defending units. Generally, tanks and long-range antitank guided missiles (ATGM) are employed in the more open terrain; mechanized infantry in urban, wooded or less trafficable areas. However, the decision on how to cross-reinforce, or even whether to do so, depends upon how the commander decides to fight the battle. The defending commander organizes the area to be defended

into a series of battle positions. Battle positions, selected as a result of terrain and weapon analysis, are locations from which, or in which, units can defend, block, or attack. They may or may not be mutually supporting. They can be selected for occupation by units as large as battalion task forces and as small as platoons. The defending commander thus directs the fight by specifying which battle position his units will occupy and what they will do there—**defend, support, attack.**

UNITS ARE EMPLOYED BASED ON THEIR WEAPONS CAPABILITIES AND THE ENEMY'S MOVEMENT

As friendly units converge on the critical battle site, the battalion and brigade commanders commit them to combat according to their weapons capabilities and the movement of the enemy force.

The first increment of combat power available is usually the massed fires of all field artillery in range. Even if artillery fire does not destroy large numbers of armored vehicles, it buttons up tanks and reduces their effectiveness greatly (as much as 50%); thus the tanks cannot maneuver as easily or use the terrain as well, nor can they see defending weapons as well and thus cannot engage or suppress them as effectively. *Artillery can prevent enemy infantry from dismounting to attack our dismounted antitank weapons.* Artillery can also smoke the overwatching positions covering the enemy attack.

INCREASE COMBAT POWER WITH FIELD ARTILLERY AND ATTACK HELICOPTERS

The second increment of combat power available to the defending Colonels could be attack helicopters. Reinforcing from division and corps level at speeds up to 125 knots, attack helicopters have a high probability of killing enemy tanks at ranges beyond 3000 meters. The helicopters will be most useful when the enemy has moved out from under at least part of his air defense umbrella and beyond his preplanned artillery fires. Attack helicopters should operate under the control of engaged brigade or battalion commanders and be committed in relays on a sustained and concentrated basis.

If dismounted antitank guided missile teams can be moved into the battle by helicopter, they represent a valuable reinforcement, but one which must be employed carefully. Because the airmobile

TOW teams (from light infantry units or dismounted from mech units) are vulnerable to massed artillery, they should not be employed in the forefront of the initial defense. They should be kept out of areas which will probably be subjected to preplanned massive artillery fires. They should normally be employed on the flanks of penetrations and be separated from attacking armor by terrain obstacles such as rivers, woods, or steep embankments.

Whenever possible, they should be sited to deliver surprise attacks—crossing shots from reverse slopes or through saddles or from built-up areas so they will be protected to some extent from frontal suppressive fire. These ATGM teams must also be withdrawn, repositioned, and resupplied by helicopter. They must occupy positions which afford terrain cover to the helicopters which support them. *They must not be expected to move about the mechanized battlefield on foot.*

Close air support of engaged forces at critical times and places provides a quick and major increase in combat power. *However, close air support requires air defense suppression which will involve many support aircraft, coordinated joint electronic warfare, utilization of Army firepower and joint planning.*

As tank and mechanized battalions begin to arrive, the brigade and battalion commanders must organize them for combat and assign battle positions and missions. The brigade commander may decide to retain whole tank and mechanized infantry battalions under his direct control, without cross-reinforcing. When he does so, he must provide for the necessary coordination between battalions.

However, the repeated requirement for close interaction of tanks and mechanized infantry will normally lead the brigade commander to organize and employ cross-reinforced battalion task forces. The tank-heavy task forces are organized and employed in the best tank terrain; the mechanized heavy task forces on the flanks or more difficult terrain.

This same consideration repeats itself at the battalion level. The battalion task force commander may decide to retain pure separate tank and mechanized infantry companies, and to provide for tank/infantry coordination between companies. But if he visualizes companies moving *independently* from position to position within his overall defense plan, then he should cross-reinforce at company level. Cross-reinforcement below company level should generally not take place.

THE COMMANDER BASES HIS DECISION TO CROSS-REINFORCE ON HOW HE DECIDES TO FIGHT THE BATTLE

It is, of course, possible to cross-reinforce some elements and not others. For example, if the brigade commander plans to occupy a series of mutually supporting battle positions in depth to wear down the enemy, he may wish to do so by employing independently operating cross-reinforced companies. If he then plans to counterattack and destroy exposed or weakened elements, he could do so with cross-reinforced battalions under the tactical control of the battalion commanders, or even pure battalions under his own personal and direct control.

As the battle develops, the brigade commander must move his defending forces from one battle position to another so as to take maximum advantage of his weapons, the terrain, and such mines or obstacles that he has been able to employ. His defense must be elastic—must absorb the shock—slow the attack—weaken it—and then destroy it. Some enemy forces will penetrate the defenses and burst through into the rear. *Every element on the battlefield must be prepared to engage and destroy these small advance elements and not give way to panic when they appear.* For this purpose, the Dragon ATGM, along with the LAW must be plentiful in the rear areas.

The Colonel must resupply his forces with fuel and ammunition and provide for battlefield repair as far forward as possible.

5

Exploiting the Advantages of the Defender. The success of the defense will ultimately depend greatly on how well the companies, platoons, tank crews, and squads exploit all the built-in advantages of the defender. We depend on the Captain for this purpose.

EXPLOIT THE ADVANTAGES OF THE DEFENDER

He must see to it that each weapon is sited to take advantage of its range and special purpose and to minimize its vulnerability to counterfire or suppressive fire. His fighting vehicles must be covered and concealed, or at least be hull down. *They must fire first.* The terrain must be exploited and reinforced when necessary with mines and obstacles to slow down the enemy and improve the effectiveness of the defending weapons.

Each battle position must combine the characteristics of a defense and an ambush. Several battle positions in mutual support should multiply the strength and value of each. The combination of all these advantages repeated in each set of positions in depth, supported by field artillery, close air support and attack helicopters, should easily inflict very high losses on an attacking enemy.

Combined with strong, short counterstrokes against exposed and weakened enemy elements, this defense can and will succeed. Sweeping counterattacks which expose our forces to heavy losses as they surrender the advantages of the defender must be the exception. Such counterattacks are allowable only if terrain key to the defense must be regained. Even then, it may be possible to control such terrain by fire alone.

Although the active defense involves the utilization of successive battle positions in depth, to wear down and weaken the enemy, followed by counterattacks, it is necessary to maintain the coherence of the overall defense, including coordination on brigade and division flanks. To the extent that the defense can be conducted well forward in the main battle area, to that same extent will the problems of flank coordination be easier. In the best of all situations, the general line of

the FEBA can be maintained throughout the battle. If it cannot be maintained and the battle takes place in the depth of the defensive system, then brigade and division commanders must exercise continuous active coordination with adjacent units.

TANKS. Tanks engage enemy tanks, ATGM, armored vehicles, and dismounted infantry from covered and concealed positions. Tanks provide the combat power to move the team from one position to another in the face of enemy opposition or in counterattack. *Tanks and ATGM are the backbone of the defense.*

MECHANIZED INFANTRY. *Mechanized infantry supports and assists the defense by:*

- Destroying enemy tanks and armored vehicles at long ranges with TOW (3000m) and Dragon (1000m).
- Overwatching tank movement and counterattacks with ATGM.
- Suppressing enemy antitank weapons while friendly tanks are moving on the defensive battlefield.
- Conducting dismounted attacks against enemy infantry antitank weapons if they cannot be suppressed and it is necessary to move defending tanks in counterattack or to new battle positions.
- Blocking covered and concealed routes of enemy attack or infiltration.
- Patrolling and reconnoitering difficult terrain day and night.
- Securing tanks and ATGM at night.
- Holding wide frontages, in economy of force missions, and defending in terrain unsuitable for tanks, such as forests and cities.

INFANTRY. *Airmobile, airborne and other light infantry support and assist the defense by:*

- Defending forest, mountain, and urban areas.
- Reinforcing threatened sectors with airmobile antitank teams.
- Protecting tanks and antitank teams from advancing enemy infantry.
- Conducting patrols and manning outposts to gain information about enemy activities on and behind the forward edge of the battle area (FEBA).

FIELD ARTILLERY. *Field artillery supports and assists the defense by:*

- Destroying, smoking, or suppressing ATGM and enemy tanks in overwatch positions.
- Disrupting continuity of enemy combined arms formations by separating infantry from tanks.
- Destroying the momentum of assaulting forces by planned massed fires.
- Suppressing enemy tanks by causing them to button up, to get off roads, to slow down, and to lose their ability to bring fire rapidly on defenders.
- Suppressing or destroying enemy artillery and mortars by counterfire.
- Destroying or suppressing forward area enemy air defense weapons so that defending Army forces can utilize close air support.
- Scattering mines in the path of attacking forces to stop them where our fires can destroy them.
- Isolating parts of the battlefield with a variety of munitions so that counter-attacks may be mounted against exposed and weakened attacking forces.

AIR DEFENSE ARTILLERY. *Air defense artillery supports and assists the defense by:*

- Destroying or driving off close support aircraft and helicopters.
- Causing enemy aircraft to lose effectiveness (releasing ordnance at other than

optimum altitudes, ranges, speeds, and attitudes.)

- Denying or limiting aerial reconnaissance.
- Providing air defense protection for small unit lateral movement in the main battle area.
- Providing convoy security for maneuver, combat support, and service support elements.
- Providing, on order, suppressive fires against ground targets in the main battle area.

COMBAT ENGINEERS. *Combat engineers support and assist the defense by:*

- Creating obstacles and minefields to reinforce the defensive advantages of the terrain.
- Opening and closing lateral tactical routes.
- Blocking avenues of approach.
- Stopping enemy forces in the fields of fire of defending weapons.
- Undertaking combat construction to harden critical command, control and logistic elements.
- Operating as infantry, if required.

ATTACK HELICOPTERS. *Attack helicopters support and assist the defense by:*

- Overwatching armored counterattacks.
- Guarding open flanks.
- Reinforcing thinly held sectors.
- Raiding enemy rear areas when opportunities occur.
- Blocking, reinforcing, and counterattacking.
- Containing and destroying enemy elements that have broken through or bypassed the defense.

USAF AIRCRAFT. *USAF aircraft support and assist the defense by:*

- Providing intelligence on enemy concentrations through reconnaissance.
- Providing close air support at the critical times and places of enemy breakthrough attacks.
- Destroying enemy second and third echelon forces before they are committed.
- Interdicting enemy supplies of ammunition, POL, and replacement fighting vehicles.

ELECTRONIC WARFARE. *Electronic warfare (EW) forces support and assist the defense by:*

- Jamming enemy command and control.
- Jamming enemy air defense radars.
- Jamming enemy weapons systems which rely on electronic guidance or control.

NIGHT OPERATIONS. Night vision and thermal imagery devices enable tank mechanized infantry, and attack helicopter units to conduct the defense at night and under conditions of reduced visibility similar to the conduct of daylight operations. *With these devices, units will be able to:*

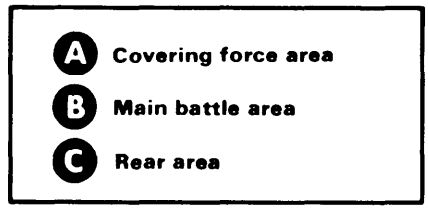
- Concentrate forces at speeds approaching those of daylight speeds.
- Move on or between battle positions.
- Engage enemy targets at ranges near the full weapon capability.
- Provide mutual support between battle positions.
- Fight at night as an integrated, coordinated combined arms team.

Light infantry will be able to exploit their weapons' range capability at night, but will continue to be restricted in movement and maneuver within and between battle positions.

The shift of night defensive operations from the more static employment of weapons to the employment of a fully integrated maneuverable team provides the commander new advantages. An enemy force of lesser night capability may be able to attack at night, but must do so at slower speeds and with limited maneuver and weapons range. The defender with full night capability multiplies his weapons effectiveness and, therefore, can defend against combat power ratios which otherwise might be greater than 3:1. He can also continue his active daylight defense into the night as he maneuvers his forces from battle positions to battle positions as the situation requires. Quick short counterattacks against weakened exposed enemy forces can be conducted at night before enemy forces can consolidate or be reinforced.

ORGANIZING FOR DEFENSE

The commander assigned a defensive mission usually organizes his forces for operations in three areas:





The Covering Force Area. The covering force has four basic tasks:

1 **Force** the enemy into revealing the strength, location, and general direction of his main attack. To do this, it will be necessary to strip away enemy reconnaissance and advance guard elements. Contact with the enemy main body is sought; a fight is started with enough intensity to force the enemy to deploy maneuver and fire support units and begin his main attack.

2 **Deceive** the enemy, or prevent the enemy from determining the strength, dispositions, and locations of friendly forces, especially those in the main battle area.

3 **Divest** the enemy of his air defense umbrella, or require him to displace his air defenses before attacking the main battle area.

4 **Gain** time for the main body, enabling it to deploy, move, or prepare defenses within the main battle area.

CONTACT SHOULD BE MADE AS SOON AS THE ENEMY ENTERS THE COVERING FORCE AREA

Units of the covering force should make contact as soon as the enemy advances into the covering force area, and fight there an action in depth which will draw the enemy out from under his forward air defenses and away from his forward artillery. This should be done in such a way that when the enemy strikes into the main battle area, his air defense and artillery support is significantly diminished.

Although any mobile force may be deployed and fight in the covering force area, it will be normal for covering forces to be predominantly armored cavalry and air cavalry, reinforced with sufficient tank, antitank, mechanized infantry, field artillery, air defense, artillery, engineer, and attack helicopter forces for the mission. For example, a reinforced armored cavalry regiment could expect to be employed as a corps covering force; or in the absence of a corps covering force, a division might use its organic cavalry squadron reinforced as a divisional covering force. As a deception measure, the covering force should always have field artillery fires available which are representative of the artillery supporting the force as a whole. Tactical air should also be used since it can increase the survivability and augment the destructive power of the covering force by attacking massed armor at critical points. As the enemy moves forward, his air defenses lose some effectiveness and friendly air attack is somewhat more effective.

FOR DECEPTION, ARTILLERY REPRESENTATIVE OF THE WHOLE FORCE SHOULD SUPPORT THE COVERING FORCE

The covering force may be under the command of the force commander who initially ordered the deployment. A reinforced cavalry regiment might be controlled by the corps commander even though it might not be deployed across a two-division front. The covering force could also be controlled by commanders subordinate to the one who initially ordered its deployment. Or, control of parts of a covering force spanning two units could be vested in the commander most directly affected; i.e., one part controlled by one division commander, the other part by another division commander. In some circumstances, brigade commanders in the main battle area could control all or part of a covering force.

Whatever the command relationships may be at the outset, as the battle progresses and the covering force closes on the main battle area, some or all covering force units will come under control of the brigades charged with defense of the main battle area. Tank and mechanized infantry task forces deployed to reinforce the covering force will probably take up positions in the main

ARMORED AND MECHANIZED UNITS USED TO REINFORCE THE COVERING FORCE WILL NORMALLY BE INTEGRATED INTO THE DEFENSE OF THE MAIN BATTLE AREA

battle area, and prepare to fight there. Cavalry squadrons from the covering force may be used as flank or rear security forces, to maintain contact between brigades, to reconnoiter, to locate and follow the movement of second and third echelons of the attacking enemy, or to take up battle positions in the main battle area. The considerable long-range antitank combat power of cavalry units, coupled with their flexibility, make them an attractive force to have for the fight in the main battle area.

THE COVERING FORCE TRADES SPACE FOR TIME

The commander assigning a mission to a covering force will normally tell the covering force to fight in a specified area for a specified period of time. For example, the covering force commander might be told he is to operate in the covering force area for 72 hours, for seven days, or until some action has been completed by the main body. The covering force must find ways not only to deceive the enemy as to main battle area dispositions, but also trade space for time—time for the main battle area force to get set to defend. Therefore, the covering force mission may be a delay which could be terrain-specific, time-specific, or both.

Even though the time specified for the delay has been achieved, *the covering force must not automatically retire from the covering force area.* Sufficient resistance must be presented to the enemy to force him to deploy his main forces. The covering force commander may be instructed not to allow himself to be so decisively engaged as to risk the destruction of his force. The main body commander may be willing to accept a lesser delay in order to preserve his covering force for later use.

Care must be exercised, however, in issuing orders within the covering force. Commanders at each echelon will have a different perspective on the battle. While this is always true, it is perhaps nowhere more true than in a covering force action. While the covering force commander may be told to delay forward of a river line for 72 hours, he may elect to tell his task force commanders to defend in certain battle positions—perhaps for a specified period of time, perhaps not. Judgment must be made at each level as to how the mission is to be described to

subordinate commanders. All too often a small unit commander, when told to delay, yields to an understandable urge to shoot too little, pull back too early, and move back too far. Thus it is imperative that each commander insure he has conveyed to each of his subordinates *precisely* what it is that he is to do in the context of the *overall* mission. At levels below battalion or squadron task force, the covering force fight is mainly a series of defensive battles, and is so described in orders and instructions.

B

The Main Battle Area. Behind the covering force lies the area in which the main battle will be fought. Terrain advantages may be used repeatedly in the forward zone to inflict casualties on a stronger attacking enemy force, and mounted elements can exploit their mobility to fight a succession of advantageous actions. However, the farther forward the battle can be fought, the better. The more the enemy is permitted to penetrate, the greater the chance of breakthrough, and the more difficult the coordination between adjacent units, including units of different nations, will be. If the active defense can maintain coherence along the line of the FEBA or in the tactical zone just behind it, the easier coordination on the flanks will be, and the more successful the total defense will be.

MAINTAIN COHERENCE ALONG THE FEBA OR IN THE ZONE JUST BEHIND IT

Nonetheless, the defense must be elastic—not brittle. Because the attacker will attempt to overwhelm the defense with a concentrated mass of tanks and armored vehicles supported by very heavy artillery fires, the success of the defense depends upon the destruction of enemy armor. The problem will be to destroy many targets in a short period of time. Thus the defense must be built around tanks and antitank guided missiles. These are the backbone of the defense. In order to cope with large numbers of targets the *tanks and ATGMs must be sited so that they can engage at maximum effective ranges and begin the attrition of the enemy early.* The use of mines or obstacles to slow down the enemy will afford more time for engagement.

DEFENDERS MUST DESTROY MANY TARGETS IN A SHORT PERIOD OF TIME

Defenders must be prepared to create strongpoints which are prepared to withstand a direct assault. These strongpoints can be established with reinforced companies or battalions when a particular piece of terrain is key to the defense or to the accomplishment of the mission. Sometimes a strong point must be established to set up a fire trap or ambush, or to provide a base or pivot around which other forces can maneuver or counterattack. Strong points are the exception, because they may be lost if bypassed or fixed by enemy attack. Nevertheless, there are times when they must be established to fight and win.

In the defense against the enemy's main effort, the battalion commanders become central to the conduct of the battle. Frontages or sectors are smaller. Forces are larger. Battle positions are often occupied by whole battalions. Battalion commanders exert continuous positive control over companies and often personally control tank infantry coordination. Cross-reinforcement at company level may or may not take place. The rapid pace of the battle—the constant requirement for suppression—the coordination of engineers, artillery, attack helicopters, and close air support all point to the necessity of battalion control and support of companies. In the economy-of-force sectors, the companies will operate more independently on wider fronts with more cross-reinforcement.

Counterattack in the Defense. Counterattacks should be conducted only when the gains to be achieved are worth the risks involved in surrendering the innate advantages of the defender. Because counterattacking forces give up most advantages of the defense, they must protect themselves from enemy observation and fires by judicious use of terrain, smoke, night, and bad weather and they must be supported by direct and indirect suppressive fires on every weapon system that can bring fire on them. Reverse slope and limited objective attacks should be the rule rather than the exception. Often, counterattacks will consist of moving tanks and ATGM to the flanks or even to the rear of exposed enemy elements. From these positions, enemy armored vehicles can be destroyed by long range fires alone. If it is necessary to close with the enemy position, the counterattack force should move by routes which protect it from the enemy's overwatching elements. Sometimes it will be necessary to counterattack to recapture critical terrain. In these cases all the principles of the attack should be brought into play.

C

The Rear Area. Behind the main battle area, there is an area from which supply and maintenance support must be projected forward. Here too are administrative echelons and communication centers. This area must be defended from air attack and from airmobile or airborne attacks. Air cavalry units, if available, can provide wide area surveillance of rear areas to detect these attacks. As enemy airmobile or airborne forces are detected, airmobile infantry or other available mobile forces can quickly concentrate to contain and destroy them. Additionally, attack helicopters can attack and destroy enemy armored elements that have broken through the defense. However, large forces cannot be reserved for these purposes and thus *support elements must be trained and prepared for self-defense, including defense against armored forces.* All rear echelon elements must use every possible measure of defense against detection from the air. Where possible, they should be hidden primarily in cities, towns and villages.

CHAPTER 6

Retrograde Operations

PURPOSE

RETROGRADE operations are undertaken to:

- ☐ Trade space for time—***DELAY.***
- ☐ Disengage from enemy contact—***WITHDRAWAL.***
- ☐ Move away from an area without enemy pressure—***RETIREMENT.***

WHEN TO CONDUCT RETROGRADE

At times, a command may have to move to the rear, or away from the enemy. This retrograde movement may be necessary when:

- There are insufficient forces to attack or defend, making it necessary to exchange space for time.
- The command is to be employed elsewhere or in a better position.
- Continuation of an operation no longer promises success.
- The purpose of the ongoing operation has been achieved.

The type of retrograde operation—*delay, withdrawal, retirement*—depends on the purpose of the rearward movement.

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DELAY

In a delay mission, a force conducts any or all types of combat operations in order to gain time for something else to happen—reinforcements to arrive, or forces to concentrate elsewhere. Combat operations executed in the delay mission may include attack, defense, ambush, raid, feint, or any others appropriate to mission accomplishment.

Normally a delay mission will be an economy of force operation so the delaying force may expect to fight outnumbered. If the force cannot defend successfully in place, it must trade space for time. Nonetheless, a commander assigned a delay mission should not assume that his force will always be defending or withdrawing. Indeed, the advantages of surprising the enemy, seizing the initiative, and generating uncertainties in the mind of enemy commanders may well indicate the desirability of attacking. The enemy generally is delayed the most when his losses are high, so *the delaying force seeks by whatever means possible to inflict maximum casualties on the enemy.*

INFLICT MAXIMUM CASUALTIES ON THE ENEMY

For larger forces (brigades and divisions) a delay is usually a time-limited or terrain-limited (or both) series of defensive actions. A delay operation denies the enemy access to a specified area for a specified time, inflicting on him the maximum possible casualties that can be expected given the strength of the delay force. Thus, a covering force might be ordered to fight the enemy forward of a specified obstacle (perhaps a river line) for a specified time (perhaps 72 hours).

THE DELAY DEMANDS THE UTMOST IN PLANNING AND EXECUTION

Further, the commander imposing time limits on the delay must carefully weigh the risks involved in setting the times. This is especially so for battalions and smaller units. A brigade commander tasked with delaying forward of a river line for 24 hours must deploy sufficient force to have a reasonable chance of carrying out his task. If he deploys a company team where a battalion task force is a better choice, he must do so fully cognizant of the risks he is taking. He is probably trading combat losses for time. *The delay is the most demanding of all ground*

combat operations. It requires highly competent, well-trained small units, and skillful small unit leaders.

FORCE THE ENEMY TO SLOW DOWN AND TO CONCENTRATE COMBAT POWER AGAINST SUCCESSIVE BATTLE POSITIONS

The concept of the delay is to force the enemy to take the time to concentrate enough combat power again and again, against successive battle positions to overcome each in turn. The delaying commander places platoons or companies in battle positions which optimize their weapons effectiveness while at the same time minimizing their vulnerability to enemy long-range observation and fires. The commander selects terrain which requires the enemy to travel along exposed approaches. When time permits, he reinforces natural terrain obstacles, creates new obstacles, and places mines to hold up enemy forces in the field of fire of defensive weapons. A platoon in a carefully selected and prepared battle position should be able to hold off at least an enemy company. This means the enemy must expend time to deploy the major elements of a battalion. Just when the battalion has been brought fully to bear, the delay force leaves, and the enemy must repeat the time-consuming process at the next delay position.

Obviously, a commander can trade space for time by occupying succeeding battle positions until he runs out of space. But he can do more; he can *trade time for risk.* He can fight harder at each position and hold each longer, thus gaining more time by accepting a greater risk of increased combat losses to each element of his force.

A COMMANDER CAN TRADE SPACE FOR TIME, OR HE CAN TRADE TIME FOR RISK

If a commander's orders require that he delay the enemy forward of a certain line until a certain time, he may be forced to stand and fight on key terrain—even beyond the point of prudent risk—to accomplish his mission. He may lose some elements of his force in such a situation. In these cases, while the overall mission of the force is to delay, smaller units missions are often told to defend until ordered to withdraw. Every commander must be sensitive to his responsibility in these cases—his

responsibility to his troops and to his mission.

Delay is also a mission frequently assigned units in a flank or rear guard or in a covering force.

WITHDRAWAL

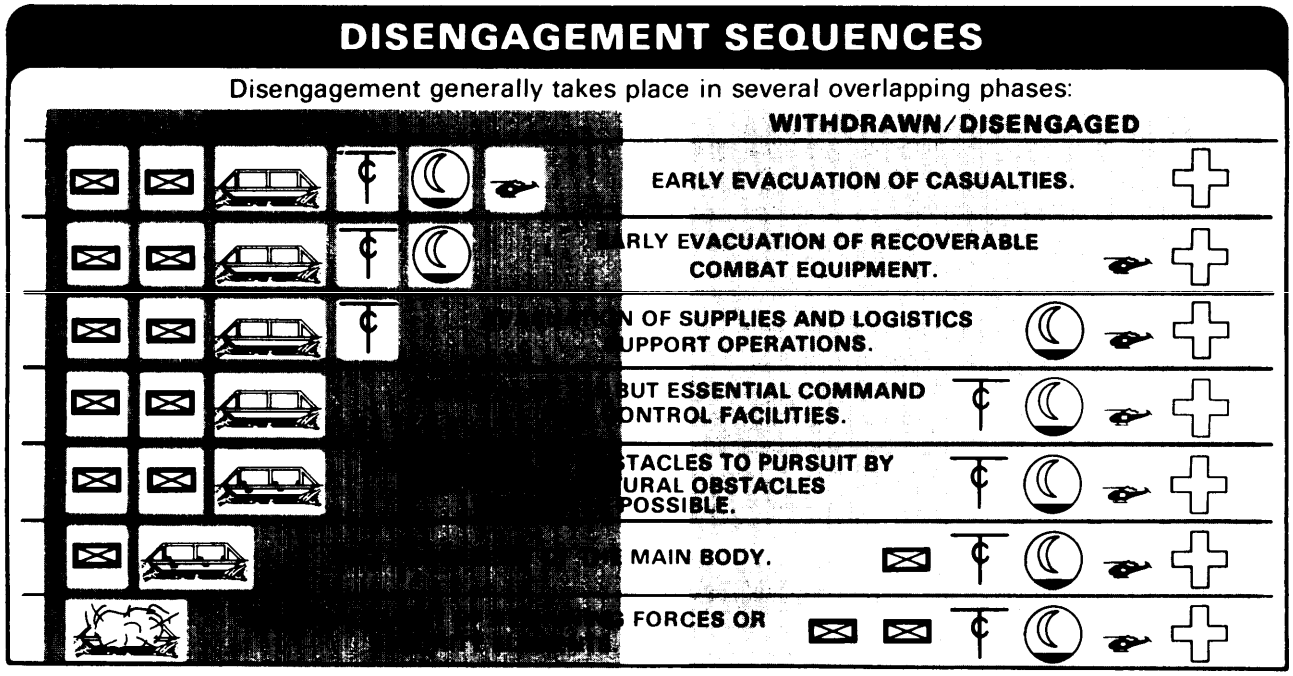
Withdrawal is a disengagement from the enemy. Disengagement is a difficult task; its timing is critical. *Waiting too long may make disengagement most difficult, even impossible.* It is desirable to break away quickly and with as little notice as possible. Sometimes, however, feints, diversions, and even attacks may be necessary to effect disengagement. Night and bad weather help the disengaging force to get away unnoticed, but at the same time make control of the disengaging force more difficult. Armor and mechanized units may be able to break away rapidly, quickly putting distance between themselves and the enemy before the enemy can react. Unarmored units, however, must usually depend on smoke, night, deception, clever use of terrain, or even attack to achieve a clean break. The routes of withdrawal must be kept clear of obstacles or congestion that would hinder movement of the units.

Normally radio silence should be imposed on units which have disengaged. Until disengagement is complete, the remaining forces should simulate, as nearly as possible, continued presence of the main body. They may do this by stepping up combat activity, electronic transmissions, other activity levels, or by attacking. This force must have specific instructions about what to do when the enemy attacks, and when and under what circumstances to withdraw. An armored unit may wait for the next enemy attack, then conduct a delay to facilitate withdrawal of the main body.

Army aviation is especially valuable in support of disengagement and the ensuing withdrawal. Air cavalry and attack helicopters can be used in feints, diversions, raids, on flanks, and to hold up attacking armored forces. Lift helicopters can assist in any or all of the disengagement phases.

RETIREMENT

Since, by definition, a retirement is conducted in the absence of enemy pressure, it is therefore a battlefield movement which should be conducted according to techniques of movement appropriate to the level of command.



CHAPTER 7

Intelligence

A PREREQUISITE TO WINNING THE FIRST BATTLE

THE INTELLIGENCE CAPABILITIES and assets of the United States constitute one of our main equalizers—one means of offsetting superior numbers of enemy forces and weapons. US Army commanders must understand that intelligence training and practice at all levels in peacetime is the price of success on the future battlefield. The commander must plan and execute intelligence operations just as he does tactical operations. He must also prevent the enemy from determining friendly intentions by maximizing the **operations security (OPSEC)** of US forces.

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THE COMMANDER MUST BE ABLE TO "SEE" THE BATTLEFIELD

In earlier chapters we discussed the lethality of the modern battlefield and the tactics needed by the US Army commander to win when outnumbered and outgunned. The first step in winning is *seeing* the battlefield. The commander requires intelligence to concentrate combat power at critical places and times. Concurrent with increased lethality in weapons, there has been a commensurate increase in intelligence acquisition capability. The commander must demand that all sources of intelligence, strategic or tactical, be orchestrated to support his mission.

As we can sense the enemy, he can sense us. Counterintelligence and OPSEC must be coordinated and executed concurrently with combat operations. Intelligence is sequential, time-critical, and event-oriented. Intelligence is the commander's responsibility and *provides the basis for tactical decision.*

INTELLIGENCE FOR THE MODERN BATTLEFIELD

Intelligence has three distinct disciplines. As the commander can mold infantry, armor, and artillery into a combined arms team, so can he weld his intelligence assets into a system derived from the ❶***electromagnetic spectrum;*** ❷***imagery*** from overhead platforms; and ❸***human intelligence*** (HUMINT) which includes direct observation.

Commanders recommend specific tasks for strategic systems, and control tactical systems organic or attached to their command.

❶ ***Electromagnetic intelligence*** is derived from electronic detection and exploitation of enemy emissions; i.e., signal intelligence (SIGINT) or enemy physical activity. Examples of processes providing intelligence derived

through detection and exploitation of *enemy electronic emitters* are:

- **Cryptanalysis**
- **Signal and communication analysis**
- **Direction finding**
- **Traffic analysis**

Examples of systems providing intelligence by detection of *physical activity* are ground surveillance radar (GSR) and remote sensors (REMS). Electromagnetic intelligence is generally timely, and has a 24-hour, all-weather capability. It is generally limited in its ability to define, classify, and accurately locate targets, and it is vulnerable to enemy deception and jamming. The same units which provide SIGINT now provide most of the offensive EW capability discussed in Chapter 9.

2 ***Imagery intelligence*** is derived primarily from radar, infrared, and photographic sensors carried by overhead platforms. To assure timeliness, intelligence derived from imagery must be disseminated to commanders *electronically* as opposed to photographically. Imagery data can be the most accurate for the production of intelligence, but it is limited by weather, hostile countermeasures, and, frequently, lack of timeliness.

3 ***Human intelligence*** encompasses the remainder of collection activity. Tactically, it is represented by the direct observation of forces in contact; multiple counterintelligence operations; deception; exploitation of prisoners, documents, and equipment; long range patrols; listening and observation posts; interface with local military or paramilitary forces; and, most important, reports of frontline friendly troops.

These three distinct disciplines provide unique types of intelligence. One source may tip off another source. Accordingly, the commander must insure that all three are fused and integrated to provide the best basis for tactical decisions.

The USAF has additional capabilities primarily in the categories of tactical imagery and electromagnetic detection. The USAF reinforcement is provided by tactical reconnaissance elements using high-performance aircraft and drones. These vehicles (manned and unmanned) have greater range, speed, and penetration depth than Army assets. Strategic systems reinforce by providing greater area coverage from overhead collection.

The Army intelligence system is a part of the national strategic intelligence system comprising government agencies and the military services. The national system is a multiple collection effort which uses a variety of platforms including aircraft, ships, and ground stations. It produces intelligence under three politico-military conditions:

1. Static (peace)
2. Tension (increased threat)
3. Combat

Under static conditions, national systems focus on peacetime concerns of national decision makers. Their most important tactical function is the development of an accurate intelligence data base which identifies the military potential in areas where US forces are likely to be committed. Management of national intelligence resources is centralized, and security restraints limit access to some of its products. Strategic collection resources support demands of major commanders. During periods of increased tension, security restrictions on dissemination and use are relaxed.

In combat, centralized control is retained but commanders' demands receive a higher

priority. Senior tactical commanders are authorized to use the intelligence as they see fit with minimum security constraints. Intelligence from national systems and those of other services is integrated with intelligence from organic Army resources.

The USAF role is critical in meeting demands of commanders. For example, some intelligence problems require joint Army-Air Force effort. Air defense suppression requires such joint intelligence planning. Corps and USAF collection platforms can locate enemy air defense radars and communications. Strategic systems can locate components of enemy systems in those areas denied to tactical assets. Long-range patrols can locate elements which present no electronic signature. The composite is fused into an integrated, all-source product. The corps battlefield information coordination center (BICC) is the fusion point for the integration of intelligence data from all sources, including allied forces.

Commanders initiate the intelligence preparation of the battlefield prior to combat. Detailed knowledge of the enemy, terrain, and weather is mandatory. Included are such fundamental tasks as:

- **Identifying obstacles**
- **Identifying main avenues of approach**
- **Identifying battle positions**
- **Identifying possible assembly areas**
- **Insuring the accuracy of map grids**
- **Preparing detailed radar coverage charts**
- **Preparing trafficability studies**
- **Determining the most likely positions for artillery, air defense, and antitank elements**

These data are reduced to overlays for use in planning prior to the battle. They can also be stored in a data base for rapid retrieval and dissemination.

Weather and terrain, although uncontrollable, must be used to our advantage. Weather factors must be considered and worked into tactical operation plans. Commanders who understand the limitations and advantages of weather and terrain can combine this with their knowledge of the enemy to tilt relative combat power in their favor. Intelligence preparation of the battlefield enhances command and control, and multiplies our capability to defeat the enemy with fewer casualties.

INTELLIGENCE MUST BE EVENT-ORIENTED AND TIMELY

Intelligence must support the commander's requirements, and must be event-oriented. Intelligence summaries (INTSUM), periodic intelligence reports (PERINTREP), and schedule-driven briefings as we have known them cannot serve modern commanders who must have intelligence keyed to events in a rapidly changing situation.

