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Infantry

March-April 1993

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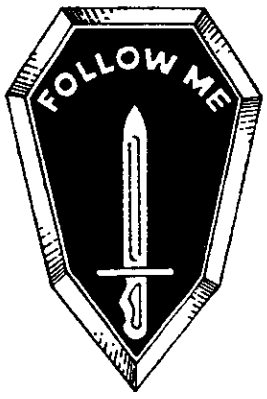

Infantry

March-April 1993 Volume 83, Number 2

DEPARTMENTS

FRONT COVER: From a photograph of 7th Infantry Division soldiers clearing enemy positions, Kwajalein Island, 1944.

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Commandant's NOTE

MAJOR GENERAL JERRY A. WHITE Chief of Infantry

INFANTRY—CENTERPIECE OF A FORCE PROJECTION ARMY

The United States Army ranked 17th among the armies of the world when Wehrmacht units invaded Poland in 1939. We had three infantry divisions at half strength and six more in various stages of organization. Technologically and doctrinally, we had improved little in the two decades since World War I. Within six years, however, the United States Army would expand to a force of more than eight million men and women, totaling 89 divisions. Technological improvements, some of them borrowed from our future adversaries, kept pace with the mobilization, and Allied forces were soon able to regain the initiative.

The United States Army's ability to recover from its period of stagnation was due in large part to the foresight of its senior leadership and its willingness to critically examine its doctrine and training. This willingness to challenge our assumptions and concepts continues today, and the 1993 Infantry Commander's Conference reflects the evolutionary nature of our doctrine through the Battle Lab concept and its relevance to force projection.

The United States Army Infantry School has proponency for the entire Infantry branch, including the mechanized force, and exercises the vertical integration of Infantry requirements. With this in mind, the Battle Lab exercises the horizontal integration of all combined arms requirements for the dismounted soldier. Vertical integration encompasses proponent issues within the Infantry branch, while horizontal integration—a function of battlespace—cuts across all branches and functional areas. Battlespace issues require close coordination with battle labs at the other branch schools on matters which affect dismounted operations.

This year's conference affords the Infantry community the opportunity to discuss the latest doctrinal, technological, and materiel developments and their relevance to the smaller, highly trained, and lethal force that we will lead into the next century. The focus of our effort is the infantryman and the training and equipment it will take to assure his dominance on the future battlefield. A great strength of our Army has been its willingness to critically examine its warfighting doctrine, and then to institute improvements based upon that experience.

This is not a new concept. As a staff officer of the American Expeditionary Force (AEF) in World War I, Colonel George C. Marshall observed firsthand the materiel and training shortcomings of the AEF. Twenty years later, as Chief of Staff, he was faced with the monumental task of building an Army that would face—and ultimately defeat—Axis forces in the Pacific, North Africa, and Europe.

The task confronting General Marshall was not a small one. Since 1939, the emerging German Army had been developing—and had successfully tested in battle—the doctrine and the equipment to conduct mobile armored warfare on an unprecedented scale, and those improvements were being closely followed by our own military planners. By the spring of 1941, the United States Army had fielded improved artillery, a light tank, and an antitank gun patterned after an earlier German model. The Army Air Force had begun flying the A-24, a dive bomber inspired by the German JU-87 Stuka.

Our Army's force structure had changed as well; the old square division of World War I was being replaced by the triangular division—a concept borrowed from the Germans—which was organized for maneuver warfare. Under the new organization, echelons had their own supporting fires and could hence conduct coordinated attacks without relying on the rolling barrages and frontal assaults that had proved so costly on the battlefields of France two decades earlier.

By the summer of 1941, the United States Army had the operational doctrine, the equipment, and the beginnings of a force large enough to respond to the ever-increasing threats in Asia and Europe. In the fall of that year, this mobilization culminated in field-army level maneuvers held in Louisiana and the Carolinas. These maneuvers were the first field-army level test of our Army's logistical, fire support, communications, and maneuver systems since World War I. Although the results were not all positive, they provided the impetus for many changes in the way we were to fight World War II.

Early in 1992, planning began on modern-day Louisiana Maneuvers. While the historical perspective and name are taken from the 1941 exercises, the scope and implications of today's efforts far surpass those of the earlier exercises. The General Headquarters Maneuvers of 1941 were run in response to a clearly defined threat, and with an Army emerging from 20 years of neglect. The force fielded in the 1941 maneuvers reflected the beginnings of our emergence from the technological, doctrinal, and organizational doldrums. Today, however, we approach the Louisiana Maneuvers from a different position. Technologically, doctrinally, and organizationally, our Army is better prepared than ever to defend our national interests. The challenge we face is to plan for the known array of worldwide threats while structuring ourselves for threats that are still over the horizon. We have already focused on the current issues such as North Korea, Somalia, Iraq, Central America, the Balkans, and other hot spots; now we must focus on issues which are presently only peripheral, but which could move quickly to center stage.

To meet this challenge, the U.S. Army Chief of Staff has identified a number of issues that are important to the Army and has tasked propo-

nent schools to address them. An action plan and process have been developed, and the Training and Doctrine Command, Forces Command, and Army Materiel Command are working their respective issues. An impressive array of information-gathering tools is at our disposal; data has been—and will continue to be—drawn from worldwide exercises and simulations such as Operation Restore Hope, Prairie Warrior, Dragon Hammer, Ulchi-Focus Lens, and any other events that yield information that could benefit our force in the future.

The new Louisiana Maneuvers will continue to provide information enabling us to update and refine our data base. The end product will be enhanced strategic agility and improved decision-making ability throughout the force. The utility of this data base is readily evident in the Battle Lab concept, which was implemented in June 1992.

The concept of the future infantry is taking shape in the Dismounted Warfighting Battle Lab (DWBL) at Fort Benning, which will draw upon the Prairie Warrior simulation exercise at Fort Leavenworth for information on such issues as Owning the Night and Second-Generation Forward Looking Infrared Radar (FLIR) technologies. Along with the Mounted Battle Lab at Fort Knox, the Depth and Simultaneous Attack Battle Lab at Fort Sill and Fort Bliss, the Command and Control and Battle Tempo Battle Lab at Fort Leavenworth, the Combat Service Support Battle Lab at Fort Lee, and the Early Entry Battle Lab at Fort Monroe, the DWBL is working toward the common purpose of being able to put a well-trained, well-equipped infantry unit on the ground, provide the fire support it needs, and sustain it until it has accomplished the mission. In order to accomplish all this, DWBL is focusing its efforts on a number of areas, each of which will build upon present expertise.

The DWBL is an agency staffed out of existing assets at Fort Benning, in which a number of Infantry School agencies have combined their energies to reach a common goal. Originally formed out of resources from the Concepts and Analysis Division, Directorate of Combat Developments, the DWBL now adds the doctrinal writing expertise of the Directorate of Combined Arms and Tactics and the training developments expertise of the Directorate of Operations and Training. These and other directorates and agencies have joined efforts to meet the challenge of equipping, training, and fielding the dismounted force of the next century.

As the proponent for dismounted warfighting doctrine and technology, Fort Benning is focusing efforts on several critical tasks. The first of these is to optimize the night fighting capability of the combined arms force. Our training and equipment in this area have undergone quantum improvements since the Vietnam War. Advances in thermal and image intensification technology have given us a decisive edge on the battlefield. Our forces' domination of the nighttime ground and air battle has reached a level that was inconceivable 20 years ago. But we cannot afford to become complacent; potential adversaries are also striving for the control of the night, and our lead in this area must be expanded to include combat support (CS) and combat service support (CSS) units.

In order to extend the envelope for detection and engagement, we will draw upon advanced FLIR, focal plane arrays, and visible-to-medium-wave infrared to help the commander maneuver and sustain his force at night.

We must also sharpen the target acquisition capability of the entire combined arms force, again including CS and CSS units, whose ability to defend themselves under all conditions will influence the outcome of the battle. Although our weapon systems now enjoy a comfortable range advantage—as demonstrated by our tank crews in the Gulf War—future potential enemies may not give up until they have achieved parity or superiority in this area. We cannot afford to let this happen; our ongoing target acquisition initiatives will extend our engagement ranges on limited visibility battlefields, and will continue to let our forces engage the enemy beyond the engagement range of his own weapon systems. Optimal state-of-the-art target acquisition systems will also significantly reduce the likelihood of fratricide by enabling our soldiers to better discriminate between friend and foe.

Target acquisition is the first step in neutralizing the enemy's weapon systems; equally important is the increased lethality of our own direct and indirect fire weapons. We are taking a close look at both our M16A2 rifle and our M249 machinegun, using such tools as analysis of defensive live-fire data to improve fire distribution techniques. We are calling upon industry to provide the sensors, electronics, munitions, optics, and related systems necessary for upgrading our small arms capability. The United States Army Natick Research, Development, and Engineering Center is working on a helmet-mounted target acquisition display. The indirect fire weapons are receiving their share of attention as well. A new 155mm light howitzer will improve the mobility of the fire support available to the maneuver force commander, while precision-guided mortar rounds will increase the lethality of his organic indirect fire support. We expect significant advances in submunition technology as well, which will further degrade the enemy's force during the close fight. Fratricide prevention is receiving increased attention with continued research on combat identification for the dismounted soldier.

Tied in with all the improvements in night fighting, target acquisition, and increased lethality is the issue of the survivability of the dismounted soldier. Our intent is to provide him with the technology to enhance both his performance and his survivability. To accomplish this, we will develop better communications systems, lighten his load, and provide him with optical, aural, and seismic sensors to sharpen his awareness of his surroundings. New, lighter weight materials will let him move faster; stealth technology camouflage will reduce his optical and thermal visibility; and digital communication will improve his command and control.

The sum total of these efforts will be a soldier who is far more combat effective than his counterpart of today. An improved biological detection capability will likewise contribute to the combat effectiveness and survivability of the dismounted soldier. Through the use of robotics and standoff systems, we will enhance his ability to detect chemical and biological agents, while advanced protection systems and antidotes and antibodies will improve the survivability of soldiers exposed to these agents. The benefits of these initiatives are many: We will be better able to detect enemy capabilities; we can plan according to the threat; we can employ means of deterring enemy biological attack; and we can reduce the number of casualties if an attack does occur. The net gain from all of this will be the increased confidence the soldier has in himself and his equipment, and his increased combat effectiveness.

This, therefore, is the role of the DWBL. It is one key element of the Army's concept of all branches working toward a common goal. The United States Army has come a long way since those ominous months before World War II, but we can still learn from that experience. The lesson is that we must continue to assess the way we do business and maintain the lead in doctrinal, technological, and training developments, for such an advantage—once lost—can be regained only at tremendous cost in lives, money, and national prestige.

INFANTRY NEWS

THE 1993 INFANTRY CONFERENCE will be held at Fort Benning, Georgia, 27-29 April 1993. Additional information is available from LTC King, DSN 835-3451 or commercial (706) 545-3451.

THE FOLLOWING MANUALS, being prepared by the Infantry School, are scheduled for publication and distribution by May 1993:

FM 7-7J, The Mechanized Infantry Platoon and Squad (Bradley). This manual discusses the tactics, techniques, and procedures for the mechanized infantry platoon and squad equipped with the M2 Bradley fighting vehicle. Mechanized infantry leaders must know the capabilities of the soldiers and the BFV to develop overwhelming combat power at the decisive place and time. Maneuver, firepower, protection, and leadership combine to form the dynamics of combat power.

FM 90-10-1, An Infantryman's Guide to Combat in Built-Up Areas. This manual provides the infantryman with guidelines and techniques for fighting against a uniformed enemy in built-up areas who may or may not be separated from the civilian population. Some techniques for dealing with insurgents, guerrillas, and terrorists are included, but FM 7-98 best addresses these issues. The urban growth in all areas of the world has changed the face of the battlefield. Combat in built-up areas focuses on fighting for and in those cities, towns, and villages.