THE INTELLIGENCE SYSTEM AS A PART OF THE TOTAL COMBAT SYSTEM

In order to understand the interaction of intelligence with operations, it is necessary to understand the difference between *INTELLIGENCE* and *COMBAT INFORMATION.* If raw data can be used for fire or maneuver as received, with no interpretation or integration with other data, it is **COMBAT INFORMATION.** If the raw data requires validation, integration, comparison, or any other form of analysis, no matter how rudimentary, it becomes **INTELLIGENCE.** In other words, the definition depends on how the information is handled and how it is used.

Once the combat engagement begins, nearly all of the intelligence acquired by modern armies is a by-product of combat operations. Much of the data can be used immediately by combat operations elements to bring combat power to bear against the enemy. Data so used is COMBAT INFORMATION. *If the data cannot be used*

immediately, but requires processing for use, it may then become INTELLIGENCE. COMBAT INFORMATION, even though used, may still be of vital importance as intelligence. In such a case, the same data can be both, but in sequence. Intelligence collection systems acquire a great deal of COMBAT INFORMATION. The systems must provide for immediate access to such data by commanders for combat action. Commanders must insure that linkages exist whereby intelligence collecting systems will rapidly feed COMBAT INFORMATION to the Captains and Colonels who need it. At the same time it is sent upward for processing.

Let us examine some of the many systems which collect and use combat information:

Basically, we start with the riflemen or weapons commander who sees enemy personnel, tanks, or other targets and engages them by fire. This sighting is combat information. When reported up the line, it can enter the intelligence system as information.

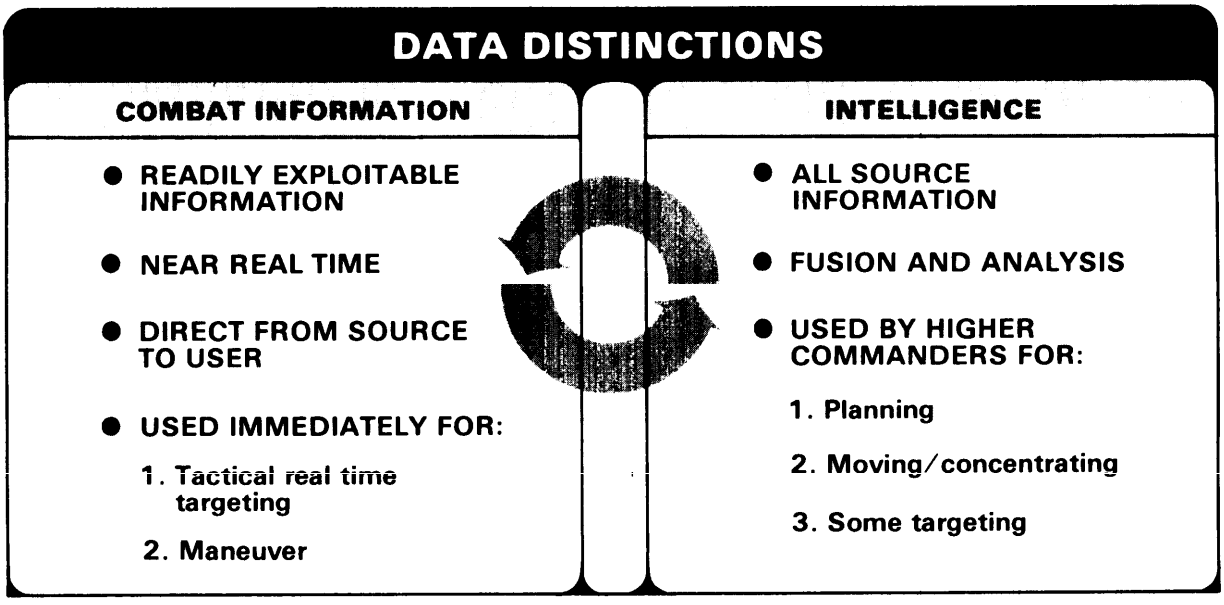
The artillery generates combat information through its *target acquisition system.* Data that can be fired upon is combat information. On the other hand, data that is not used for immediate firing is passed over to the intelligence/operations fusion center to be processed into intelligence. Data used for firing may also be processed into intelligence for use by a senior commander. The artillery counterfire system is a subelement of target acquisition specializing in locating and engaging enemy batteries. Its data follows the same pattern.

The air defense system finds and identifies enemy aircraft, and engages them with guns and missiles. The *immediate data,* coming largely from their radars, is combat information. The intelligence picture is filled when such data is passed for integration and processing within the intelligence/operations fusion center.

Other combat elements such as tactical air support, cavalry, and maneuver elements use and report data in keeping with their own roles and missions.

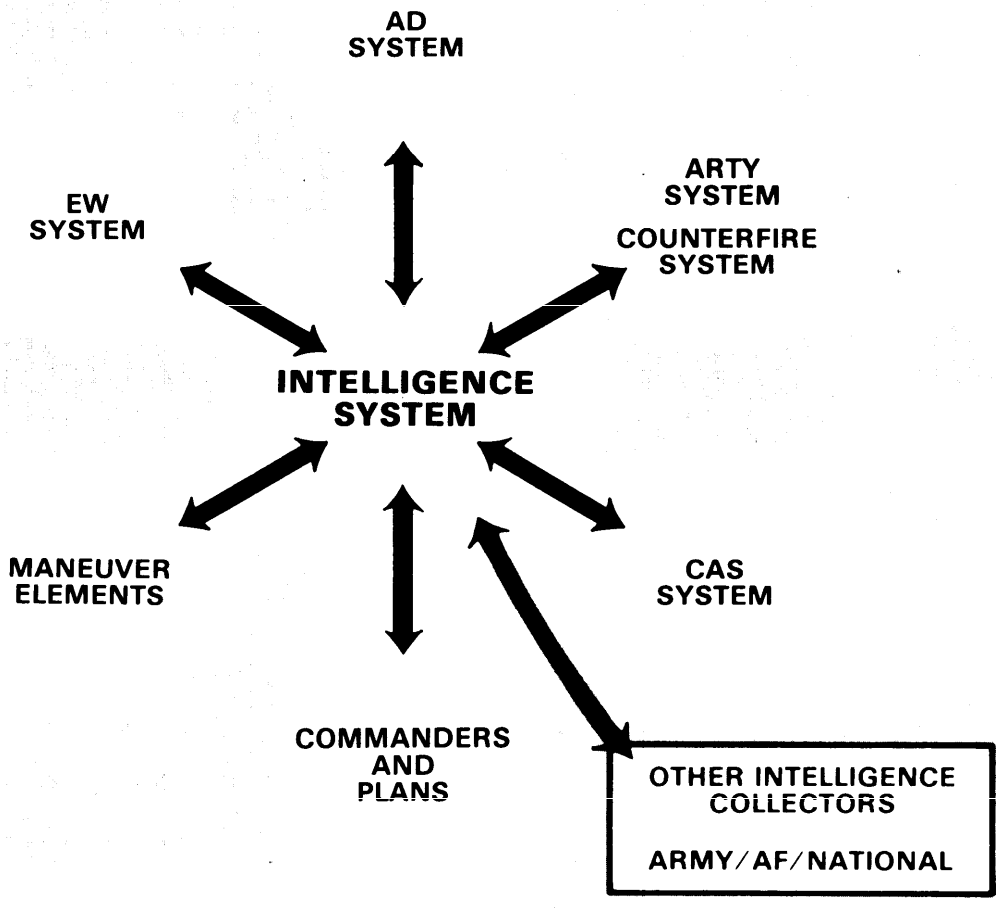
Sometimes, as in the case of EW, the collectors of data deal with both combat information and intelligence. Due to the technical nature of such data, some form of processing must always take place. Electronic data must be converted into usable information. When it is highly perishable and of immediate value, we have a case where intelligence becomes combat information.

This chart shows the distinction between combat information and intelligence.

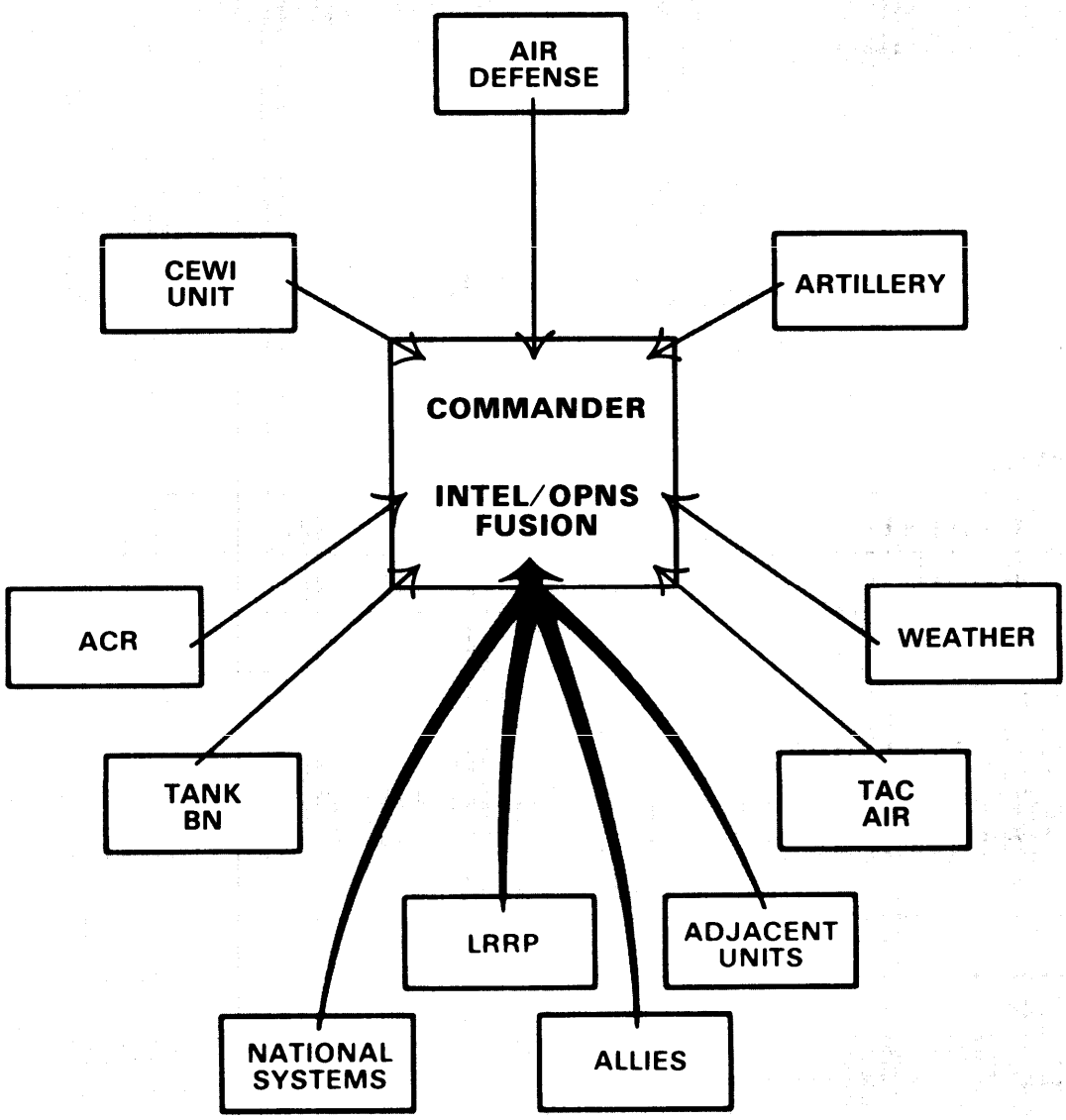


It is obvious that combat systems operators, commanders, and their staffs must interact and exchange data freely in order to insure that combat information is never withheld. Integration of intelligence and operations is necessary to provide the commander this assurance. Combat information is extremely perishable. The intelligence system must be geared to *immediate response* when it acquires combat information through its many collection systems.

Targeting for deep airstrikes, missiles, or long range artillery will most often be the product of intelligence rather than combat information. Such intelligence must be a fused, all-source product. The picture which emerges is one of operating (semi-self-contained) combat systems acquiring and using combat information from their own sensors—eyeballs, radars, electromagnetic systems, imagery, observation devices and others—and spilling that data into the intelligence/operations center as rapidly as possible. It can be pictured conceptually like this:



An example, using organization units, might look like this:



Information demands which cannot be fulfilled with organic resources must be satisfied by those of a higher commander. For example, national level collection supports corps requirements far beyond the scope of organic capabilities, and inputs both combat information and intelligence into the corps fusion center. Division and brigade centers similarly support their commanders' needs as well as those of subordinate commanders which exceed their organic capabilities.

The following chart depicts the various intelligence assets and organizations which work to satisfy the operational requirements of the Generals, Colonels, and Captains.

INTELLIGENCE ASSET AVAILABILITY

	GENERALS		COLONELS		CAPTAINS
	CORPS	DIVISION	BRIGADE	BATTALION	COMPANIES
ELECTROMAGNETIC SIGINT					
COMINT	★	★	★		
ELINT	★	★	★		
REMS		★	★	★	★
GSR		★	★	★	★
WEAPONS LOCATING RADAR		★	★		
IMAGERY					
PHOTO	★	★			
IR	★	★			
SLAR	★	★			
HUMAN OBSERVATION					
RECONNAISSANCE UNITS	★	★		★	
TROOPS				★	★
IPW	★	★	★		

*This chart illustrates the echelons at which these assets are normally assigned, attached, or in direct support.

TACTICAL COUNTERINTELLIGENCE

Tactical counterintelligence exists to support the OPSEC effort which thwarts the enemy's intelligence collection by denying and shielding our intentions and actions. The counterintelligence estimate assesses the enemy's view of our forces, identifies our vulnerabilities, and recommends corrective measures to be included in the commander's OPSEC annex. Based upon the execution of OPSEC, the commander can effectively direct measures to conduct bold and innovative deception operations.

To deceive the enemy, the commander must first know how the enemy collects information—what systems he depends upon and trusts; which assets he neglects. The commander can determine how to exploit enemy vulnerabilities by deception through this knowledge of enemy intelligence collection and analysis practices. Tactical counterintelligence and OPSEC must be coordinated, concurrent, and continuous with all tactical operations.

The threat from enemy intelligence is real and must be neutralized. The Soviets also collect intelligence using the three primary intelligence disciplines.

The *HUMINT threat* can be minimized by aggressive counterintelligence and security practices, assisted by territorial security forces—local military, paramilitary, police, and intelligence organizations.

The success of *imagery* from hostile overhead platform can be lessened by rigid cover, concealment, and camouflage discipline.

It is, however, the *electromagnetic* collection threat that looms as the primary Soviet tactical intelligence capability. This formidable threat has developed steadily over the years. It was the Russians who were decimated by the Germans at Tannenberg during WWI due to exploitation of communications intercept—a combat lesson not forgotten. Communications discipline and security are the basic means by which we

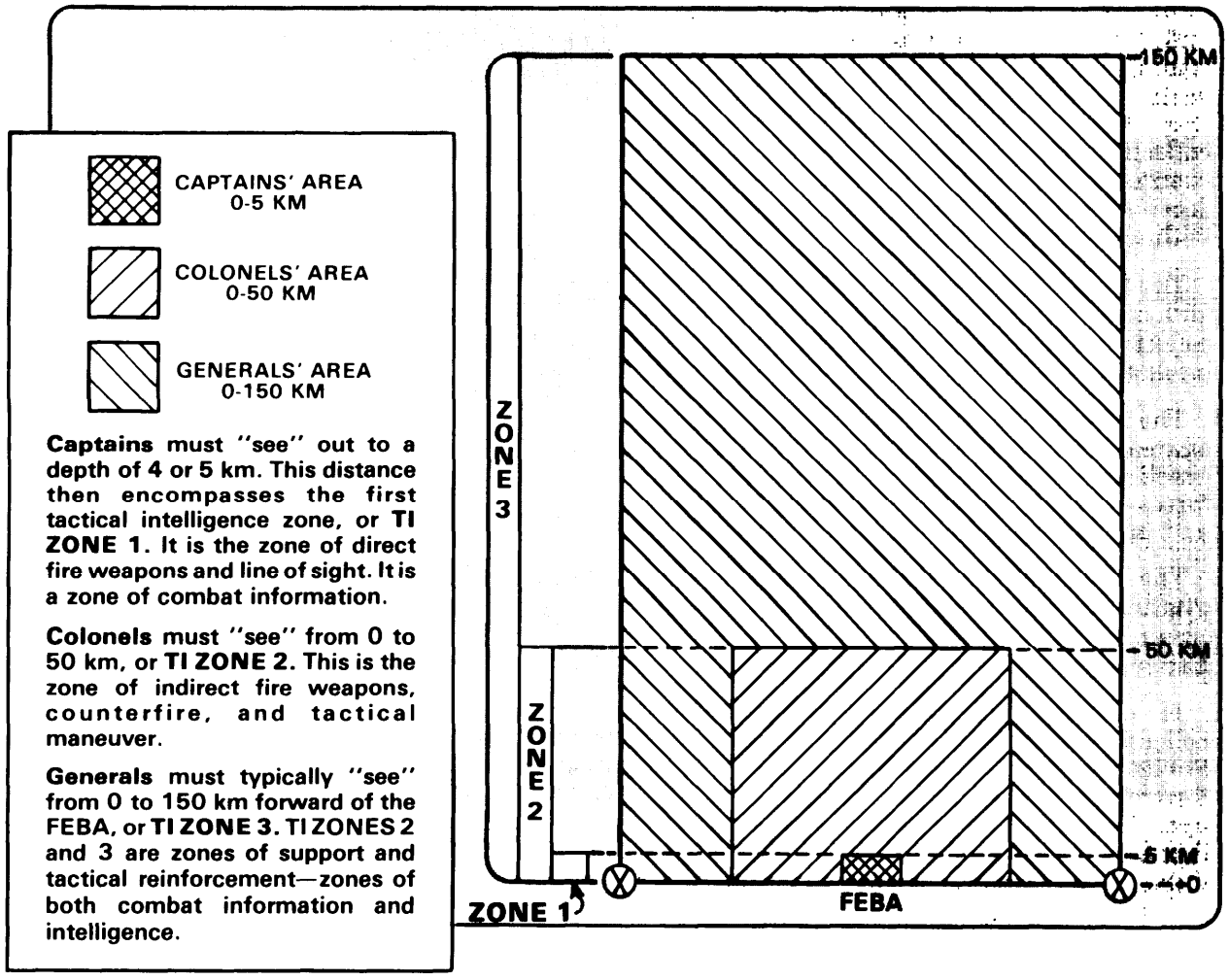
THE SOVIET'S PRIMARY MEANS OF COLLECTING TACTICAL INTELLIGENCE IS THROUGH THE ELECTROMAGNETIC THREAT

shield our intentions and actions from hostile electromagnetic observation. These actions can help to reduce casualties.

Tactical counterintelligence operations supported by an intelligence data base and a detailed preparation of the battlefield are prerequisites to deception. As OPSEC helps thwart the hostile intelligence threat, a parallel effort is focused on the enemy's collection apparatus to assist with the deception plan. For deception, damaged equipment and weapons can be realistically positioned. While dummies cannot often deceive imagery, real inoperative equipment can, when placed in realistic, covered, and camouflage positions. Operation of phantom nets by specially trained and equipped units can deceive and mislead the enemy. These operations present fictitious order of battle and tend to overload his acquisition system. Tactical counterintelligence and OPSEC operations require central management by the senior tactical commander and can be highly successful, cost-effective multipliers of combat power.

INTELLIGENCE TO FIGHT THE BATTLE

The battlefield forward of the FEBA is viewed to different depths by different commanders for different purposes. The perspective differs by echelon of command and is discussed in terms of Tactical Intelligence Zones (TI ZONES), as shown in this chart.



As the perception of the battlefield differs by echelon, it also varies according to the tactical situation. Intelligence from all sources, fused and processed, is contained within the data base available to the commander. Decisions should be based on all available information and caution exercised with regard to enemy deception operations.

Captains are interested primarily in their area of operations projected within TI ZONE 1. Within this area, they need combat information for direct fire weapons and tactical suppression of enemy fire and maneuver elements. Captains need highly accurate and timely data for targeting. Most of this information is derived from line of sight, visual contact, weapons sights (both day and night), and small tactical radars or remote sensors.

The Colonel's area of intelligence interest includes both TI ZONE 1 and TI ZONE 2. In order to direct combat operations, Colonels need intelligence and timely and accurate combat information of a greater scope than Captains. Colonels must see enemy movement, reinforcement, artillery locations, air defense positions, assembly areas, armor and other significant tactical indicators and targets.

Generals focus their intelligence requirements on TI ZONES 2 and 3 while closely following the action in ZONE 1. In order to concentrate forces they must demand intelligence and, in certain circumstances, combat information relating to the density of enemy forces, direction of enemy movement, and air defense suppression throughout their area. (See later section on templates.) Generals control and direct those intelligence collection assets having the greatest range and coverage. Generals must seek supplemental coverage from USAF, allied, and national systems and focus them to fill those gaps not covered by their own resources.

The intelligence required by commanders does not vary significantly for the offense, defense, or retrograde. Such operational variances do, however, impact on tactical intelligence collection capabilities. For example, commanders in the defense can use more fully all of their resources. As mobility increases, certain types of collection systems become less effective. For example, REMS and GSR become limited to flank screening and rear area security. Those systems not capable of realtime intelligence are of little use. In the retrograde, timeliness, accuracy and usability of intelligence are of extreme importance. As movement is rearward, it is possible to employ some collection resources in a "stay-behind" mode as long as they operate in realtime. In both offensive and defensive operations, commanders should "leap-frog" or "jump" their collection resources so that they have continuous coverage to meet their needs.

ENEMY "INTENTIONS" MUST BE CONSIDERED ALONG WITH CAPABILITIES AND PROBABLE ACTIONS

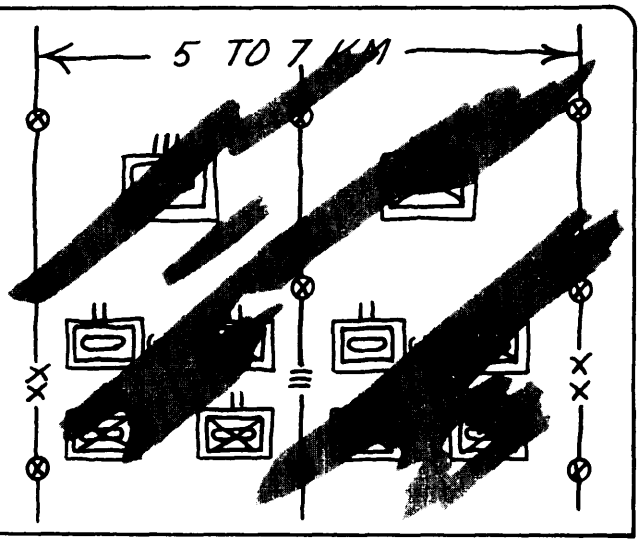
As Generals, Colonels and Captains must continually be able to "see" the enemy across their areas of intelligence interest, they also need to think imaginatively in terms of what the enemy is doing. It can be assumed that all armies reveal activity patterns and deployment variations tied doctrinally to different tactical operations. However, commanders can no longer be satisfied with considering enemy capabilities and probable courses of action based on deductive analysis of past occurrences. Commanders must *always* seek the enemy's intentions.

For example, Soviet offensive doctrine calls for massing of up to six divisions echeloned in depth across a 10-12 km front. At the same time the entire artillery of this force is normally deployed forward. *Such a set clearly indicates a breakthrough attempt.* Locations of certain emitters, in conjunction with other elements known to be organic to specific echelons, reveal a preparedness to pursue a given tactic. Templates designed to reflect enemy tactics and doctrine in a variety of situations can help commanders to estimate intentions in the context of capabilities.

INTELLIGENCE TEMPLATING

Intelligence templating is an analytical tool used to relate enemy activities to terrain and weather. On the rapidly changing modern battlefield, the commander needs more than just raw intelligence—he needs quick answers. Therefore, he must focus on the product of intelligence rather than on the process. However, while commanders are not interested in the details of intelligence processing, they should be familiar with the methodologies used in arriving at the final product or intelligence estimate of enemy intentions. If the product is not credible, the commander will not rely on it as the basis for tactical decisions.

Templating, therefore, is an integral part of the commander's intelligence preparation of the battlefield. An attack template of a combined arms army showing frontages, depth, echelon spacing, composition, disposition and strength of subordinate elements can be prepared in graphic form, to scale, and moved about over a military map. Based on previous terrain analysis, focus can be placed on specific areas or avenues of approach. Inductive judgments can be made as to where the enemy could position his forces, assembly areas, command posts, air defense and artillery weapons. Enemy courses of action in executing the attack will begin to be revealed. Below is an example of a doctrinal template depicting a motorized rifle division in the breakthrough:



This template is provided to the commander by his intelligence section. It may be prepared on acetate and used over an enemy situation map or displayed on a computer assisted cathode ray tube (CRT). Doctrinal templates can be prepared for any enemy capability; i.e., attack, defend, withdraw and reinforce, and for each specific course of action available to the enemy within the constraints of terrain and weather.

An event template can serve as a model against which enemy activity can be compared. The purpose is to determine which course of action the enemy will adopt based on an analysis of the activity indicators. An example of an event template is below:

EXAMPLE OF COMMANDER'S EVENT INDICATORS FOR ENEMY ATTACK AT THE OUTBREAK OF WAR

(Enemy Events in Reverse Order)

	TIME*
1. Intensified Reconnaissance and Surveillance	D-7
2. Replacement and Supply	D-5
3. Movement of ADA forward from rear TI Zones	D-1
4. Movement of 2d echelon forces forward to assembly areas in TI Zone 2 from TI Zone 3 or adjacent zones	D-1
5. Lateral Movement of 1st echelon forces to concentrate for the attack	H-12
6. Movement to LD	H-2
7. Deployment into attack formation	H-1
8. Assault	H-hour

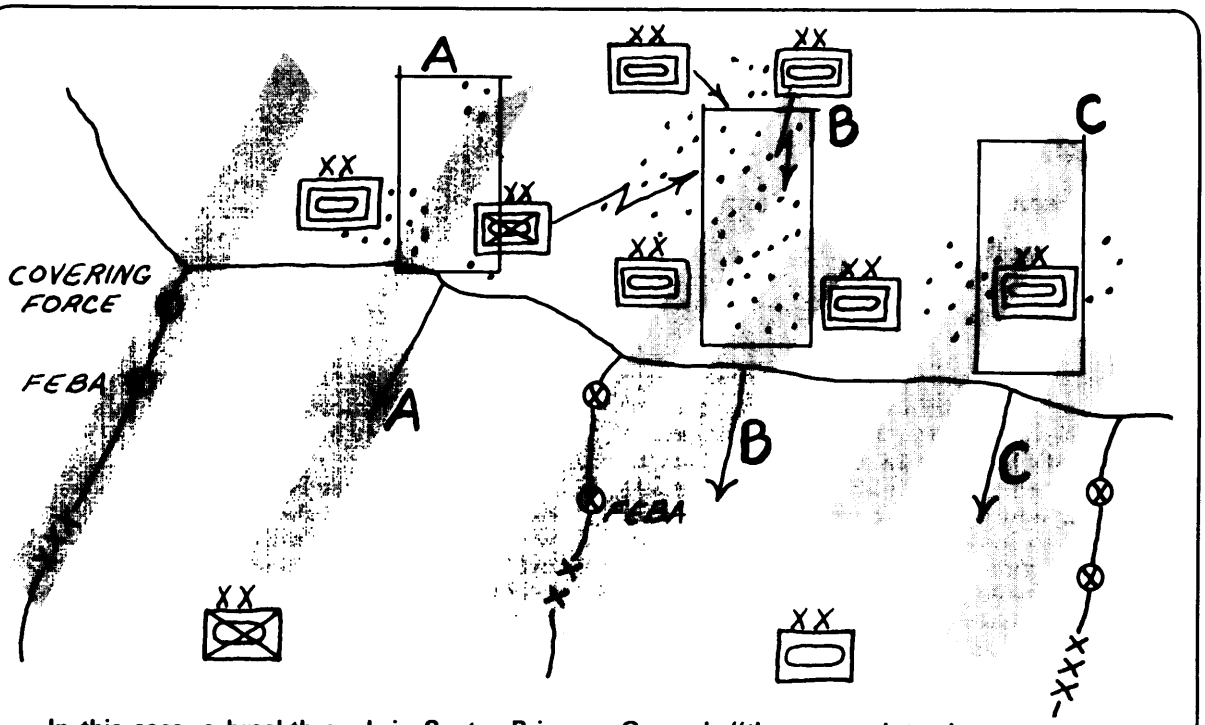
**Timing does not necessarily reflect Soviet doctrine.*

An event template relates an enemy course of action to time and space on the battlefield. If the commander is to "see the battlefield", then he must know where to look, when to look, and what to look for. Event templates can be as general or as detailed as the commander requires. They provide the commander the capability of determining critical activity areas and critical activity indicators which drive his intelligence collection and processing system. He can plan the allocation of scarce collection resources to critical areas and against critical information requirements. The commander can determine the optimum resource mix that will accomplish the collection task. He can insure by prioritizing critical information requirements, that his intelligence processing system is not inundated with non-essential reporting.

An event template is similar to an IBM card with pre-punched windows. Each window is an indicator. As the indicators are answered either through reporting or analysis, the adoption of a particular course of action relative to other courses of action by the enemy becomes apparent. An event template concerning where the breakthrough will occur, when and with what force, might be appropriate to more than one course of action and sector of the battlefield. When the enemy employs deception as a means of confusing the commander, event templating can assist in identifying those enemy deception activities as they relate to the commander's courses of action.

At corps level, the General receives combat information and intelligence directly from tactical and national systems. Templates can be developed which permit the corps commander to pass combat information to his division commanders before the detailed information has been analyzed and turned into intelligence. For example, the General's Tactical Intelligence Zone (TI ZONE 3) can be templated so that when actual conditions reach a predetermined threshold (i.e., number of emitters - number of tanks - number of vehicles in a certain area) the corps commander can quickly inform his division commanders or take action himself. The enemy's signatures, whether electronic or physical, provide the keys for templates.

An event template of a breakthrough might look similar to the one below:



In this case, a breakthrough in Sector B is anticipated while alternate courses of action may exist for Sectors A and C, such as deception and reinforcement. Density of forces, combat power, range of weapons, and rate of movement are important considerations in using an event template as a means of reaching a commander's decision point. The intelligence estimate must tell the General: "the enemy intends to execute a breakthrough at Sector B with five armored divisions within (hours or minutes)." The commander must insure that his intelligence system has the capability to determine enemy intentions in sufficient time for him to allocate his combat resources to blunt the breakthrough.

In gathering data for templates, the commander can focus his collection assets so they provide continuous surveillance of those areas of enemy activity and key terrain which will indicate the enemy's intentions as to where, when, and how he will attack. The commander's SIGINT assets must continuously monitor the enemy's command and control nets, search for his radars, and monitor logistics activity to identify and locate major weapon systems and troop concentrations. When they are identified and located, the commander can begin to assess the enemy's intentions. He must call in all resources available, national as well as tactical. Imagery can locate tank and artillery build-ups. Imagery from overhead platforms can search to the rear of the enemy's area of operation to reveal preparation for an attack in depth. PWs, refugees, and other human sources can provide information about the enemy's intentions. Properly directing his intelligence system, the commander can gain the information needed in his decision-making process.

THE COMMANDER'S ROLE

Commanders must plan and control intelligence operations with the same level of interest and personal involvement as they normally devote to combat operations. Intelligence must respond to commanders.

OPSEC supported by tactical counter-intelligence is vital for economy of force and surprise. Commanders must think of the enemy in terms of the enemy's tactics and doctrine, and seek to detect indicators of his intentions as well as his capabilities. *On the modern battlefield, no commander can succeed unless he demands and receives the intelligence and combat information he needs. He must go after it personally.*

Finally, the commander is the one who makes the ultimate decision based on the best information available. He will never have all he wants and it will seldom be unambiguous. Nonetheless, he must decide—take risks—and act decisively.

CHAPTER 8

Air-Land Battle

INTRODUCTION

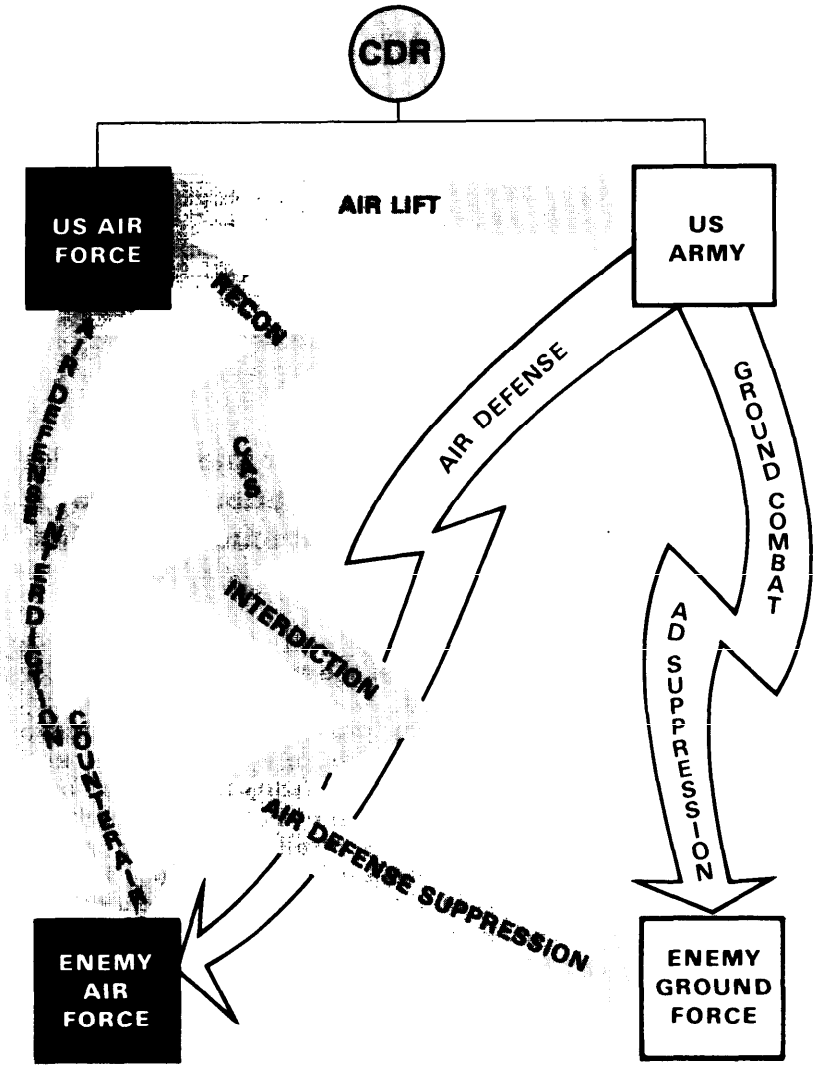
MODERN BATTLES are fought and won by air and land forces working together. The interaction and cooperation between air and land forces extends into almost every function of combat.

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Both the Army and Air Force deliver firepower against the enemy. Both can kill a tank. Both can collect intelligence, conduct reconnaissance, provide air defense, move troops and supplies, and jam radios and radar. But neither the Army nor the Air Force can fulfill any one of those functions completely or by itself. Thus, *the Army cannot win the land battle without the Air Force.* In fact, the Army consciously avoids the development of weapons or equipment to perform functions which the Air Force can perform more effectively.

Given the complex and important interaction between air and land forces, the requirement for cooperation and teamwork is very great. Because the Army and Air Force are separate services which come together on the field of battle under joint commanders, the requirement for an air-ground communications system and an agreed employment concept (followed by joint training in operation procedures and frequent exercises) is absolutely essential.



THE AIR AND LAND FORCES INTERACT AND COOPERATE IN ALMOST EVERY COMBAT FUNCTION

The Air Force contribution to the air-land battle may be described in five main categories:

1 Drive enemy air forces from the battlefield so that Army forces can exploit their mobility and mass at the critical places and times.