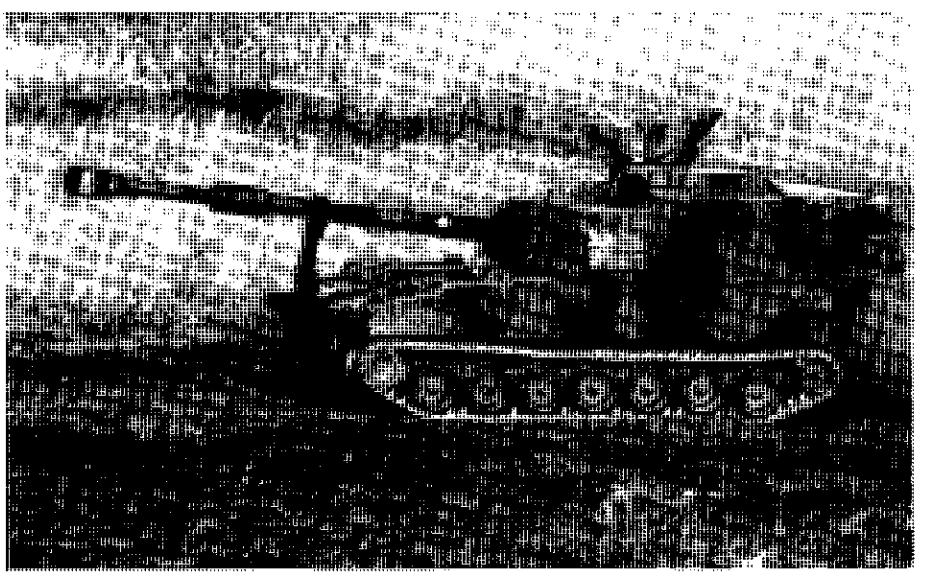
THE NATIONAL INFANTRY Museum is interested in obtaining action combat photographs taken by soldiers during the operations in Grenada, Panama, or the Persian Gulf for its permanent collection. The museum will copy and return the original photographs.

Anyone who would like to share such photographs should contact Mr. Grube at DSN 835-2958, or commercial (706) 545-2958.

THE M109A6 PALADIN 155mm self-propelled howitzer is the latest modification to the M109-series howitzers. Although it looks familiar, its new capabilities offer the combined arms team more responsive artillery fire at longer range.

With previous versions of the self-propelled howitzer, responsiveness was measured in minutes; with the Paladin, it will be measured in seconds. The Paladin can consistently receive, process, and fire at targets within 30 seconds if it is halted and within 60 seconds when it is on the march. As soon as a mission is completed, the howitzer can either move immediately to another firing location or continue the march to support a maneuver force mission.

This improved responsiveness in providing fire support is made possible by an on-board technical fire control and position navigation system, called the Automatic Fire Control System (AFCS). When the Paladin stops, the navigation system tells the ballistic computer the howitzer's location; it is now ready to receive fire missions.



The Paladin's automated capabilities make it twice as survivable as its predecessor, which means twice as many howitzers to continue the fight and 80 percent more missions in support of maneuver forces.

In addition, the Paladin has an improved cannon and a gun mount that extend its range approximately six kilometers. It can now provide accurate supporting fire for the maneuver force using any munition that is available to all 155mm howitzers. These munitions include illumination, dual-purpose improved conventional munitions (DPICMs), scatterable mines (FASCAM), and high explosives. Paladin can fire assisted projectiles to ranges out to 30 kilometers.

A Paladin platoon has supported the

1st Cavalry Division at the National Training Center (NTC), demonstrating how modern artillery can provide more responsive fire support for the combined arms team. Although one platoon cannot fully exploit the potential of this new system, its ability to "shoot and scoot" will be obvious in such missions as the movement to contact. No matter how far the battlefield is extended, the Paladin will be near the front, poised to provide devastating and responsive fire support.

This newest member of the combined arms team is scheduled for fielding in June 1993.

THE M-40 CHEMICAL MASK is being tested and fielded to replace the M-17 mask. The new mask provides three to five times the protection of the M-17 because of better sealing and the use of silicone rubber instead of butyl rubber for the face piece. The basic M-40 mask comes equipped with a threaded cheek filter mounted on either the left or the right side and an improved water tube attachment.

In 1992 the Army's Test and Experimentation Command (TEXCOM) tested four additional improvements to the M-40:

- Protective eye lens outserts designed to protect the eyes from laser or ballistic damage.
- A silicone hood designed for quick removal.
- A canister system option that eliminates the cheek filter.
- A communications system consisting of a voice amplifier or a microphone for intercom systems previously installed in Army vehicles.

The canister system option, which provides a connection to aircraft oxygen systems and combat vehicle filtration units, is interchangeable with other NATO canisters.

Test results show that the mask is a dramatic improvement over its predecessor, but it still needs some work in other areas. For example, the laser outserts prevented any eye damage from laser-generated range finders used for weapon aiming, but they also prevented the soldiers from using a laser-generated reticle for sighting.

Despite small problems, the new amplifier will be a boon to soldiers trying to communicate with each other in a chemical environment.

The Army plans to distribute the M-40 masks to Force Level One units first. Members of the 82d Airborne Division have already been issued the basic mask without the voice and laser outsert modifications. Other installations have also established their units' order requirements.

(Condensed from "M-40 Protective Mask," by Lieutenant Colonel Sidney R. Thurston, The Air Land Sea Bulletin, 30 September 1992, pages 9-10.)

1992 INDEX

The 1992 index to INFANTRY is available to anyone who requests a copy. Please address your requests to Editor, INFANTRY, P.O. Box 2005, Fort Benning, GA 31905-0605.

HOT-WEATHER AND DESERT battledress uniforms (BDUs) are scheduled for some design changes in the future.

The uniforms will be made of a blended cotton and nylon ripstop poplin fabric. This is a lighter weight fabric than the current standard cotton and nylon twill. It was selected after extensive testing for appearance, comfort, and durability.

The waist tabs on the coat have been removed and the coat girth has been reduced by three inches. The sleeve cuff has been modified to allow for easier rolling, and the front bellows on the lower pockets have been removed. The only noticeable change made to the trousers was the elimination of the knee pleats. The reinforcing patches for the knees, crotch, and elbows on the hot-weather uniform have been retained and will be added to the desert uniform. Buttons have been retained as closures on all pockets and the trousers fly. Zippers and velcro fasteners were evaluated but were rejected because of reliability, durability, and cost of repair or replacement. The noise of opening velcro was also unacceptable to test soldiers.

Current procurement plans call for the production of 1.4 million hot-weather trousers and 1.5 million hot-weather coats during Fiscal Year 1993. Contracts for 77,000 desert uniform trousers will be awarded during FY 1993, and contracts for 40,000 coats will be awarded in FY 1994.

There will be no specified changeover date. Uniforms that incorporate the design changes will be issued on an as-needed basis, while uniforms in the current design will continue to be issued until existing stocks have been exhausted.

NIGHT VISION DEVICES and image intensifier tubes will be produced for the Army under a contract that was let in late 1992. The contract is for the production of AN/PVS-7B night vision ground goggles, AN/AVS-6 aviation goggles, spare parts and third-generation spare image intensifier tubes.

Night vision devices allow vision at extremely low light levels. They can be designed to operate in the visible spectral region as well as in the ultraviolet and near infrared.

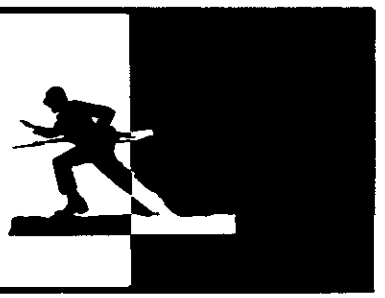
The delivery of the goggles and tubes is scheduled to begin in December 1993.

NERVE GAS ANTIDOTES that use an auto-injector delivery system will be produced under a recent contract. Auto-injectors are pen-like medical devices that allow a soldier to inject himself with a precise drug dosage safely and quickly.

The contract is the first in a series of innovative programs designed by the Defense Personnel Support Center (DPSC) to assure adequate supplies of critical items in the event of war.

The contract calls for manufacturing nerve gas antidotes, storing serviceable material for expired auto-injectors, managing DPSC's shelf life extension program, and filling new product orders.

PROFESSIONAL FORUM



Identifying the Decisive Point

CAPTAIN DENNIS R. LINTON

At what time and place on the battlefield will the next battle be won or lost? This is a question that commanders have long tried to answer. Every battle has a *decisive point* that can be determined through hindsight. Throughout history, however, successful commanders have been able to determine this point during the planning phase of an operation, concentrate combat power at the critical time and place, and go on to achieve victory. One example can be seen in General Robert E. Lee's conduct of the Battle of Chancellorsville in 1863.

The Army of Northern Virginia had stopped the Union attack at Fredericksburg, but Lee received reconnaissance reports that the enemy was massing for an attack on his left flank. Leaving his right flank lightly defended, Lee reinforced his forces at Chancellorsville. He decided to conduct a spoiling attack and searched for a Union weakness. Through reconnaissance, he determined that the Union right flank was weak and unprotected and ordered General Stonewall Jackson to conduct a night attack through the area of tangled underbrush known as the Wilderness. This attack so shocked and confused the Union forces that they abandoned their attack and were decisively defeated. Lee's ability to visualize the battlefield, exploit an enemy weakness, and concentrate combat power at the decisive point led to his success.

In the 19th century, this ability to identify the decisive point was defined by the French phrase *coup d'oeil*—literally, "stroke of the eye." A 1914 military dictionary defined the term as *the art of distinguishing by a rapid glance the weak points of an enemy's position, and of discerning the advantages and disadvantages offered by any given space or [terrain], or selecting with judgment the most advantageous position for a camp or battlefield.*

DEVELOP ABILITY

Some of the great battle captains of the past, such as Lee, may have been able to determine the decisive point intuitively, but most leaders have to be trained in this skill. Today's commanders, if they are to develop their own power of *coup d'oeil*, must learn to identify a potentially decisive point (or recognize such a moment when it occurs on the battlefield); synchronize combat power at that point; and then reinforce this ability through tactical training. First, however, the Army needs to offer a more adequate definition of *decisive point.*

Military theorist Henri Jomini, in *The Art of War* (1838), first attempted to define the term in the levels of war that are now recognized as operational and tactical. He said that any action or position that is capable of exercising a marked influence—upon the result of the campaign or of a single battle—is a decisive point. As this definition relates to the tactical level, the decisive point on the battlefield is determined by the terrain, the positions the respective forces occupy, and the point's relationship to the ultimate aim of the operation.

Although this definition is not completely satisfactory today, it comes close. For purposes of this discussion, therefore, *decisive point* is defined as the point in a given campaign, battle, or engagement at which one force achieves success, and the tide of battle shifts from one side to the other. This point is determined by the terrain, the enemy disposition, or an event, in combination with time. The point will be decisive only if it achieves the purpose of the respective force.

Examples of possible decisive points are the seizure of terrain that controls an avenue of approach, the exploitation of an open flank, or the destruction of a critical unit, weapon, or other asset (such as a command post or a logistical base) that is important to the enemy.

The planning tools a commander uses

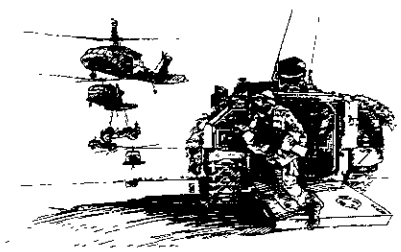
are the estimate of the situation, the intelligence preparation of the battlefield (IPB), and the analysis of relative combat power.

As a leader goes through the estimate of the situation, he begins to identify possible decisive points. During the mission analysis, he identifies the essential tasks that must be done if the unit is to accomplish its mission. The leader should understand how the purpose of his mission relates to the main effort, and how his unit fits into his higher commander's intent and concept of the operation. During the terrain analysis, the leader should determine whether the terrain offers a marked advantage to any combatant who controls it. The enemy analysis will help the leader understand the disposition and the capabilities of the opposing force so he can determine its possible weaknesses. The analysis of friendly troops should be done in the same manner. This information provides criteria that can be used in comparing strengths and weaknesses in terms of relative combat power.

Most of the information about the enemy and the terrain is obtained during the IPB process. The advantage of this process is that it gives the commander a graphic picture of the upcoming battlefield. These products help focus reconnaissance efforts on probable enemy weaknesses and possible decisive points. Such IPB products as the decision support template help the commander make decisions in a timely manner so as to strike a decisive blow. But the IPB works this way only if the commander keeps in mind two things: It is a process that continues throughout the battle, and, most important, it is everyone's responsibility, not just the S-2's.

Before developing courses of action, the commander must complete his analysis of relative combat power. Since the goal is to concentrate combat power against enemy weaknesses, he must evaluate his own unit's strengths and weaknesses in comparison to the enemy's. Although force ratios can provide a starting place for his analysis, this information does not fully take into account such combat multipliers as deception and other intangible factors.

The next step is an analysis of friendly strengths against enemy weaknesses, and vice versa, using the elements of combat power (maneuver, firepower, protection, leadership) as comparison criteria. This analysis helps identify points where a friendly strength may be able to exploit an enemy weakness, as well as points where the commander must protect his own weaknesses. In addition, it helps the commander identify tactics, techniques, or procedures that he might use either to amplify his own combat power or to degrade that of the enemy. For a light force fighting a heavy force, one example is an antiarmor ambush in restrictive terrain. After completing the analysis in this manner, the commander can identify points where he may be able to concentrate overwhelming combat power on an enemy weakness. If he decides that one of these points will achieve the purpose



of the mission, then it is a potential decisive point.