2 Provide reconnaissance and intelligence to the Army and the Air Force regarding enemy locations, concentrations and movements.

3 Conduct battlefield interdiction operations—that is, ground attack—against enemy reserves, fire support elements, command posts, and supply points. This is probably the most effective use of tactical air forces because targets are plentiful and attacks may be concentrated and sustained. The defeat of second and third echelon attacking forces before they even reach the line of contact is a main objective of such operations.

4 Provide close air support, wherein tactical fighter aircraft attack targets designated by the ground commanders. Close air support is increasingly difficult, but when the engaged Army forces require close air support to accomplish their mission, it must be provided regardless of difficulty and regardless of cost.

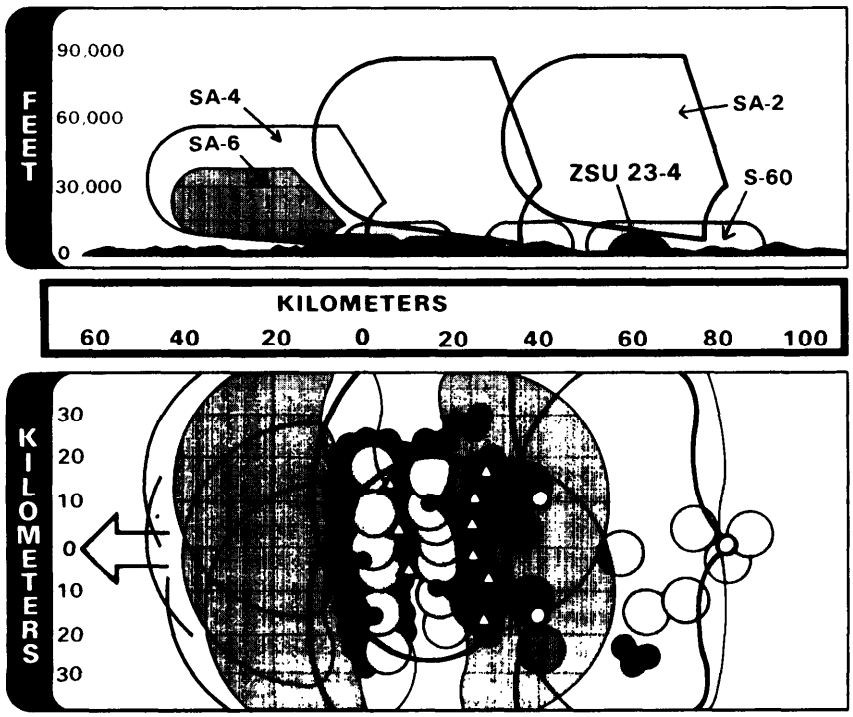
5 Provide tactical airlift—that is, the movement of troops and supplies on the battlefield.

The coordination of air support to Army forces—or more accurately, the coordination of the air-land battle—takes place through the *Air-Ground Operations System*. This system is well established and has proved effective in two wars. However, it is now confronted with a new and more demanding environment created by the growth in size and effectiveness of enemy air defense systems.

ENEMY AIR DEFENSES

The Soviet Union and the Warsaw Pact nations have tried to offset or reduce our Air Force's combat power effectiveness through the use of extensive and sophisticated mobile air defenses—defenses involving mixes of guns and missiles which provide overlapping coverage. Warsaw Pact air defenses now provide a mobile umbrella which accompanies each echelon of the Pact Armies, including forward deployed battalions. The variety and numbers of air defense weapons accompanying a typical Warsaw Pact Army of 4 or 5 divisions are impressive.

WEAPON	TYPE	UNITS	WEAPONS LAUNCHERS
[illegible]	AAA	32 Btrys	128
[illegible]	AAA	23 Btrys	138
[illegible]	SAM	5 Btrys	15
[illegible]	SAM	9 Btrys	27
[illegible]	SAM	3 Btrys	18



This figure portrays a typical Soviet Combined Arms Army air defense system 50 kilometers wide and 100 kilometers deep. Shoulder-fired SA-7 and vehicle-mounted SA-9 launchers common to all units are not shown, but provide a dense blanket of low altitude air defense which complements the other systems.

LEGEND

- SA-2 — 3 Batteries
- SA-4 — 9 Batteries
- SA-6 — 5 Batteries
- S-60 — 23 Batteries
- ZSU 23-4 - 32 Batteries
- ZSU 23-2 - 19 Batteries
- ZSU 57-2 - 6 Batteries

SUPPRESSION OF ENEMY AIR DEFENSES

Whenever and wherever the heavy use of airpower is needed to win the air-land battle, *the enemy air defenses must be suppressed,* or losses of aircraft will be too high and the effectiveness of air support too low. Suppression operations may include temporary neutralization of selected facilities and short-term degradation of other installations, as well as the planned destruction of critical defensive elements. The overall aim is to reduce friendly attrition to an acceptable level. The suppression of enemy air defenses requires a coordinated Air Force/Army effort to locate the enemy positions and communications vulnerabilities, and to plan and execute a suppression operation with all available firepower and electronic means.

INTELLIGENCE FOR SUPPRESSION

The Army/Air Force team at each appropriate echelon mounts a combined intelligence campaign to locate enemy air defense weapons, radar, communication links, and control centers. All available Army and Air Force collection and locator systems will be employed.

Air Force systems include:

- **Reconnaissance aircraft equipped with infrared (IR) mapping**
- **Side-Looking Airborne Radar (SLAR)**
- **Real-time sensor and data links**
- **Camouflage film**
- **Drones with cameras and signal intelligence receivers**
- **Position locating systems**
- **Tactical electronic reconnaissance elements**
- **Airborne warning and control systems**

The Army will demand information from:

- **Forward observers**
- **Sound and flash systems**
- **Locating radars**
- **Airborne photo and IR platforms**
- **Ground and airborne emitter locators**
- **Remotely piloted vehicles**
- **Standoff target acquisition systems**

Information collected from these systems are fed into a common center which "fuses" the data into a composite picture that is as near real-time as possible.

PLANNING FOR SUPPRESSION

Working as a team, Air Force and Army counterparts prepare a **suppression plan.** This will be a comprehensive, all-out, air defense suppression effort aimed at degrading enemy air defenses to an acceptable level, and then keeping them down. The effort goes after the air defense weapons themselves, critical communications, control links, and radars.

EXECUTION OF SUPPRESSION OPERATIONS

The suppression plan identifies which segment of enemy air defenses will be attacked and suppressed, and in what priority. Execution of the plan requires explicit timing. Suppression operations also require an immense application of artillery and surface-to-surface missiles on those identified targets that are within range. These ground weapons are employed at the same time that penetrating aircraft use a sophisticated array of antiradiation missiles, standoff precision guided missiles, conventional bombs and ECM pods, as well

as supporting airborne jammers. The target priorities are to first destroy enemy air defense command and control centers, then systematically reduce the surface-to-air-missiles (SAM) and antiaircraft artillery (AAA) sites in the vicinity of targets to be struck by the fleets of follow-on aircraft or in the corridors to be opened.

Electronic warfare is an essential part of suppression operations. The Army is well equipped with communications jammers; the Air Force possesses the preponderance of *non*-communications jammers. Thus integrated planning and execution of the EW component of the suppression operation is essential. Generals are responsible for the detailed plans for orchestrating these collection and countermeasure systems primarily because they originate at corps or division level in the Army, but the Colonels and Captains need the products to fight the battle.

Once the suppression operation begins, an obvious tactic would be to barrage jam as much of the enemy's forward sector as possible, leaving the deeper ECM targets to the airborne suppression force. The proper application of the time-phased attacks on each successive, critical enemy air defense control point will disorganize his carefully planned defenses. Signal intelligence must concentrate on monitoring the air defense control nets, and seeking targets of opportunity to be attacked by field artillery, air strikes, or jammers.

CLOSE AIR SUPPORT

During the last three wars we had at least local air superiority over our battlefields. Captains, Colonels, and Generals must understand that this will not automatically be the case on the modern battlefield. *The first battle of the next war will not resemble, in any fashion, what we have come to accept as the norm—unopposed close air support whenever we want it.*

- Enemy ground-based air defenses may prevent our aircraft from orbiting or loitering over the main battle area (MBA).
- Enemy aircraft may challenge and engage close air support missions.
- Airborne and forward air controllers (FAC) may have to stand-off from enemy air defenses.
- Strike flights will probably come in low, pop-up to attack targets, and return to very low altitude for egress. Subsequent attacks will probably be at low altitude from a different direction.

The density and lethality of enemy air defenses force us to adopt new procedures to direct close air support. The airborne FAC is still necessary but must operate at low level and at a safe distance from the FEBA, perhaps as far as 15 kilometers back. Obviously he must have "eyes" in the battle area with whom he communicates and to whom he hands off the attacking aircraft for precise target identification. *It is the ground FAC or Army forward observer who identifies the target.* The request is then transmitted via the Air Force air request net. The observer or controller must attempt to identify enemy air defenses that could endanger the incoming aircraft, see that the pilot is warned, and assist in suppressing those defenses with artillery and other fires.

Requests for and control of close air support will follow prescribed air-ground operations procedures and make full use of the Air Force communication nets. Requests and guidance must be complete, but concise because of enemy jamming potential. Ground FACs and observers provide the bomb damage assessment back to the airborne FAC, or to appropriate control facilities, so decisions can be made to restrike or divert sorties to other targets.

NEW AND IMPROVED AIR FORCE MUNITIONS MEAN A GREAT INCREASE IN ANTIARMOR LETHALITY

Improved Air Force munitions, such as Maverick and Rockeye, have greatly increased **antiarmor lethality.** Maverick, in conjunction with cockpit guidance systems, allows strikes of close support targets from standoff distances up to 20 kms. In the near term, new glide bombs will be capable of striking targets 50 kms from the launch point. Other aircraft will strike the target directly with conventional bombs and tank-piercing 30mm cannon fire.

Ground and airborne FACs, scout helicopters, FOs, and many strike aircraft will be equipped with target designators to maximize our advantage in precision guided munitions. FAC controlled radar beacons enable tactical fighters to strike targets during night and adverse weather conditions.

In marginal weather, attack helicopters with antitank guided missiles may provide the only quick reaction capability, while Air Force area antitank munitions will be more effective against larger massed enemy forces.

All commanders must integrate all available Army and Air Force fire support with the maneuver of their forces. Close air support is part of the inventory along with tank and artillery fire, ATGM, and attack helicopters.

Close air support will be available to the ground commander when he needs the additional firepower:

- **To defeat engaged forces.**
- **To achieve assigned objectives.**

AIRSPACE MANAGEMENT

The purpose of airspace management is to maximize joint force effectiveness without hindering the application of combat power by either Service. Friendly aircraft must be able to enter, depart, and move within the area of operations free of undue restrictions on their movement, while artillery fires in support of the ground force continue uninterrupted. The tempo and complexity of modern combat rules out a management system that requires complicated or time-consuming coordination. Also, the likelihood of poor or enemy-

jammed communications dictates maximum reliance on procedural arrangement. To meet the requirements of simplicity and flexibility, our airspace management system operates under a concept of *management by exception*. Joint Air Force and Army management elements at corps and division provide the framework for implementing the system.

Each service is free to operate its aircraft within the theater airspace. Army aircraft at low altitude operate under the control of Army commanders. Air Force aircraft at medium and high altitude operate under control of the Tactical Air Control System. The boundary between low and medium altitude regimes is flexible and situation-dependent. Only when aircraft pass from one regime to another is traffic coordination required. Generally, Army aircraft operate without restriction below coordinating altitudes forward of the division rear boundary. Conflicts are generally avoided by passing information about major movements or high concentrations of fire—but risks are taken.

Airspace management in the forward combat area accepts:

- ***The necessity for coordination being met by SOP wherever possible to reduce the need for detailed, time-consuming coordination and use of communications.***
- ***That the maneuver brigade and battalion does not need a dedicated staff element for airspace management; they will be assigned airspace management functions only on a by-exception basis.***
- ***That the maneuver unit commander is responsible for using good judgment in the application of air support and other firepower in the same place and time.***
- ***That weapon rounds in flight are not considered a significant danger to aircraft. These rounds are under control of the ground commander requesting or ordering weapon fires and are coordinated through his fire support coordinator (FSCOORD) and air liaison officer (ALO).***
- ***That controls of Army aircraft will also be governed by SOP and other procedures to reduce reliance on communication and reduce interference with combat operations.***

THIS CHAPTER PROVIDES AN OVERVIEW OF EW OPERATIONS. SPECIFIC INFORMATION ON THE CONCEPT OF EW EMPLOYMENT, CAPABILITIES, AND PRIORITIES IS CONTAINED IN SUPPLEMENT FM 100-5A (SECRET).

CHAPTER 9

Electronic Warfare Operations

THE ELECTRONIC BATTLEFIELD—

THE COMMANDER must view the electromagnetic environment as a battlefield extension where a different type of combat takes place. This invisible but very real struggle is **electronic warfare (EW).**

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WHAT IS ELECTRONIC WARFARE?

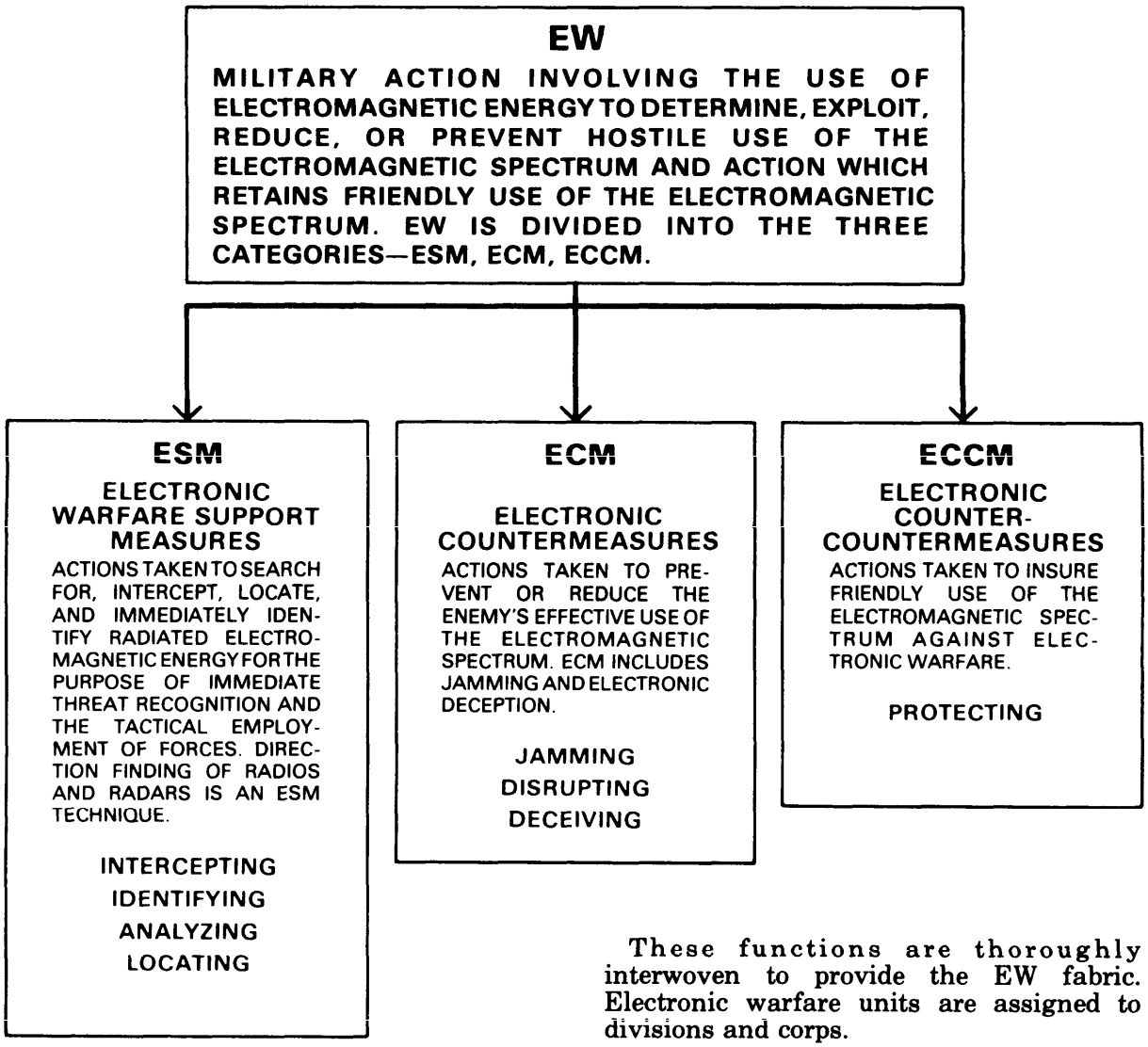
Electronic warfare is a combat power element having two facets—*electronic combat* and *defensive EW.*

1 *Electronic combat* is the primary role of EW and includes:

- **Electronic Warfare Support Measures (ESM)**—signals intercept and direction finding to provide target acquisition data for jamming and for applying other forms of combat power.
- **Electronic Countermeasures (ECM)**—jamming and deceiving enemy command, control, intelligence, and weapon systems using electronic emitters.

2 *Defensive EW,* also known as **Electronic Counter-Countermeasures (ECCM),** refers to the electronic tactics to protect our emitters from the enemy's jamming and target acquisition efforts.

The relationship is shown in this chart:



These functions are thoroughly interwoven to provide the EW fabric. Electronic warfare units are assigned to divisions and corps.

THE SOVIET EW CAPABILITY

The Soviet army, or armies based on the Soviet model, applying radio-electronic combat can *selectively deprive adversaries of control of the electromagnetic environment.* These forces will first analyze communications with signals intelligence and select key communication terminals, links, and relays which serve as keystones upon which the command and control of tactical forces depend. They assign priorities and attempt to destroy or disrupt our communications accordingly. Targets which are not fired upon may be selected for intense spot and barrage jamming. The electromagnetic signatures of command post elements provide very lucrative targets for these tactics.

COMMUNICATIONS CAN BE DESTROYED OR DISRUPTED ON A TARGETED BASIS

Soviet-type emitters may lack sophistication by US standards, but they will be present in adequate numbers and with considerable redundancy. Their emitters are simple, reliable, rugged, and highly effective.

US commanders who understand the enemy's capability and tactics, and who emphasize countertactics can effectively cope with the Soviet-type EW capability.

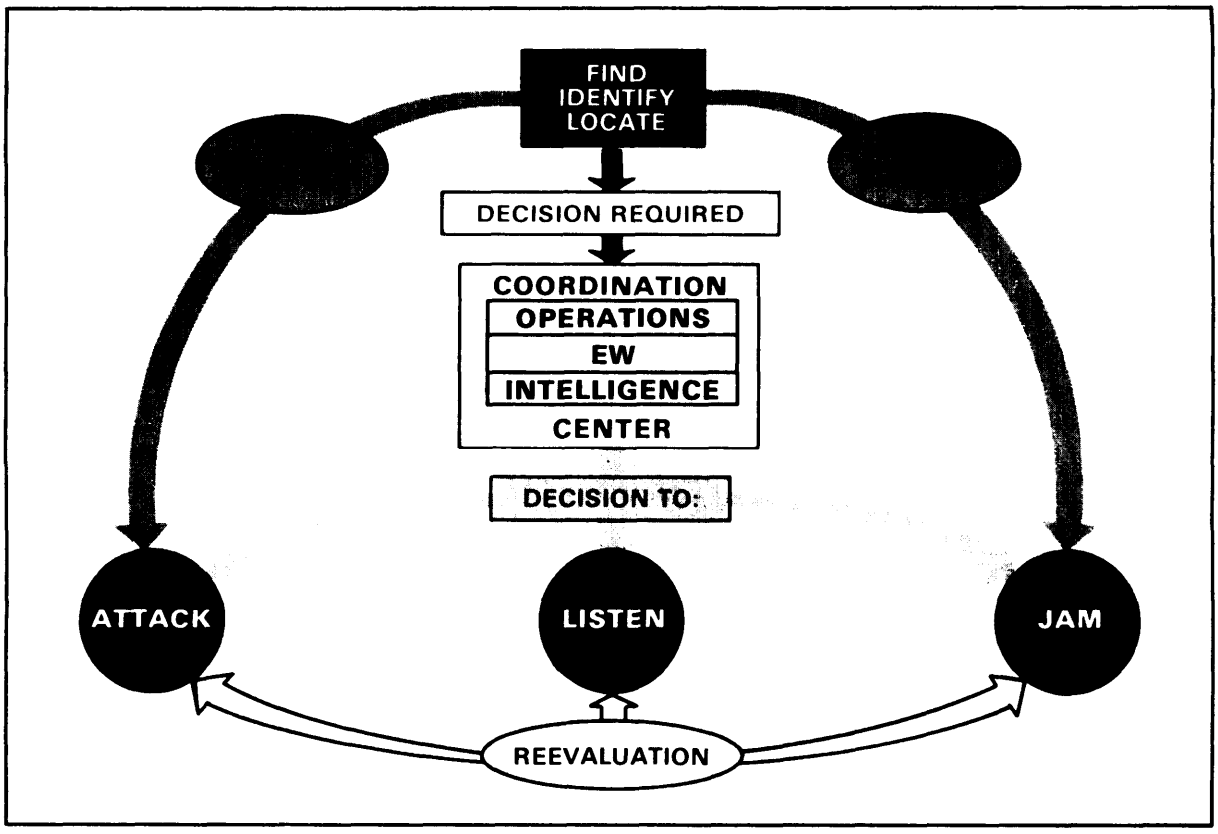
OPERATIONAL CONCEPT

The commander must understand the enemy's use of electronic systems. He must see these systems as a target array in which each enemy net or weapon system using electronic emitters has a relative importance. He then evaluates each with respect to its value to the enemy or its contribution to his combat power.

THE COMMANDER MUST EVALUATE THE RELATIVE IMPORTANCE OF ENEMY ELECTRONIC EMITTERS

At corps and division, the commander is confronted with an enemy electronic array comprised of thousands of emitters and hundreds of communication nets. Emitters should be sorted by their function, position in a net, and capability to affect the combat plan. Nets must be further sorted to show the commander those options which may be effectively employed to destroy or disrupt them.

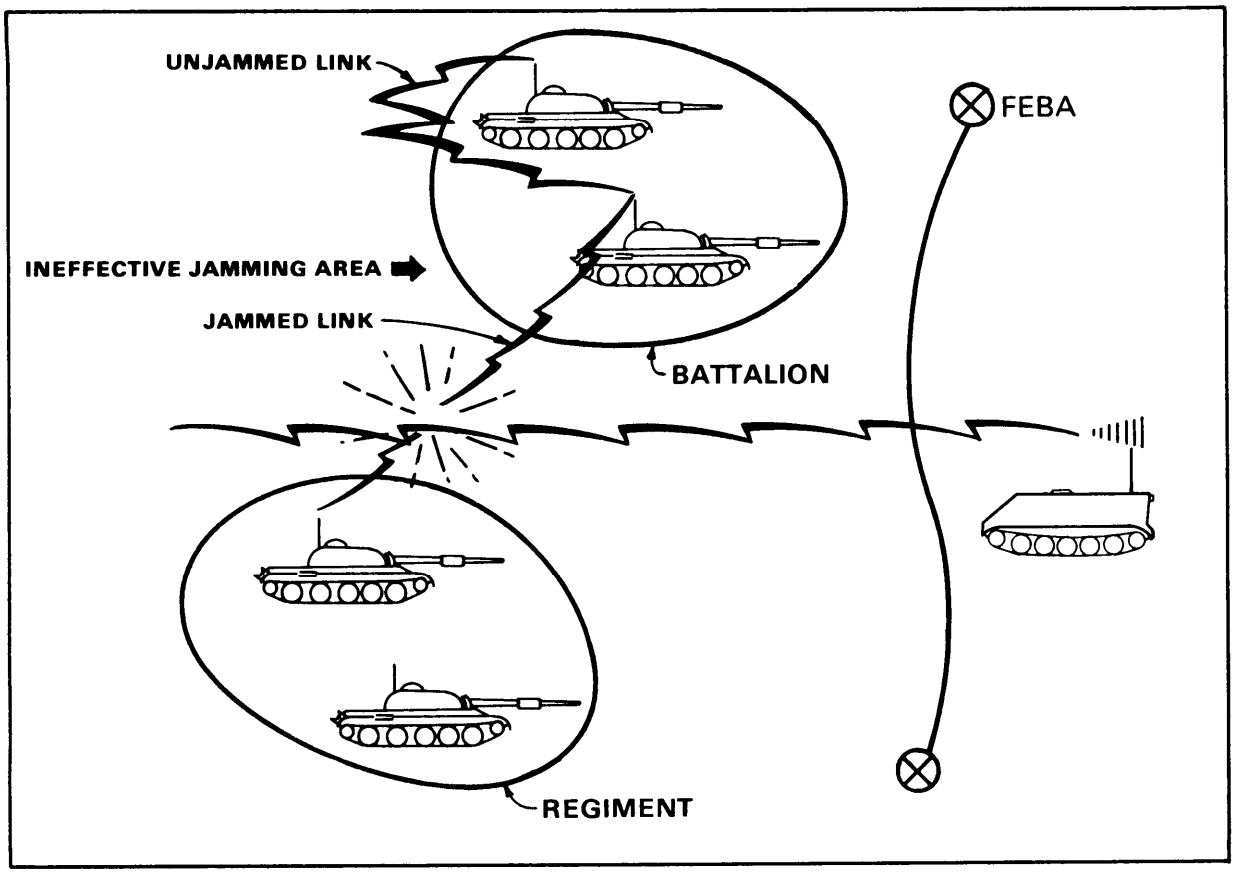
Conceptually the EW system at corps and division looks like this:



DECIDE TO JAM OR EXPLOIT, AND THEN, CONTINUOUSLY REEVALUATE DECISION

As can be seen, once the enemy emitter is found, identified and located, this information flows to the coordination center at division or corps where an interface occurs between intelligence, operations, and EW. Here a decision is made whether to jam, destroy, or exploit for intelligence. If the decision is to listen for intelligence purposes, at some point this decision must be reevaluated—that is to continue listening or jam. Commanders should identify certain nets that have high tactical value to the enemy but have little or no intelligence value. Enemy fire direction nets usually meet this criteria and should be jammed per SOP. As such, when these nets are identified and located, they are automatically jammed and the coordination center is so informed. In other cases, the commander may direct that certain targets, such as enemy jammers, be fired on by SOP once identified and located.

When making these decisions, commanders must understand that certain communications cannot be jammed or if jammed require an inordinate amount of power. For example:



Here the signals within the enemy battalion are being transmitted over short distances at relatively high power, thus making jamming very difficult if not impossible. On the other hand, the communications links between battalion and regiment or regiment to division extend over longer distances and are weaker, permitting them to be jammed.

The commander must continually keep in mind that *jamming must complement his concept of operations.* Jamming will only be effective for short periods of time until the enemy takes evasive action or executes countermeasures.

Jamming assets are used to:

- **Disrupt key command and control nets, thus reducing the enemy's combat power in critical sectors.**
- **Provide deception.**
- **Deny the enemy the ability to react to change on the battlefield; i.e., commit reserves—change direction.**
- **Reduce the effectiveness of enemy fire support.**
- **Deny the enemy use of his air control nets.**
- **Disrupt the enemy's flow of critical supplies—(ammunition and POL).**

Direction Finding and Target Acquisition are also components of EW and are applied to *determine the approximate location of emitters.* These locations provide valuable information for targeting command posts, key control points, and weapon systems. They assist in determining enemy intentions by providing a picture of the battlefield. Direction finding may also be used to help locate friendly units which have become isolated from command and control. Due to vulnerability factors, ground vehicle radio direction finding will be the nucleus of divisional electronic combat. At corps and division level, airborne direction finders are important for locating enemy radios and battlefield radars.

COORDINATION OF OVERLAPPING TARGET AREAS IS A CORPS-LEVEL RESPONSIBILITY

The corps commander allocates corps-level EW and intelligence resources to support the battle plan. He is concerned with severing or exploiting enemy command and control between division and higher echelons. *The division commander severs or exploits enemy command and control between division level and lower echelons.* Coordination of corps and divisional EW assets is especially important, however, because EW is dependent on radiated power and distance. It is the responsibility of the corps fusion center to coordinate overlapping target areas.

TARGET PRIORITY SELECTION ON THE BATTLEFIELD IS DETERMINED AT DIVISION-LEVEL

The division commander focuses on battlefield EW operations. To accomplish this, he is supported by a staff and organic EW resources. He selects EW target priorities in accordance with the threat to his command and with regard to the target's vulnerability to EW. Enemy communication links that connect regiments to divisions, and forward operations posts to regimental and division command posts are of particular importance because these links control the enemy's scheme of fire and maneuver.

The enemy's use of low power, high frequency and very high frequency, tactical communications may dictate the deployment of ground-based, high frequency EW assets in the division forward area. EW units must therefore accompany brigades and battalions, and be equipped and trained to deploy within sight of the line of contact.

Brigade and battalion commanders, in coordination with the G3, are responsible for the positioning of EW assets within their areas. They should not preoccupy themselves with the execution of EW operations except for those times when EW elements operating in their sectors have combat information that directly affects their direction of the battle.

Commanders of battalions and companies use defensive EW for protection.

DEFENSIVE EW TACTICS AND OPSEC

A command post or weapon system cannot survive on the modern battlefield if it is easily identified and located by the characteristics of its electronic emitters. Their survival is dependent on good defensive EW tactics which conceal emitters or deceive the enemy as to their identity and location.

The commander has several means available to manage the electromagnetic spectrum.

- The **Communications-Electronics Operating Instructions (CEOI)** are used to assign specific frequencies to specific elements of a command. A frequently changing CEOI is highly effective in defeating hostile ESM activities by increasing the difficulty in identifying targets for exploitation.
- **Emission Control (EMCON)** is used by the commander to restrict use of the electromagnetic spectrum to certain critical systems or prohibit use altogether (partial or complete silence). This tactic prevents the enemy from collecting data on our emissions during a specific period and eliminates the probability of unintentional interference by friendly emissions with those from critically important systems.
- **Manipulative Electronic Deception (MED)** is employed to alter an electromagnetic profile of a unit or weapon system or to simulate a notional one to support a commander's countersurveillance or operations security (OPSEC) plan.

  The commander should also consider locating his elements so as to provide shorter communications links, thus making jamming more difficult.

Jammers are also very high power radios and, in exceptional circumstances, commanders may be required to use jammers to ram critical communications to units isolated by enemy electromagnetic interference.

There is also a potential for tactical jammers to be used to protect friendly

emitters from being heard, seen electronically, and located by enemy radioelectronic combat units. A well-designed jammer with a highly efficient and directional antenna may operate in the same frequencies as our own communication systems and still protect them from enemy intercept by providing signal maskings. To do this, jammers are located very near the forward battle positions between the friendly emitters and the enemy EW units, where they carefully direct high intensity signals toward the enemy while allowing friendly emitters to communicate effectively. This tactic is dependent on both ingenuity and the availability of special antennas.

Ground mobile EW elements must be mounted in highly protected vehicles that are compatible with and of equal mobility to the other elements of the combined arms team—***they must be able to survive on the modern battlefield.***

EW is perhaps the only element of combat power that, subject to the constraints of security and governmental regulations, can be used in peacetime for training *exactly as it would be used in war,* without causing casualties to personnel or damage to equipment. Commanders must conduct tactical exercises in the same EW environment that they can expect in war.

ON THE USE OF JAMMERS

Commanders must also remember that *jammers are targets.* Because of the large amount of power and heat they radiate, jammers are easily identified by enemy intercept and locating equipment. If jammers are to operate effectively and survive, they must be protected, highly mobile, and their missions must be capable of being shifted from jammer to jammer.

Jamming units must be able to perform electronic combat missions while deploying and when in contact with the enemy. Antennas must be able to be raised and lowered in seconds, not minutes. All equipment must be simple to operate and to maintain.

CHAPTER 10

Tactical Nuclear Operations

INTRODUCTION

FOR NEARLY 25 YEARS the US Army has had nuclear weapons deployed as an integral part of the weapons inventory, and such weapons are also deployed to support allied nations. The Soviet Union and other countries have also fielded a nuclear capability for battlefield use. The use or threatened use of nuclear weapons will have a profound effect on the modern battlefield. The combat power provided by nuclear weapons could mean the difference between victory or defeat, or could cause an enemy to terminate his attack by altering his perception of an easy victory.

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Even when used in low yields, nuclear weapons can quickly and decisively alter combat power ratios and change the course of the battle. They can help counter an overwhelming conventional attack, rupture tough defenses, or be used to respond to an enemy's nuclear attack. However, since the strategies of major nuclear powers imply that threats of escalation to general nuclear war could be associated with the limited use of nuclear weapons, employment of these weapons must be selective and restrained.

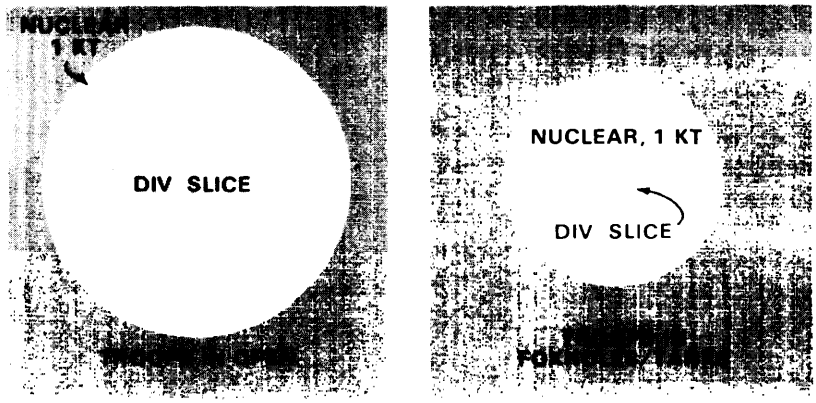
In any battle, we must have the capability to use nuclear weapons effectively, along with our conventional weapons, in support of the land battle. We must be properly trained and equipped to survive an enemy nuclear attack—to minimize the disruption, to maintain effective command and control, and to continue the execution of the assigned mission. This level of training is enhanced through combined conventional-nuclear operational training exercises.

NUCLEAR WEAPONS EFFECTS

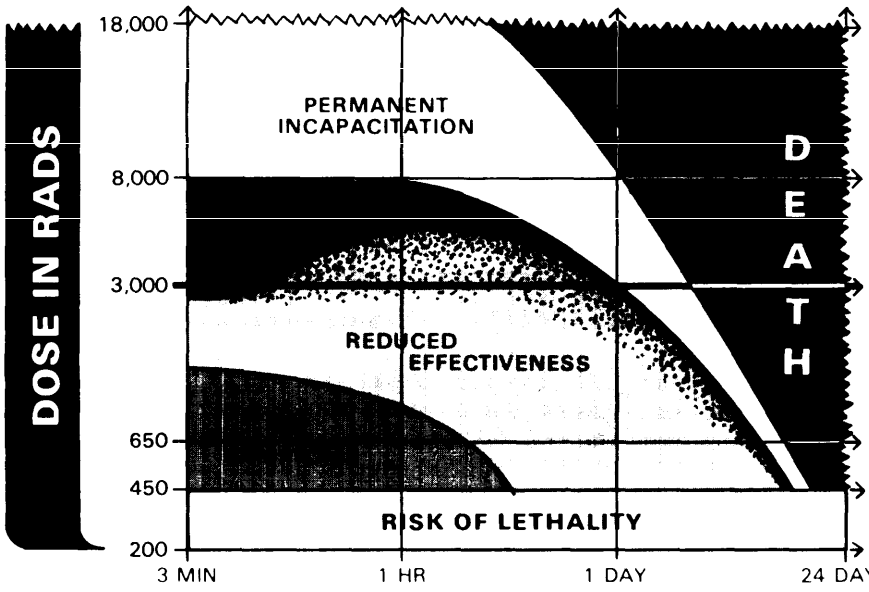


Nuclear detonation effects present new phenomena and increased destructiveness on the battlefield when compared to conventional firepower. Blast effect is vastly increased, and, in the smaller yields, radiation has the most significant effect on troops in the open, in armored vehicles, or in foxholes. Thermal radiation is an added danger to unprotected soldiers. The *electromagnetic pulse* (**EMP**) which emanates from a nuclear burst can damage radios and other electronic equipment, seriously interfering with command and control communications and target acquisition systems. Fallout can also produce casualties, delay movements, and deny terrain to units that are unprepared to detect residual radiation and protect themselves from its effects.