Upon completion of the estimate of the situation and the analysis of relative combat power, the commander—using the IPB products—can then identify potential decisive points and develop the following courses of actions as outlined in the current editions of Field Manuals 7-10, *The Infantry Rifle Company*, and 7-20, *The Infantry Battalion*:

- Determine the decisive points and times on which to focus combat power.
- Determine the results that must be achieved at the decisive points to accomplish the mission.
- Determine the results to be accomplished by the main effort and the supporting efforts. The purpose of the main effort should be clearly linked to the decisive point, and the purposes of the supporting efforts should be linked to the main effort.
- Determine the essential tasks for subordinate units (main and supporting efforts) that achieve these purposes.
- Task organize and establish control measures that clarify and support the mission.

(Although FMs 7-10 and 7-20 are primarily for light infantry units, the process is the same for other units as well.)

Everyone involved should keep in mind that any potential decisive point identified during the planning phase is only that—potential. Since combat does not always unfold as the commander has envisioned or planned it, however, the commander must also make sure his plan is flexible enough to allow for the accomplishment of the mission if the decisive point should occur at another time or place during the battle.

He must train his subordinate leaders to use the products that come from the planning process to help them visualize the upcoming battle. Frequent tactical decision exercises can be used to train these leaders to visualize the battlefield, attack enemy weaknesses, and concentrate combat power to achieve a decision.

In addition, he must also allow his subordinate leaders the flexibility to take advantage of opportunities as they arise. One way to do this is to issue mission orders, which focus on the tasks that must be accomplished without specifying how they are to be done. Mission orders work, however, only if the subordinates understand the commander's intent and concept of the operation. The commander's intent must be tied in with the commander's intent at each higher level. This relationship between the units at various levels allows his subordinates to adapt to changing circumstances and still accomplish the mission.

An example of identifying the decisive point when it appears on the battlefield can be seen in the battle at Chickamauga in 1863. During the second day of the battle, a miscommunication in orders caused a gap to develop in

the Union line as one unit shifted positions before it was relieved. At the same moment, the lead brigade of General James Longstreet's corps charged. Acting on the brigade's success, Longstreet seized the moment and squeezed his entire corps through this half-mile gap, routing General William Rosecrans and half of his army. This defeat forced the Union troops to retreat to Chattanooga. By taking advantage of an enemy weakness that developed at a critical time, Longstreet was able to bring the Confederate Army one of its few victories in the western theater.

The estimate of the situation, the IPB, mission orders, and commander's intent are practiced every day in our army. But we need to reinforce the process of tying them in with achieving the decisive point. We must train our leaders so they can use these concepts to develop their ability to recognize the decisive point and reinforce it in tactical training.

Once leaders have learned the importance of concentrating combat power against enemy weaknesses, and particularly when they recognize the importance of directing the main effort at a decisive point, they will naturally want to be able to perceive these decisive points at a glance. We can train them to concentrate combat power at the decisive point by using such training events as map and sand table exercises, including wargaming, and by discussing the decisive point during after-action reviews (AARs) following tactical exercises.

Map exercises enable leaders to plan potential decisive points and to discuss their reasons for selecting those points. Wargaming shows whether a planned point will be decisive and whether the plan provides the flexibility needed to take advantage of a decisive point that occurs elsewhere. These low-cost exercises are effective for officer professional development sessions.

After-action reviews also provide an excellent opportunity to discuss the decisive point. The following questions can be useful during an AAR to help teach the importance of recognizing and acting upon the decisive point:

- Was a potential decisive point identified during the planning process?
- Was the main effort focused to attain decisive action at the decisive point? Did supporting efforts tie in with the actions of the main effort?
- Where did the commander concentrate his combat power? Was this a potential decisive point?
- What was the outcome? Did the point turn out to be decisive or not?
- At what actual time and place did the battle shift in favor of one force?
- Did the plan have the flexibility needed to shift the focus of effort if the decisive point was somewhere other than planned?

Only with training can leaders learn to identify potential decisive points during the planning process. Then they must develop the ability to recognize the decisive point when it occurs during combat. If the decisive point is not where it has been planned, leaders must have the flexibility to shift the focus of effort to achieve a decisive victory there.

The proper exercise of the formal planning process during training will help our leaders identify possible decisive points. It is only with training that today's leaders will develop the skills of the great captains of the past in recognizing decisive points and seizing the opportunity for victory.

Captain Dennis R. Linton is a small-group tactics instructor in the Infantry Officer Advanced Course. He previously served in platoon and company assignments and commanded a rifle company in the 25th Infantry Division. He is a 1984 ROTC graduate of the West Virginia Institute of Technology and has completed the U.S. Marine Corps Amphibious Warfare School.

The Army's Family of Boots

CAPTAIN TROY W. GARRETT

Protecting soldiers' feet has always been a major challenge to an army. Whether it was the earliest Roman legion traversing the rugged Alps or a battalion of U.S. infantrymen slogging through the muddy rice paddies of Vietnam, their commanders understood that despite technology, the objective must ultimately be taken by the foot soldier. If soldiers are not trained and equipped to care for their feet, victory in battle is difficult, if not impossible. Foot injuries accounted for a high percentage of casualties in the Buna and Aleutians campaigns of World War II, on the Russian front, and later during the Korean War.

Our modern Army still faces the challenge of protecting its soldiers' feet, a challenge that is more complex than ever. Today, with the U.S. Army's

worldwide contingency mission, we must be prepared to fight and win in all climates. Luckily, advances in technology, improvements in textiles, and the development of synthetic materials have removed some of the burden. Even with the advances in technology, however, no one type of boot can protect soldiers in all climatic environments.

For military purposes, the world is divided into seven climatic categories, based on such criteria as solar radiation, relative humidity, moisture, and temperature ranges. *(See also "Environmental Influences on Desert Operations," by Colonel Robert H. Clegg, May-June 1992, pages 28-34; "Cold Regions: Environmental Influences on Military Operations," by Brigadier General Peter W. Clegg and Colonel Robert H. Clegg, July-August 1992, pages 27-32, and September-October 1992, pages 26-32; and "Tropical Regions: Environmental Influences on Military Operations, Part 1," by Colonel Clegg, in this issue.)*

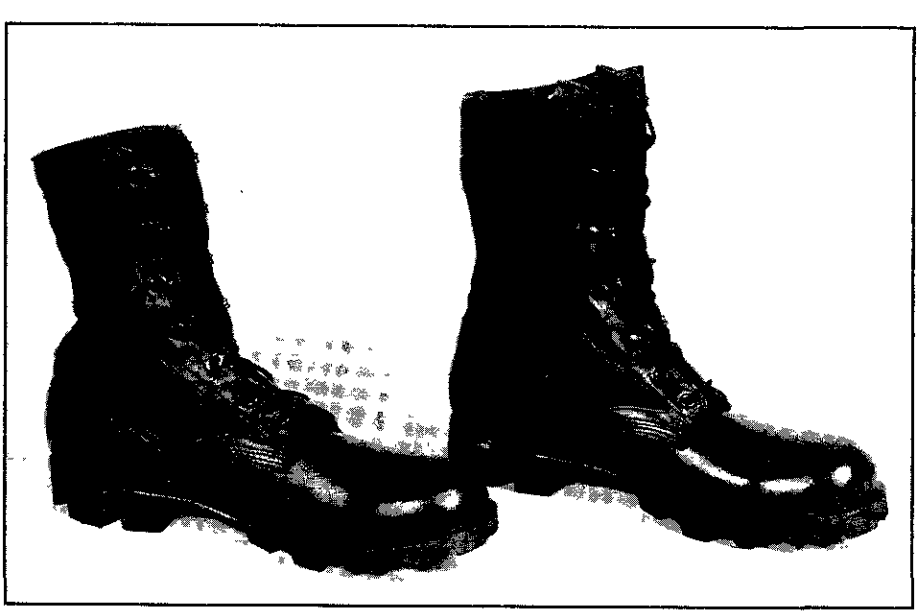
The climatic category and the predominant type of terrain in a region are the variables that influence the development of a boot for that particular environment. A boot designed for hot-wet environments will not adequately protect a soldier's feet in a desert environment with high solar radiation and fine sand that can enter the boot through the side drain holes. Conversely, the same hot-weather boot, because of its lack of insulation, cannot be expected to protect feet in a wet environment at temperatures of -20 degrees Fahrenheit and below. If insulation were added to the boot, then it would be too hot for use in a tropical environment, so we must design boots for use in specific environments and for particular operational requirements.

In any problem solving project there is always a set of criteria that set parameters and focus the effort. Developing boots for the Army is no different, and the type of sock or sock system (two or more socks worn together) must also be factored into the equation. The following set of basic tenets—derived from such factors as mission, technology, and common sense—focus the development process:

The system must adequately protect the soldier's feet from the particular environment in which he must operate. This is the overall goal of any boot-sock system.

The system must be simple and easy to support. Boots and socks must be durable and must require little maintenance or logistic support.

The system should keep feet dry and as warm (or cool) as possible. Combat and materiel developers strive to use all available technology to accomplish this while staying within the constraints of supportability.



Hot Weather Boot (left), Improved HWB (right)

Standard Black Leather Combat Boot

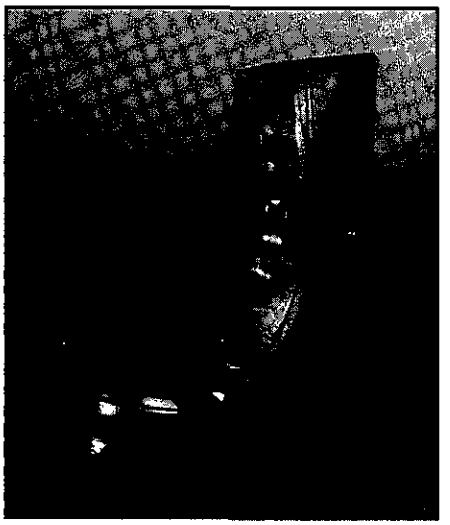
The system should keep boot-foot friction to a minimum. This is absolutely critical to the fighting effectiveness and health of the soldiers.

When a sock system is to be used, the size of the socks should not require that a soldier wear one size of boot in the summer and another larger size in winter to accommodate heavier socks. To do otherwise would place an additional burden on the soldier and the logistic system.

The Army's current family of boots includes the following:

The Standard Black Leather Combat Boot. In 1983, in response to problems discovered at the training centers, the Army initiated a program designed to improve the durability and comfort of the combat boot. The old combat boot, although reasonably well built, did not last through the rigorous demands of basic training. As a result, the U.S. Army Infantry School, the proponent developer for combat boots, initiated a program to replace the existing boot with a new standard combat boot.

Candidate boots from around the world were solicited, and nearly 40 original entries were ultimately considered during the selection process. All of the candidates were evaluated against such screening criteria as weight, material composition, and design. Candidates that were deemed inappropriate were eliminated, and eight candidates were chosen for further testing.



Black Vapor Barrier Boot

A combat boot walk-off test was conducted at Fort Benning that included about 2,400 pairs of the eight candidate boots. The test used basic training soldiers and cadre from the Army and the U.S. Marine Corps over a complete training cycle of 13 weeks. Throughout the test, the boots were evaluated for durability, fit, traction, water resistance, and numerous other factors. In the final selection, the leather upper design from one candidate and the sole from another were combined to form what is now the standard Army combat boot.

The standard black leather combat boot is made of leather that has been treated for mildew and water resistance. It weighs 4.1 pounds and incorporates a speed-lace system, a padded collar, and a one-piece sole and heel molded directly to the upper. The boot is the mainstay of today's force and is issued to all initial-entry soldiers.

The Hot-weather Boot. The hot-weather boot, known to most as "the jungle boot," was a direct result of the United States' involvement in Vietnam. The standard boots of that time did not adequately protect soldiers from the constant moisture of the tropics, nor did they protect against the *pungi* sticks and related booby traps employed by the enemy. In the early 1960s, the Army met this need by developing the initial hot-weather boot.

Over the years, that initial boot has undergone several refinements, but it is still the Army's primary boot for high humidity and wet environments. It is made of moisture-resistant nylon and leather, with two drainage outlets. The sole is a "Panama" design that makes it easier to clear mud from the cleats. A metal plate has been incorporated into the sole to provide protection from possible penetration.

Although the original hot-weather boot was issued with a green nylon upper, the color was changed to black in 1990 to standardize it and make it more acceptable for wear in garrison. This boot, weighing about 3.3 pounds, is still a candidate for several improvements.