DIVISION SLICE ARTILLERY CAPABILITY vs. 1 KT NUCLEAR WEAPON
IMMEDIATE LETHALITY



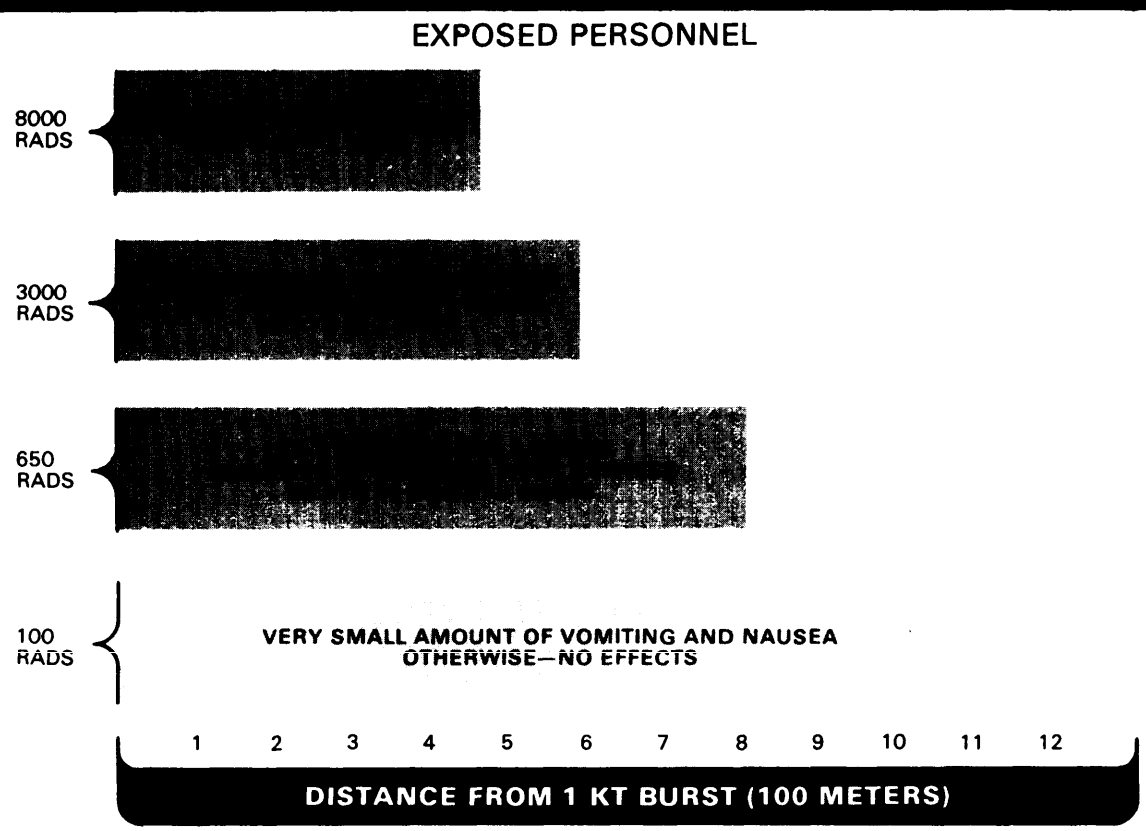
A nuclear weapon with a yield of 1 Kiloton (KT) (2,000,000 lbs) has approximately the same lethality against troops in the open as seven artillery battalions (type division slice of artillery—five 155mm battalions and two 8-inch battalions) firing improved conventional munitions in a single volley. Against troops in foxholes or tanks, however, the 1 KT weapon is much more effective, having 20 to 30 times the lethal area coverage of one division slice volley.



Although thermal effects begin to dominate troop safety at about 3 KT, for the yields of most interest on the battlefield (1 to 10 Kilotons), radiation is the main killer. This figure shows how a dose of radiation affects soldiers performing typical combat tasks.

The immediate incapacitation radiation level is 8,000-18,000 rads (unit of measure for radiation) but, an active soldier suddenly exposed to 3,000 rads could become incapacitated within 3-5 minutes. He may recover to some degree in about 45 minutes, but due to vomiting, diarrhea, and other radiation sickness symptoms, he would be only partially effective until he dies within a week. A soldier exposed to 650 rads initially shows no symptoms, but loses some of his effectiveness in about two hours and can be expected to die in a few weeks under battlefield conditions. Exposure in the 100 rad region usually has little effect. Accordingly, in conventional-nuclear combat it would be prudent to subject front line enemy to 3,000-8,000 rads or more, enemy to the rear to 650-3,000 rads, and avoid subjecting friendly forces and civilians to an unacceptable dose level (100 or more rads).

RADIATION EFFECTS FOR A 1 KILOTON (KT) NUCLEAR WEAPON



The intensity of initial radiation is reduced by the protection provided by tanks and foxholes, and also by each 100 meters of distance from the burst. For example, this figure shows that a 1 KT burst incapacitates exposed soldiers (within five minutes) out to 600 meters. It only does so out to 500 meters for troops in tanks or foxholes. The 1 KT nuclear weapon causes reduced effectiveness to exposed soldiers (after two hours) out to about 800 meters. Soldiers in tanks or foxholes are usually safe beyond about 1,100 or 1,200 meters. Ten-KT weapons are about 50 percent more effective than 1 KT weapons; however, the safe distance increases to about 5,500 meters due to the thermal effects coming from larger weapons.

In addition to the immediate effects of nuclear weapons, commanders must also be concerned with residual radiation resulting from fallout, rainout, and induced radiation. When a nuclear weapon detonates too near the surface of the earth, dust debris and heavy particles which are sucked up into the air fall to the ground and create areas of lethal radiation. Similar results could occur when the cloud from a nuclear burst, even at a fallout safe height (about 50 meters for a 1 KT), passes through rain which then carries radioactive particles to the earth. To minimize fallout, friendly nuclear weapons will normally be employed as airbursts. However, *radiological monitoring is essential to detect areas contaminated by rainout, induced radiation, or by fallout if enemy policy is different.*

THE NUCLEAR BATTLE

The use or threatened use of nuclear weapons will significantly influence every phase of the battle, to include purely conventional operations. Planning and preparation for their use or counteruse must be continuous. The use of nuclear weapons begins a new phase in operations—a combined conventional-nuclear phase of uncertain length during which a clear distinction between offensive or defensive use of nuclear weapons could be difficult. With nuclear strikes, *either side could deliver instantaneously crippling combat power.* Depending on the deception, surprise, target acquisition, and boldness of the user, such weapons could change the course of battle very quickly.

IT MAY BE DIFFICULT TO DISTINGUISH BETWEEN OFFENSIVE OR DEFENSIVE USE OF NUCLEAR WEAPONS

Once conventional-nuclear operations begin, personnel and materiel losses could occur more rapidly, with much higher casualty and materiel loss rates in both forward and rear areas. If limited numbers of weapons are used, the total losses may not go higher than in extended periods of severe fighting on the lethal conventional battlefield, but they would occur in a shorter time. There could be severe shortages of critical supplies and medical treatment, placing a severe strain on logistical support systems. The effects of nuclear bursts may cause temporary failure or permanent damage to some communication and data processing equipment, thus placing a premium on remaining services, *unless units practice techniques that improve protection and reduce vulnerability to EMP.* The time and resources required to dig protective shelters, move between dispersed sites, decontaminate supplies, replace casualties and other related reconstitution activities will slow rear area operations.

Control of nuclear weapons requires swift and reliable reconstitution of communications. Time-saving procedures must be developed and practiced. When enemy nuclear strikes are probable, all units on the battlefield must protect themselves by terrain shielding, digging in, and when possible, avoiding easily targeted massed forces. Radiological monitoring and reporting is required, and cover and concealment become extremely important.

THE PROTECTION AFFORDED BY COVER AND CONCEALMENT MUST BE STRESSED

CONTROLS ON NUCLEAR RELEASE

Release, or the authority to use nuclear weapons, will be conveyed from the **National Command Authority (NCA)** through the operational chain of command. In order to dampen the escalatory effects of using nuclear weapons, release will normally be approval to employ preplanned packages of weapons to be fired within a specified time-frame, and within specified geographical areas according to the constraints established by the releasing authority. Unwanted destruction can be minimized by careful selection of targets, weapon yields aim points, and delivery systems. Retaliatory attacks by the enemy are also of primary concern. The danger of such attacks can be reduced by a proper disposition of forces and a strong counterretaliatory capability.

The precise circumstances that may require the use of nuclear weapons will be determined by the developing battle. Ideally, normal operational reports will provide the required current battle information. Special reports, sent when the tactical situation indicates the need to employ nuclear weapons, will detail what has happened, what has been done to reinforce the defense, and assess the seriousness of the problems.

HIGHER AUTHORITY WILL REQUIRE SUBMISSION OF SITUATION REPORTS AND SPECIAL REPORTS PRIOR TO AUTHORIZING NUCLEAR WEAPONS USE

Situation reports and special reports complement one another and must provide the required information to portray a complete picture of the situation for higher authorities. These reports should describe how a particular package of nuclear weapons, when requested, would be used to counter the developing threat and permit resumption of effective operations. Commanders should send request messages when they judge that the use of nuclear weapons will be essential for accomplishment of their mission. It is possible that the information and the situation will be such that a higher level of command may direct the use of nuclear weapons without a request from a corps commander.

NUCLEAR PLANNING

Advanced planning for nuclear strikes or counterstrokes is essential to timely employment. Training, planning, logistic support, and other arrangements to allow units to use nuclear weapons must be done before the outbreak of hostilities, or before deployment. Where the use of nuclear weapons by either side is a possibility, the headquarters of the deployed force must develop, refine, and update contingency plans for the employment of nuclear weapons based on guidance from higher echelons of command and the battlefield situation.

At the time authorized commanders request the use of nuclear weapons, they must be able to foresee a situation developing which will be sufficiently grave to require their use. One of the criteria to be followed in requesting release of nuclear weapons is that the overall defensive capability must not be allowed to deteriorate to the point where available forces cannot conduct effective conventional-nuclear follow-on operations after the strike.

Although many weapons will probably be available, release may be expected for only the numbers and types of weapons included in planned "packages" of nuclear weapons. A package is a group of nuclear weapons of *specific yields* for employment in a *specified area,* within a *limited timeframe* to support a *tactical contingency.*

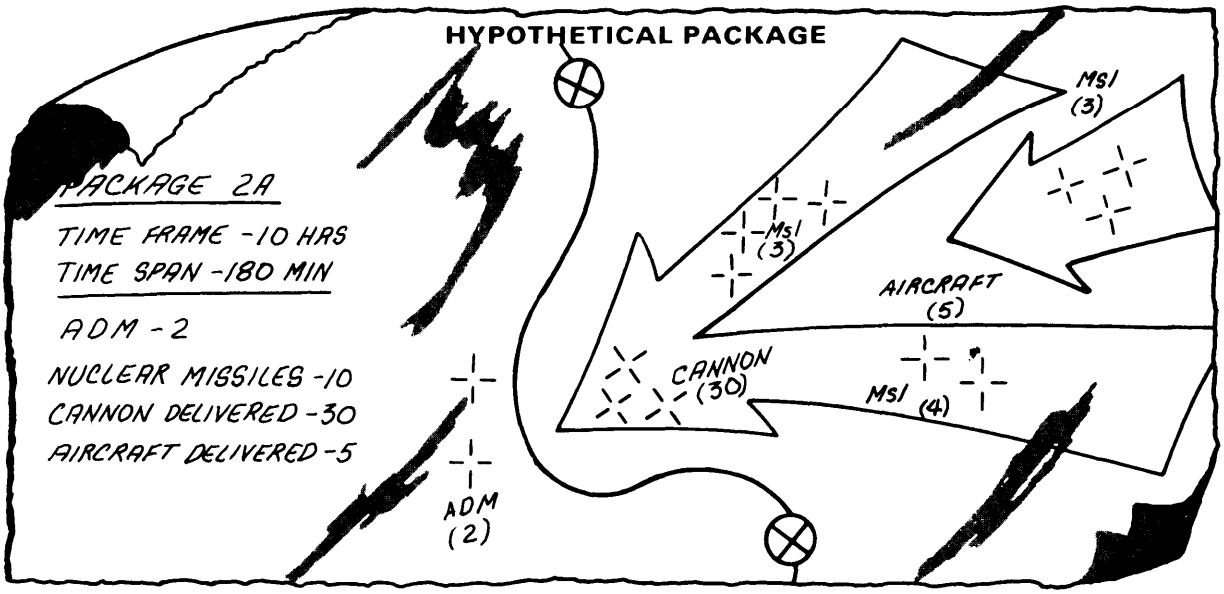
PLANNING A "PACKAGE" OF NUCLEAR WEAPONS

Sufficient nuclear weapons should be planned in each package to alter the tactical situation decisively, and to insure accomplishment of the assigned mission.

The package will be planned for employment in a timeframe, normally expressed in hours, to insure full integration with other military and diplomatic actions. Within the specified timeframe, all nuclear weapons will be employed as a "pulse" within a shorter timespan, normally expressed in

minutes. The timespan for the pulse of nuclear weapons will depend on the technical capability for proper command and control, warning, tactical flexibility, operational necessity, and national approval. Continuous updating and refining of packages is essential if they are to be employed effectively within the timespan approved or directed by the releasing authority.

Planning must reflect the contraints and directives of higher authority, *and must also include the procedures for warning friendly units* and the responsibilities for post strike analysis. Since aircraft may be designated to deliver some of the weapons, and the other services must arrange to warn friendly aircraft to avoid areas scheduled for nuclear strikes, planning and coordination will be a joint effort. *The echelon which will control employment of the requested package is responsible for disseminating the warning*— this requires an adequate and survivable command and control communications system.



EMPLOYMENT

The first use of US tactical nuclear weapons would probably be in a defensive mode based on prepared defense plans. Later use could include nuclear support for offensive operations to destroy the enemy or regain lost territory. Tactical advantage may be gained by neutralizing lead elements in the enemy second echelon, and by eliminating his committed echelon's support and supporting fire systems. This can defeat the enemy tactic of echelonment by destroying the follow-up reserves for the breakthrough, and by weakening enemy support. This will reduce pressure on friendly units in contact so they can contain engaged forces by conventional means and control the battle.

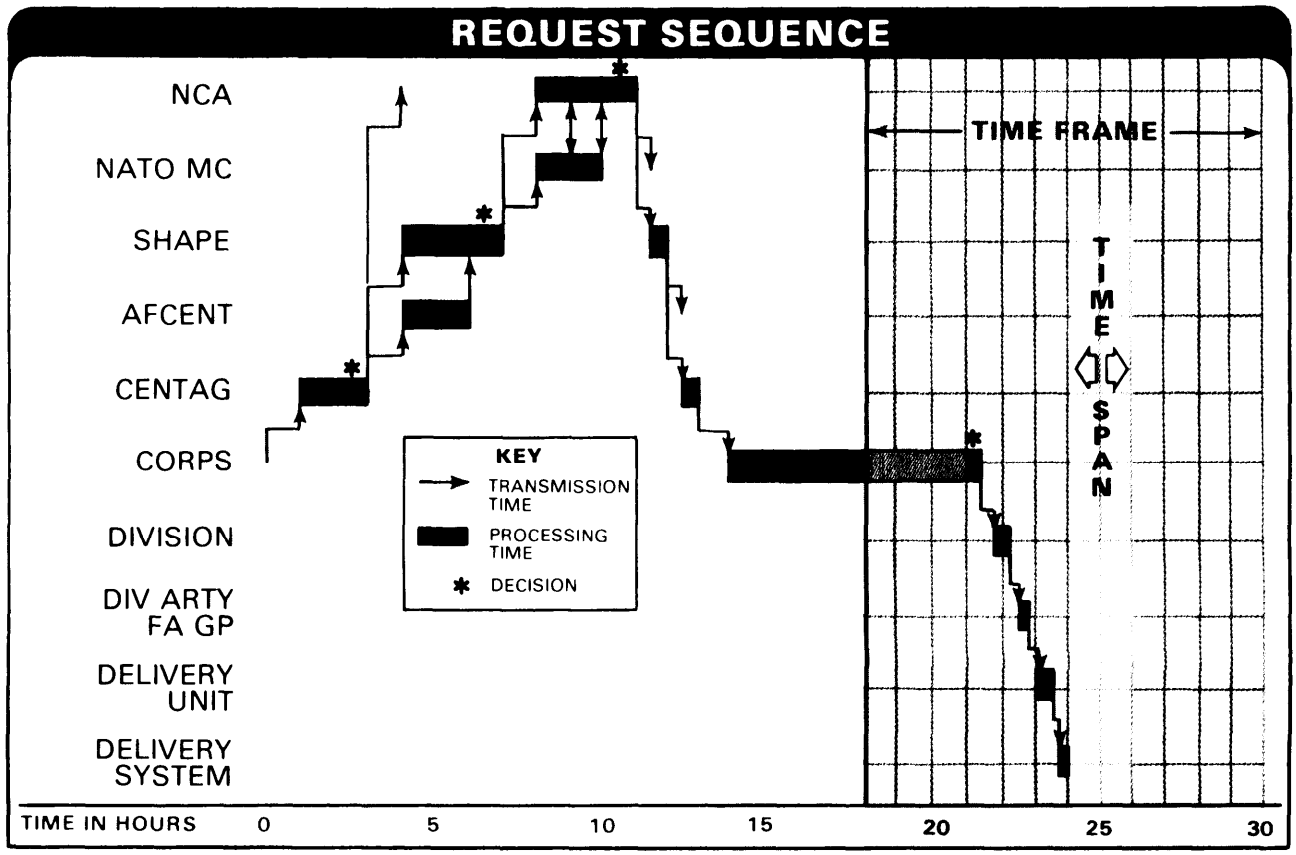
In general, the logical targets are:

- **Committed enemy units**
- **Reserves**
- **Lead elements of second echelon forces**
- **Enemy nuclear systems**
- **Field artillery**
- **Air defense artillery**
- **Selected command and control elements**
- **Support forces rearward of the committed elements**

Groups of targets on avenues of approach, along the FEBA, and in likely areas of enemy breakthrough attacks constitute the basis for a weapon package.

Plans are prepared to identify avenues of approach where the enemy is likely to concentrate, and areas where breakthrough attacks are most likely to occur. Divisions target their weapons, including atomic demolition munitions, in these areas, avoiding inhabited areas and public facilities where civilian casualties and other undesirable collateral damage would exceed levels allowed in planning guidance. For the safety of friendly forces and civilians, target areas closest to the line of contact or population centers should be targeted with low-yield weapons. Corps will review division nuclear fire plans for tactical suitability, and integrate them into appropriate corps weapon packages.

Commanders will make a timely request for approval of a nuclear weapons package, specifying the desired timeframe and firing timespan. To convey to the enemy that we are using nuclear weapons in a limited manner, all weapons in a package should be fired in the shortest possible time. The package must be employed *on time, in the approved areas, on high priority targets.* While not a substitute for strong conventional forces, nuclear weapons provide the commander the capability to generate instantaneous combat power of enormous magnitude that can negate the enemy's offensive advantage and deny him his objective.



Successful conventional-nuclear operations require—that commanders understand the effects of these weapons, and plan carefully in advance to minimize personnel and material vulnerability.

CHAPTER 11

Chemical Warfare and Nuclear, Biological, and Chemical (NBC) Defense

INTRODUCTION

DURING WWI, the first large-scale chemical attacks were made, achieving results that led to a major use of chemical weapons on the battlefield. During that war, ***chemical weapons proved to be four times as effective*** in producing nonfatal battlefield casualties as high explosive (HE) weapons. Although extensive protective measures were devised, over 1,300,000 casualties (4.6 percent of the total casualties) resulted from chemical warfare (CW) operations. As an example, WWI Russian fatalities from chemical agents exceeded US losses in Vietnam and the total Russian chemical casualties (fatal and nonfatal) were more than the current US force strength in Europe.

Since 1918, however, toxic chemical weapons have not been used on a WWI scale. The use of chemical weapons since WWI has essentially been restrained by the threat of retaliation in kind. Many nations, however, now possess the capability to employ these weapons.

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US POLICY

There is a commonly held misconception that ratification of the 1925 Geneva Protocol completely removes the chemical warfare threat to the Army. This is not the case. The Protocol limits the "first use" of lethal chemicals, but does not address the production and stockpiling of such weapons.

The Geneva Protocol of 1925 prohibits the use in war of asphyxiating, poisonous or other gases. It ***does not*** *prohibit the production of chemical warfare agents, the development of weapons that deliver chemical agents, the stockpiling of chemical munitions, or the development of chemical warfare protective materiel and decontamination equipment.*

The US did not ratify the Geneva Protocol until 22 January 1975, and, like other signatories to the treaty, reserves the right to retaliate with chemical agents should chemical warfare be initiated against our nation and its armed forces.

The current US national policy on chemical warfare is based on the Presidential decisions of 25 November 1969. Specifically, the President reaffirmed the long standing unilateral US position of no first use of lethal chemical weapons; extended this no first use policy to include incapacitating chemical agents; and renounced the use of biological agents and weapons, and all other methods of biological warfare. In February 1970, this renouncement was extended to include biological toxins, which are chemical substances.

Consistent with the President's renunciation of the "first use" of lethal and incapacitating chemical agents, the objective of the United States chemical warfare program will be to deter the use of chemical agents by other nations and to provide a retaliatory capability should deterrence fail.

The above instructions were promulgated by the Department of the Army in July 1970

to implement the President's decision. Inherent in these implementing instructions are two basic requirements:

1. **US forces must be organized, trained and equipped to survive and operate effectively in a chemical warfare environment.**
2. **US forces must have the capability to retaliate in kind and scope sufficient, at least, to balance a like capability of the enemy.**

Commanders must be prepared to support and execute our national chemical warfare policy. This can be done best by maintaining a visible, responsive capability to fight and win the first battle in a chemical warfare environment.

THREAT

Soviet and Warsaw Pact forces are well trained and equipped for both the offensive and defensive aspects of chemical warfare, and for nuclear and biological defense.

Soviet military doctrine describes chemical agents as "weapons of mass destruction" and treats their use as an integral part of warfare. The Soviet Army is well organized and equipped for chemical warfare operations either in toxic areas imposed upon them, or to exploit their own use of chemical agents. As an example, the latest Soviet tanks and APCs have built-in air filtration systems, while the majority of other equipment has, as a minimum, partial protection. Soviet commanders at all levels learn how to conduct their missions under chemical warfare conditions. CW agent detection is a routine part of unit reconnaissance training and large-scale chemical agent decontamination exercises are regularly conducted. In addition, chemical staff personnel are assigned down to battalion level, and organic chemical decontamination units are assigned at all military command levels from *Front* down to tactical company.

SOVIET AND WARSAW PACT FORCES TRAIN AND EQUIP FOR CHEMICAL WARFARE AS IF IT WERE INEVITABLE

Soviet tactical doctrine stresses the following:

1. SURPRISE
2. SECURITY
3. RECONNAISSANCE
4. SUPERIOR FIREPOWER

1 *Surprise*

Surprise denies the enemy time to react. Nuclear, chemical, and/or conventional fires would be employed with surprise to increase their shock effect. Surprise is achieved by secrecy in planning, camouflage, deception, rapid combat preparation, the execution of decisive and unexpected maneuvers, and rapid delivery through adequate and effective weapons systems.

2 *Security*

Security against a chemical or nuclear counterstroke is achieved through dispersion, careful selection of assault areas, and in-depth organization of defense forces and fires.

3 *Reconnaissance*

Reconnaissance for exploitation of chemical strikes is employed well forward of the FEBA to acquire enemy nuclear weapon sites, airfields, depots, and troop assembly areas. Soviet ground troops are extensively rehearsed in reconnaissance of and movement through contaminated areas. During a high-speed advance, contaminated areas are by-passed or traversed in sealed tanks and armored personnel carriers to maintain the momentum of the attack.

4 *Superior Firepower*

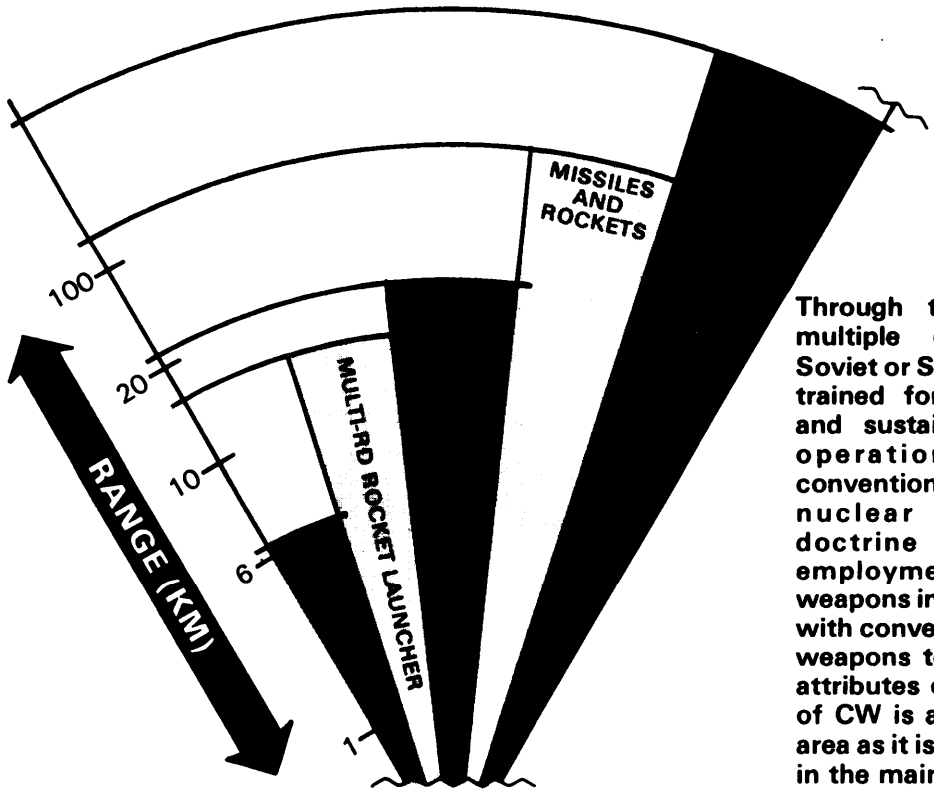
Superior firepower is reflected in the organization of chemical weapons in a Soviet division and stressed in their military doctrine. Soviet tactics have been geared to the nuclear as well as chemical battlefield. An initial massive nuclear and/or chemical strike in great depth has been viewed by the Soviets as a means to gain surprise, achieve a major penetration, and destroy effective resistance.

SOVIET TACTICS OUTLINE IN DETAIL THE USE OF CHEMICAL WEAPONS ON THE MODERN BATTLEFIELD

The modern persistent and nonpersistent chemical agents used by Soviet forces can be delivered by a variety of weapon systems providing great flexibility of employment:

- **Tactical aircraft**
- **Surface-to-surface tactical ballistic missiles (SCUD)**
- **Free-rocket-over-ground (FROG)**
- **Multiple rocket launchers (MRL)**
- **Tube Artillery**
- **Mortars**

SOVIET CW OFFENSIVE CAPABILITY (PROBABLE)



Through the use of these multiple delivery systems, Soviet or Soviet-equipped and trained forces could initiate and sustain large-scale CW operations in either a conventional or conventional-nuclear conflict. Their doctrine emphasizes the employment of chemical weapons in close coordination with conventional and nuclear weapons to capitalize on the attributes of each. The threat of CW is as great to the rear area as it is to forces operating in the main battle area.

US FORCE SURVIVABILITY

The objective of US policy is to deter the use of chemical weapons by other nations. *If this deterrence fails*, and the use of chemical weapons is authorized by national command authorities, the primary objective is to achieve early termination of CW operations at the lowest possible level of intensity. US forces must, therefore, be prepared to:

- ***Detect and protect against chemical and biological munitions and agents***
- ***Conduct operations in an NBC environment***
- ***Use chemical weapons in retaliation***

Some casualties will inevitably result from the employment of chemicals, even against a fully protected force. Additionally, US forces will suffer serious degradation of performance caused by the requirement to continuously wear chemical protective clothing and equipment. Unless well-trained and conditioned, our soldiers will be less effective during NBC operations. The problems associated with wearing protective equipment (heat stress, respiratory strain, psychological stress, reduced mobility, visual acuity, and manual dexterity) will adversely affect mission accomplishment. Soldiers wearing chemical protective equipment have a limited tolerance time for hard work and must be allowed to attend to body functions. Therefore, *the dual vulnerability of forces to both the effects of the chemical agent and the stresses from the protective equipment can result in an unacceptable degradation of combat effectiveness and attrition of the force.* This degradation can be reduced through training, and by use of the **Mission-Oriented Protective Posture (MOPP)** as described in FM 21-40, NBC Defense.

Chemical protective clothing and equipment provides protection from biological attack also. There are two additional aspects of biological defense with which the commander must be continuously concerned. The first is an aggressively enforced immunization program. Such a program provides immunity to a wide variety of potential biological warfare agents, but to be effective, it must be enforced *prior to an attack.* The second aspect is rigorous adherence to good field sanitation practices. This type is effective both before and after attack in reducing losses to disease.

Effective defense against nuclear attack is dependent on the training of the individual soldier to react properly at the time of attack. Common field fortifications provide the best shelter available to the soldier in nuclear as well as conventional attacks, and the preparation of such fortifications must be routine for soldiers in rear areas as well as for those engaged in the battle area. Each aspect of NBC Defense is covered in detail in FM 21-40.

Training in CW and NBC defense must be integrated into individual and unit training programs and into higher echelon tactical exercises. Training objectives must be designed to develop and evaluate the readiness of forces to operate in an NBC environment and to insure proficiency with all available offensive and protective materiel. Emphasis must be placed on performing all operational missions while using NBC detection, warning, and protective equipment. Toward this end, agent simulants should be used whenever possible to provide realism.

Units, materiel, and supplies must also be protected. Mobility, dispersion, and use of terrain will minimize some of the dangers and effects of chemical attack. Detection and early warning of such attacks will be important to survivability. While NBC defense specialists will be at work at each level of command, soldiers must also assist in the overall NBC defense effort. They must thoroughly understand decontamination procedures so that actions to accomplish the mission continue.

Some essential military tasks cannot be performed at all in full protective equipment; however, if the protective equipment is removed, a force could sustain sufficient casualties to render it ineffective in a very short period of time. If we lack the ability or means to retaliate, enemy forces need only be

encumbered with protective equipment in areas they attack with chemicals. Conversely, without knowing where these first attacks will come, our forces will have to be encumbered everywhere.

To negate this enemy advantage, our countermeasures against a chemical attack must be directed against enemy chemical delivery systems and agents—prior to and following the first attack. We must make a maximum effort to locate and destroy enemy chemical warfare munitions and related delivery systems. If successful, this action could prevent the first attack or result in early termination of chemical conflict.

SUPPRESSION OF ENEMY DELIVERY SYSTEMS AND DESTRUCTION OF AGENT MUNITIONS IS IMPERATIVE

To survive in the chemical warfare environment, it is essential that commanders assure that their forces are provided the highest degree of protection against the CW threat. While these measures will save lives, commanders must realize that as the degree of chemical protection increases, the efficiency and endurance of their troops to accomplish the mission decreases.

FUNDAMENTALS OF EMPLOYMENT

Only the national command authorities can decide when to retaliate with lethal and incapacitating chemical agents. That decision will be relayed, along with guidance and policy for the use of chemical weapons, to field commanders.

The initial use of chemical munitions should comprise a retaliatory response of sufficient magnitude to discourage the further use of chemicals by the enemy. The response should be planned and executed to produce casualties, impose mobility restrictions, and degrade enemy mission effectiveness in an intensity sufficient to:

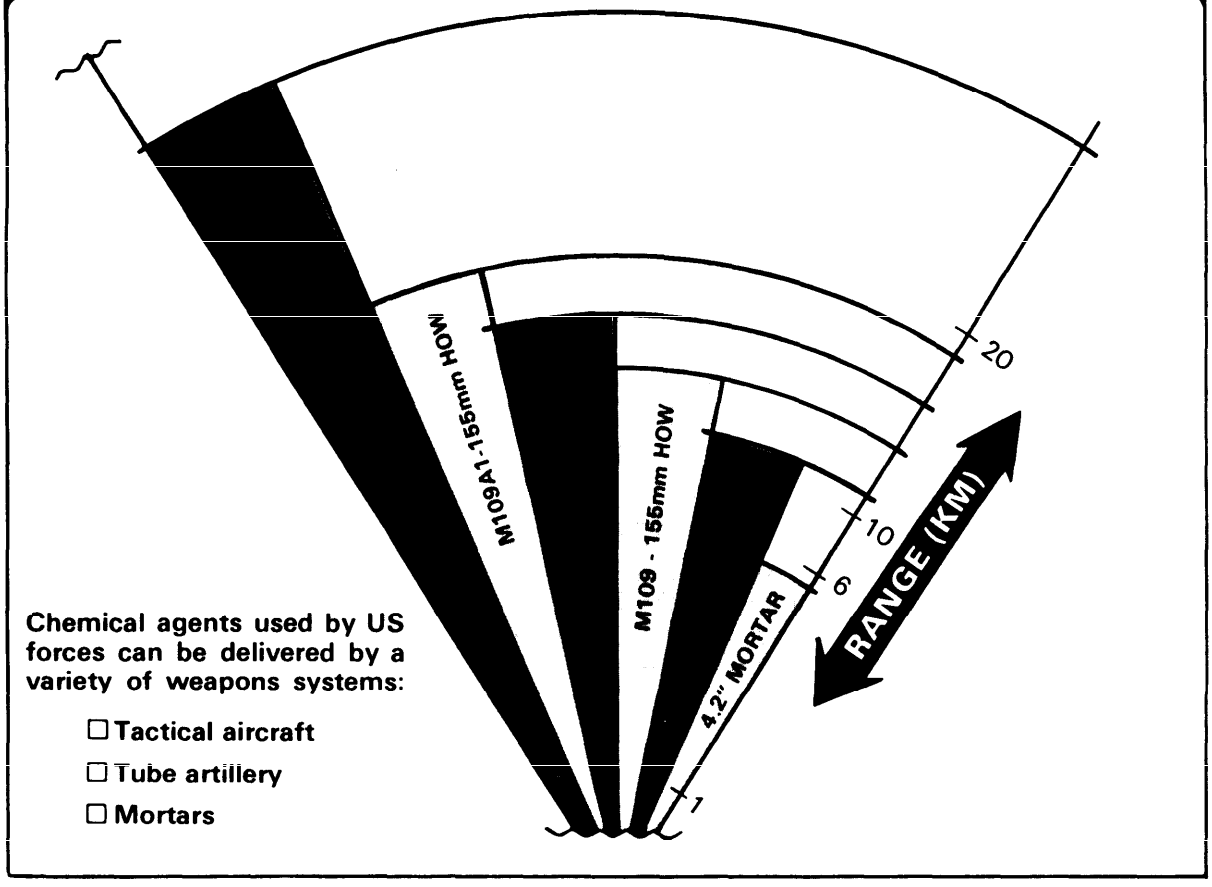
- **Stop enemy successes and deny him mobility and combat effectiveness advantages by forcing the same chemical protection restrictions on him.**
- **Convey the message of high resolve to**

win, with the use of chemicals if necessary.