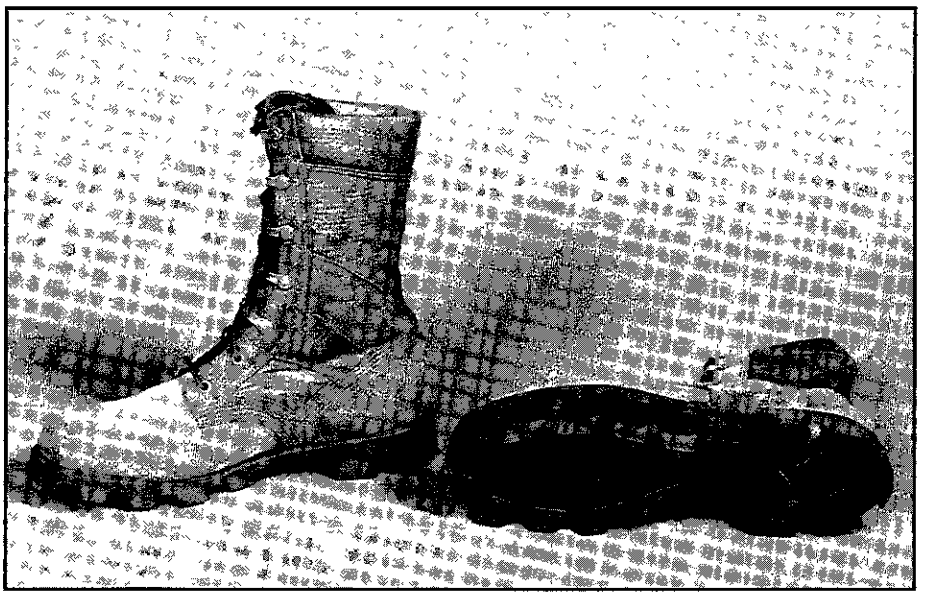
Improved Desert Boot. In early 1983, special operations forces (SOF) identified the need for a boot to support mission requirements in the desert during Operation BRIGHT STAR in Egypt. The desert boot was subsequently pursued by the U.S. Army Infantry School for further development in 1989. The jungle boot, which was used at the time, was found to be ineffective in the hot, arid climate of the desert. The metal plate transferred heat to the bottom of the foot, and the drainage holes allowed sand to enter.

The current desert boot incorporates a moisture-resistant leather and textured nylon upper. It has a softer rubber sole to reduce shock caused by the small rocks and gravel prevalent in the desert. A sealed foam thermal barrier in the sole prevents heat transfer to the feet. Additionally, the drainage holes have been eliminated, and the leather seams are sewn tighter to help keep sand out.

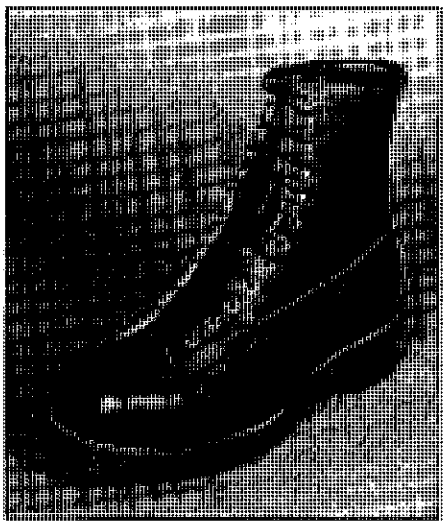
The desert boot was initially procured and sent directly to Southwest Asia during Operations DESERT SHIELD and DESERT STORM. Numerous comments from the field during that period resulted in improvements that include a padded collar, a wider ankle support, and a special moisture-wicking liner to absorb perspiration. This boot, which weighs only 2.7 pounds, was a welcome newcomer to the family of Army footwear.

Vapor Barrier Boots. Vapor barrier boots play an important role in the Army. Both the black and white versions—commonly referred to as "Mickey Mouse" and "VB" boots, respectively—protect soldiers in the extreme cold climates of the world. The black boot is specifically for use in temperature ranges from 0 to -25 degrees Fahrenheit, while the white boot provides increased foot protection and comfort down to -60 degrees.

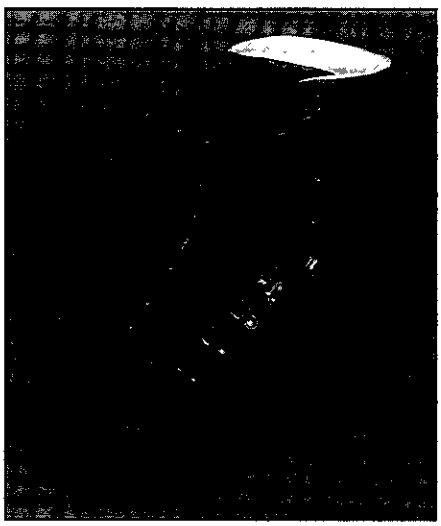
Intermediate Cold-Wet Boot. The intermediate cold-wet boot (ICWB) was developed to fill the gap between the standard combat boot and the vapor barrier boots. This boot was designed as a march boot, specifically for cold and wet environments, and to provide foot protection in temperatures ranging from



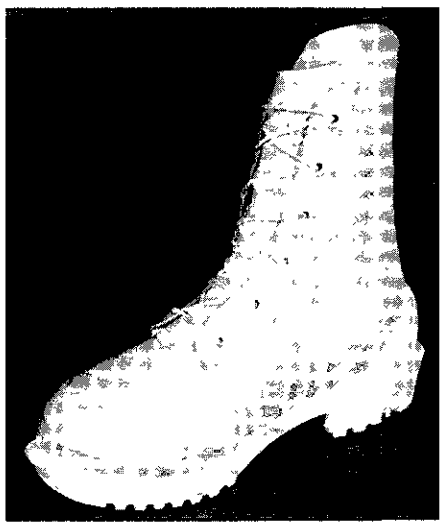
Improved Desert Boot



Mountain Ski Boot



Plastic-shell Mountain Ski Boot



Improved White Vapor Barrier Boot

30 degrees to -10 degrees Fahrenheit.

The ICWB is a fully lined and insulated all-leather boot. It incorporates a "GORE-TEX" liner that keeps out water and moisture while allowing perspiration to escape. The boot uses the popular "Vibram" slip-resistant sole for better traction on snow and ice.

Like the standard combat boot, the ICWB was tested extensively. Eight candidate boots were tested during a series of three field and technical tests in Alaska and in the Ranger Course's mountain phase at Dahlonega, Georgia.

The boot selected weighs 4.5 pounds and has been issued only to certain units operating in cold-wet regions or having contingency missions for those regions. Although the ICWB issue is currently limited to dismounted infantrymen, fielding may soon be expanded to include other combat units.

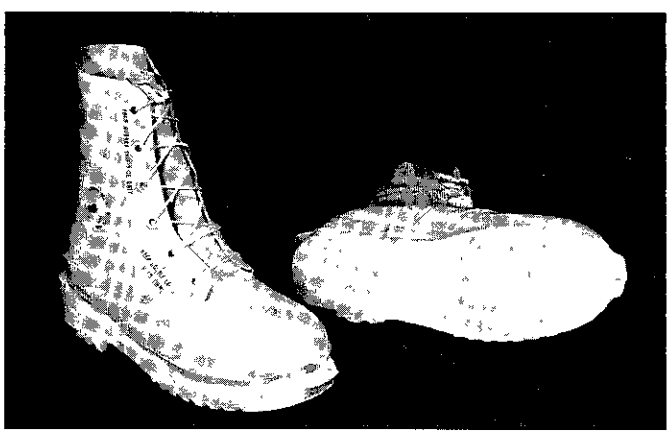
Mountain Ski Boots. The mountain ski boot is seldom seen except in mountain units or those in Alaska. It is the Army's primary climbing boot, but it can also be used for ski and snow-shoe operations. The boot weighs 4.7 pounds and is made of a water-resistant (not waterproof) leather upper with a glove-type leather liner. It has a removable felt insole for insulation and a rubber sole with binding attachments for skis. The mountain ski boot provides adequate protection down to 10 degrees Fahrenheit.

Future Improvements

Boot development is a dynamic process that must constantly respond to the needs of the field as technology improves. The Infantry School continues to pursue a number of initiatives that focus on improving some of the boots now in the field:

Hot-Weather Boot. The Infantry School is investigating improvements to the hot-weather boot to make it more comfortable and improve its performance. Specific changes include the addition of a one-and-one-half-inch rolled comfort collar that will increase the height of the boot, a wider leather support band for increased ankle support, a softer sole compound for more comfortable marching, and a special liner to pull away perspiration and moisture. The improved boot will have more spike protection with a Kevlar-resin mesh replacing the steel plate. Additionally, alternative sole designs will be evaluated. A field test of these improvements is scheduled for mid-1993 at Fort Benning.

Plastic-shell Mountain Ski Boots. The JFK Special Warfare Center and School has identified a plastic-shell boot for use with the snow and ice traversing equipment (SITE) system. It



Arctic Vapor Barrier Boot

Intermediate Cold-Wet Boot

is much like a typical ski boot and will be used primarily for skiing and snowshoe operations. The boot is designed with a flexible cuff for limited marching and incorporates a synthetic thermal liner that is inserted into the plastic shell. This boot is intended for use in extreme cold climates.

Improved White Vapor Barrier Boot. Also as part of the SITE program, an improved version of the white vapor barrier boot was developed. The improved boot incorporates new synthetic insulators and has an injection-molded sole for better traction and lighter weight. This boot weighs 20 percent less than the standard VB boot.

Evaluation of Socks and Sock Systems. Significant advances in textiles have produced a wealth of different sock materials and styles. The Infantry School is in the process of evaluating different socks and sock systems for wear with boots currently in the inventory. This project, as well as the hot-weather boot improvement project, is part of the Soldier Enhancement Program, which allows for faster research and development. Testing and evaluation of new sock candidates began in late 1992.

The development and fielding of high-quality combat footwear has always been a top priority for the U.S. Army. Although the current family of boots provides our soldiers with the best foot protection available in the world today, the Army's research and development community is constantly striving to improve that protection. By applying new technology and improvements to its boots, the Army will meet the challenge and keep its soldiers mobile for their diverse missions well into the 21st century.

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Briefing Techniques
Say Well What Needs Saying

LIEUTENANT COLONEL RUSSELL W. GLENN

Effective verbal communication is essential, both in peacetime and in combat. A misunderstood message in training can waste time, money, and training opportunities. In combat it can cost the lives of the soldiers entrusted to our care.

Briefings are some of the means we use to communicate information; an effective briefing not only transmits your intent and guidance but also reinforces soldiers' confidence in the unit's leadership. Whether you are a squad leader who briefs your soldiers in the field or a staff member who represents the commander at an orders briefing, there are some techniques that will help you communicate more effectively.

The basics of preparing and presenting oral briefings are covered in Field Manual 71-2, *The Tank and Mechanized Infantry Battalion Task Force*; FM 101-5, *Staff Organization and Operations*; and other sources. But I would like to add some observations and ideas from my own experience. This information applies equally to leaders who give briefings themselves, head a team of briefers, or train others to present information.

Any briefing has two critical phases: preparation and presentation.

Preparation

The first step in the preparation phase is to determine the purpose of the briefing and to state what you want to achieve. The next step is to prepare an agenda or a format that will guide the briefing. An orders briefing frequently follows the five-paragraph order format or some modification of it. One alternative is to use a METT-T (mission, enemy, terrain, troops, and time) format; publications such as Fort Leavenworth's Student Text (ST)-22-2 (Writing and Speaking Skills for Senior Leaders) provide others. The key is to select a format that will effectively communicate the necessary information.

As you prepare, consider your audience's perspective. A squad or platoon leader briefing his men must consider where they have been for the past several hours. If they have been packed into a squad vehicle during movement, the briefing must include a clear picture of where they are now. They may not know. Where is the enemy in relation to their location? How will vehicle operators know if they missed a turn during movement? Identifying major roads, a river, or other limits ensures that no one wanders outside a well-defined "box."

A well-organized briefing site will help the briefer conduct his presentation without distractions. Consider the time of day the briefing will be presented: Avoid an arrangement which will have either the audience or the briefer facing into the sun. War-game the briefing much as you would a plan or an operation. Consider what will happen if the wind picks up, if it rains, or if the electricity fails.

Maps, screens, chalkboards (or the equivalent), and speakers must be positioned so the briefing will flow smoothly and without distractions. In a briefing that includes multiple briefing aids, one technique is to position the speaker between two aids so that he can refer to his right or left instead of walking in front of his material.

When using a map, make sure north is obvious. If the briefing is on a vantage point in the area of operations, orient the map to the ground. To avoid an opportunity for confusion during the briefing, make sure the map overlays are in the order in which they will be used and that all of them will unroll from the same side. In addition, see that all of them have labels in the same location so they can be reorganized quickly if needed.

Rehearse the mounting and removal of the overlays. Using a standard map board helps. During my assignment to the 3d Armored Division, for example, every major headquarters and staff section had a map board of standard size with four bolts mounted in the same locations (see diagram). The G-2 was responsible for specifying the grid coordinates of the four map corners and the bolt hole locations. Any headquarters or staff representative could prepare his overlay accordingly and then bring it into a briefing, knowing it would fit the map provided. An overlay could be slipped over the bolts, and the usual strips of tape were not needed.

A map may not always be the best way to brief what is on the ground, however. A terrain sketch may be more effective if a unit's area of operations is limited, if the map scale is small, or if detail is necessary in briefing a location. The sketch should include only the terrain features and control measures needed for clarity. You may want to keep a piece of poster board with combat acetate on both sides in your vehicle to use as a sketch board. But if you have nothing else, use chalk to sketch on the side of the vehicle.

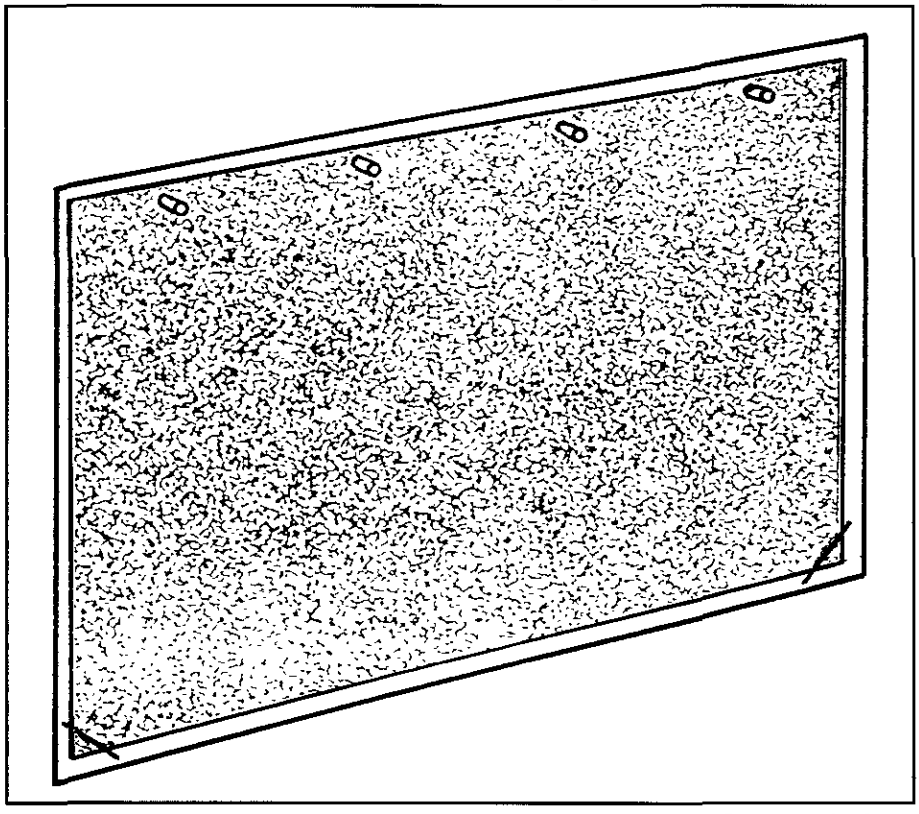
In preparing slides, choose ink colors carefully. Red, blue, and green are hard to see on a dark background. These colors can be used to show large arrows or similar information, but lighter colors work better for lettering, unit symbols, and other detail work. The reverse is true with light backgrounds. Yellow and orange are poor for detail, and yellow is hard to see in general if the background is light. Keep the number of different colors to a minimum; too many will distract the audience and make the information harder to understand.

When using briefing slides, keep the slides simple. Cut out any unnecessary information; then use two or three different slides instead of trying to cram too much information into one. Again, number all of the slides so a tray that is dropped can be reorganized quickly.

Try not to mix too many types of briefing aids. A single means of presenting information (either butcher paper, slides, or chalkboard) with a map is straightforward. Integrating butcher paper or a chalkboard, a map, and one type of projector is not too difficult, and most audiences are not disturbed by the selective use of these in a briefing. But using both 35mm slides and viewgraph transparencies is generally unwise; timing the two aids can be difficult, and the differences between them in terms of quality and size of image on the screen may detract from your presentation. Simplicity is generally best.

Lighting is critical. Enough light to see the briefing aids is essential, but too much light—or improperly directed light—can cause reflection. If you're using a generator, have a back-up generator ready, along with a good operator who can react quickly if the primary source fails. An overhead projector is an effective means of spotlighting your aids.

The proper use of a pointer is another



Division standard map board with four bolt holes. The G-2 specified the grid coordinates of each corner and each bolt hole (a total of eight coordinates). Rubber bands affixed with tacks kept overlay corners from curling outward.

key to successful briefings. When a speaker uses his hand to point to information, he frequently blocks the audience's view. With a pointer, he can stand aside and still point accurately. The speaker should keep the pointer in the hand closest to the briefing aid; otherwise, he tends to turn his body toward the aid, again blocking the view.

Assign seats to the speakers so that they will be less likely to cause a distraction when they get up to speak. Also make sure each speaker walks the route from his initial location to the briefers' area and then to the seat he is to occupy after he briefs; he will be less likely to interfere with the next briefer or with others who may be helping. Each speaker should know whom he follows and who follows him. This eases the transition between speakers, and each can introduce the next.

Do not overlook the seating of key people in the audience. Assigning seats helps ensure that those who arrive late can be guided to their seats without undue disruption.

Once the briefing area is set up, look at it from the viewpoint of the audience. Sit or stand where the audience members will sit or stand; otherwise, you may not see the glare they will see from their positions.

Finally, *rehearse* the briefing. As a minimum, walk through it mentally, but conduct a full dress rehearsal if you can, with all briefers, assistant instructors, and training aids on hand. Have an audience too, if possible, one that can critique the speakers and ask tough questions. Also ask the audience to review the aids for clarity and accuracy. Each speaker should say only what is necessary and stay within the allotted time.

A full dress rehearsal is especially critical if more than one speaker is involved. It lets the briefers complement each other during the briefing by reinforcing points already made or referring to those coming up. Individual presentations can be tailored to dovetail with others. Make sure the briefers coordinate with each other when the material in one affects another. Such a rehearsal should lead to a professional, team-building presentation in which no one is unpleasantly surprised. The Center for Army Lessons Learned (CALL) Publication 91-1, Rehearsals, provides additional guidance.

Presentation

The second phase of a briefing is the presentation itself. Briefers must arrive early and provide briefing aids to the assistant instructors so that they can put all the slides in order, ensure that the projectors are focused, set up the screens properly, and complete the many other tasks that are essential to a good session.

Post the agenda. For a long briefing, it is helpful to have a printed program containing the briefing agenda or to have the agenda visible throughout the briefing. For other situations, showing the agenda at the beginning is enough. Stating the objective—the one determined at the beginning of the preparation phase—ensures that all members of the audience understand the purpose of the presentation. When briefing a commander or other decision maker, this is also the time to identify any unresolved issues or decisions, so he can focus on those key elements.

Speak naturally. Be sure to speak clearly so that your audience can hear you and work on eye contact. An inexperienced speaker, or one who is unsure of himself, tends to keep his eyes fixed on his notes or aids, glancing up only briefly.

As a speaker gains confidence, he looks into the crowd for extended periods but rarely makes eye contact with his audience; he tends to look off to the side of his audience during his presentation. An experienced, confident, relaxed speaker, on the other hand, makes *real* eye contact. In addressing small groups, he actually looks into the eyes of the people in the audience for several seconds at a time. This attempt at personal contact helps draw individuals into the briefing. It also helps him sense whether his points are being understood. Such a speaker can get the same effect even with a large audience: One person in a large briefing may feel the speaker is looking directly at him, addressing the crowd but noting his interest and attentiveness. In reality, the briefer is letting his eyes rest on a portion of the audience, and many others nearby may also feel he is looking only at them. Such attention to eye contact can be combined with the use of notes or aids; this technique simply takes practice and rehearsal.

Also related to a speaker's confidence is the way he handles slides or other briefing aids when they contain text. An inexperienced speaker may feel uncomfortable standing while the

audience reads the aid, but a more confident speaker knows that all he has to do is introduce the material or address the highlights. *Do not* read your slides to the audience.

Control the briefing. If you want the audience to hold questions until the end of your presentation, say so in the beginning. Then when someone interrupts, ask him to bring his question up again if you fail to address it before the conclusion. Use good judgment here. Some commanders like to insert comments during their staffs' briefings to make sure critical points are emphasized and the intent is clear. Since it is the commander's briefing, check with him if you are not familiar with his style.

Answer questions forthrightly. Staff members or unit leaders who have a good working relationship will support each other by stepping forward, if it is appropriate, when they think you can use some help. If no such help is available, take a note and tell the questioner you will get back to him later. Better still, have someone else take notes for you. Taking your own notes is likely to disrupt your presentation, and you may find those notes unclear afterwards.

If a staff or unit is briefing a senior officer, capturing all guidance and queries is especially important. At least one, often two or three, should take notes at such a briefing to reduce the chances of missing a senior commander's key comments.

Brief with confidence. You are the expert; the audience is there to learn from you. Your job is to inform or train them. There is no reason to be nervous if you know your material well.

Finish your briefing cleanly. A definitive conclusion, such as "Sir, pending any questions, I will be followed by Sergeant Jones." Or, "That's it, men. Any questions?" Such a device keeps you in control.

The result of a well planned and prepared briefmg—by a single speaker or several—is an informed audience that has more confidence in its leaders.

Lieutenant Colonel Russell W. Glenn, an Engineer officer, is a U.S. Army exchange officer to the Royal School of Military Engineering in Great Britain. He previously served with the 3d Armored Division in Germany and during Operations DESERT SHIELD and DESERT STORM and with the 1st Infantry Division. He is a 1975 graduate of the United States Military Academy.

Infiltration
A Form of Maneuver

LIEUTENANT JEFFREY A. MERENKOV
SERGEANT MAJOR CLIFFORD R. WEST

Infiltration has long been considered a preferred form of maneuver. As a *technique* it has been used in guerrilla operations, in rear area harassment operations, as a reconnaissance tool, and in support of units in the attack. As a result, it is often regarded as a small-unit activity and one that requires a small group of men—a squad or platoon, for example. But history has proved that infiltration can also be used effectively as a form of maneuver—as a *tactic*.

The purpose of infiltration is to move by stealth to place a maneuver force in a more favorable position from which to accomplish the mission. It is a preferred form of maneuver because it permits a smaller force to use its stealth and surprise to attack a larger or fortified force.

During infiltration, the attacking force passes through the enemy's primary defensive area, avoiding major engagement, and disposes itself in the rear for decisive action. Movement is traditionally on foot or by air, but it can also be by vehicle or watercraft.

An infiltrating force accomplishes its mission in conjunction with other units by attacking the rear and flanks of forward enemy positions to support a penetration of a larger or heavier force. It can also attack communication lines, headquarters, command posts, key combat support and combat service support activities and facilities, and hinder the deployment of enemy reserves.

Finally, infiltrating forces can perform forward observer and reconnaissance missions for larger units in the attack or defense.

Field Manual 7-20 defines several phases:

Patrol. A unit conducts aggressive reconnaissance patrols to determine the extent of enemy positions and to locate gaps in enemy positions that will be

used to infiltrate through.

Prepare. The commander must conduct thorough execution of troop leading procedures.

Infiltrate. Units must infiltrate through gaps by units and sub-units, avoiding detection, and, if possible, engagement. The infiltrating unit also ignores ineffective enemy fire during this phase.

Consolidate. After infiltration, the friendly unit reassembles in the enemy's rear using one or more link-up and objective rally points (ORPs). The unit conducts final preparation for execution of the mission in the ORP.

Attack. The unit completes its mission from its position of advantage to the enemy's rear.

In some respects, an infiltration can be compared to a penetration, since both move through an enemy position. The major difference is that in a penetration maximum combat firepower is committed in the passage through the enemy line. In an infiltration, maximum firepower is committed only after passage through the enemy line and subsequent reassembly, penetration, and initiation of the attack.

A number of factors are required for successful infiltrations:

Weather and Terrain. Infiltration is best carried out under conditions of reduced or limited visibility. Fog, rain, snow, darkness, jungle, and rough terrain make infiltration operations more feasible and reduce the possibility of enemy detection. Easy, predictable avenues of approach are to be avoided.

Planning. A commander's planning, on the basis of a mission analysis and an estimate of the situation (METT-T), will best determine whether or not infiltration is the form of maneuver that offers the best chance for success. A well-prepared, mutually supported defense in depth by a determined enemy may prevent any successful attempt at infiltration. But when an enemy's defenses are over-extended, or when his front has not been stabilized and is constantly fluid, infiltration has the best chance of succeeding.

The decentralized nature of this type of operation demands detailed reconnaissance, detailed briefing of personnel, detailed coordination—and more time for execution than normal operations.