- **Convince the enemy that it will be to his advantage to terminate chemical warfare.**

The advantage of this concept lies in its flexibility, wherein the level of response can be controlled according to the prevailing military and political circumstances. This permits a response intensity ranging from retaliation against limited, specific targets up to a theaterwide effort. However, the use of chemical weapons in conjunction with either conventional or nuclear weapons will require directed or self-imposed intensity and geographic restrictions in order to prevent escalation or undesirable collateral casualties and contamination.

US CW OFFENSIVE CAPABILITY



Chemical weapons are basically area weapons that have effects ranging from mild incapacitation to high lethality. Political and military considerations may dictate such restrictions as:

- *Types of agents that may be employed.*
- *Types of targets that may be attacked and areas where chemical weapons may be employed.*
- *Extent of collateral effects permitted.*

When selecting chemical agents, commanders must strive to cause the enemy to use protective clothing thus degrading his performance.

CHARACTERISTICS OF TYPICAL CHEMICAL AGENTS

This chart shows typical US agents and their effects. Threat forces use similar agents with similar effects.

NERVE AGENT	**GB**	VAPOR OR AEROSOL	A FEW MINUTES	LETHAL EFFECT ON UNMASKED TROOPS	VERY SHORT. DEATH MAY OCCUR WITHIN A FEW MINUTES IF AGENT IS INHALED
NERVE AGENT	**VX**	LIQUID	A FEW HOURS TO A WEEK	LETHAL EFFECT ON TROOPS, CONTAMINATION OF TERRAIN AND EQUIPMENT	A FEW HOURS (DELAYED CASUALTIES)
BLISTER AGENT	**HD**	LIQUID	USUALLY A FEW DAYS, POSSIBLY A FEW WEEKS	INCAPACITATION OF TROOPS, CONTAMINATION OF TERRAIN AND EQUIPMENT	A FEW HOURS (DELAYED CASUALTIES)

Use of these chemical agents provide commanders with the ability to:

- **Cause casualties among unprotected or poorly equipped and trained personnel.**
- **Cause decreased effectiveness by requiring enemy forces to wear protective equipment.**
- **Restrict the use of terrain.**
- **Channel forces into a specific area.**
- **Delay an advancing enemy force.**
- **Attack targets normally protected against conventional munitions.**
- **Produce casualties or restrict the use of equipment or real estate through contamination without destroying structures or installations.**

Even if an enemy force is prepared for a chemical attack and sustains few casualties, it will be less effective because of the need to wear protective equipment, the resultant increase in time to complete normal tasks, and the time required for decontamination. Once chemical operations have commenced, authority to use chemical weapons is normally decentralized to the lowest echelon that is responsible for the area within which the casualty producing effects of the agent will extend and that is capable of controlling, coordinating, and exploiting their use. This authority will normally be retained at division level; however, in some cases, it could be delegated as low as brigade.

PLANNING FOR CHEMICAL WEAPONS EMPLOYMENT UTILIZES THE SAME PRINCIPLES AND PROCEDURES USED FOR FIRE SUPPORT COORDINATION

When planning to employ chemical weapons, commanders must coordinate with adjacent units over whose zone or sector toxic clouds are expected to pass. This planning requires adherence to the same basic principles and procedures that apply to the employment of other weapons systems. Chemical weapons employment planning is a part of fire support planning and the principles and procedures of fire support coordination remain unchanged. These requirements do, however, assume increased importance because of the relatively large area covered and the wide variation of effects that can be achieved. When analyzing potential targets for chemical weapons employment, commanders must, as a minimum, consider the:

- ☐ *Restrictions on use imposed by higher HQ.*
- ☐ *Effect on the overall mission.*
- ☐ *Impact on future operations.*
- ☐ *Effects desired (persistent or non-persistent).*
- ☐ *Time to produce casualties (prompt or delayed).*
- ☐ *Influence of weather.*
- ☐ *Collateral effects.*
- ☐ *Safety of friendly forces.*

OFFENSE

In the offense the commander would consider using chemical weapons to:

1 *Attack enemy first echelon defending forces with nonpersistent agents.* Nonpersistent agents will obtain rapid casualty production; cause the enemy to mask, degrading his ability to defend; and eliminate the possibility of residual contamination through which attacking forces would have to pass.

2 *Attack enemy reserves with persistent and nonpersistent agents.* Engage reserves constituting an immediate threat, or occupying an area to be used by friendly forces with a nonpersistent agent. Reserves which are a more remote threat or in areas which friendly forces intend to by-pass are engaged with a persistent agent.

3 *Protect the flanks of the axis of advance with persistent agents.* The degree of flank protection that can be obtained is directly dependent on two factors—first, the enemy commander's willingness to cross a contaminated area despite the risks involved, and second, the level of chemical defense preparedness of the counterattacking force. Commanders cannot expect absolute flank protection from persistent agents alone.

4 *Attack enemy command and control facilities with persistent and nonpersistent agents.* Nonpersistent agents are employed against those facilities in which rapid casualty production and/or penetration of hardened sites is desired. The use of persistent agents against such facilities may cause some casualties, but more important, restricts the use of them and causes the enemy to have to take time for their decontamination.

5 *Attack enemy fire support with persistent and nonpersistent agents.* The principle in this case is similar to attack of command and control facilities. Counterfires to interrupt the mission of an enemy battery would use nonpersistent agents, while fires intended to add to the enemy's logistical problems would use persistent ones.

When using chemical weapons in the offense, the commander must consider the impact on his operations. The weapons selected must complement his plan and not cause obstacles to his own movement.

DEFENSE

In the defense the commander would consider using chemical weapons to:

1 *Contaminate probable enemy avenues of approach using persistent agents.* As in the case of flank protection, the effectiveness of this measure is dependent on the determination of the enemy commander and the CW status of his troops. Nevertheless, even well-trained, well-disciplined, and well-equipped troops will lose momentum in traversing a contaminated area. The commander must not depend on chemical contamination to serve as a barrier to enemy movement.

2 *Attack enemy second echelon forces with persistent and nonpersistent agents.* By so engaging the enemy second echelon, its momentum is slowed, the enemy assault elements become "shallow", unable to depend on the second echelon for timely reinforcement, and the entire force is made more vulnerable to friendly counterattack. Nonpersistent agents are used against those elements presenting the most immediate threat and those occupying territory over which friendly forces must pass. Persistent agents are employed against those elements which present a lesser threat or which occupy areas to be avoided by the counterattacking force.

3 *Attack enemy command and control facilities with persistent and nonpersistent agents.* The principles governing these attacks are the same as those governing such attacks in the offense.

4 *Attack enemy fire support with persistent and nonpersistent agents.* The rationale for these attacks is the same as for those conducted in the offense.

5 *Attack enemy logistic systems with persistent and nonpersistent agents.* The logistical momentum required for a successful offense is sensitive to chemical attack. Nonpersistent agents are employed against targets in which the potential for high casualty production is great; for example, a replacement facility. Persistent agents can be very effective in diverting logistical effort to large-scale decontamination of supplies and equipment. When such agents are used against logistical complexes, the enemy is caused to expend a great deal of additional effort in attempting to sustain the forward movement of materiel.

When using chemical weapons in the defense, care must be exercised to preclude cloud drift of toxic chemicals over friendly forces. When using agents of high persistency to contaminate areas, the commander must consider the impact of such contamination on his plans for counterattack.

RETROGRADE

In the retrograde, the commander would consider using chemical weapons to:

1 *Slow the attacking enemy force with persistent and nonpersistent agents.* Nonpersistent attack is used to slow forces that constitute an immediate threat by forcing them into chemical protective clothing and equipment and creating immediate casualties. Persistent agents are used for much the same reason, but, because of their delayed casualty production, are used on forces constituting a lesser threat.

2 *Restrict the use of specific terrain to the enemy with persistent agents.* As with flank protection and contamination of avenues of approach, the degree of restriction depends on the enemy commander and the readiness of his force. Even the best prepared force, however, would be required to expend effort to decontaminate an area for occupation.

3 *Contaminate with persistent agent those supplies or equipment that may have to be abandoned.* Commanders must keep two things in mind in considering this course of action—first, international law forbids the destruction of certain types of supplies and equipment (most notably, medical supplies and equipment). In general, supplies, particularly foodstuffs, petroleum products, and textiles, should be considered "destroyed" when contaminated with a persistent agent. Equipment, particularly major end items and repair parts, can be decontaminated and used by the enemy. Consequently, even though contamination of supplies and equipment to be abandoned is a valid consideration for the commander, destruction of such materiel will normally be found more feasible using more conventional methods. In all cases, the commander must consider the collateral effects resulting from his use of chemical weapons and he must insure that these effects are consistent with his planning guidance.

The commander must insure that his forces are properly equipped and trained to operate in a chemical environment. If US forces are prepared for both defensive and offensive chemical warfare operations, the probability of an enemy using chemical weapons on the modern battlefield will be reduced.

Finally, the commander must be constantly aware that the systems which deliver chemical agents are the systems which also deliver his conventional and nuclear fires. Fire planning must be continuous, and must make the most efficient use possible of all types of fires available in order to effect the maximum sustained impact on the enemy's ability to continue the battle.

CHAPTER 12

Combat Service Support

THE REQUIREMENT

OBVIOUSLY, AN OUTNUMBERED FORCE must be more effective man-for-man, weapon-for-weapon, and unit-for-unit than the opposition. In earlier chapters we have emphasized the importance of individual and crew training to weapon effectiveness, and the importance of tactical skill to unit effectiveness. Likewise, units cannot develop full combat power without a full complement of operating equipment and weapons. This is what ***combat service support*** is all about.

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THE ONLY MEASURE OF COMBAT SERVICE SUPPORT EFFECTIVENESS IS THE PERCENTAGE OF BATTLEFIELD-OPERABLE WEAPON SYSTEMS

We are not interested in logistics systems per se. We are interested in operating weapon systems on the battlefield. This means that weapon systems must be supplied with fuel and ammunition, and repaired when damaged or otherwise inoperable. The measure of effectiveness for combat service support is the percentage of weapon systems which are fully operable on the battlefield. *There is no other criterion.* When the General concentrates his forces at the critical time and place, he is, in effect, concentrating weapon systems (tanks, field artillery, helicopters, etc.). Therefore, he must, at the same time, concentrate his combat service support resources to:

1. ARM THE SYSTEMS (Ammunition)
2. FUEL THE SYSTEMS (POL)
3. FIX THE SYSTEMS (Maintenance and Repair Parts)
4. MAN THE SYSTEMS (Troop Support)

SUPPLIES, SUPPORT, WEAPONS ARE CONCENTRATED AT CRITICAL PLACES AND TIMES

Combat service support is an element of combat power. The General uses the available resources of these elements to strive for a combat power ratio of at least 1 to 3 in the defense, or 6 to 1 in the offense. He manipulates his resources to attain the required balance of power by directly controlling critical elements and establishing priorities for support. He concentrates supplies and support, just as he concentrates weapons—at the critical places and times. To do this, he must know:

- **WHAT HE HAS (Resource identification and quantity)**
- **WHERE IT IS (Availability—immediate or near future)**
- **ITS CONDITION (Readiness)**

The Colonels influence the battle by maneuvering the combat service support resources assigned to them. They keep support units close to the weapon systems they support, commensurate with the risk involved. They deliver supplies tactically. They plan the use of allocated transportation to fit the scheme of maneuver.

THE COLONELS "MANEUVER" AND THE CAPTAINS "APPLY"

The Captains apply combat service support troops and resources to the actual maintenance of critical weapon systems, and to the provision of fuel, ammunition and food where it is needed.

Commanders must think in terms of their weapon systems support, not in terms of generalized logistic support. Logisticians must insure that we have effective operating weapon systems.

CONCEPT FOR MODERN LOGISTICS

OVERVIEW

The General must insure that his combat force has the wherewithal to fight effectively at the outset of the battle and to fight continuously thereafter. Combat service support elements provide the staying power to sustain his force in combat. *The support system has no other purpose than to maintain and support the weapon systems and their operators.*

The competition among the services for available strategic airlift and sealift, during the critical stages of a war, is very keen. The General must integrate the deployment of support, with the deployment of the troops and weapons which require that support, in exactly the right proportions. The criteria are twofold:

ONLY DEPLOY WEAPONS SYSTEMS WHICH CAN BE SUPPORTED TO THEIR FULL OPERATIONAL POTENTIAL

Weapons should not be deployed which cannot be supported to their full operational potential.

Support elements should not be deployed before they are required by the weapon systems committed to battle.

In a theater of operations which exists in peacetime, war reserves should be prepositioned for use in the early stages, and

to sustain the combat force until support from CONUS can be established. Airlift must be allocated to transport priority needs during this phase, and for critical repair parts throughout the war.

Considering the nature of the battlefield, support functions critical to battle are conducted as far forward as possible so that combat equipment can be armed, fueled, and when necessary, fixed close to the battlefield. Critical supplies must be hauled to the forward elements. This support must be provided swiftly. In addition, highly skilled technicians must be transported to points where their expertise is needed. The proper application of command and control of combat service support elements and activities assures the right support, in the right place, at the right time.

THE RIGHT SUPPORT MUST BE "WHERE" NEEDED, "WHEN" NEEDED

COMBAT SERVICE SUPPORT UNITS

- **Must respond to combat demands for critical supplies and essential maintenance.**
- **Must tailor resources and priorities to the changing combat situation.**
- **Must be flexible enough to support from any base arrangement.**
- **Must measure their success in terms of operating equipment and weapons on the battlefield.**
- **Must be trained to survive and accomplish their mission under combat conditions.**

Throughout the support structure, resources must be *austerely* supplied, *properly* applied, and *efficiently* used.

Forward support for the combat forces in battle is by far the most important undertaking in the logistic system; all other elements exist to make it happen.

ARMING IT—AMMUNITION TO THE FIGHTING FORCES.

1 *"When the General concentrates his forces at the critical time and place, he is, in effect, concentrating weapon systems. Therefore, he must, at the same time, concentrate his combat service support resources to:"*

1. ARM THE SYSTEMS

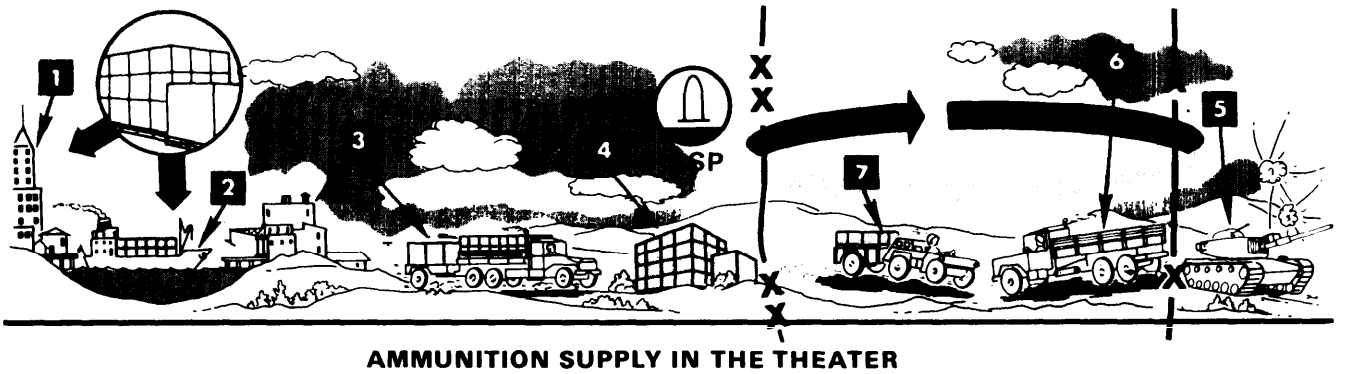
The brigade fighting elements require ammunition resupply for the necessary firepower to suppress or destroy the enemy.

SUCCESSFUL RESUPPLY DEPENDS UPON

- **A smooth flow of ammunition from CONUS direct to the units that support the weapon systems.**
- **Careful estimates of requirements based on usage, experience, and type of combat anticipated.**
- **The ability of the combat service support commanders to respond to demand for critical needs and adapt to changing situations.**

The Generals authorize basic loads which enable the combat units to fight the battle until resupply can be effected.

In order to sustain operations for specific periods, brigades, divisions, and corps indicate their ammunition needs by submitting their **Required Supply Rates (RSR)** for types of ammunition to the next higher commander. US forces often have to fight their battle at the end of a long, vulnerable supply line. Availability and tactical requirements may change, dictating a supply that is less than the required rate. To accommodate these variables, each commander, from corps to battalion, announces a **Controlled Supply Rate (CSR)** to his next subordinate commanders in order to control consumption based on available supply and still accomplish the mission. *Ammunition resupply is closely coordinated to assure proper routing and rerouting to meet tactical changes and to shift ammunition units to meet varying requirements.*



AMMUNITION SUPPLY IN THE THEATER

Ammunition is packed on pallets or in containers in CONUS 1, shipped via fast sea transport 2, moved through fixed ports 3, or over the shore, in a rapid, steady flow to corps level ammunition supply points (ASP) 4. Materials handling equipment is designed for the job and conditions of terrain and climate. The fighting elements 5 (brigades, artillery, cavalry, etc.) draw ammunition from the ASPs to replenish basic loads and meet their operational requirements. Fighting elements send tactical wheeled vehicles 6 back to the ASPs to pick up the ammunition and deliver 7 it to the forward areas. However, they may find it necessary to use high mobility, or even armored vehicles for the last leg of the trip up to the fighting maneuver battalions.

FUELING IT—POL TO MOVE THE FORCE.

2

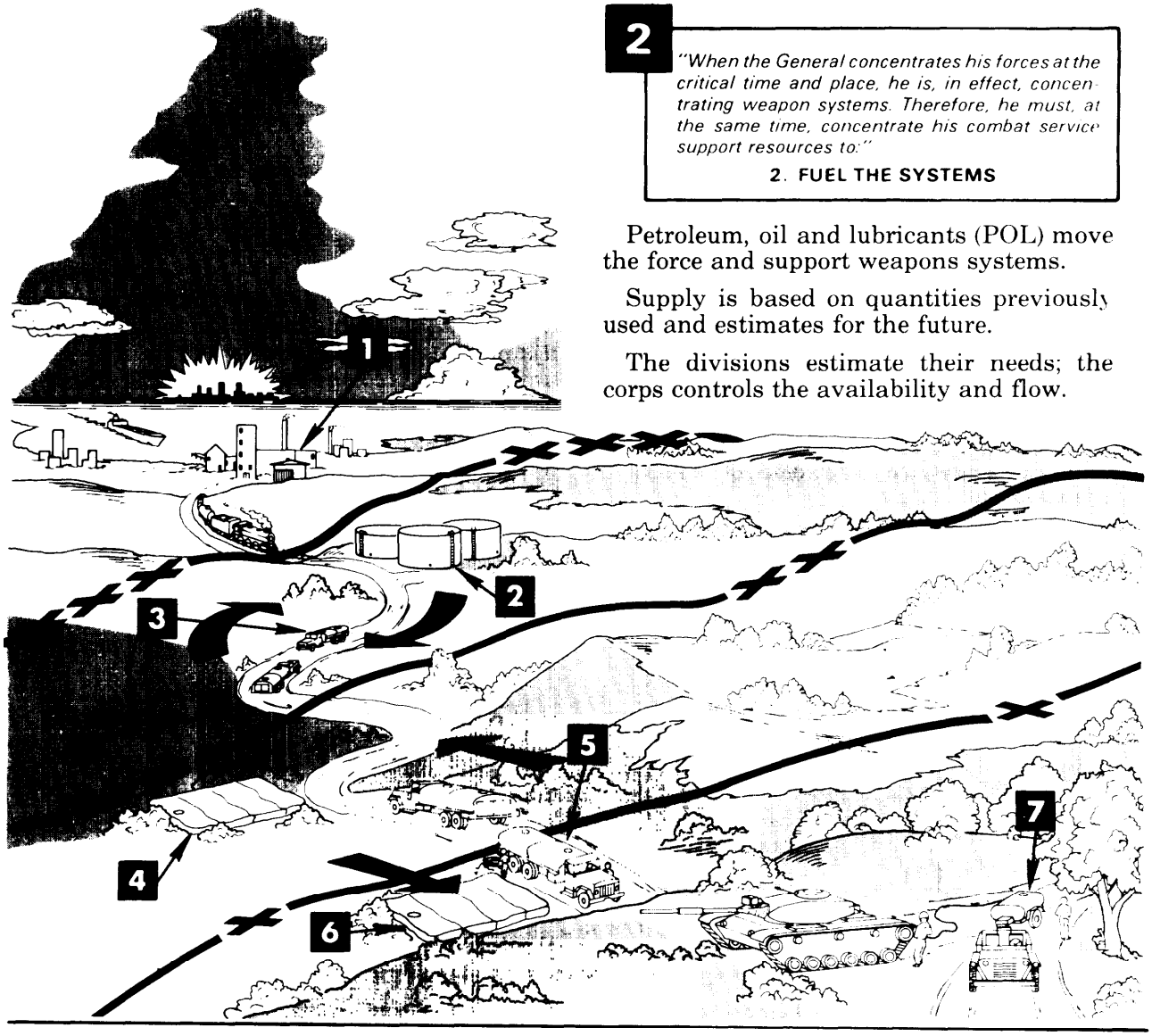
"When the General concentrates his forces at the critical time and place, he is, in effect, concentrating weapon systems. Therefore, he must, at the same time, concentrate his combat service support resources to:"

2. FUEL THE SYSTEMS

Petroleum, oil and lubricants (POL) move the force and support weapons systems.

Supply is based on quantities previously used and estimates for the future.

The divisions estimate their needs; the corps controls the availability and flow.



PETROLEUM SUPPLY IN THE THEATER.

POL is delivered to the corps from CONUS 1 or off-shore sources. It flows into corps field storage 2 (bladders or tank farms) from pipelines, trucks, or railcars; or in an emergency, by aircraft delivery. Corps moves 3 POL to the divisions. Divisions normally store POL in bladders 4 or on tank trucks. Divisions deliver 5 to their brigades and other major units 6. Tactical refueling forward of brigade trains is by battalion tankers 7.

FIXING IT—SUPPORT FORWARD IN THE BRIGADE AREA.

3

"When the General concentrates his forces at the critical time and place, he is, in effect, concentrating weapon systems. Therefore, he must, at the same time, concentrate his combat service support resources to:"

3. FIX THE SYSTEMS

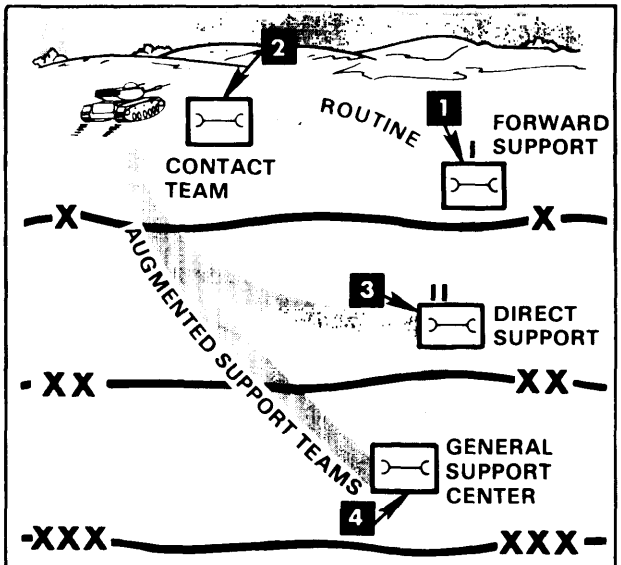
Modern Army weapon systems, such as tanks, attack helicopters, and air defense radars require:

- Special parts.
- Special tools.
- Specially trained mechanics.
- Special technical documentation.
- Special technical assistance, when required.

Therefore, special maintenance centers are established in the corps area for the following categories of materiel:

- Armament and combat vehicle.
- Wheel vehicle.
- Aviation.
- Missile.
- Communications-electronics.
- Ground support equipment.

These centers are in direct communication with the appropriate command of the **U.S. Army Materiel Development and Readiness Command (DARCOM).** The centers provide maintenance support of all weapon systems in the corps falling within their scope or category. They push parts, assemblies, float equipment and teams of experts to the division areas where the battle is the hottest, and the losses or problems are the largest. The centers deal directly with and support those elements of the division maintenance battalion dealing with those particular weapon systems.



MAINTENANCE SUPPORT IN CORPS AREAS

The equipment of the combat force must be kept in operation since early replacement may not be possible. Maintenance personnel organic to the combat unit are the first on the scene when equipment is in need of repair. Forward support maintenance companies 1 extend their support to combat units by sending contact teams 2 to work with them. Normally, more than half of the repairmen of this company will be out-working in the combat area. The forward support contact teams are augmented, as needed, by additional contact parties from division rear 3 or technical assistance from corps general support 4. People, parts, and tools are pushed into that forward support area when needed; when no longer needed, they are pulled back. Supervised battlefield cannibalization may be used when the parts are not available from the supply system, and an item of equipment can be repaired using parts from other unserviceable equipment. The thrust of maintenance turnaround is forward in order to maximize combat time by minimizing repair and evacuation time.

MANNING IT—THE BEST MAN FOR THE JOB

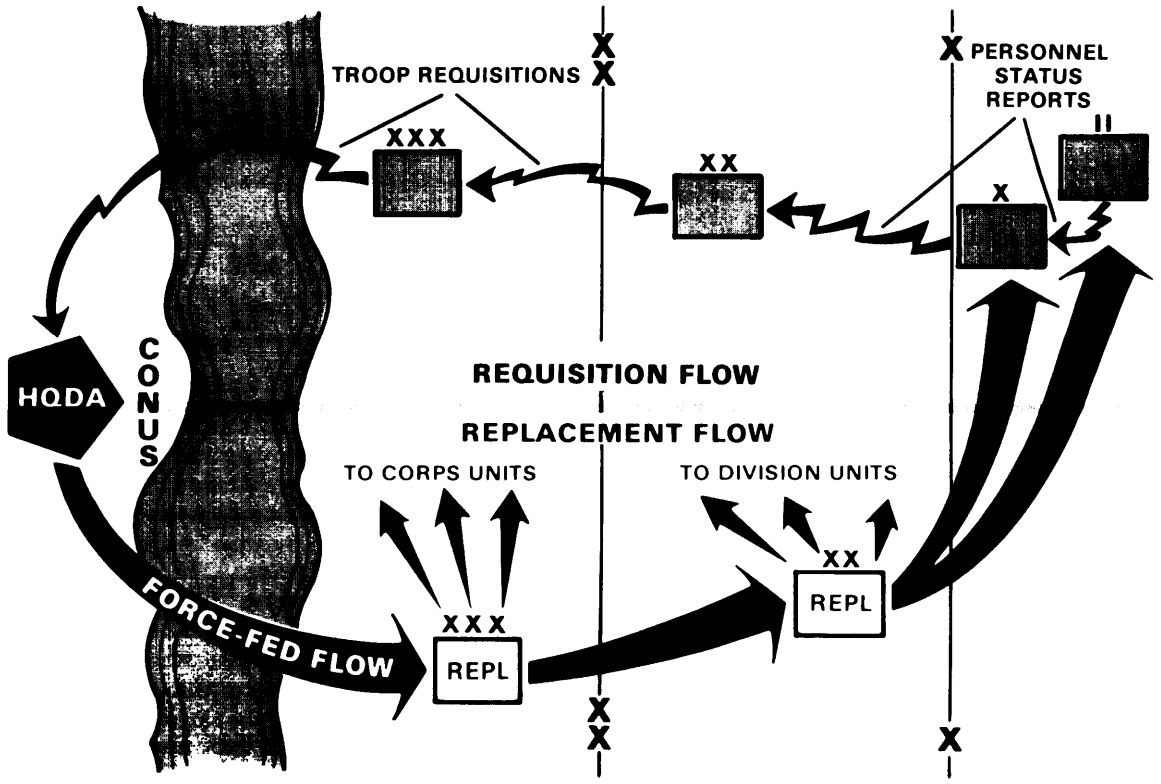
4

"When the General concentrates his forces at the critical time and place, he is, in effect, concentrating weapon systems. Therefore, he must, at the same time, concentrate his combat service support resources to:"

4. MAN THE SYSTEMS

Combat service support includes a wide range of assistance for the operating forces. Many of these services and activities have an important, but indirect impact on the conduct of warfare; others have a direct effect.

Troop Replacements. The outcome of battle increasingly depends upon the proper functioning of a few primary weapon systems. As a result, the personnel system must be focused upon the support of these systems. For example, highly trained tank and ATGM gunners must be identified, segregated, and delivered to the weapons



EXAMPLE REQUISITION AND REPLACEMENT FLOW FOR CORPS WITH NO THEATER ARMY

Replacements being moved from CONUS to the theater may be allocated to corps or division and moved direct to replacement activities operating at those command levels. Small numbers of individual replacements needed to man critical weapon systems and maintenance teams may be assembled and briefly retained in dispersed forward locations to satisfy immediate needs; or these personnel may be assigned, in an overstrength status, to units which can logistically support them and reasonably forecast a need for their services. Major commanders in the theater of operations monitor the replacement stream within their commands for the purpose of determining allocations and assignments.

crew on the battlefield with the same care as the weapon system itself. In short, *the personnel system on the modern battlefield must be weapon systems oriented.*

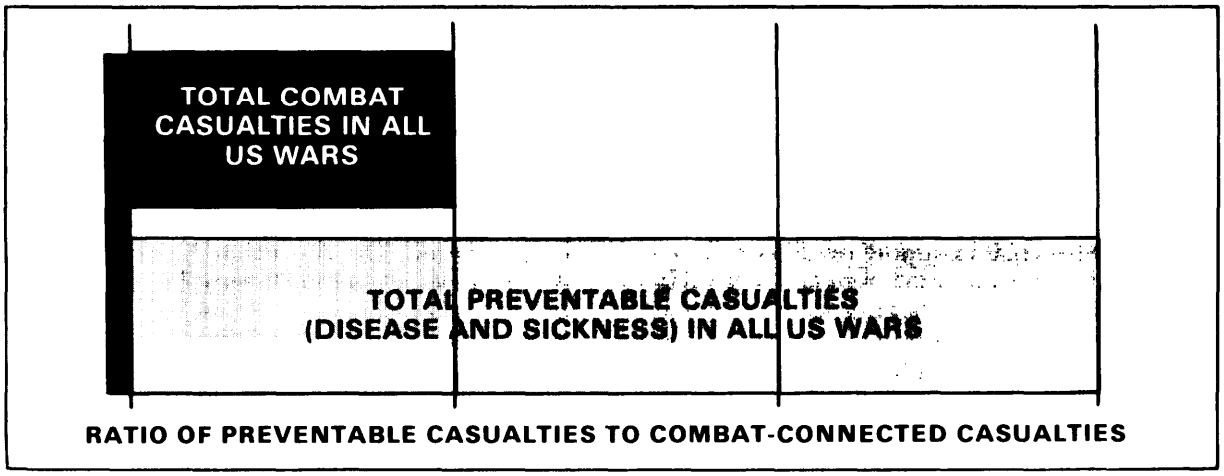
Before the battle starts, contingency planners estimate required replacements, by MOS, for the first 30 days. This estimate is based on the strength of the deployed force and the anticipated intensity of the battle. As the situation changes, this estimate is reevaluated and updated. When the contingency plan is executed, a force-fed replacement flow, based on this estimate, is started from CONUS to the theater of operations. **Headquarters, Department of the Army (HQDA),** coordinates and directs the movement of replacements.

Within the theater of operations, requisitions for replacements are initiated by the highest level organization which can accurately determine requirements. In some cases, companies and battalions may be required to initiate requisitions because of the non-availability of current strength data at higher echelons. Requisitions are forwarded from division to corps to theater army and then to HQDA. Each command echelon validates and adjusts requirements based on immediately available assets, enroute personnel, and further refined loss estimates.

Troop Subsistence. The intense combat which could take place in a violent battle of relatively short duration generally precludes the practice of providing hot meals in the combat area. Under these conditions, field rations will be provided in individually packaged meals that are easily carried and readily consumed by the soldier; thus sustaining him without reducing his combat effectiveness. When combat conditions permit, and rations and cooking equipment are available, troops are served at least one hot meal daily. Food preparation should be consolidated at battalion level whenever possible and the meals transported to the company level units.

Troop Health. In all our wars, more soldiers have been lost to commanders through disease and sickness than through enemy action. In fact, the proportion has run as high as 3 to 1.

To insure that soldiers are physically able to fight, commanders must establish comprehensive programs of health preservation and restoration. They must prescribe standards, allocate medical support to perform specific tasks, and *insure compliance.* Colonels insure that medical personnel and assets are provided to support the mission. Captains supervise tasks of assigned individuals responsible for providing health services, and require troops to observe the rules of hygiene and sanitation.



LOGISTIC COMMAND AND CONTROL

ORGANIZATION FOR LOGISTICS

Because success in battle depends increasingly on a few primary weapon systems, support must be focused on these critical systems.

At the edge of the battle, in the brigade area, support to weapon systems is coordinated by a **Forward Area Support Coordinator (FASCO),** an officer who represents the division support command commander. This individual is the connecting link between combat and support elements and insures proper support to combat systems. He coordinates the operation of the forward support elements of maintenance, supply, transportation, and medical which are located with the rear elements of the brigade they support. As requirements change, these division support units push forward additional resources and withdraw them when no longer needed.

The FASCO reports to the **division support command (DISCOM)** commander, who also commands and directs support activities throughout the division in accordance with the General's priorities and the changing battlefield situation.