During infiltration, movement is traditionally on foot or by air, but it can also be by vehicle or watercraft.

Objectives and routes are selected on the basis of a terrain analysis, enemy dispositions, and the desire to avoid engagement before reaching the areas from which the decisive attack is to be launched.

The attack may consist of two parts—one an attack by the infiltrating force and the other an attack by forces in contact with the forward enemy elements. Either may constitute the main attack force or the secondary attack force. The best results are achieved when the attack is fully coordinated and when the infiltrating force attacks at the same time as the frontal attack force, or soon after it. Well-coordinated plans for reinforcement, fire support, and deception can greatly reduce the risk of failure.

Mental Attitude. An offensive frame of mind is necessary to an infiltration mission. Infiltration is not just a defensive tactic used to slow or harass an advancing enemy; it has an offensive role and that role should not be neglected. Furthermore, an infiltrating force that is surrounded by the enemy requires aggressive, confidence-inspiring leadership.

Alternative Course. As a major form of maneuver, infiltration should be considered an alternative course of action rather than solely an aid to a direct attack using another form of maneuver such as a penetration. Infiltration also provides the opportunity to wreak havoc on the enemy.

Initiative. Successful infiltrations by sizable forces have been characterized by boldness, audacity, and the exercise of initiative by all commanders. Infiltrators are not reckless; they do not flaunt their maneuver in the face of the enemy. Individual resourcefulness and ingenuity are required to avoid enemy detection. Although infiltration entails great risk, the audacity and element of surprise of the plan itself compensate for the gamble involved.

Patrolling Proficiency. The key to successful infiltration is the patrols' ability to find gaps and weak points in enemy defenses. It is a unit's ability to use stealth, avoid enemy observation posts, and select the best route (for avoiding enemy contact or for the ability to deviate from the original route) to execute the mission. A minor breach of noise and light discipline can compro-

mise the entire force.

Conditioning. Passage through difficult terrain such as swamps, mountains, jungles, and enemy lines requires a high state of physical conditioning. Due to the difficulty of support and resupply missions, the infiltrating force must be prepared to endure the hardship of carrying several days of supplies and equipment over difficult terrain. Soldiers must be able to move long distances with extra heavy loads and still make a determined attack. Soldiers must also be prepared both mentally and physically to transport and care for casualties that cannot be immediately evacuated back to friendly lines. The ability to forage and live off the land may also be required if the situation deteriorates. The U.S. infantryman operates best when he knows the risks and understands the situation ahead of time.

Surprise. Surprise may be the most important aspect of a successful infiltration operation. Every effort must be made to avoid enemy surveillance or detection. Extra caution must be exercised against an enemy believed to be operating with night vision goggles (NVGs), thermal imagery devices, or electromagnetic sensors.

Control and Security. Security during infiltration can be provided by friendly patrols and artillery fire to prevent enemy reconnaissance patrols from determining the size and objective of the infiltrating force. Control measures must be used during movement into enemy territory. Trails and roads should be avoided, if possible. If they cannot be avoided, however, point, flank, and rear security must be maintained. During the infiltration, radio should be used only with great caution. The use of thermal imagery devices helps the infiltrating force avoid detection and contact. Rally points (RPs) are also key to successful control during infiltration. These are easily identifiable places where units can reassemble or reorganize if they disperse. RPs that provide cover and concealment are chosen along each route or lane. An ORP that does not compromise security is selected near the objective. Before it is occupied, however, it must be reconnoitered. Assembly areas, linkup points, release points, and attack positions are other control measures.

Lane Selection. A commander must decide whether to use single or multiple routes or lanes.

Infiltration lanes are chosen on the basis of terrain analysis, gaps in the enemy's defensive security system, and locations of the enemy security elements. Lanes should offer cover and concealment and help soldiers avoid detection by radar, sensors, NVGs, and the like. If enemy target acquisition assets are unavoidable, heavy patrolling should precede an infiltration. Active deception measures such as artillery fire, diversionary attacks, feints and

ruses can also be used.

An infiltration route is assigned if precise information is known about enemy defenses. If detailed intelligence is not available, an infiltration lane should be used instead.

The number of routes or lanes used depends on the size of the infiltrating force, the amount of intelligence available on the enemy and the terrain, the time available, and the number of possible routes or lanes. The force uses a single route or lane with ease of navigation, control, and reassembly in mind. Or it can use multiple routes or lanes to reduce the risk of detection of the entire force and to allow faster movement.

Size. The largest force possible should be infiltrated without sacrificing stealth. The size of an infiltrating force depends on its mission. A squad may be enough for an area reconnaissance. A squad or a platoon may be necessary to destroy a command post. But an infiltration in support of a frontal attack may require a company, a battalion, or even a brigade.

Infiltration should be thought of as a primary course of action or *form of maneuver*, as opposed to just a *technique*. The latest edition of FM 7-20, *The Infantry Battalion*, reflects this notion. While a name in itself is not important, the lack of clear terminology contributes to misunderstanding and confusion regarding the role of infiltration. Furthermore, the inherent risks of infiltration operations tend to discourage most commanders from practicing and using them. It cannot be denied that infiltration is a gamble. But audacity, if properly applied, will provide its own security. Proper planning for fire support, reinforcement, and deception will greatly reduce the risk of failure. Success depends on proper planning, highly trained troops in excellent physical condition, and aggressive but competent small unit leaders who can execute the mission with minimal supervision.

History has shown us many examples of the devastating effects of infiltration. Quite often we have been the ones who were surprised when an enemy used it against us. Yet even commanders who have been schooled the hard way are still hesitant to adopt the tactics of the enemy. Present and future infantry commanders must, therefore, overcome their historical reluctance to adopt infiltration tactics.

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The Submachinegun
In the Personal Defense Role

STANLEY C. CRIST

The Small Arms Master Plan (SAMP) addresses the desire for a personal defense weapon that, along with an individual combat weapon and a crew-served weapon, would create a family of small arms vastly superior to our present infantry weapons. According to the SAMP, the personal defense weapon should be very light (weighing less than 1 1/2 pounds) and capable of hands-free carry. It should have a very high hit probability at 50 meters, with a munition that is deadly at that range and able to penetrate body armor.

The Army's current personal defense weapon—the M9 pistol—meets the requirements for hands-free carry, and its 9mm NATO round is lethal at ranges well beyond 50 meters, but only against unprotected personnel. The greatest weakness of the M9 is its poor hit probability. It is far from easy for most soldiers to hit a target at 50 meters with any semiautomatic pistol; when the target is shooting back, hit probability usually drops to zero. As a result, the handgun is little more than a symbolic armament; it has been used in the personal defense role chiefly because it is small and light.

Until relatively recent times, more effective weapons have been much too big and heavy for a person to carry all the time. But this situation changed with the development of the third-generation submachinegun (SMG).

First-generation SMGs were not only very expensive to manufacture; they were also as big as the standard infantry rifle at the time—and sometimes heavier. A prime example is the M1A1 Thompson submachinegun used by World War II paratroopers.

Second-generation weapons used receivers made of sheet metal stampings and stocks formed from steel tubing or heavy-gauge wire. The result was a big decrease in cost, as well as a significant reduction in size and weight. The M3A1 "grease gun," which the Army used for some four decades, is a typical second-generation SMG.

Third-generation submachinegun is not much larger than the M9 service pistol.

With the introduction of the third-generation SMG, the use of "telescoping" bolts permitted the design of such ultra-compact submachineguns as the Ingram M10, used by Navy SEAL teams. Nine-millimeter SMGs have been built that are only a little larger than the M9 pistol—still small enough to be carried in a shoulder holster.

Such a weapon offers a dramatic improvement over the service handgun in hit probability, approaching the SAMP standard of 0.9 at 50 meters. And it achieves this hit probability with off-the-shelf weapons and ammunition. It is true that the standard-issue M882 ball ammunition cannot defeat body armor, but high-performance military ammunition does exist that would correct this deficiency. The current stocks of M882 ammunition could continue to be used for training and gradually replaced with the enhanced-penetration rounds.

Third-generation submachineguns use the straight-blowback method of operation, which is the least expensive type of automatic weapon. Low cost is a very desirable characteristic for any personal defense weapon candidate, because it will see little use, even in the biggest war. It is primarily a back-up weapon, for issue to troops whose main duties are not infantry combat—tankers and helicopter crewmen, for example.

It would be an easy matter to attach a sound suppressor to a submachinegun, thereby increasing its versatility and usefulness. Special operations forces often conduct operations that require a high degree of stealth. Members of aircraft crews shot down in enemy territory also need to keep a low profile until they are rescued.

The Small Arms Master Plan envisions a sidearm that can fill every possible requirement, from military police to general officers, from cooks to clerks,

from artillerymen to tankers. It is doubtful that a single weapon can be created (given present technology) that will be suitable for every need. For combat troops, however, the small, 9mm submachinegun can fill the role quite well. Compact, relatively light, with high hit probability, hands-free carry, and low-cost, the submachinegun could be an effective, affordable personal defense weapon that is available now!

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FIFTY YEARS AGO IN WORLD WAR II

MARCH-APRIL 1943

By 1943 the tide of Japanese success in the Pacific was receding. In New Guinea, in the Solomon Islands, and on Guadalcanal, American and Allied forces were dislodging a tenacious enemy in some of the bitterest fighting of the War. In North Africa, Rommel's Army Group Africa faced the ever-increasing numbers of Allied forces and saw its hold on that area slipping away. The German Sixth Army lost its momentum, becoming surrounded at Stalingrad, and the Soviet Army swung into an offensive which would eventually sweep the invaders from their homeland.

Here are some of the highlights of events that occurred in March and April of that year, excerpted from Bud Hanning's superb book A Portrait of the Stars and Stripes, Volume II *(Seniram Publishing, Inc., 1991).*

1-4 March — *A Japanese naval convoy of 8 destroyers and 8 troop transports is attacked by a force of B-24's and fighters in the Battle of the Bismarck Sea off New Guinea. Only four destroyers survive. Over 3,000 Japanese are lost in their final attempt to land troops in the Huon Gulf.*

6 March — *General George S. Patton, Jr., assumes command of U.S. II Corps in Tunisia and prepares to go on the offensive.*

8-25 March — *A Japanese offensive against Allied positions at Bougainville, New Guinea, is defeated.*

18 March — *1st Ranger Battalion, supported by 1st Armored Division, seizes El Guettar, Tunisia. Three days later, they conduct a night attack on the El Guettar Heights, capturing more than 700 enemy.*

9 April — *In action around the Fondouk Pass, Tunisia, Private Robert Booker drags a light machinegun and ammunition across open ground and destroys a German machinegun nest, though wounded by machinegun and mortar fire. He is posthumously awarded the Medal of Honor for heroism.*

16 April — *Also in Tunisia, 18th Army Group finalizes plans for a thrust toward Tunis and Bizerte. In the British 8th Army area, General Bernard L. Montgomery prepares to launch an offensive against Enfidaville on the 19th.*

18 April — *Japanese Admiral Isoroko Yamamoto is killed when his plane is shot down over the Solomons, by Captain Thomas Lanphier of the 339th Fighter Squadron. The story is suppressed because Captain Lanphier's brother is a prisoner of the Japanese.*

22 April — *The Allies launch the final offensive to clear Tunisia of Axis forces. The British 5th and 9th Corps commence the attack, meeting stiff German opposition North of Sebkret el Kourzia.*

24 April — *The American force ordered to invade the Aleutian Islands departs San Francisco. It will arrive at Cold Harbor, Alaska, on 30 April.*

TROPICAL REGIONS: INFLUENCES ON MILITARY OPERATIONS, PART 1

COLONEL ROBERT H. CLEGG

EDITOR'S NOTE: This article is Part 1 of a two-part series on the tropical regions of the world and their environmental effects on military operations. It discusses climatic and meteorological conditions, the terrain and vegetation, and the military aspects of the terrain. Part 2, scheduled for the May-June 1993 issue, will discuss the effects of a tropical environment on soldiers, on equipment and facilities, and on combat and support operations.

This series continues Colonel Clegg's INFANTRY articles on the various regions of the world, which include "Environmental Influences on Desert Operations" (May-June 1992), and the two-part "Cold Regions: Environmental Influences on Military Operations," co-authored with Brigadier General Peter W. Clegg (July-August and September-October 1992). Colonel Clegg's two-part series on the temperate regions will follow.

Colonel Clegg's intention in writing this series, and INFANTRY's intention in publishing it, is to provide a complete reference that military leaders can use in preparing to operate in any part of the world to which their units may be deployed in the future.

Tropical regions make up about 20 percent of the earth's surface, primarily along the equator but also extending 20 degrees to the north and south. The tropics have been areas of conflict for centuries, for various reasons, and the involvement of the United States Army in such areas dates back at least to the Seminole Wars. The Army now has an extensive and successful history of jungle operations, both in counterinsurgency situations and in more conventional mid-intensity campaigns.

At the beginning of the 20th century, the Moro insurrection in the Philippines tested the Army's ability to adapt to the jungle. During World War II, jungle combat occurred in the Southwest Pacific, and in Burma, Malaya, and Indo-China. In addition, both the Army and the Marine Corps have also been involved in Central America and the Caribbean throughout this century. More recent deployments include those to the Dominican Republic (1965), Granada (1983), El Salvador, Honduras, and Panama (1989). In addition, conflicts in Cuba, Nicaragua, and El Salvador increased tension between the United States and the Soviet Union throughout the "cold war" years.

After wars of independence in tropical Africa, struggles among tribes in Zaire, the Congo, Nigeria, Ghana, Liberia, and other new countries required increased readiness and often the involvement of the U.S. Army. In tropical India, Bangladesh, and Sri Lanka, the U.S. armed forces have followed events closely and have become involved for humanitarian reasons. The Army's longest tropical war, of course, was in Southeast Asia, and conflict continues in that region. Other tropical countries, such as Indonesia, continue to be involved in guerrilla warfare in jungles.

Today, tropical areas continue to be volatile, and it is a safe bet that the Army will again be involved in jungle operations. When or where these operations may be will not be known until it is too late to prepare for them. Therefore, we must not forget the lessons we have learned about jungle operations and must continue to train for such operations.

The first step is to understand the fundamental characteristics of the tropical environment.

Climatic and Meteorological Conditions

Tropical regions are hot and wet with very little variation in conditions. It is the amount of precipitation rather than the temperature that differentiates the three sub-climates of

tropical regions—the tropical rain forest, the monsoon, and the savanna. The average monthly temperature is mostly around 80 degrees Fahrenheit and never below 64.4 degrees.

The *tropical rain forest* sub-climate is found along the equator in the Amazon River Basin, eastern Central America, the Congo River basin and west Africa, the South Pacific (Indonesia, Philippines, Malaya), and Hawaii. Conditions in these areas are best characterized as monotonous. The average monthly temperature is 80 degrees Fahrenheit with only a two- or three-degree range in year-round averages. Humidity is consistently high, with rain falling nearly every day at about the same time and totalling 60 to 100 inches a year. Generally, there is little wind.

The second tropical sub-climate is the *monsoon*, which is seasonal, based on precipitation. It includes a distinct wet season that averages from 20 to 30 inches of rain a month and a dry season that averages only two inches a month. Average temperatures remain high (80 degrees Fahrenheit). Winds are significant—in fact, the term *monsoon* means "reversal of winds"—bringing on the seasonal variation. The monsoon climate is found mostly in coastal regions, such as the east coast of Indo-China, the west coasts of Southeast Asia (Burma and Bangladesh) and of India and Africa, and the east coast of Brazil.

The *savanna*, the third tropical sub-climate, is a transitional climate between the tropical and the arid. There is a slight variation in temperature by season in this sub-climate, with ranges of 15 to 30 degrees Fahrenheit from the monthly average of 80 degrees. Like the monsoon, the savanna includes distinct wet and dry seasons.

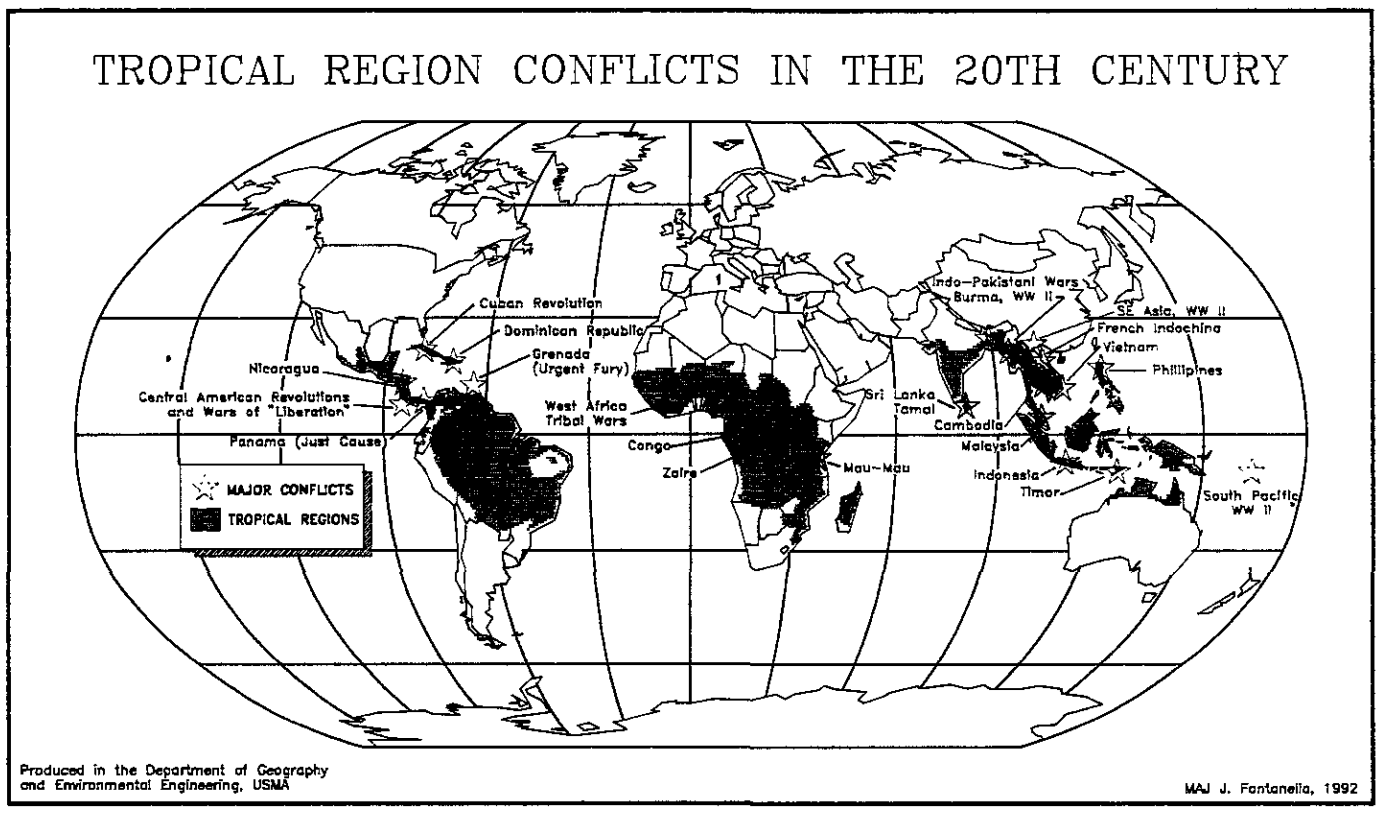
The savanna wet season brings 35 to 70 inches of rainfall a year, much drier than the monsoon wet season. The savanna is found in southern Mexico, the west coast of Central America and Cuba, Central Southeast Asia, southern India, northern Australia, and in Africa and South America between 5 degrees and 20 degrees South latitude and between 5 degrees and 10 degrees north latitude.

Climate Controls

Latitude is the dominant climate control in tropical areas, because it controls the amount of solar radiation. Both the intensity and the duration of sunlight determine temperature, and the angle of incidence of the solar rays influences their intensity and duration. This variation is least at the equator, where each day of the year has exactly 12 hours of light and 12 hours of darkness. The highest solar intensity occurs when solar rays hit the earth at right angles (head on). Because the earth revolves around the sun and because of its tilt, these perpendicular rays "migrate" north and south to 23.5 degrees latitude (the angular tilt of the earth's axis). This region, known as the tropics, experiences high solar intensity. This solar intensity, combined with uniform solar duration, results in hot temperatures. Because temperatures are high, evaporation occurs readily. In tropical areas, the oceans provide the moisture source for evaporation, which explains why the tropics are hot and wet.

Ocean currents also affect tropical climates because they move warm, moist air as well as water toward the west and the poles along the eastern coasts of the continents, bringing high precipitation.

Most tropical areas are coastal, and the *oceans* exercise still another control on the climate. Large bodies of water moderate conditions and keep them relatively stable, compared to interior land masses where there are temperature extremes and increased dryness. This land-water contrast



largely accounts for the differences between the drier savanna inland (away from the water source) and the moist rain forest and monsoon areas along the coasts.

Mountains are especially influential in controlling moisture. As warm, moist air from the oceans hits land and rises, it cools, allowing condensation and then precipitation. Coastal mountains cause a rapid elevation of this air. As the air rises and cools, the moisture precipitates out in large quantities, creating heavy rains. It is warm moist wind hitting land that creates the wet monsoon.

In the summer, the oceans are relatively cooler than the land (which absorbs solar energy faster), and this causes higher pressure over the oceans. Air moves from high pressure to low pressure (from the oceans to the land). In winter, the opposite occurs, because the land loses heat more quickly than the water; thus the high pressure (colder) air is created over the land. Air then moves from the cooler drier land to the oceans, creating the dry monsoon (no rain).

This seasonal reversal of winds changes the precipitation pattern. The equatorial region, where it is relatively calm with stable conditions (no seasons), does not experience typical monsoon weather. It is north and south of the equator at about 10 degrees latitude where the monsoon climate is found. In some locations, such as northern Vietnam, the monsoon cycle is reversed. This occurs because in the winter cooler drier air moves southward out of China (warming) across the South China Sea (picking up moisture) and then hits the Tryong Son (Aunamite) Mountains causing elevation, cooling, and precipitation, hence the wet winter monsoon. Farther inland on the back side of the coastal mountains and away from the moisture source (the ocean), less moisture is available and drier savanna conditions prevail.

The final climatic control is *altitude*. Although altitude plays a lesser role in the tropics, it still changes the temperature (a drop of three degrees Fahrenheit for every 1,000-foot rise). Therefore, temperatures are cool in the higher mountains of the tropics. In fact, snow occurs on Mounts Kenya and Kilimanjaro, which are practically on the equator.

Climatic Elements

Temperature, the dominant climatic element, directly determines moisture, pressure, and wind. The average temperature in the tropics is 80 degrees with daily ranges of up to 30 degrees and monthly average ranges of only two to three degrees. No monthly average temperature is below 65 degrees.

The daily sequence begins with cool temperatures of 60 to 70 degrees in the dark morning hours. With sunrise, temperatures steadily increase to more than 90 degrees and may hit 100 by 4:00 p.m. As dusk draws near, temperatures decrease. The daily variation is greater in the high mountains because of the cooling effect of altitude.

For military purposes, the critical temperature value is 85 degrees, the point at which heat injuries become more likely, mental capacity deteriorates, engines overheat, batteries lose capacity, and aircraft performance diminishes. The critical temperature on the low side is 50 degrees. This is a concern only in the dark early morning hours in the mountains, but there is a definite chill, made worse by wetness.

The temperature alone is not the problem. Because all temperatures are on the high side, evaporation causes high humidity. This moisture in the air, together with relatively high temperatures, makes the comfort level fall, especially in the tropical rain forest and monsoon climate regions, where the relative humidity hovers around 100 percent. When the wet bulb globe temperature (WBGT)—the index of comfort used by the Army—is 75 degrees and higher, precautionary measures are required. In the 80-degree range, exercise imposes greater strain on the human body. In the rain forest and monsoon areas, 80-degree wet bulb readings occur daily.

With large quantities of water in the air, it rains almost every day in the rain forest and in the monsoon during the wet season. Heavy rains of up to eight inches in one day can occur, and yearly totals of 80 to 200 inches are possible. The savanna is considerably drier with only 35 to 70 inches annually (still high, compared to other regions of the world). Staggering amounts of rain fall in the monsoon areas, with more than 200 inches in less than six months. In monsoonal India, 84 inches of rain in three days has been recorded, more than the continental United States might get in two years.

In the rain forest, cumulus clouds build in the afternoon and clear after the daily rain. The wet monsoon may provide a constant cloud cover; fog and dew are also common. Dew collects on everything. For example, the "fog factory" of Khe Sanh (Vietnam) almost provided the North Vietnamese another Dien Bien Phu (exactly what they hoped for). Khe Sanh, an old French fort similar to Dien Bien Phu, was occupied by U.S. Marines to interdict the Ho Chi Minh Trail. For more than two months in 1968, the 304th, 324th, and 325th North Vietnamese Divisions besieged the Marine camp. The monsoon isolated the camp and aerial resupply became impossible. Close air support could not be provided. The plateau on which Khe Sanh is located was plagued by a persistent thick fog that resulted in zero ceiling and zero visibility. Even when conditions in the vicinity of the camp were excellent, it was covered with fog. The 26th Marine Regiment, supported by attached units, was outnumbered six to one. When the attack came on 21 January 1968, the fog precluded adequate resupply or tactical air support, but high-flying B52 bombers dropped almost 60,000 tons of bombs to ward off the attackers. The Marines held, and the weather cleared in early April. The 1st Cavalry Division then made the first division-sized air assault into the area, defeated the enemy, and relieved the camp.