The DISCOM focuses on weapon systems availability and readiness through the **Division Materiel Management Center (DMMC).** Here, the readiness of weapon systems to fight is continuously examined, and management action is taken to keep them operational Maintenance priorities are controlled to insure that operations of the maintenance battalion optimize weapon system readiness. Action is also taken to obtain critical repair parts quickly, when necessary to return a weapon system to combat. The DISCOM moves supplies forward and shifts support resources to meet operational needs, and reacts to shifting deployments and changing combat losses. When division requirements cannot be met locally or technical assistance is needed in support of combat systems, assistance is obtained from the **corps support command (COSCOM).**

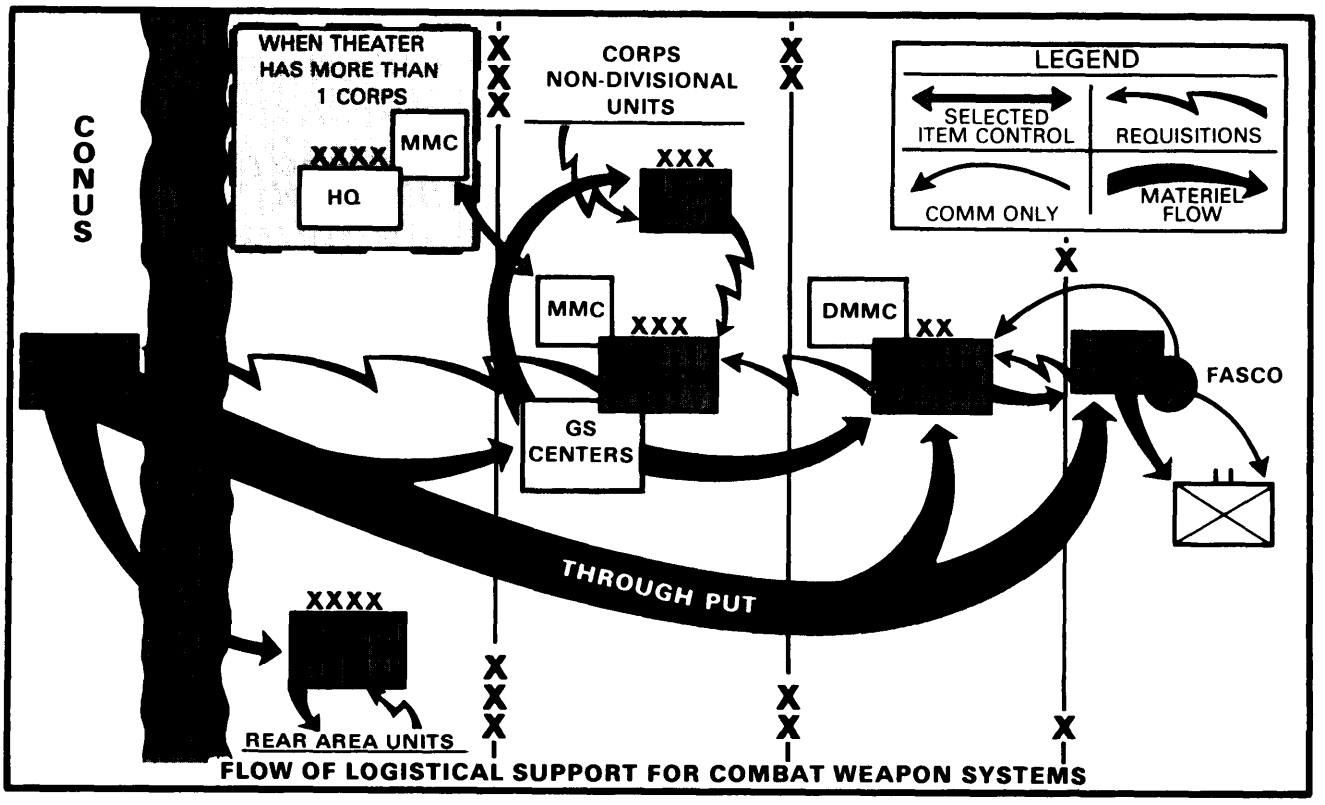
Logistic support for non-divisional units follows the same pattern, whether located within the division area or behind the division rear boundary. Direct support is provided by corps DS units, unless attached to a division for support. The DS units draw on the COSCOM for supplies and expertise.

Integrated general support, supply, and maintenance are provided to all elements of the corps by general suport technical centers operating under the COSCOM. A corps support command may have all of the following centers:

- **Armament and Combat Vehicle**
- **Wheel Vehicle**
- **Aviation**
- **Missile**
- **Communications - Electronics**
- **Ground Support Equipment**

The centers are tailored to support the force. Their size, types, numbers, and location depend on equipment density within the corps, the intensity of combat, and geographic environment. Each center provides general support maintenance, repair parts supply, and end item supply for a group of weapon systems or materiel items. They assist forward support units on technical problems and in battlefield recovery and damage assessment, operate a collection point for battlefield recovered items, and manage their use as a cannibalization source for repair parts and assemblies.

To tailor the general support structure austerely, two or more centers may be consolidated. On the other hand, optimum weapon system support may be achieved by having more than one center of a particular type. General support repair parts, except for missiles and aircraft, may be consolidated at one of the centers or at a more centralized location. In addition to the technical centers identified above, the COSCOM may have



FLOW OF LOGISTICAL SUPPORT FOR COMBAT WEAPON SYSTEMS

general support activities to receive, store, and issue POL, food, and other supplies not processed by the technical centers.

The centers provide the highest level of technical competence on weapon systems available in the Corps. Each center works directly with the CONUS logistic centers and development commands of the US Army **Materiel Development and Readiness Command (DARCOM)** in order to draw on their technical expertise and support. DARCOM technical specialists and representatives from industry will provide on-site assistance on weapon system technical problems.

The COSCOM commands the centers and manages logistic operations throughout the corps. The **Materiel Management Center (MMC)** of the COSCOM continuously monitors the operational readiness of weapon systems and takes action to keep them fighting.

The COSCOM sends requisitions directly to CONUS to meet the needs of the corps.

In a large theater of operations involving more than one corps, the Theater Army Headquarters provides overall management of logistic operations. It sets priorities, assigns logistic missions, and allocates resources. Through its MMC, this headquarters specifically controls and manages selected items which are so critical that the Theater Army commander retains their control. Most of the major combat weapon systems will be controlled here at the major item and critical subassembly level.

The Theater Army commander may establish an **Area Command (TAACOM)** behind the corps rear boundaries to handle materiel as it passes through the port system. The TAACOM does not normally carry backup supplies for the corps. It provides support to whatever units are located in its area which may include some weapon systems such as air defense, or combat units in theater reserve status.

MANAGEMENT INFORMATION SYSTEMS AND COMMUNICATIONS

Visibility is the key to the General's control of resources. Management information systems and communications are the tools that provide visibility. Through the medium of **automatic data processing (ADP)** systems, the commander knows what he has available, where it is, and its state of combat readiness. Computer-based systems are highly mobile and environment adaptable, but in the combat theater they are high priority targets for sabotage and direct enemy action. Therefore, *security and backup for ADP support are important planning considerations.*

COMPUTER BASED SYSTEMS ARE HIGH PRIORITY TARGETS IN COMBAT THEATERS

In addition to providing management information, ADP operating systems are capable of processing huge volumes of repetitive information. In this capacity, the computer analyzes demands that support the weapon systems in accordance with priorities established to satisfy the combat commander's needs. It assists the manager in setting stock levels to meet demands, determining availability within the command, and placing orders on the CONUS base.

Earth satellites and other electronic devices provide us with vastly improved intercontinental communications. Huge volumes of data bits are transmitted halfway around the world almost instantaneously. Transceiver terminals within the theater provide channels of communication between the COSCOM and TAACOM materiel management centers and the sources of supply in CONUS. Support managers transmit information to the commander's headquarters in response to his queries. These data and management information links bring CONUS-based managers and technicians close to the pulse of the battlefield. They provide a sharpened perception of weapon system requirements, and a quick response to the combat commander's needs.

CONSERVATION AND SUCCESS IN BATTLE

In the last three wars, our Army was not fully committed until US industry was in heavy production of military equipment and large quantities of war materiel were readily available. We cannot expect this luxury in the future. We will fight for many months with what we have at the start of the war. Supply priority will go to weapons ammunition, POL, and repair parts. Austerity will be the rule. *Elaborate construction and other support for "standard of living" has no place on the battlefield we see before us.*

SUPPLY PRIORITY GOES TO AMMUNITION, POL, AND REPAIR PARTS

Every commander at every level—General, Colonel, and Captain—must conserve resources carefully to sustain our combat force. Ammunition and POL must not be wasted. Weapon systems must be taken care of and maintained by the operating troops and their support elements. Equipment damaged in the battle must be recovered, repaired, and used again.

Whatever indigenous resources exist in the area must be obtained and used to support our combat force. If available, POL, food, and other supplies can be procured locally. Facilities normally used for civilian purposes can be obtained for support of the war effort. Civilian transportation of all kinds must be used to reduce our requirement for military transport. In secure rear areas, local hire civilians will be used to the maximum to reduce our requirement for military personnel.

For success in battle, fighting with what we have, conservation of our limited manpower and combat equipment is absolutely essential.

CHAPTER 13

Operations Within NATO

OVERVIEW

THE NATO ALLIANCE links together 15 nations in a combined effort to insure the security and freedom of its members. Article 5 of the North Atlantic Treaty states that: ***"The parties agree that an armed attack against one or more of them in Europe or North America shall be considered as an attack against them all . . ."*** The principal military commands of NATO are **Allied Command Europe (ACE), Allied Command Atlantic (ACLANT)** and **Allied Command Channel (ACCHAN).** ACE is responsible for the defense of all NATO territory in Europe except Britain, France, Iceland, and Portugal. In the Central Region of ACE, forces are provided by the United States, the Federal Republic of Germany, the United Kingdom, the Netherlands, Belgium, Luxemburg, and Canada. In the Southern Region, forces from the United States are joined by those from Italy, Turkey, The United Kingdom, Portugal, and Greece. The Northern Region includes military forces from Germany, Norway, and Denmark. These national forces may operate outside their own territory; however, each NATO nation retains sovereignty within its territorial boundaries and controls political, civil, and economic activity.

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SACEUR
SHAPE — BELGIUM

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COMMANDER-IN-CHIEF ALLIED FORCES NORTHERN EUROPE
CINCNORTH
KOLSAAS, NORWAY

COMMANDER U.K. AIR DEFENSE REGION
COMUKADR
HIGH WYCOMBE, ENGLAND

COMMANDER-IN-CHIEF ALLIED FORCES CENTRAL EUROPE
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COMMANDER ACE MOBILE FORCE
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VERONA, ITALY

COMMANDER ALLIED LAND FORCES SOUTHEAST EUROPE
COMLANDSOUTHEAST
IZMIR, TURKEY

COMMANDER 4TH ALLIED TACTICAL AIR FORCE
COMFOURATAF
RAMSTEIN, GERMANY

COMMANDER NAVAL STRIKING & SUPPORT FORCES SOUTHERN EUROPE
COMSTRIKFORSOUTH
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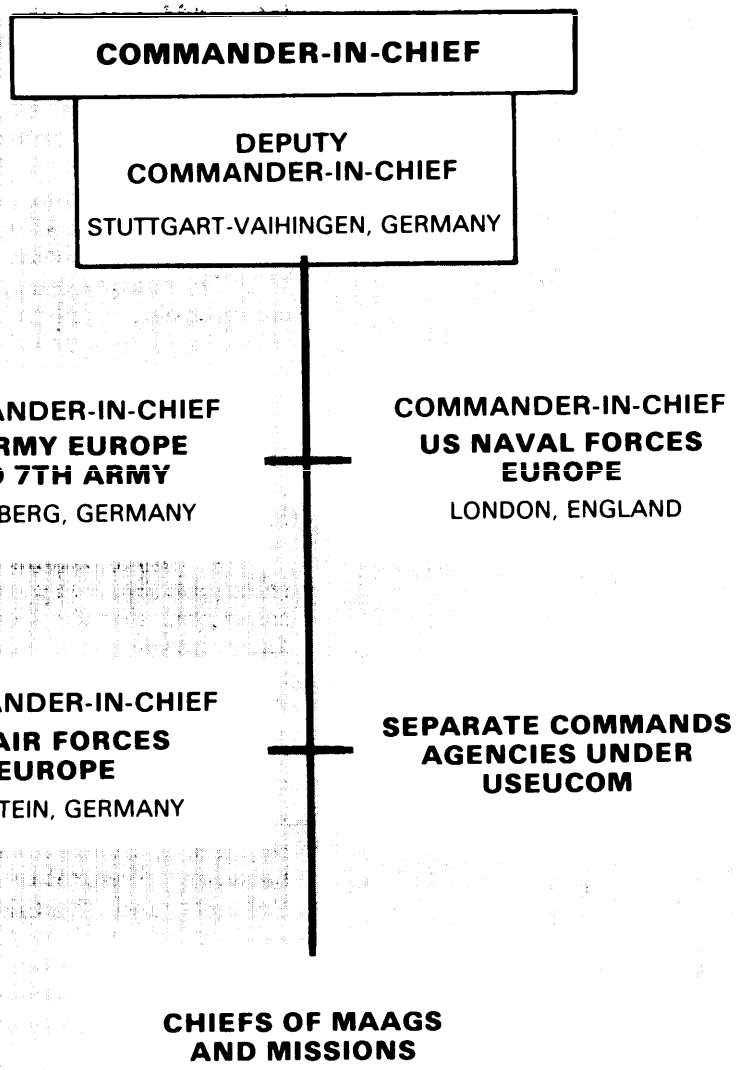
■ **TRI-SERVICE COMMANDS COMPRISING ARMY, NAVY AND AIR FORCES**

● **NATIONAL COMMAND IN PEACETIME, ALLIED COMMAND IN WARTIME**

★ **CINCNORTH - DIRECTLY COMMANDS ALL THE AIR DEFENSE FORCES**

ACE has a single supreme commander of military forces who reports to the Military Committee of NATO. He exercises operational command over subordinate elements, which are also commanded by NATO commanders.

UNITED STATES EUROPEAN COMMAND



The United States European Command (USEUCOM) is the senior US military headquarters in Europe. USEUCOM develops plans for general war in Europe to support NATO's strategy of flexible response. The command exercises operational control over component forces assigned by the Joint Chiefs of Staff.

For contingency operations, USEUCOM maintains small, specially-tailored force packages for rapid deployment throughout the command. These include Air Force fighter squadrons, Army airborne units, and Marine landing teams.

Upon alert of impending hostilities, national combat and combat support forces are phased into NATO commands. Operational command of these forces is relinquished by national commands so that when hostilities occur or are imminent, the NATO commander, not the national commander, employs the forces. A similar transfer of authority occurs for post D-day augmentation forces; national commands prepare the units for combat and then transfer operational command to NATO. However, each nation retains responsibility to provide combat service support to their forces.

The implications of this command relationship vary with the echelon of command. For the General, it is a matter of daily importance. Some US Generals are commanders of large NATO organizations. Whether he is a NATO commander or not, each will be concerned with adherence to NATO procedures, coordination with allied forces (whether combat, combat support, or combat service support), and with the actions required to insure a useful meshing of effort between dissimilar organizations. The Colonels and Captains will be concerned with certain routine NATO procedures and, though not as often as the General, the coordination of foreign and US forces in operations and support.

An important consideration is that there will be differences between the various forces which encompass more than the easily recognized variation in language. They will include variations in doctrine, organization, training, logistics, food, and customs as well. The commander must recognize these and take them into account in his planning.

Some of these differences are being eliminated. **Standardization Agreements (STANAGS)** establish procedures and guidelines for the employment and coordination of all arms in land combat. *(A list of STANAGS relevant to land force tactical doctrine is at Appendix A.)* As STANAGS are adopted, they become a part of the various nations' unilateral procedures. Allied Publications (APs) provide NATO allies information pertaining to tactics, intelligence, training, doctrine, security rules, exercise procedures, technical and administrative matters. Rationalization efforts (reducing duplication of effort, particularly in the development of expensive weapon systems; establishing common doctrine; improving interoperability) are in progress. They will, in the long term, facilitate combined operations.

The immediate goal is interoperability in both equipment and methods of operations which will allow multinational forces to work smoothly and effectively together. **Allied Tactical Publications (ATP)** establish a basis for a common understanding of doctrine between nations and provide NATO commanders with guiding principles. Currently available ATP include *Land Force Tactical Doctrine* and *Tactical Air Doctrine.*

FACTORS AFFECTING NATO OPERATIONS

In Europe, the ground forces of both the Warsaw Pact and NATO (which are primarily armored and mechanized) are supported by modern, highly capable air forces. Warsaw Pact forces are equipped with standardized weapons and have a common doctrine; NATO elements are much more diverse. Areas requiring particular attention are:

1. **Command and Control Relationships**
2. **Field Standing Operating Procedures**
3. **Requirements for Coordination**
4. **Liaison Teams**
5. **Language**
6. **Organization for Combat**
7. **Combat Plans and Orders**
8. **Fire Support Relationships**
9. **Communications**
10. **Intelligence**
11. **Combat Service Support**
12. **German Territorial Forces**
13. **Environmental Considerations**

1

Command and Control Relationships

Combat and combat support forces from various national forces are placed under NATO command. The usual command relationship established is *operational command,* with logistical responsibility remaining with the nation concerned. At corps level, and below, most national forces will be found in a unilateral organization. The cross-attachment of different national maneuver units is seldom practical below brigade level. As noted earlier, host nations retain sovereignty in their territory. Host nations also have overall responsibility for rear area protection in their national territory. US elements in the area behind the corps rear boundary are responsible for self-protection and coordination with appropriate host nation authorities.

POSITIVE CONTROL OF NUCLEAR WARHEADS ALWAYS STAYS WITH THE US

The NATO strategy of flexible response requires the capability to employ nuclear options at various levels of conflict. NATO forces, therefore, should be capable of operating satisfactorily in combined conventional-nuclear operations. Command, control, and communications support is essential to deterrence and to employment of theater nuclear forces. The wartime operational command of the forces, delivery vehicles, and units, will be exercised by the military command structure of NATO. The US, however, maintains positive control of the nuclear warheads in peace and war. There must be continuing command and control procedures, to include efforts to upgrade situation reporting and message handling procedures, to enhance the overall flexible response capability.

2

Field Standing Operating Procedures (FSOP)

Prearranged Field Standing Operating Procedures and lists of commonly used terms in the language of the nations concerned are necessary to effective operations. These are developed in multinational training

exercises in peacetime, and should become a part of the standard procedures for NATO units.

3 *Requirements for Coordination*

In addition to the close command relationships mentioned above, certain aspects of coordination require special attention. Boundaries are always sought out as weak points. Boundaries between forces of different nations are particularly vulnerable and require detailed liaison and close coordination of all allied actions in areas adjacent to the boundary. Operational procedures must be established and implemented by national commanders to insure mutually supporting and responsive tactical air, army aviation, and other fire support. Planning is required for contingencies which include movement of boundaries and the frequent restructuring of forces to support an adjusted mutual boundary.

RECOGNITION BECOMES EXTREMELY IMPORTANT

In a multinational operation, recognition of forces, both friendly and enemy, takes on increased importance. *Standard procedures for battlefield recognition must be developed and exercised frequently.* The procedures should be designed for common equipment, such as flares and flashlights.

4 *Liaison Teams*

Liaison teams are of increased importance in a multinational structure. They are required in many situations in which they would not be necessary in unilateral operations. *Team members should be bilingual, and must be knowledgeable of organization, procedures and equipment of both the US forces and the other NATO countries with which they will be operating.* Teams should be formed, trained, and

equipped prior to hostilities. Communication equipment must permit operations in both the allied and US nets. If the US or allied team's standard equipment will not suffice, US forces should be prepared to provide communication equipment to, or receive equipment from the allied force.

5 *Language*

US forces must have a capability for communication in the language of the forces with which they will operate. Besides skilled interpreter-translators in the positions which are usually required (e.g., intell, liaison), battalion and higher commanders will require enough language capability to communicate with adjacent and supporting commanders. Key word lists (e.g., for artillery commands) printed in multiple languages will assist in alleviating the communication problem. All personnel should receive training in the basics of communication in the allied language, recognition of road signs, directions, and methods of effecting simple coordination.

6 *Organization for Combat*

A thorough understanding of concepts of the organization, procedures, and employment of national tactical units is required. As an example, commanders must be aware of the differences in the capabilities of allied weapon systems, which have a marked impact on how they must be disposed and their plan of maneuver. Other national forces may consider a "brigade base" concept, similar to the US separate brigade, as the normal method of operation. Such brigades may have combat support and combat service support elements as part of their normal structure. When a US brigade is under operational command of such an allied division, US combat support and combat service support must be provided from the US division or other supporting units to meet the US brigade requirements.

Seldom do we expect to cross-attach below brigade level. Placing battalions or smaller elements under the operational control of other national forces is possible, but *increases the coordination requirements,* particularly in the areas of liaison team requirements, communications, fire support, and logistic support.

7 *Combat Plans and Orders*

The NATO format for plans and orders is the same as the US Army five paragraph field order. However, differences in tactics, terminology, and graphics must be taken into account. In issuing orders to others and in preparing to execute orders from others, commanders must take particular care to *insure mutual understanding of required actions* through personal contact of commanders, use of interpreters and liaison teams. Also, great reliance should be placed on graphic displays, such as map overlays.

8 *Fire Support Relationships*

In NATO, fire support coordination techniques are generally in consonance with established US procedures. Advance planning and training reduce the time required for translation of terms when support is requested across national lines. *The reaction time for tactical air support and conventional, nuclear, or chemical fire support can be reduced through the use of preplanned fires.* Additional methods which will assist planners include liaison teams which possess a bilingual language capability, adherence to STANAGS, Field Standing Operating Procedures, and key word lists printed in multiple languages.

9 *Communications*

The degree of success achieved in multinational operations will depend on our ability to communicate with all allied forces

situated in our area of operation. Differences in equipment may create some difficulty, if the potential problem is not foreseen. For example, US radio secure voice equipment is not compatible with all allied radio equipment; some allied wire secure equipment is not compatible with US wire equipment. The use of agreed communications terms as directed in Allied Communication Pamphlets (ACP) will reduce transmission time and misunderstanding among allied forces. US personnel must be trained and ready to use these procedures, and if equipment is not compatible, to exchange the equipment necessary for effective communications.

10

Intelligence

Within the NATO military structure, the land warfare function of intelligence is dependent upon the support of national forces. Each allied nation has intelligence which is needed by major NATO commanders. Intelligence dissemination can best be achieved by providing NATO intelligence channels with a liaison element and an automated data processing support capability which will allow the liaison element to access Army component and national data bases. Provided with dedicated, secure communications facilities, the liaison element can furnish a timely response to NATO requirements. *Commanders at all levels must insure that their intelligence efforts are coordinated with their allies.* This relationship takes on particular significance when US commanders at any level share a common boundary with other national forces.

11

Combat Service Support

Each nation has the responsibility to assure combat service support to its forces, but efficiency and economy require maximum mutual support between nations. In the past, US forces have relied primarily on organic national support; however, greater reliance is now being placed on the highly developed European national support structure. This trend can be expected to continue, in both peace and war. Using host nation support allows a reduction in US support elements, while maintaining required support of combat forces. *US elements must be prepared to coordinate and mutually plan to obtain common supply items from allied units or to provide items to them.* Each nation is responsible for providing support of its unique items to elements cross-attached to other nations.

12

German Territorial Forces

The US combat service support commander is responsible for coordinating his activities with the host nation. In the Central Region of Germany, for which most of our forces are designated, the German Territorial Forces provide host nation support to US and other NATO allies. The Territorial Forces are divided into three commands and their NATO responsibility begins at the corps rear boundary and extends to the national boundary. Their primary missions include:

- **To insure logistical support of NATO forces within the scope of national agreements.**
- **To support NATO forces by the provision of local resources.**
- **To insure cooperation between NATO forces and civil defense authorities.**
- **Responsibility for:**
  - *Security*
  - *Damage Control*
  - *Military movement control*
  - *NBC reporting and warning*
  - *Engineer support*

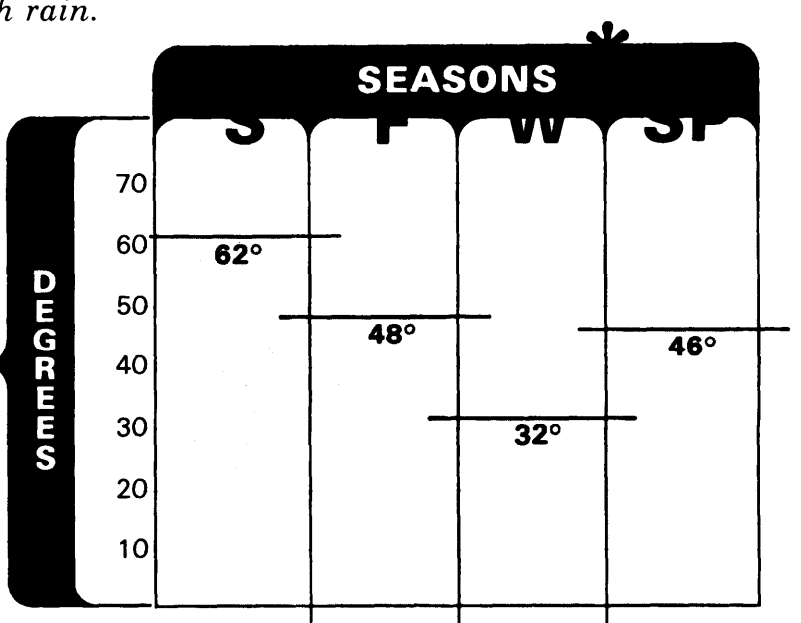
13

Environmental Considerations

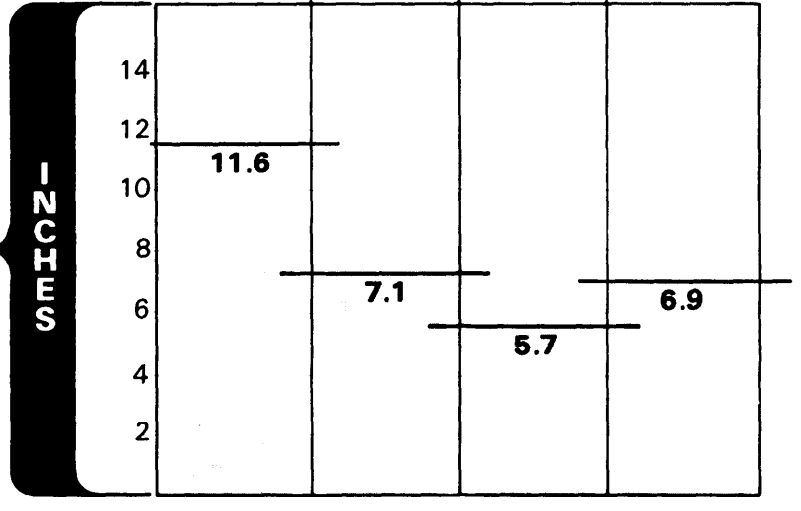
US commanders and troops must be prepared to fight in the unique environment of the central NATO front—generally the environment of West Germany.

The climate of Germany is generally cold and wet. Although there are sunny warm days in summer and snow conditions in winter, the predominate climate is a low overcast with rain.

This chart shows the mean temperatures for the four seasons in Germany. While the temperature means do not appear to be particularly severe, US forces must be well equipped and trained to operate for extended periods in cold weather and snow.

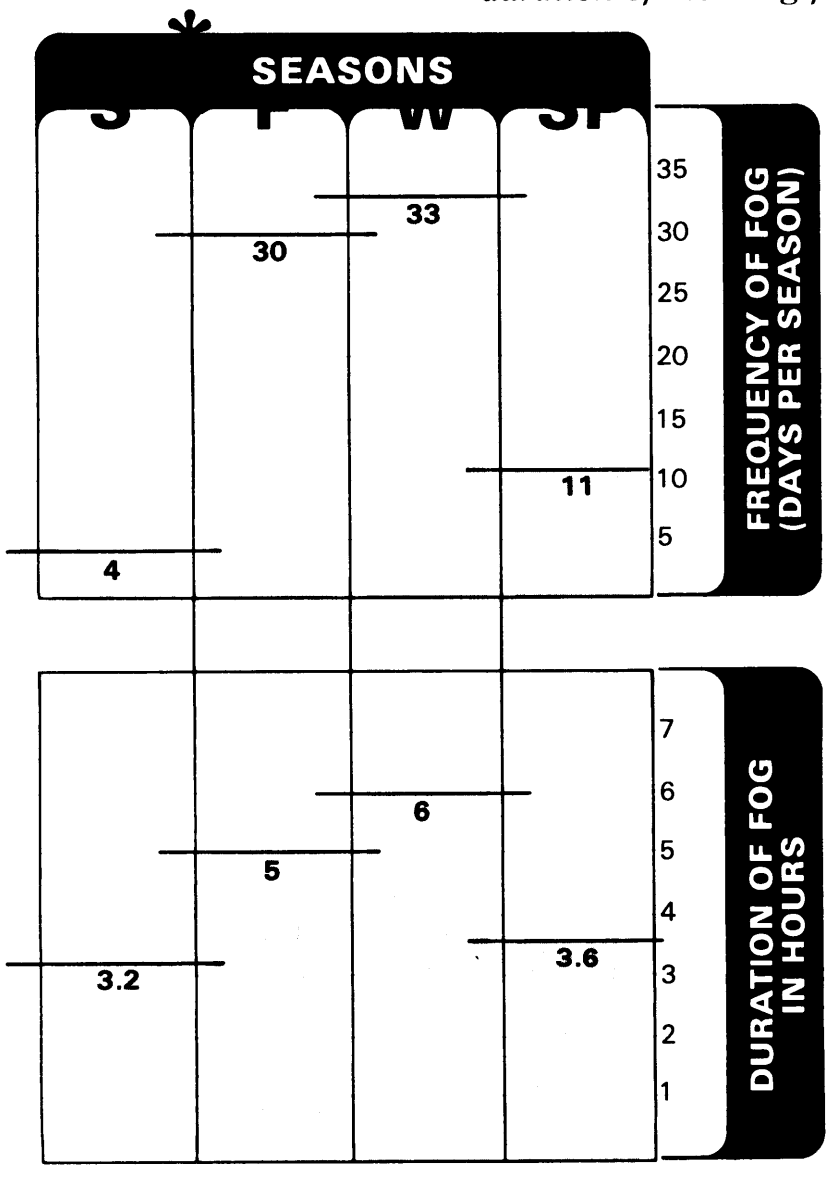


This chart shows the mean rainfall that can be expected in Germany. This is particularly significant in late winter and early spring when the snow begins to melt, the ground thaws, and spring rainfall occurs. During this period, cross-country wheeled vehicle trafficability will be seriously impaired.



* SUMMER 20 JUNE - 20 SEPTEMBER
FALL 21 SEPTEMBER - 20 DECEMBER
WINTER 21 DECEMBER - 19 MARCH
SPRING 20 MARCH - 19 JUNE

Fall, winter, and early spring are featured by frequent fog which lies heavily on the land and often does not lift until midday. Frequency and duration of morning fog are as follows:



Approximately 1 out of 3 mornings during the fall and winter, US forces will have less than 1 km visibility causing a significant reduction in the frequency of long range engagements.

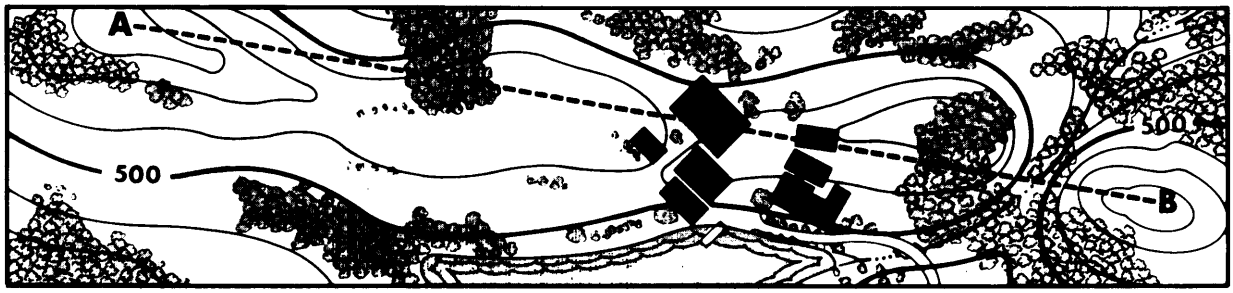
The cloud layer over Western Europe is typically low and scudding on westerly winds. The average ceilings (more than 50% cloud cover) expressed as a percentage for three month periods in West Germany are:

	MAR-MAY	JUN-AUG	SEP-NOV	DEC-FEB
NO CEILING	29.7%	33.9%	25.1%	15.7%
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1500-2000	3.9	2.4	4.0	5.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
500-1000	6.5	5.0	8.0	14.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AVERAGE	6.2	6.7	18.5	17.1

The incidence of ceilings less than 500 feet is markedly increased when coupled with fog as in this chart:

Due to the incidence of ceilings that are 1,000 feet or less, commanders can expect a one-third degradation in close air support missions during the December-February time frame.

The topography of Germany is fine grained compared to the areas in the US where most of our troops are trained. Germany is more like the Piedmont of Virginia and the countryside of New England. There are many hills, streams, small forests, and villages. It is not easy to find long-range fields of fire for tanks or ATGM. For example, line of sight can be thought of as being like this.

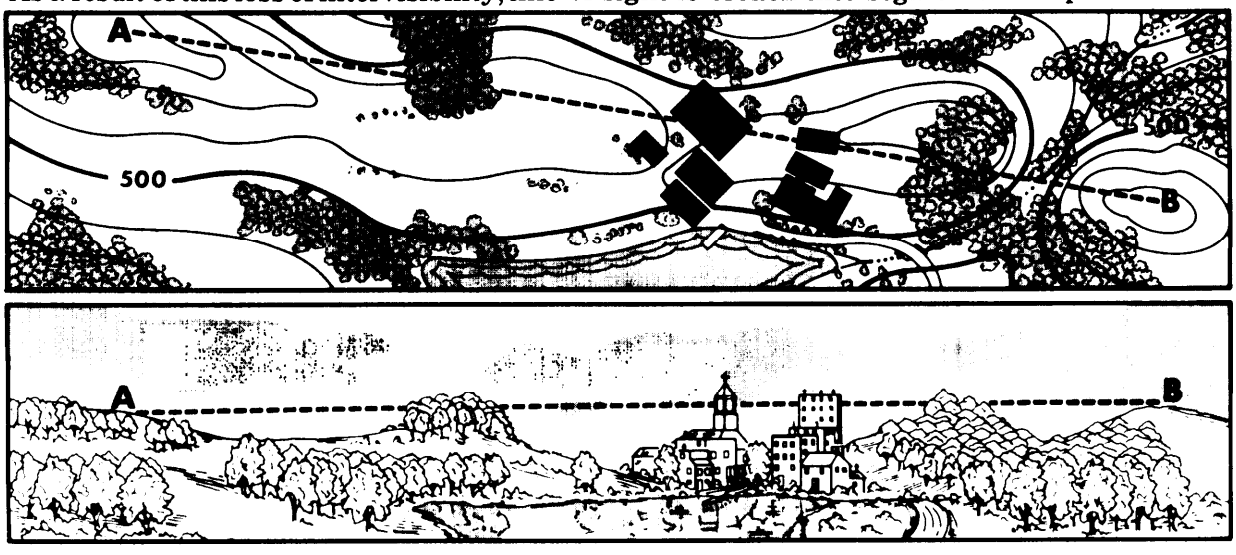


But, due to landforms (hills and valleys), vegetation, and manmade features, line of sight is interrupted as shown in this chart.

AVERAGE PERCENT OF LOSS OF INTERVISIBILITY BY CAUSE

AREAS	LANDFORM	VEGETATION	MAN-MADE FEATURES
FULDA GAP	**58%**	**25%**	**17%**
NORTH GERMAN PLAIN	**21%**	**78%**	**1%**

As a result of this loss of intervisibility, line of sight is broken into segments as depicted here.



This chart portrays the minimum segment lengths necessary to achieve a hit when firing an ATGM, given the target range and speed.

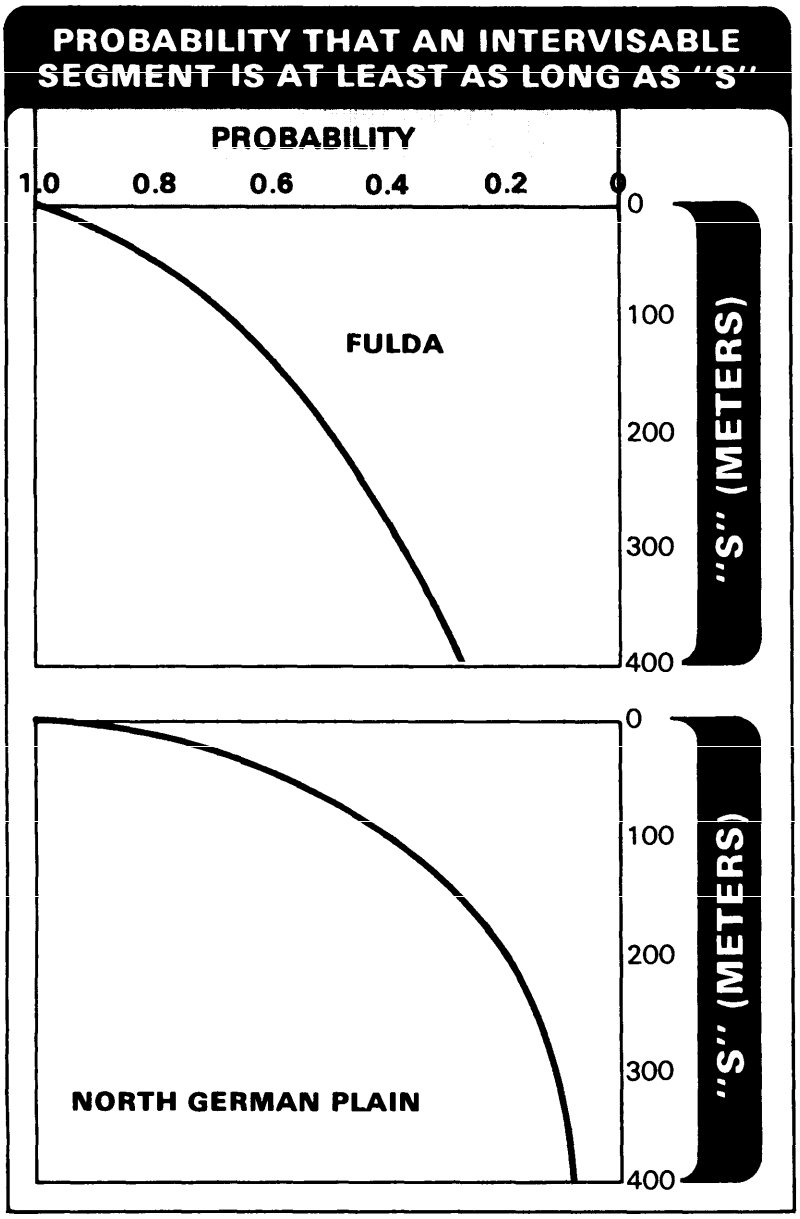
TYPICAL MINIMUM SEGMENT LENGTHS (METERS) FOR SUCCESSFUL ENGAGEMENTS

RANGE (METERS)	APPROX. MISSILE FLIGHT TIME (SECONDS)	TARGET SPEED (MPH)	10	20	30	40	60
1000	5	8	54	90	126	162	234
2000	10	4	36	54	72	90	126
		13	120	180	240	300	420
3000	15	8	90	126	162	198	270

SEGMENT LENGTH IN METERS

As an example, if an ATGM attacks a target at 2000 meters, the missile time of flight is 10 seconds. If the gunner acquires and fires in 10 seconds at a tank moving toward him at a rate of 8 mph, the tank must remain exposed for 72 meters to score a hit.

The probability that the tank will remain exposed the required length of time is shown here.



These curves show that the hills and forests in the American sector provide more exposure for attacking tanks than the flat land of the North German Plain where attacking tanks are more often screened from view by vegetation.

In the previous example, the tank had to remain exposed for 72 meters. In the Fulda region, the gunner would have a 73% chance of this occurring. ATGM training must take this into account. Gunners must practice acquiring and engaging targets that are

moving at different speeds over different terrain. They must be able to determine if the target will remain exposed for a sufficient distance to achieve a hit. This only portrays the intervisibility situation with regard to ATGM. *Tanks, due to higher muzzle velocity, have a much higher probability of the target remaining exposed for a sufficient distance and therefore a higher probability of hit.*

The landscape of Germany is steadily changing as population and industrialization grow. Manmade structures cover more and more of the countryside. There are hundreds of towns and cities of over 50,000 population, and increasingly the small villages are connected by continuous strip development along the interconnecting valleys. Cities and towns present continuous built-up areas covering hundreds of square kilometers, as around:

Munich	sq km	**310**
Nuremberg/Fürth	sq km	**247**
Stuttgart	sq km	**207**
Frankfurt/Mainz/Hanau	sq km	**560**
Heidelberg/Mannheim	sq km	**302**
The Ruhr	sq km	**1155**
Cologne/Bonn	sq km	**393**

The urbanization of Germany has a *major* impact on military operations (see Chapter 14). German buildings are sturdy brick, stone, and concrete. Buildings provide cover and concealment for troops. Villages provide natural strong points. Built-up areas restrict visibility and fields of fire. Buildings provide natural shelter and concealment for headquarters and support activities. *They also make target acquisition more difficult.*

Combat in Germany will automatically involve repeated, almost continuous battle for cities, towns, villages, and adjacent built-up areas. The total percent of built-up area by German state looks like this:

Bavaria	6.5%
Hesse	10.0%
Lower Saxony	9.5%
Baden-Württemberg	8.7%
Nordrhein-Westfalen	15.0%

To accomplish our NATO mission, US commanders must insure that their units are not only capable of the combat tasks for which they are designed, but that they are *trained in NATO procedures and are alert to the differences in the various armed forces which may affect combined operations.* Personnel at all levels must use common prearranged terminology, understand strengths and limitations of the forces with which they work, and adhere to NATO field standing operating procedures. They must also understand the environmental considerations as they apply to military operations. US forces employed elsewhere within NATO, or within any international alliance, must, of course, take similar considerations into account.

CHAPTER 14

Military Operations in Special Environments

INTRODUCTION

ALTHOUGH THE PRIMARY MISSION of the US Army is to prepare for the defense of NATO, it is entirely possible that it will find itself committed to battle elsewhere. This means that our Army must also be trained to fight in other environments.

CHAPTER

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The environments that have a strong effect on the conduct of military operations are:

- *Mountains*
- *Jungles*
- *Deserts*
- *Northern Regions*
- *Built-Up Areas*

The special manuals which cover operations in special environments are being revised and updated in accordance with the principles set forth in this manual.

MOUNTAINS

Mountainous terrain exists throughout the world from northern regions to the tropics. The Army must, therefore, maintain the capability to operate in this type of terrain. This capability is provided primarily by the infantry, airborne and airmobile divisions, and Army aviation units. The helicopter has revolutionized mountain warfare to the extent that military mountaineering skills are no longer necessary for the majority of the forces committed to mountain combat. Their mobility will come primarily from the helicopter and the boot, rather than the piton and the rope. Only small forces conducting Ranger-type patrols and raids will normally have recourse to military mountaineering skills. Thus, *light airmobile infantry will play the dominant role in mountain fighting.*

Environmental Effects. Mountainous terrain, as discussed here, is not the extremely high, severe alpine-type peaks, but rather the lower, more mature mountains typical of southern Italy or Korea. Thus, the effects of altitude on troops are not a major consideration in this environment. Mountainous terrain is usually characterized by one or more of the following: some exaggerated features, heavy woods or jungle, rocky crags, compartmentation, routes of communication limited in extent and of poor quality, degraded radio communications, and highly changeable weather conditions. Mountains may consist of an isolated peak, single ridges, or complex ranges extending for thousands of kilometers.

The environmental effects of mountain operations significantly influence the use of weapons and equipment. In general, the effect of fire is less than in normal terrain since mountains offer considerable natural cover such as rocks and cliffs. The use of overhead and long-range fires, however, can be greatly increased, due to the elevation and good observation afforded. This capability emphasizes the importance of occupying the heights in order to fire down on the enemy. The steepness of slopes, however, does limit grazing fire and causes a great amount of dead space. This gives added importance to weapons with a high angle of fire, such as

ENVIRONMENTAL INFLUENCE ON USE OF WEAPONS AND EQUIPMENT

- **EFFECT OF FIRE**
  Less than in normal terrain due to considerable natural cover.
- **OVERHEAD AND LONG-RANGE FIRES**
  Use greatly increased due to good elevation and observation.
- **GRAZING FIRES**
  Limited, due to steepness of slopes and increased dead space.
- **HIGH ANGLE FIRE**
  Increased use. Adds importance to field artillery, mortars, and grenade launchers.

field artillery, mortars, and grenade launchers. Due to the difficulties of movements in rugged mountain terrain, all equipment should be as light as possible, preferably air transportable.

Mobility in mountains is extremely difficult if only ground movement is considered. Highways usually run only along the valley floor; existing roads and trails are normally few and primitive; and cross-country movement, particularly across terrain compartments, is particularly arduous. The extensive use of the helicopter, however, can normally overcome these difficulties. Although subject to the limitations posed by the enemy air defense, weather, and density-altitude considerations, the helicopter is by far the principal vehicle for moving forces engaged in mountain operations.

Finally, mountain combat lacks the unity characteristic of combat in level or rolling terrain. The configuration of the terrain tends to give the battlefield a piecemeal character and induces more or less isolated conflicts which are difficult to control by higher commanders. The terrain also greatly amplifies the normal advantages of the defender. The dominant terrain provides the defender, while usually denying the attacker, excellent observation and firing positions. Man-made obstacles significantly increase the natural obstacle of the rugged mountainous terrain. The defender can more easily deceive the enemy as to his strength and dispositions. Since the defender normally has more time to develop lateral trails, he can usually shift forces on the ground more rapidly than the attacker. Delaying actions are particularly effective in the mountains and can be accomplished by a much smaller force than is ordinarily needed. These advantages combine to make the mountains an ideal place for defensive combat.

ADVANTAGES ARE OVERWHELMINGLY IN FAVOR OF THE DEFENDER

HOW TO FIGHT IN THE MOUNTAINS

The fundamental principles of the dynamics of the modern battlefield apply to combat in the mountains. The focal points

of mountain combat are the heights. The essence of mountain warfare is to *attempt always to fight from the top down.* A detailed discussion on how to fight in mountains is contained in **FM 90-6, Mountain Operations.**

Employment of Large Units. In rugged mountains there are limits to the employment of large forces: Deployment is greatly hindered and restricted. Frequently, adjacent units cannot provide mutual support. Rapid shifting of forces, except by helicopter, is often difficult. Small units, on the other hand, have many occasions for sudden and bold action. As in other special environments, *Generals must consider the capabilities of the forces committed to mountain operations.* While the normal infantry division is an appropriate force for operations in mountainous areas, some of its heavy equipment and heavy weapons may not be suitable for the terrain. The airborne and the airmobile divisions, however, because of their light equipment and training, are even better suited for mountain operations. It is the light infantry that will be the principal force and bear the brunt of mountain combat. Army aviation units should be committed to the maximum extent possible in support of the infantry to provide tactical mobility and to accomplish resupply and evacuation.

LIGHT INFANTRY IS THE PRINCIPAL FORCE

Direction of the Battle. The importance of gaining the heights and fighting down to the enemy must be impressed upon commanders at all levels, but it is particularly important for the brigade and battalion commanders who normally assign intermediate objectives, defensive positions, etc. Gun emplacements and observation posts on commanding heights can dominate the valley below. Friendly advances should, where possible, be made along ridges, although caution must be used not to fall into an ambush, nor invite observed artillery fire. *Movement through a valley, without security on the high ground, invites destruction.* Counterattacks, when launched down a descending slope, have the advantage of permitting more rapid movement. Even

IMPORTANCE OF FIGHTING FROM THE TOP DOWN MUST BE CONTINUALLY STRESSED

airmobile assaults that merely gain the heights to the flanks or rear of an enemy position can frequently cause the enemy to pull back from his forward positions. This concept of always striving to fight from the top down should permeate the entire force engaged in mountain combat.

Since mobility in mountain combat derives from the extensive use of helicopters, the Colonels must actively direct airmobile operations to quickly build up a favorable combat power ratio at the point of contact. While it is usually light infantry forces that are moved about the battlefield, there are also frequent occasions when available helicopter assets could be used to concentrate both direct and indirect fire weapons. When conducting airmobile operations to the flanks or rear of enemy positions, particular care must be exercised in the mountains to suppress or avoid enemy air defenses. Because of their normal emplacements on the heights and their good observation and fields of fire, machine guns and automatic small arms weapons pose a threat to helicopter movement. Good intelligence, careful planning, and suppression of enemy positions are required. Close air support is the most effective way to bring heavy firepower to bear.

Fighting the Battle. Since decentralization of control is forced upon the commanders of large units by the piecemeal character of the battle, the initiative, resourcefulness, and judgment of small unit commanders will be taxed to the utmost. *Small unit commanders must expect to operate independently or semi-independently.* The degree to which the Captain has trained his force in the techniques of mountain combat and physically conditioned them for operating in the rugged mountain terrain will be the measure of his success.

TRAINING AND PHYSICAL CONDITIONING WILL BE AN IMPORTANT FACTOR IN ASSURING SUCCESS

Because of the increased advantages of the defender in the mountains, the small unit commander must often emphasize the use of surprise in the attack. Frontal assaults in daylight are normally prohibitively costly. Helicopter assaults on heights which dominate the defender's positions are

normally the most advantageous. If helicopters are unavailable, the envelopment conducted by a stealthy approach at night and without preparatory fires usually offers the best chance of success. Conversely, in the defense, small unit leaders must emphasize security measures to prevent being surprised from stealthy or unexpected enemy moves.

JUNGLES

The jungle regions of Asia, Africa, and the Western Hemisphere are potential battlefields. Past wars have provided valuable experience for the US Army in the conduct of jungle operations. Infantry, particularly airmobile infantry, artillery, and light armored forces are valuable assets in jungle warfare. *Close air support is essential.*

Environmental Effects. Jungles are areas located in the humid tropics wherein the land is covered with such dense vegetation that it impedes military operations and tends to obstruct military lines of communication. Types of jungles vary from tropical rain forests and secondary growth forests to swamps and tropical savannas. The dominating features of jungle areas are thick vegetation, high and constant temperature, heavy rainfall and humidity. Seasonal variations in rainfall have highly significant impact on military operations.

Military operations in jungles are affected primarily by two factors—***climate*** and ***vegetation.*** These two factors combine to restrict movement, observation, fields of fire, communications, battlefield surveillance, and target acquisition. However, these factors favor military operations by providing excellent cover and concealment in jungle terrain.

DISEASE CAN QUICKLY DECIMATE TROOP STRENGTH AND EFFECTIVENESS

The jungle climate contains numerous health hazards for troops, particularly unacclimatized soldiers who have little or no resistance to many of the endemic diseases. Thus, an increased disease rate from diarrheal diseases and fungus infections may occur. Protection is required against mosquitoes, flies, fleas, leeches, and other parasites. If these health hazards are not countered, *more troops may become*

hospitalized during jungle operations because of disease than because of wounds. The environmental effect of the climate and dense vegetation dictate that all equipment accompanying combat forces must be rugged, lightweight, and man-portable. The fighting load of the soldier should be kept under 40 pounds. All weapons and equipment will require daily maintenance in a tropical climate. Because of the normal scarcity of road and rail networks, combat service support and engineer support requirements will be increased.

According to the type of vegetation, ground observation in jungle areas can vary from a few feet to 20 or 30 meters. Aerial observation is often ineffective due to the jungle canopy and, during the rainy season, due to heavy rain, low hanging clouds, fog and haze. The vegetation also severely degrades fields of fire in jungle areas except along trails and roads. The dense vegetation does provide, however, excellent concealment. While camouflage is enhanced in the jungle, it must be remembered that vegetation does not protect the soldier from enemy fire. Troops must not mistake concealment for cover. For example, in most jungle areas, trees will not provide extensive coverage. Cover in jungle areas is provided by surface irregularities, such as ravines, gullies and large rocks.

Finally, the jungle environment is a serious obstacle to movement. Dense vegetation, gullies, steep hills and cliffs, rivers, unfordable streams, and swamps hinder movement. Vehicular movement is normally canalized, impeded, or impossible. Cross-country movement by foot is slow and difficult. *High mobility in jungle areas is attained most effectively through movement by air.*

HOW TO FIGHT IN JUNGLES

The battlefield dynamics and the fundamentals of offensive and defensive operations discussed in previous chapters are applicable, with modifications, to meet the conditions of the jungle environment. A detailed discussion of how to fight in jungles is found in **FM 90-5, Jungle Operations.**

Employment of Large Units. The first and perhaps most important task of the Generals who employ large units in jungle operations is to configure the force properly. The force must be composed of the proper mix of units and weapons, properly trained and properly equipped for jungle operations. Infantry, because of its versatility, mobility, and capability to conduct operations in all types of terrain and climate, will play the dominant role. Other combat and combat support units are used primarily to support the operations of infantry elements. Infantry forces must be lightly equipped to enhance their mobility through the jungle by foot, as well as to enhance their mobility over the jungle by air. Army aviation assets are, therefore, crucial to a successful jungle campaign. Armor units, designed to support infantry operations, can also be used in the jungle particularly during dry seasons and year-round to provide security for lines of communications. Some heavy infantry weapons, such as TOW, Dragon, 90mm and 106mm Recoilless Rifles, will be of little use in the jungles. The use of lighter weapons such as the 5.56mm rifle, the 7.62mm machinegun, the 40mm grenade launcher, the M72 LAW, and mines and booby traps should be emphasized. Where visibility is limited and fields of fire are restricted, small arms predominate and thus infantry units have the greatest utility.

As in other environments, it is primarily the General's responsibility to "see" the battlefield. However, due to the restricted jungle terrain and the scarcity of intelligence gathering assets below division level, this responsibility is even more important in the jungle than in other environments. Because of the environmental effect on normal battlefield surveillance efforts, emphasis must be placed on patrolling, particularly long-range patrols. In addition to patrols, the commander must use all source intelligence—for both maneuver and targeting.

Since the principle of achieving favorable force ratios at the point of contact is applicable to jungle warfare, the Generals must play a role in achieving the necessary concentration of combat power. This is done

through the proper control and allocation of mobility assets. These assets include airmobile, water, and ground transport. Since combat actions are likely to be short and violent, the General must insure that all mobility assets are immediately responsive to move troops rapidly to the area of contact. Additionally, Generals concentrate combat power by shifting available air and field artillery assets to the engaged unit. The usual technique is to employ infantry forces to find the enemy, pin him down, and cut off his escape; then, to concentrate field artillery and air firepower on the enemy to destroy him.

Generals must give overall directions to the jungle campaign. They should employ troops in those areas and against those objectives that give promise of success. For example, aimless wanderings through the jungle in search of an elusive enemy is often fruitless, whereas an attack against his bases of supply are often quite profitable if they are known and accessible.

Directing the Battle. Unlike battles in the wide expanses of the desert, jungle battles are normally very decentralized. Since it is difficult for the Colonels to be present at the scene of each engagement and since visibility is so restricted by the dense vegetation, Colonels are usually forced to depend on accurate and timely reports to properly direct the battle.

HELICOPTER TRANSPORTATION SHOULD BE USED FOR INFANTRY UNITS WHENEVER POSSIBLE

The fundamental task of the Colonels is to direct the concentration of combat power at the point where it is needed as rapidly as possible. Normally the quickest response available to the Colonels is the application of air strikes and artillery fires to support the engaged unit. Since the commitment of additional ground forces by foot is extremely slow and arduous in the jungle, infantry units must be committed by helicopter whenever possible. It may be possible to commit some forces rapidly by ground vehicles or water transport. Armored units may also be committed in support of the infantry by road or, where possible, through the jungle. Normally, as a favorable force ratio is built up, the Colonels employ committed units to the flanks and rear of the engaged enemy.

Finally, Colonels influence the battle by insuring effective combat service support. The Colonels must weigh the difficulty of resupplying troops in the jungle against the amount of supplies required to be carried by the force in order to insure that proper trade-offs are made. Units should be as self-sufficient as possible, yet not overburdened by the weight of their supplies. Helicopters or tactical airlift must be carefully husbanded for the resupply effort. Resupply convoys should be protected and accompanied by security elements.

Fighting the Battle. Battles in the jungle are characterized by:

- **Restricted maneuver**
- **Slow tempo of operation**
- **Close combat**
- **Extremely limited visibility**
- **Difficulty in providing logistical support**

Jungle engagements are most often fought by platoons and companies rather than battalions and brigades. Ambushes, patrols, and raids are types of combat operations particularly suited to the jungle environment.

Because of the ease with which small units can be surprised and engaged in the dense jungle vegetation, Captains must pay particular attention to the security of their units. Security measures are intensified because of reduced observation, difficulties of control, communications, and movement. *The use of OP/LPs to attain all-round security is essential.* Perimeter defensive positions are organized and closely linked for mutual support. Trip wires, mines, flares, and remote sensors give early warning of the enemy's approach. Units advance so that enemy contact is made with the smallest portion of that force. Captains must maneuver their units so that the entire unit is never caught in the kill zone of an enemy ambush.

AMBUSH . . . THE MOST IMPORTANT TYPE OF ACTION IN JUNGLE COMBAT

Captains must be masters of the ambush. In no other type of military action is the ambush more important, more effective, or more frequently employed than in jungle combat. The ambush takes maximum advantage of the principles of concealment, surprise, and offensive action to reduce the enemy's combat effectiveness when they are on the move or temporarily halted.

The Captain is responsible for training his men to move, live, and operate with complete ease in the jungle environment. This high level of individual training is particularly important when conducting patrols. While patrolling is important in all types of warfare, it has increased importance under jungle conditions. Many types of patrols, such as long-range reconnaissance patrols or combat (raid) patrols, will require deep penetrations into the jungle. The successful accomplishment of these missions will depend on the degree of individual training, physical endurance of the men, and the dynamic leadership of the Captains and other small unit leaders.

DESERTS

Many desert areas of the world are potentially vital to the national interests of the United States. For a wide variety of factors—strategic location, natural resources, assistance to an ally, deterrence of aggression, etc.—the US Army may be called upon to fight in desert regions. War in the desert is more suitable to armored and mechanized infantry forces; however, airmobile forces can be employed to good advantage. For the initial lodgement, airborne forces are valuable.

Environmental Effects. Deserts are semiarid and arid regions containing a wide variety of soils in varying relief. Deserts characteristically exhibit frequent environmental extremes. Temperatures often range from 30-130 degrees. Clear days with unequaled visibility and flight conditions quickly change to raging

sandstorms that can halt all military operations. Long periods of drought are interrupted by sudden rains bringing flash floods and mud but little relief from water shortages. Large areas of generally excellent trafficability are interspersed by insurmountable mountains, dunes, impassable ravines, bogs, and sand seas.

Those desert areas where there is a general absence of pronounced terrain features have a significant effect on military operations. Generally, large forces are not canalized by the terrain and, therefore, large scale use of mines and obstacles is required. Key terrain in the classic sense loses its importance to smaller units. Although a scarcity of large terrain features decreases the available cover, small indentions and wrinkles in the ground do provide cover for small units and individual weapons. Every effort must be made to capitalize on existing cover. The generally easy observation and long fields of fire make undetected advances and withdrawals extremely difficult.

THE USE OF DECEPTION IS A PRIMARY MEANS OF ATTAINING SUCCESS

Deception measures of all types (e.g. feints, ruses, decoy equipment, etc.) become mandatory for success. Movement at night or during sandstorms while maintaining strict communication security assumes enormous importance in order to conceal intentions. Engagements are often fought at long ranges, thus placing a premium on accurate gunnery at maximum range. Finally, the scarcity of prominent terrain features severely increases the problem of land navigation. Dead-reckoning techniques must be used.

Because of the sparse vegetation, concealment in the desert is more difficult than in many other environments. Concealment, however, is not only possible, it is *absolutely necessary*. The proper use of camouflage nets, pattern and mud painting, covering of reflective surfaces, and other techniques are necessary to insure survivability on the desert battlefield.

The desert environment has a debilitating effect on troops who have not been properly acclimated or trained. Continued exposure to the sun's rays causes profuse sweating, sunburn, dehydration, cramps, heat

exhaustion, and even heat stroke. Proper field sanitation and personal hygiene must be emphasized by commanders to prevent dysentery and other diseases. The psychological impact of the environment induces mental fatigue, impaired perception and depression which, coupled with pressures of combat, can overwhelm the soldier and render him ineffective. Acclimation and proper training can defeat these environmental effects.

The desert has an even greater detrimental effect on machines. Dust and sand can be as deadly to our vehicles as enemy fire. Fuel, lubricants, and intake air are easily contaminated, resulting in ruined engines and eroded components. Intense command supervision is required to insure continuous availability of these three precious commodities—clean air, fuel and lubricants. Vehicle cooling and electrical systems are vulnerable to desert extremes of temperature. Tracks, tires, and suspension system suffer a great deal of abuse in the desert. Sand and rocks literally grind away rubber tracks, while thorns repeatedly puncture tires. Thus, *a larger supply of spare parts is required in the desert than in more moderate environments.* The intense desert heat can quickly cause communication equipment to overheat and malfunction. Proper operation of equipment, as well as proper preventive maintenance, are required to insure effective communications.

CLEAN AIR, FUEL AND LUBRICANTS ARE ESSENTIAL TO VEHICLE OPERATION

HOW TO FIGHT IN THE DESERT

In desert warfare, the battlefield dynamics and the fundamentals of offensive and defensive operations previously discussed are applicable. Certain fundamentals, however, require emphasis or modification for success in the desert. These are discussed here. A detailed discussion on how to fight in deserts is contained in **FM 90-3, Desert Operations.**

Employment of Large Units. It is the responsibility of the Generals to insure that large units committed to desert operations possess the most effective mix of weapons systems. *Only mobile forces can play an important role.* Freedom of maneuver and the vastness of these regions favor a fluid type of

warfare. Thus, armored/mechanized, and airmobile forces must constitute the bulk of the fighting forces. The value of foot mobile units is generally limited to the static defense of key positions and installations. Air power, to an even greater degree than in other environments, is crucial to winning the land battle. Conversely, air defense is vital to preserve our freedom of maneuver.

The requirement for Generals to disperse their forces and then rapidly concentrate is more urgent in the desert than perhaps any other environment. Because of the scarcity of cover and concealment, forces must be dispersed over a broad front and in great depth. Yet, the requirement for favorable force ratios at the point of engagement, as discussed in previous chapters, continues to exist. The offense in the desert most often takes the form of wide envelopments and turning movements instead of penetrations. In the defense, forces must be equally mobile and responsive to rapidly concentrate against the enemy's attack. To achieve this successful concentration of forces in the desert, Generals must be particularly sensitive to the following two requisites.

First, in the open, barren expanses of the desert, Generals must constantly insure the operational security of their forces. For example, dust and diesel plume signatures must be taken into account. Communications security, the use of radio listening silence, and the use of wire, whenever possible, must be strictly enforced. Lines of communications must be secured. Strong air defense forces must be deployed to protect forces, particularly when moving. In short, those principles of security applicable to any other battlefield take on added importance in the desert.

Second, because of the difficulty of maintaining air-tight operational security, Generals must undertake active measures to deceive the enemy. Feints and ruses through such strategems as dummy equipment, notional radio communications, and false dust signatures provide opportunities for deceiving the enemy as to our true intentions or dispositions. *Effective deception and security are indispensible conditions for successful concentration of forces on the desert battlefield.*

Direction of the Battle. Because battles in the desert tend to be less decentralized than in other environments, the Colonels have a more personal and direct role in supervising and directing the battle. Leading from the front rather than from command posts to the rear, they are in excellent position to sense the tide of battle. They must seize opportunities to exploit enemy weaknesses as soon as they become apparent. Indecisive delays can cause fleeting opportunities to be lost.

Brigade and battalion commanders will often personally coordinate the interactions of tanks, mechanized infantry, and field artillery. Thus, pure tank and mechanized infantry companies and even battalions will often be retained under battalion and brigade commanders. However, when companies or battalions are required to be committed to action outside of the zone of the battalion or brigade commander's personal influence, they must be suitably cross-reinforced to form effective combined arms teams.

In desert battle, because of the open nature of the terrain and the more centralized control of the battle, Colonels become deeply involved in the contest of suppression and counter-suppression. Enemy ATGM and air defense weapons are the principal targets for suppression by indirect fires.

Since in mobile desert warfare everything depends on the proper functioning of vehicles and weapons, Colonels must pay particular attention to the maintenance of continuous and adequate combat service support. Units should be organized and equipped to sustain themselves for 72 hours without major resupply. Since the security of a line of communication (LOC) is particularly difficult, traffic should be kept to a bare minimum and carefully regulated. Vehicles moving along open lines of communication are particularly vulnerable to air attack. This vulnerability, therefore, demands strong air defenses and, as far as possible, only night movement along LOC.

Fighting the Battle. Perhaps the most important characteristic of small units in winning the desert battle is the ability to hit accurately at extremely long ranges. This capability, particularly for tank and antitank weapons, is often the decisive edge needed for victory. Captains and all small unit leaders are responsible for training gunners to achieve the maximum results from their weapon systems.

Since the very survival of units in the desert depends on their ability to avoid detection by air or ground observation, emphasis on cover and concealment is crucial. Whether fighting in the offense or the defense, Captains must force their units to take advantage of the small folds and wrinkles of the seemingly featureless desert terrain. When units must cross open areas to accomplish their missions, they must move at night or use smoke in large quantities as well as fire suppression.

As soon as time permits, fighting positions must be dug for dismounted infantry and hull down firing positions scooped out for tanks and other vehicles. Additionally, *personnel and vehicular camouflage must be an integral part of every individual and unit endeavor.*

Captains will have to orchestrate the teamwork required between overwatching and maneuvering forces. They must insure that suppressive fires from the direct fire weapons are accurate, timely, and effective. Particular emphasis is given to the suppression of enemy ATGM.

Finally, all small unit leaders from company commander to vehicle commander must personally supervise and strictly enforce proper preventive maintenance practices. Without proper maintenance, armored and mechanized forces in the desert cannot operate.

NORTHERN REGIONS

The northern regions, including the Arctic and sub-arctic, comprise about 45 percent of the North American continent and 65 percent of the Eurasian land mass. This area has potential importance to United States national interests. The US Army must, therefore, maintain the capability to conduct military operations in the environment. However, the probability of large scale combat operations under extreme arctic conditions is unlikely. In arctic regions such as the polar ice cap, for example, so many resources are needed for the survival of the force that little remains to accomplish anything militarily useful. Therefore, the likelihood of large forces being committed to such an extreme environment is small. The Army, however, must be able to operate air defense forces in the Arctic and, as necessary, airmobile elements for relief, resupply, reconnaissance, and surveillance.

It is quite possible, however, that the US Army could be called upon to commit large numbers of troops to combat operations in the northern, sub-arctic regions of Europe, Asia, or North America. This discussion, therefore, focuses on these sub-arctic northern regions.

Environmental Effects. Northern regions are characterized by extreme cold and deep snow during the winter months. Seasonal effects differ between winter, summer, and particularly the transition periods (spring breakup and fall freezeup). The summer months have long periods of daylight; the winter has long nights. Aside from the purely climactic effects, military operations are also influenced by the vast distances and isolation common to these areas.

Certain weather phenomena are peculiar to these regions. Whiteouts and greyouts cause a loss of depth perception, which increases the hazards of flying, driving, or skiing. Ice fogs can form over a body of troops, bivouac areas, motor parks, convoys, etc., and disclose their locations.

AIRMOBILITY IS THE MOST EFFECTIVE YEAR-ROUND MEANS OF TRANSPORTATION

One of the most important environmental effects is the impact upon mobility. Mobility varies considerably according to the season. The most suitable time for ground operations is from mid-winter to early spring before the

breakup period. The worst period is during the spring thaw when the ground becomes saturated, roads become flooded, often disintegrating, and low lying areas are turned into a morass of mud. During winter months, light infantry units achieve mobility by foot or, sometimes, by skis, snowshoes or sleds. Airmobility provides the most effective method of movement for light infantry units year-round. Tracked vehicles possess generally good mobility, except during the transition periods. Wheeled vehicles and trailers are not generally suitable for sub-arctic operations.

Another important environmental effect is the impact of extremely low temperatures on weapons. In extreme cold, metal becomes brittle and increased parts breakage occurs in all types of weapons. Many weapons create ice fog which, on a still day, may obscure the gunner's vision, thus requiring movement to alternate positions after the first shot. *Care must be taken not to bring a weapon into a warm shelter* because condensation causes the weapon to freeze and malfunction when taken back into the outside cold temperatures. Tank weapons face a particularly bad obscuration problem from ice fog and soft snow blown up by the muzzle blast. Extreme cold also decreases tank gun ammunition velocity and, hence, its accuracy. Field artillery or mortar bursts are less effective because of the dampening effect of deep snow or mud.

Finally, the northern environment significantly increases the time required to perform even simple tasks. Experience has shown that five times the norm may be required. For example, starting and warm-up times of armored vehicles may approach 2 hours in temperatures of -50 degrees fahrenheit. For troops conducting a foot march, additional time is required for adjustment of clothing and equipment, checking for presence of correct equipment, striking shelters, loading equipment, etc.

In sum, the northern environment poses special problems to military operations. The proper equipment, training, and the highest caliber of leadership are the ingredients for successful northern operations.

HOW TO FIGHT IN NORTHERN REGIONS

The battlefield dynamics and fundamentals of fighting on the modern battlefield apply in northern regions as in other environments. The fundamental difference is found in the necessity for taking active measures to counter the effects of severe climactic conditions. A detailed discussion of how to fight in northern areas is found in **FM 90-11, Northern Operations.**

Employment of Large Units. In northern regions the large quantity of shelters, warming tents, and other installations required, coupled with the difficulty of concealing their locations, offers lucrative targets for enemy air attack. The reverse is also true—enemy installations are vulnerable to friendly air attack. Thus, air power takes on an importance in northern regions nearly equal to its importance in deserts. Air defense, the reciprocal of air power, assumes an equally important role. Generals, there, must be able to conduct the air-land battle, as described in Chapter 8.

It is the job of the Generals to insure that the proper mix of forces, properly equipped and trained, are deployed for northern operations. There is no clear advantage to the use of either predominantly heavy or predominantly light forces for northern operations. Each has its advantages and disadvantages. Light infantry forces can attain excellent ground mobility during the winter months if properly trained and equipped. They are severely limited during the summer months and transition periods; however, light infantry forces are ideal for airmobile operations year round. While mechanized and armored forces are generally excellent in summer and winter months, they are severely restricted during the spring and fall transition periods. Army aviation assets for airmobile operations and resupply assume an importance in northern regions equal to that of the jungle. Engineer construction for improving lines of communications, erecting shelters, etc., also assume added importance in northern operations.

As in other environments, Generals employing large units in northern regions must also be able to concentrate their forces

so that, in the defense, they are able to achieve a favorable combat power ratio. Because the ability to concentrate hinges largely on the mobility of their units, Generals must always consider the impact of the environment. Remembering that the importance of mobility is relative to that of the enemy's, the skillful General can turn the effects of the environment to his advantage and achieve a mobility differential superior to the enemy's.

Finally, as in all environments, Generals must give overall direction to the campaign. In the sub-arctic they must *pay particular attention to the seasonal effects.* For example, large offensives that depend on ground mobility should normally not be planned for the spring breakup. Instead, increased airmobile operations may be conducted during this period.

Directing the Battle. As in the conventional situations in temperate climates, brigade and battalion commanders are responsible for the immediate direction of the battle. They must fit the forces to the ground and maneuver against the enemy as the battle develops, while coordinating the concentration of firepower. In so doing, they must be sensitive to, and make allowances for, the impact of the climate on mobility and weapons effects. Thus, additional time may be required to make simple moves or additional firepower may be required to achieve desired effects.

Of particular importance in northern operations is the opportunity to achieve surprise and the corresponding ever-present danger of being surprised. Because the severe weather conditions increase the natural tendency for troops to seek protection, the opportunities for achieving surprise by attacking during blizzards, white-outs, etc., are abundant. Conversely, the requirement for increased security in the defense during such periods demands intensive supervision.

The Colonels must insure that the proper equipment for cold weather operations is not only available to their troops, but is used. Special clothing and shelter above that normally required for field operations are essential.

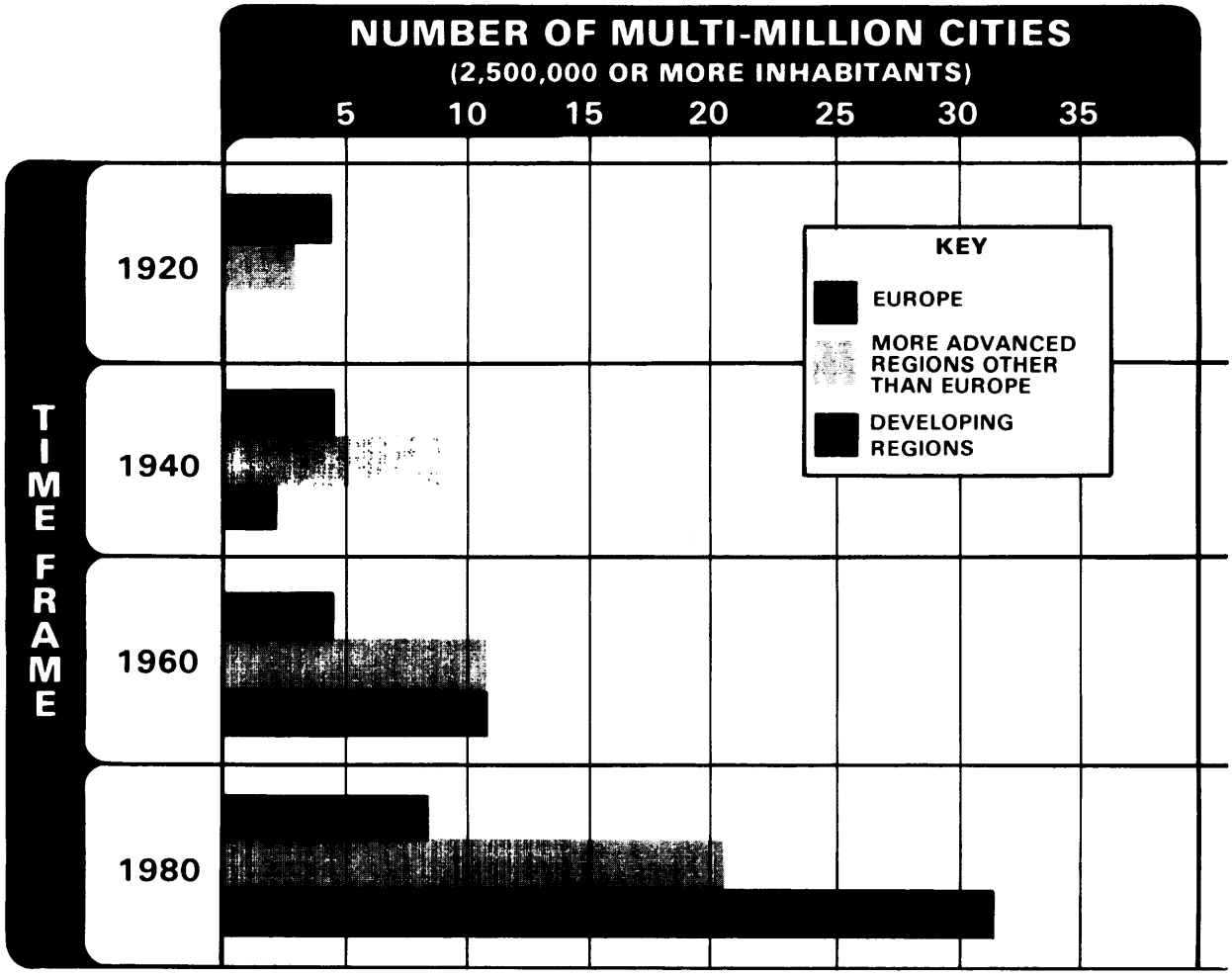
Fighting the Battle. Company commanders, platoon leaders, and squad leaders or tank commanders fight the battle as they would in temperate climates, using **cover, concealment, suppression** and **teamwork.** The difference is that in northern fighting the utmost in forceful and dynamic leadership is demanded of all small unit leaders in order to cope with the effects of the environment. Leaders at all levels down to the squad must make decisions far surpassing the scope of their usual responsibilities. The human element is all-important. Combat effectiveness is most difficult to maintain unless troops are kept warm, fully hydrated, and in condition to fight. Thus, a force that is exposed to the elements for long periods without adequate shelter or warming equipment can suffer casualties from the environment as surely as from enemy fire. The Captain has an enormous responsibility to keep his troops fit to fight the battle.

MILITARY OPERATIONS IN BUILT-UP AREAS

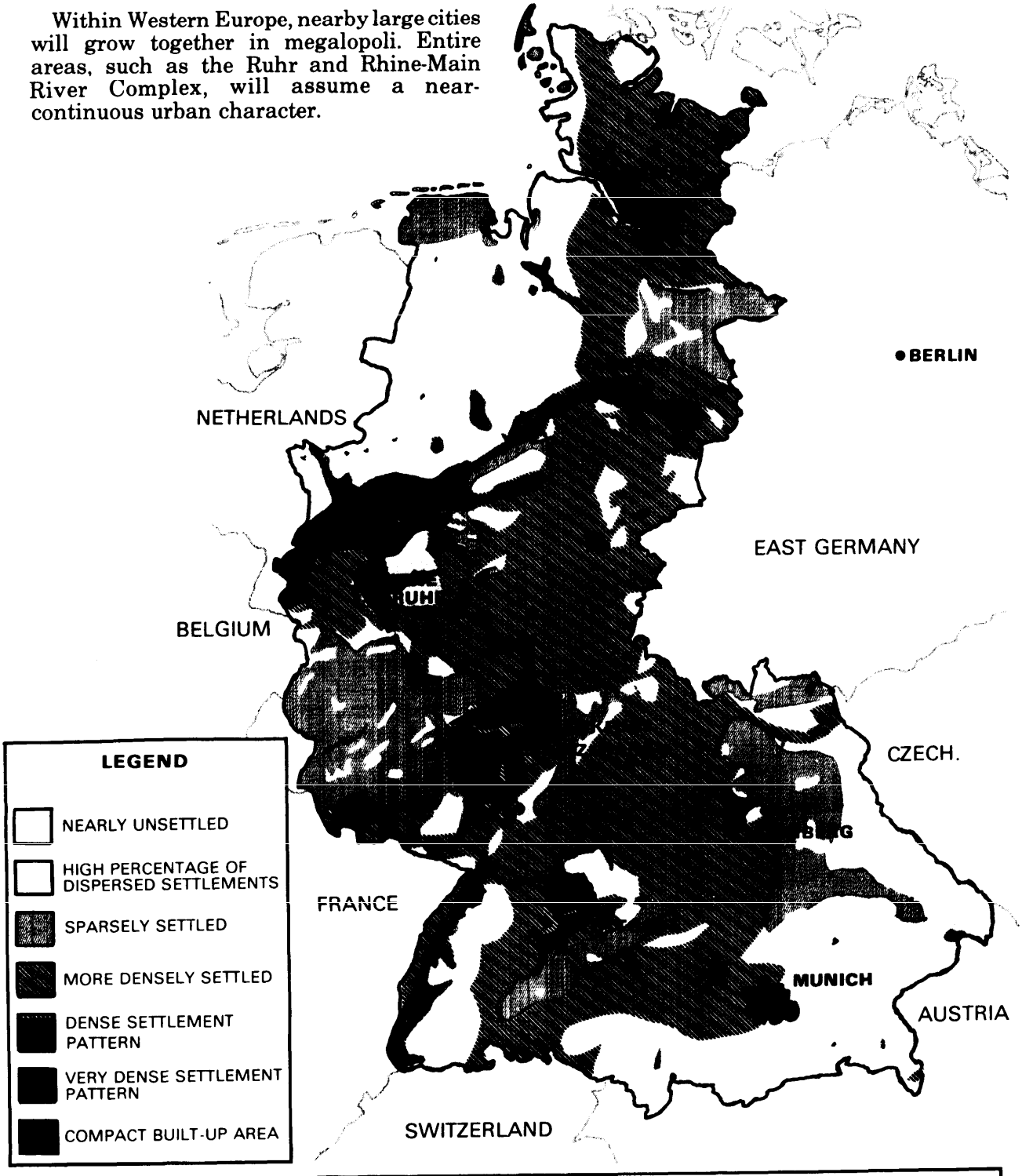
Many areas of the world, especially Western Europe, have experienced a massive growth in built-up areas and man-made changes to the natural landscape. These changes significantly affect potential future battlefields. Avoidance of built-up areas is no longer possible. Rather, military operations in built-up areas are an integral part of combat operations and present special opportunities and challenges to commanders at all levels.

Environmental Effects. Built-up areas and man-made changes to the terrain take a variety of forms. New highway systems have opened up areas previously considered unsuitable for fast mobile operations. While these roads are generally restrictive, the areas they cross require a greater degree of attention than in the past. Major cities have lost their well-defined nature and have spread out over the nearby countryside and into suburbs. Highways, canals, and railroads have been built to connect population centers and have themselves attracted industries, and directed urban

growth into strip cities. More agricultural land is being converted to urban use which reduces terrain suitable for fast-moving armor operations. Rural areas, while losing some of their population, have retained their previous character. Small farming communities are scattered every few kilometers throughout the more open areas. These villages are generally located along streams and have an extensive network of secondary roads. Each of these man-made topographical changes affect military operations. Future trends indicate an increasing density of large cities and their resultant urban sprawl. These trends are not confined just to Europe, where growth appears more dramatic because of reduced distances, but include many other advanced and developing regions of the world.



Within Western Europe, nearby large cities will grow together in megalopoli. Entire areas, such as the Ruhr and Rhine-Main River Complex, will assume a near-continuous urban character.



This map shows the nature of built-up area development in West Germany.

CHARACTERISTICS OF URBAN COMBAT

It is necessary to discuss four different categories of built-up areas because each presents different problems and opportunities to tactical commanders. They are:

1. **Villages (population of 1000 or less).**
2. **Strip areas (generally interconnecting built-up areas between villages and towns along roads and valleys).**
3. **Towns and small cities (population up to 100,000 and not a part of a major urban complex).**
4. **Large cities with associated urban sprawl (population up to millions covering 100 or more square miles).**

THE CATEGORY OF A BUILT-UP AREA RELATES TO THE COMMAND-LEVEL OF OPERATION REQUIRED

Commanders will be faced with situations continuously involving the different categories of built-up areas. Small villages (1) and strip areas (2) will be most commonly encountered by company and battalion commanders. The town and small city (3) will impact on the operations of brigade or division operations. Large cities (4) or major urban complexes will require operations at division or corps level. Commanders at various levels must consider what increased advantage is possible by using or not using a built-up area within the overall concept of their operations, keeping in mind that the decision to attack or defend certain urban areas may have political as well as operational considerations.

The defender has the advantage in the use of built-up areas. He has superior protection readily available, as well as concealment and covered routes of movement within the area. On the other hand, the attacker can isolate and bypass some built-up areas, but will be required to attack others. He is then faced with fighting from the outside into a well defended position. Both attacking and

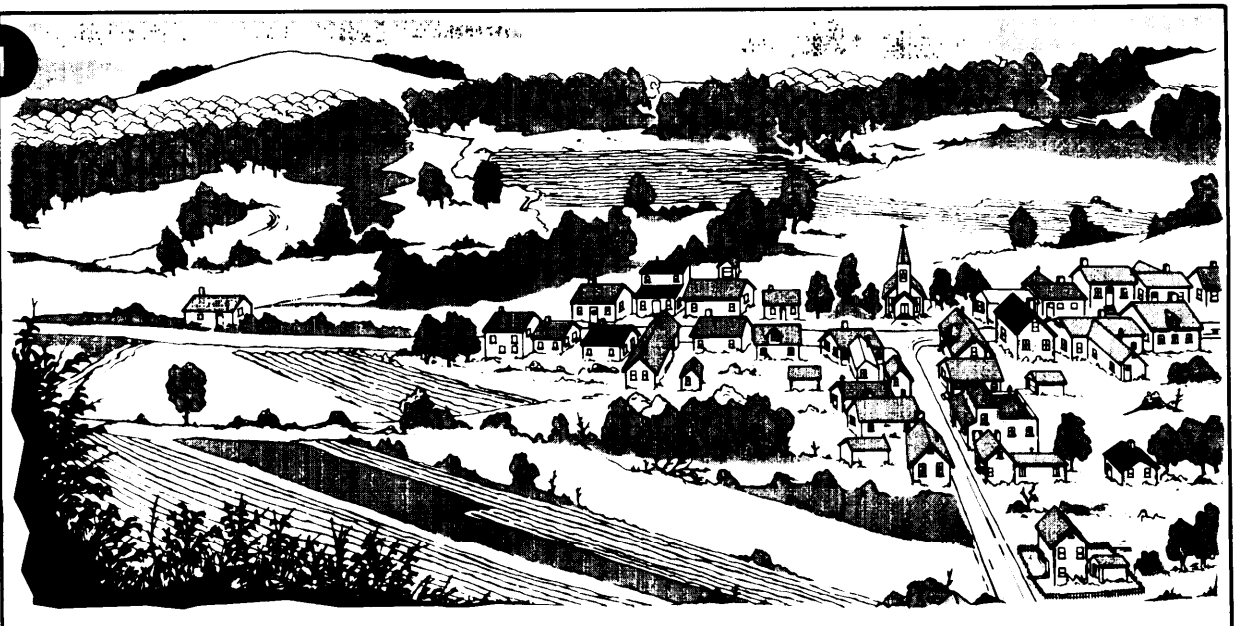
defending forces will take advantage of the cover and concealment offered by built-up areas to position command posts, stocks of supplies and combat service support units.

Commanders must use their forces to best advantage. If the force is armor/mechanized, it must be able to fight in urban areas and extract the full advantages of mobile armor protection and firepower while minimizing their disadvantages. If light infantry forces are available, the built-up area offers the opportunity to fully use their capabilities of holding well protected positions while minimizing their vulnerabilities to modern weapons.

FIGHTING IN BUILT-UP AREAS

The whole subject of combat in built-up areas is one in which the US Army is not well versed. Our doctrine has centered on techniques of combat in cities or in house-to-house fighting, and the placement of weapons in the defense. These techniques remain important and will be updated in FM 90-10. However, the larger problem of conducting operations in continuous and contiguous built-up areas and the principles of these operations are new. It is a novel and untested dimension of warfare.

1



VILLAGES

The typical village, especially in Europe, has stone, brick, or concrete buildings (stores, houses, and barns) in a cluster, with a number of more modern and more lightly constructed houses on the outskirts. Villages provide ready-made cover for platoons, companies, and even battalions. Therefore, they can be readily developed into strongpoints through the application of obstacles, carefully sited weapon systems, preplanned fires, improvement of fields of fire, and so forth.

Defense. Villages provide formidable battle positions when occupied by well-trained troops with modern antitank weapons. The defenders are provided strong cover and good concealment. Thick walls protect from direct suppressive fires; positions on first floors and in basements protect from some of the effects of indirect fires. Antitank guided missiles can be fired from within buildings, if sufficient space exists, and armored vehicles can be concealed within barns or large buildings.

Villages are often spaced 2000 to 4000 meters apart. ATGM and tanks may be able to cover the open ground between villages and provide mutual support to other villages. Thus, battle positions within a group of adjacent villages could provide a system of prefabricated and mutually supporting positions. Enemy armored forces may be able to bypass one or two villages but would probably take high losses from tanks and ATGM in attempting to bypass the group of villages. Thus, enemy units will be forced to develop a combined arms attack against the village or group of villages. Such attacks are costly to the enemy in time and casualties. If the defender is fighting outnumbered, he may choose to use the villages as battle positions from which to attrite the enemy and then move to new positions before the enemy mounts a deliberate combined arms attack to close on the position. Movement from these battle positions can be covered from supporting battle positions or nearby favorable terrain. If the defending force chooses to defend a village, he should fully develop it into a strongpoint. Covered approaches to villages should be controlled by infantry fires and covered by indirect fire.

Offense. The cardinal principle of the offense is to attack where the enemy is weak. Thus, defended village strongpoints should not be attacked if they can be suppressed or bypassed. However, within the active defense, or in the offense, it may be necessary to eliminate resistance from a defended village which blocks a supply route or is inflicting losses on bypassing forces. *The attacking force must bring overwhelming force to bear on the strongpoint and supporting enemy positions.* Identified or suspected targets should be destroyed by direct fire to drive the defender back into the village. Artillery fires, with delayed fuzing, should be used until all or most of the buildings have been penetrated. The approach of the attacking force to the village must be covered by smoke. Mechanized infantry, accompanied by tanks and combat engineer vehicles, should move to the cover of outlying buildings and then seize the village in its entirety in one assault. Combat

SMOKE MUST BE USED TO COVER THE ATTACKING FORCE APPROACH

engineer vehicles can employ the demolition gun to destroy strong buildings that slow the assault. Tanks provide close support throughout. Adequate forces must be employed to carry the assault quickly with the object of securing the whole village in the confusion of the initial assault. House-to-house fighting may be required but is costly in casualties and time. Night attacks may be used to gain entry into the village if it is not possible to suppress or obscure the defenders with available fire support.

2



STRIP AREAS

Where houses, stores and factories have grown up along roads or down valleys between towns and villages, they can present an approximation of a fortified line. These areas provide the same advantages to the defender as those discussed for villages.

Defense. A defender may not be able to occupy the entire strip and associated villages and towns—certainly not if the defender is outnumbered. However, if visibility is good and if sufficient fields of fire are available, the defender can occupy positions within the strip and deceive the enemy into thinking it is an extensive defense line. Tanks and ATGM can inflict high losses on attacking enemy armor and slow his momentum. Strips afford covered avenues of withdrawal to the flanks.

Offense. Defended strip developments must not be permitted to slow the mobility of the attacking force. They are not easily bypassed and therefore weak points should be isolated through suppression and obscuration. Heavy concentration of direct and indirect fire should support a penetration through the strip by a fast moving armor force. If the enemy force does not withdraw after the penetration, suppression and obscuration of the flanks must continue for the force to pass through. Eventually these areas must be reduced by follow-on forces.

3



TOWNS AND SMALL CITIES

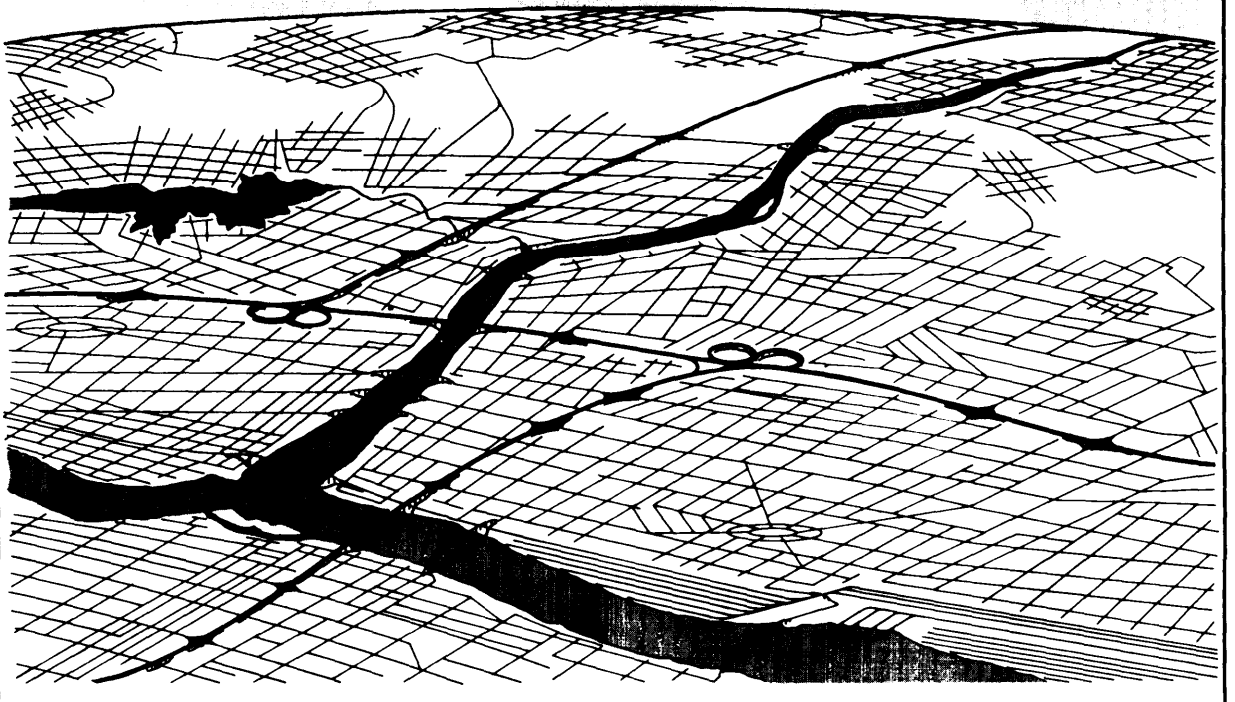
Towns or cities that have a definable limit present different problems. The outlying terrain can dictate the value of the town within the operational concept of the force. If the town can be easily bypassed and sufficient routes exist around the area to support operations, then it is of limited value operationally. The town's operational worth is high if the adjacent terrain is restrictive, if it provides good supporting defensive positions, and if routes of communication pass through it. The decision to attack or defend a town or city must be made by corps or division commanders because of the forces required and the time consumed. Further, *the decision to attack or defend a city may be tantamount to a decision to destroy it.* **Political considerations may weigh heavily in such cases, particularly if the city has a cultural or historical significance.**

Defense. A smaller force can gain a significant combat power advantage when defending a town or city against a larger attacking force. To achieve this, critical approaches must be selected and tanks and ATGM sited to gain maximum attrition of the attackers. Obstacles and mine fields assist in slowing and canalizing the attack. Reserve forces should be placed where they can quickly reinforce at critical areas. Because defending forces are vulnerable to airmobile or airborne landings within the town or city, the defending commander must cover suitable landing and drop zones, such as parks or stadiums, with obstacles or fire. Should a decision be made to continue the defense of a town or city after adjacent units have withdrawn from terrain outside of the city, sufficient combat support and combat service support units should be attached so the defense can continue in isolation. The defending commander must then redispose his forces to meet an attack from any direction. A decision to leave a defending force to fight in isolation can only be justified if the time to be consumed by the attacker warrants the probable loss of the defending force.

Offense. Attacks on defended towns or cities should strive to isolate the defending force within the town from his larger force. If the attack of the defended area is required, the cohesion of the defense should be broken by forcing a quick penetration of the defenses, preferably from the flanks or rear.

Feints and ruses can deceive the defender as to the point of major effort. Assault units are task organized with tanks, infantry, and combat engineers for the breakthrough. Overwatching point target destruction fires, obscuration, and indirect suppression help to gain an entry into the town. The assault units must suppress enemy AT weapons in order to maintain their mobility. Direct and indirect fires and, in the near future fuel air explosives, are required for suppression. Artillery fires are used to block reinforcements moving toward the attack corridor and obscuration throughout the area will reduce the defenders' ability to employ weapons. Once the momentum of the attack has been gained, commanders must maintain that momentum until the defense has lost its cohesion. While a quick breakthrough of the defense is sought, an attacking commander must have sufficient forces available for house-to-house clearing if required.

4



LARGE CITIES/MAJOR URBAN COMPLEXES

Major urban complexes such as Frankfurt/Mainz/Hanau or the Stuttgart area are so large that they cannot be captured or defended in their entirety, and they cannot be avoided by bypassing. The commander has no choice but to conduct the whole range of military operations within them—attack, defense and retrograde. These areas have the characteristics of a concrete jungle, and as in any jungle, visibility is reduced and cover and concealment abound.

The major urban complex affects operations by:

- Reducing the mobility of large forces.
- Providing instant fortified positions for the defender.
- Restricting observation.
- Reducing the effects of almost every weapon in range, lethality, or both.
- Hiding the signature of weapons.
- Reducing the range of radios, but reducing their emission signatures.
- Creating rubble obstacles.
- Increasing problems of civilian control and the requirement to work with civil authorities.
- Reducing the effectiveness of reconnaissance and surveillance sensors.
- Providing cover and concealment to concentrating forces.
- Complicating command and control procedures.

Despite these effects, forces must operate within such areas. To do so, commanders must collect intelligence and combat information, concentrate forces, apply combat power, move and support the combat elements.

Built-up areas such as Stuttgart and the Ruhr will quickly soak up infantry; therefore, as in jungles, airmobile forces will be useful.

RECONNAISSANCE AND INTELLIGENCE

Urban areas increase the difficulty of reconnaissance and intelligence operations. Forces within built-up areas are afforded greater concealment, not just from visual means, but also from sensors. As an example, infrared sensors will pick up the hot spots from built-up areas; however, sensor returns will be so numerous due to fires and other normal heat sources associated with cities that interpretation will be difficult. Side Looking Airborne Radar (SLAR) will be degraded by the masking effect of buildings. Overhead aircraft reconnaissance will be vulnerable to concealed enemy air defenses. The large number of warehouses and other large buildings make it easier to conceal vehicles, command posts, and logistical complexes, thus increasing the difficulty of detection. The enemy may increase emphasis on wire communications because of poor line-of-sight radio communication. This will impair SIGINT operations. Ground radar will be degraded in detecting activities within the urban complex itself. Remote sensors (REMS) may be employed to cover lightly or undefended areas; however, their effectiveness is reduced by line-of-sight masking by buildings and their monitoring stations must be carefully sited.

A key source of intelligence will be HUMINT—the exploitation of indigenous civilians and police units. Extensive patrolling will be required. Underground arteries such as subways and sewer systems may be used for this purpose.

Only a part of the complex may be a battle area or there may be several separate battle areas. Air cavalry units can improve a commander's reconnaissance capability in both the offense and defense. They can cover gaps between defended areas to detect enemy forces attempting to bypass. In the offense, they can locate the weak points in the defense and also provide flank security to the attacking force, but they will be vulnerable to ambush.

Extensive outposting will be required in both the offense and defense to overcome the natural concealment offered by built-up areas.

CONCENTRATE

Attack. When the enemy strongpoints and weakly defended areas have been determined through reconnaissance and intelligence operations, the commander must concentrate his force on a narrow front where the enemy is weak. The object of the attack is to breakthrough and disrupt the enemy rear where his command and control, combat service support, and air defenses are least protected. In order to concentrate sufficient combat power for the breakthrough, the fundamentals outlined in Chapter 4 should

be observed; however, the concentration of the force may take more time due to rubble and other obstacles. While the urban area provides extensive concealment for the concentration, the additional time required will dictate the execution of deception operations. Airmobile forces and attack helicopters units can bypass strongpoints if enemy air defenses are isolated and suppressed; however, particular attention must be paid to small arms and machinegun air defense fires.

Defense. When the area of the enemy main attack has been determined, the defending force must shift combat power to meet the attack. Because of the increased cover and concealment offered by urban areas, a defending force may be able to defeat an attacker with relative combat power greater than 3:1. While urban areas reduce some of the effects of artillery fires, this will assist in slowing the attack until additional weapons systems can be brought to bear. Attack helicopters and close air support can rapidly add combat power while additional armored and mechanized infantry forces are maneuvering. The masking effect of buildings allows light infantry and ATGM to be brought in closer to the actual battle area than on the open battlefield. However, they lack the mobility to mass quickly unless moved by helicopter.

Fire Support. Field artillery is the principal fire support means of forces operating within built-up areas. The suppressive effects of artillery rounds, particularly improved conventional munitions, are reduced by the additional cover provided by structures within the built-up areas. Increased use of delayed fuzing is required to penetrate buildings and improve munitions effectiveness. Direct fire weapons such as self-propelled artillery, combat engineer vehicles, and tanks will be required to overcome or suppress strongpoints.

INCREASE MUNITIONS EFFECTIVENESS WITH DELAYED FUZING

Suppress and Move. Armor and mechanized forces must retain their capability to move within urban areas in both the offense and defense. Suppression is more difficult in urban areas due to reduced weapons effects and increased protection

SMOKE SHOULD BE USED WITH DIRECT AND INDIRECT FIRES

afforded enemy weapons. Direct and indirect fires must be employed in conjunction with smoke in order to suppress the enemy weapons along attack corridors. Fuel air explosives, when introduced in the near future, will provide area suppression (through overpressure) against snipers, antitank gunners, and other direct fire weapons without destroying buildings and creating large amounts of rubble.

Support. Continuous support is required for urban area operations. Obstacle breaching and reduction is key to maneuvering within urban areas and *combat engineers* must be fully integrated into the combined arms maneuver team. Combat service support operations can take place closer to engaged elements than is usual in more open terrain.

Isolation. Small units, both in the attack and defense, will often become isolated while fighting within urban areas. The commander of the isolated force must continue his mission within the overall concept of the operation. The larger force commander must decide whether to linkup and reinforce the isolated unit or order their withdrawal by exfiltration.

ATGM. Antitank guided missiles and light antitank weapons may be fired from the protection and concealment of enclosed rooms. Firing signatures are hidden, and hit and kill probabilities improve when weapons are fired from high elevations. Tests have shown that the minimum safe requirements for their use are as shown below.

FIRING ANTITANK WEAPONS FROM BUILDINGS AND ENCLOSED AREAS

WEAPON	MIN. SIZE FRAME STRUCTURE	MIN. SIZE MASONRY	MIN. VENT SIZE*
LAW	7' x 10'	MIN OF 4' TO BACK WALL	20 Ft^2
DRAGON	15' x 15'	17' x 11'	20 Ft^2
TOW	20' x 30'	20' x 20'	20 Ft^2

All glass should be removed from windows, doors and within rooms. Soft furniture and curtains should be left to absorb sound. Firers must wear helmets and ear plugs. Don't stand behind weapons being fired.

**Open door and window space.*

It is obvious that the ability to conduct operations in built-up areas will steadily increase in importance. It is equally obvious that new weapons, new techniques, and tactics will be required. At the present time such operations would probably be slow, laborious, and costly. Additional research and experimentation are required. For the details of the current state of the art, see **FM 9-10, Military Operations in Built-Up Areas.**

APPENDIX A

Relevant STANAGs

STANAG 2003	*Patrol Reports by Army Forces.*
STANAG 2008	*Bombing, Shelling and Mortaring Reports.*
STANAG 2014	*Operation Orders, Annexes to Operation Orders, Administrative and Logistics Orders.*
STANAG 2017	*Orders to the Demolition Guard Commander and Demolition Firing Party Commander.*
STANAG 2020	*Operational Situation Reports.*
STANAG 2022	*Intelligence Reports.*
STANAG 2036	*Doctrine and Procedures in the Technique of Land Minefield Laying and Recording.*
STANAG 2041	*Operation Orders for Road Movement Tables and Graphs.*
STANAG 2077	*Order of Battle.*
STANAG 2082	*Relief of Combat Troops.*
STANAG 2096	*Reporting Engineer Information in the Field.*
STANAG 2099	*Fire Coordination in Support of Land Forces.*
STANAG 2101	*Principles and Procedures for Establishing Liaison.*
STANAG 2103	*Reporting Nuclear Detonations, Radio-Active Fallout and Biological and Chemical Attacks.*
STANAG 2104	*Friendly Nuclear Strike Warning to Armed Forces Operating on Land.*

STANAG 2113	*Destruction of Military Technical Equipment.*
STANAG 2134	*Offensive Air Support Operations ATP-27.*
STANAG 3156	*Aircraft Paratroop Signal Lights.*
STANAG 3204	*Aeromedical Evacuation.*
STANAG 3345	*Forms for Planning Air Movements.*
STANAG 3463	*Planning Procedures.*
STANAG 3465	*Safety, Emergency and Signalling Procedures for Military Air Movement Fixed Wing Aircraft.*
STANAG 3466	*Responsibilities of Air Transport Units and User Units in the Loading and Unloading of Transport Aircraft in Tactical Air Transport Operations.*
STANAG 3570	*Drop Zones and ULLA Drop Zones - Criteria and Marking.*
STANAG 3700	*NAD-NATO Tactical Air Doctrine ATP-33.*

APPENDIX B

"How to Fight" Manuals

	FM	TITLE
CAPSTONE		
	100-5	*Operations*
	100-5A	*Electronic Warfare (SECRET)*
	100-5-1	*Conventional-Nuclear Operations*
	101-5	*Command and Control of Combat Operations*
	71-100	*Brigade and Division Operations (Mechanized and Armor)*
	71-101	*Brigade and Division Operations (Infantry/Airborne/Airmobile)*
COMBAT		
	71-1	*The Tank and Mechanized Infantry Company Team*
	71-2	*The Tank and Mechanized Battalion Task Force*
	7-7	*The Mechanized Infantry Platoon/Squad*
	7-8	*The Light Infantry Platoon/Squad*
	7-10	*The Rifle Company*
	7-20	*The Battalion (Infantry/Airborne/Air Assault/Ranger)*
	7-85	*Ranger Operations*
	17-12	*Tank Gunnery*
	17-50	*Attack Helicopter Operations*

17-47	*ACCB*
17-95	*Cavalry*
100-999	*Air/Land Operations*

COMBAT SUPPORT

5-100	*Engineer Combat Operations*
6-20	*Fire Support for Combined Arms Operations*
11-50	*Communications in the Division*
11-92	*Corps Signal Communications*
21-40	*NBC Defense*
24-1	*Tactical Communications Doctrine*
44-1	*Air Defense Artillery Employment*
44-3	*Chaparral/Vulcan Employment*
44-23	*Redeye Employment*
44-90	*Hawk Employment*
90-1	*Employment of Army Aviation Units in a High Threat Environment*

SPECIAL OPERATIONS

90-2	*Tactical Deception*
90-3	*Desert Operations*
90-4	*Air Assault Operations*
90-5	*Jungle Operations*
90-6	*Mountain Operations*
90-7	*Denial Operations and Barriers*

90-8	***Counter Guerrilla Operations***
90-10	***Military Operations in Built-Up Areas (MOBA)***
90-11	***Northern Operations***
90-12	***Airborne Operations***
90-13	***River Crossing Operations***

The proponent agency for this field manual is the US Army Command and General Staff College. Users are invited to send comments and suggested improvements to Commandant, USACGSC, ATTN: ATSW-TA, Fort Leavenworth, KS 66027.

By Order of the Secretary of the Army:

FRED C. WEYAND
General, United States Army
Chief of Staff

Official:

PAUL T. SMITH
Major General, United States Army
The Adjutant General

DISTRIBUTION:

Active Army, ARNG, USAR: Two (2) copies to each DA Form 12-11 account, plus DA Form 12-11A, Requirements for Avn Co, Bn, Gp and Bde; Engr Bn, Armored, Inf, and Inf Mech Div; Engr Bn, Airborne and Airmobile Div; FA Tactics; The Rifle Co, Plt and Squads; The Inf Bn; The Inf Bde; Med Spt in Div, Sep Bde and Armored Cav Regiment; Tactical Sig Comm Systems, Army, Corps and Div; Sig Bn, Armored, Inf, Inf Mech and Airmobile Div; Sig Bn, Airborne Div; Tank Units, Plt, Co & Bn; The Armored Bde; Div Armored and Air Cav Units; The Armored Cav Regiment; and Mil Police Spt Army Div and Sep Bde (Qty rqr block nos. 3, 28, 29, 39, 78, 79, 80, 82, 106, 110, 111, 129, 130, 131, 133, and 134) and DA Form 12-11B, Requirements for Supply and Services in Div and Sep Bde; Combat Intelligence; Denial Opns and Barriers; Desert Opns; Jungle Opns; Night Opns; River Crossing Opns; USA ADA Employment; The Div Spt Cmd and Sep Bde Spt Bn; the Field Army Spt Cmd; USA/AF Doctrine for Airborne Operations; The Division; Operations of Army Forces in the Field; Combat Service Spt; Tactical Nuclear Operations; and Army Airspace Control Doctrine (Qty rqr block nos. 267, 273, 293, 306, 307, 308, 312, 348, 380, 381, 399, 404, 405, 406, 411, and 426).