Atmospheric pressure is also directly related to temperature. Heat causes low pressure; therefore, the tropics have a series of low pressure cells called equatorial lows. Low pressure is less stable than high pressure. With the hot air rising, a vacuum of sorts is created that is filled by cooler air moving from the north and south where higher pressure prevails. Along the equator, winds are calm because the air is rising. The high winds occur at about 10 degrees North and South latitude. It is here that tropical storms and hurricanes

occur, with winds up to 120 miles per hour.

Tropical Storms

Storms in the tropics range from short-duration thunderstorms to Sumatras, with winds of 50 knots, to typhoons, with winds over 100 knots. Thunderstorms result from the convectional lifting of hot moisture-laden air throughout the day.

As heat and humidity increase, so does the intensity of thunderstorms. Massive, dark nimbo-cumulus clouds form, creating strong winds, heavy rains, and lightning. Each of these elements is a danger by itself: Winds overturn vehicles, destroy structures, and displace debris, which causes injury. Heavy rains immediately fill streams and increase the speed of their flow, and floods are an ever-present danger. And lightning causes fires and injury.

Typhoons (also known as hurricanes or cyclones) are the most dangerous storm in the tropics. These result from extremely low-pressure centers, which allow for high winds. As high winds cross the ocean, great waves form. It is when the hurricane hits land that the high winds, the surf, and the heavy rains become particularly hazardous. The greatest danger is the storm surge, a huge wave of up to 25 feet. When it crashes onto the land, everything in its path is uprooted, and flooding follows. Typhoons are most common in late summer or early fall when the oceans are the warmest. The east coasts of continents are the most vulnerable.

Hurricanes and other tropical storms have taken their toll on U.S. military operations. In December 1944 a typhoon in the Philippine Sea caught Task Force 38 by surprise. The 86 ships were steaming to destroy Japanese airfields in support of landings on Luzon. On 17 December, the fleet was experiencing high seas and driving rains but was unaware of a building typhoon. By noon on the 18th, the barometer plummeted and winds were at 100 knots. The fleet, instead of sailing away from the storm, mistakenly headed directly into it. Within a three-hour period, the ships were scattered over a 50- to 60-mile area. Visibility had dropped to only three feet with no discernible distinction between the sky and the sea. The aircraft carrier *USS Langley* rolled heavily and, together with the *USS Altamaha,* was severely damaged by the storm.

In the short time the hurricane pounded the fleet, 800 sailors were killed, seven ships damaged, and three destroyers capsized. On the carriers, 146 planes were lost, having been blown overboard or tossed into the sides of the ship below decks. The crippled fleet had to abandon its mission; the U.S. landings had to be postponed, and the fleet headed for Hawaii for repairs and replacements.

Terrain Analysis

Landscapes in tropical regions fall into three categories: coastal regions and islands with steep volcanic mountains and thick jungle; flat river flood plains, basins, and deltas or flat atoll (coral reef) islands, again with jungle vegetation or rice paddies; and elevated "tableland" with tall savanna grasses.

Coastal and island topography with volcanic mountains is characterized by sandy beaches, a flat coastal plain that ranges from less than a mile to more than 20 miles and then steep slopes rising from near sea level to more than 10,000 feet. The slopes may be too steep to be negotiated, even on foot. Because of jungle vegetation, movement is extremely slow—it can take days to go only a few miles. This terrain is found in Central America, Southeast Asia, and the islands of the South Pacific (Indonesia, the Philippines, Hawaii).

During World War II, the Japanese forces that landed on New Guinea had to face this type of landscape, as well as the combined forces of the 32d U.S. Infantry Division and the 7th Australian Division. Control of New Guinea was key to protecting the U.S. convoys that were delivering equipment to Australia for General Douglas MacArthur's impending campaign. The allied force occupied the southern side of the

This is an example of the multicanopy jungle with heavy vines that is found in tropical regions.

This area of tall grass and mud is typical of the Mekong Delta region of Vietnam.

island at Port Moresby, while the Japanese landed on the north side at Gona and Buna. The Owen Stanley Mountains separated the two forces.

The Japanese generals' plan was to attack Port Moresby by crossing the 10,000-foot range, a distance of 140 miles of thick jungle, and the march began on 22 July 1942. The construction of steps assisted the crossing, where even pack animals were useless. The Japanese soldiers vigorously accepted the challenge, but the tropical conditions (sweltering temperatures, constant rain, thick vegetation, steep slopes, flooded streams) took their toll. Exhaustion led to sickness, which was exacerbated by a change to cool, wet nights in the high mountains. At the halfway point some 43 days later, the attack force of 4,000 had been reduced by one-third.

MacArthur ordered a defense 20 miles north of the port. The Japanese attack materialized, but malnutrition, fatigue, sickness, and long, easily interdicted supply lines led to defeat as the allies routed the crippled Japanese force. Now the Japanese withdrew across the treacherous and forbidding terrain, pursued by the combined force. Only 500 effectives returned to Buna. Even the commander became a casualty of the terrain when he drowned in the swamp.

Not all the islands of the South Pacific have steep volcanic mountains, however. Some are flat (only a few feet above sea level), the result of coral forming a reef around ancient volcanoes that are no longer present. As the volcanoes subsided and collapsed inward, they left coral reefs as islands with lagoons in the center.

Other flat coastal areas include the floodplains and deltas of some of the world's greatest rivers (the Amazon, Ganges, Congo, Niger, Orinoco, and Mekong), which meander across wide areas and create backwater swamps. Thick vegetation predominates upstream and inland while agriculture is prevalent near the coast, where greater access exists. Because rice paddies are highly productive in such areas, finding solid ground can be difficult.

During the Vietnam war, combat occurred in the steep mountainous jungle areas north of the Mekong Delta as well as in the flat paddies and tall grasses of the delta itself. In the flat, waterlogged swamps and paddies, foot movement was slow, fatiguing, uncomfortable, and dangerous. But the use of helicopters to overcome these obstacles proved deadly to the Viet Cong, who were then faced with highly mobile air assault infantry. Helicopters also vastly improved aerial observation so that enemy activity could be detected and countered.

The savanna regions are characterized by hills and table land covered by tall grasses. Such regions are found in tropical east Africa, eastern South America, and central Southeast Asia. The topography in these areas is characterized by flat plateaus and rolling hills with deeply cut gorges and channels. With much less rainfall, these areas have no standing water like that found in rain forest and monsoon areas.

The surface in tropical environments ranges from standing water to thick, deep clay (laterite) soils to volcanic rock debris. In the rain forest and monsoon areas, along the river valleys and coastal deltas, there are swamps up to hundreds of square miles in size. The water depth varies from a few inches to several feet. With elevation, thick lateritic soil becomes common. This soil is reddish and fine-textured due to its high iron content and heavy leaching due to high rainfall. Soil depth can be over 20 feet, and this depth, coupled with heavy rain, makes for very unstable slopes. When wet, the clay particles produce a slick surface that reduces trafficability.

In the monsoon areas where there is a dry season, the red clay soil becomes so compact that it is ideal for airfields and roads. In Vietnam, engineers constructed hundreds of dirt airfields and miles of roads on this kind of soil. With high use of these areas, dust reduces visibility and clogs engine air filters. Where volcanoes have been active, lava rock is the surface material. In the hills and plateaus of the savanna, soils are likely to be coarser in texture. The floor of the savanna does not have the vegetation debris and litter that

characterizes the rain forest floor.

Vegetation in the tropics is predominantly, though not exclusively, jungle. Jungle includes closely spaced, broadleaf evergreen trees. Tropical rain forest jungle has multicanopies or layers of vegetation and tall trees. Coconut palms are found along coastal areas. Bamboo and elephant grass grow in thick patches. Vines hang from the taller trees in the enclosed tent-like facade. The canopy reduces the sunlight that penetrates to the jungle floor, limiting underbrush. In some thick jungles, the floor is relatively free of growth. Where the canopy is not continuous, however, shrubs, bushes, and grasses quickly grow and impede trafficability. The jungle floor is likely to be littered with rotten trees. Tree stem diameter is generally less than with mid-latitude hardwoods, but there are exceptions. Softwood trees prevail, and mangroves are common in the swamps. In the drier savanna, tall grass (up to 15 feet) interspersed with short trees covers vast areas. Cultivated vegetation of the tropics includes plantations of banana and rubber trees, and sugar cane and rice fields.

Because of the high levels of precipitation, the drainage features consist of numerous small streams that cut the landscape and join large river systems. In the mountains, the streams begin as small creeks, but heavy runoff cuts deep into the soft soil. Even in relatively small streams, water flow is rapid and dangerous to cross because of the heavy rain and steep slopes. In flatter areas, the streams join large meandering rivers that dominate the terrain.

Backswamps along the river's floodplain and coasts contain still water, except during the monsoon floods. In the drier savanna, drainage can be similar, but the gullies are dry most of the year. They are still deep, though, and can require bridging. Floods are a frequent problem in most tropical areas and cause great loss of life and property, especially in delta areas where the most people live.

The tropics are heavily populated; the vast majority of the people are crowded into dense cities along coastal areas. Villages surround the cities in flat areas where agriculture is productive. In Central America and many other tropical areas, the capital city holds most of the population. As dis-

This area, northwest of Bien Hoa near the Saigon River, is a typical flood plain.

tance from the coast and urban areas increases, population becomes sparse; often the overall density is less than one person per square kilometer (especially in the Amazon basin of South America and in coastal west Africa where there are no major cities). In Africa, the cities of Lagos and Kinshasa hold practically the entire regional population.

Very few people actually live in the jungle. Even in Asia, large tracts of territory have only ten people per square kilometer, yet some of the world's most densely populated areas (100 people per square kilometer) are also in tropical Asia (Java, the Vietnamese coast, southern Thailand, the Philippines, along the Irrawaddy River in Burma, and in all of tropical India).

The man-made features that dominate the urban centers are practically nonexistent in the rain forest jungle and the vast expanses of savanna grasslands. While third-world cities have modern structures mixed with colonial buildings, makeshift huts house most of the people in the cities as well as in the sparsely populated areas. In the cities, automobiles crowd the streets, but bicycles and even water buffalo may share the roadway. The features that do exist outside the central city are not durable and are often washed away during the monsoon floods or blown away by the typhoon winds.

The tropics are plagued with many natural terrain hazards, and military planners must consider all of them. Because many of the tropical areas are along tectonic plate boundaries, volcanoes and earthquakes are constant dangers. The thick soils, steep slopes, and abundant rainfall reduce stability and result in landslides and mudslides.

Flooding is yet another hazard that frequently curtails military operations. The Burma Road was built by allied engineers in World War II to facilitate the movement of supplies through the jungle mountains that connect India to China. The road was the lifeline of General Joseph W. Stillwell's force as well as the Chinese resistance to the Japanese. The topography was extremely steep, the soil deep, and with moisture, collapse was a real danger. During the monsoon, 15 inches of rain fell in one day. Streams became impassable and overflowed their banks, sometimes by as much as 30 feet. Bridges were washed away, along with exposed earth from cleared dirt roadways. Rains and unstable slopes collapsed the road banks and washed the road down the steep slopes. Landslides cut the road, and mudslides reduced its length. During the monsoon, ground movement of materiel stopped. Supplies had to be airlifted, but dark and cloudy skies, thunderstorms, and heavy rain limited flying to one day out of three; and dirt airfields needed constant repair.

Military Aspects of Terrain

Observation and fields of fire are restricted in the tropical rain forest and monsoon areas. Observation improves in the savanna where there is less vegetation. Dense jungle, however, is clearly a major problem. In Vietnam, for example, the vegetation was often stripped away along the sides of roads and the perimeters of fire bases and other fixed positions to improve observation and fields of fire. Where this measure was not taken, the enemy could sneak up to the road and friendly positions to conduct surprise attacks.

Clearing for fields of fire and better surveillance is absolutely necessary in tropical areas. Because of the multicanopy vegetation, aerial observation is significantly reduced. The thick layers also affect remote sensors. Although radar can penetrate vegetation, small targets are difficult to identify with radar imagery.

Mountainous terrain also reduces observation and fields of fire. Deeply cut streams create dead space that must be covered by sensors, mines, observation posts, and indirect fire.

Atmospheric conditions further restrict observation. Fog and mist, ever present in the thick tropical air, can reduce visibility to a few feet and distort the readings of optical devices and other sensors. During heavy rain, reduced visibility gives the attacker an opportunity to move undetected by sight or sound. In the wet monsoon season, the rains are so heavy and constant that observation is often zero. The clouds cause shadows in the darkened jungle, further complicating ground visibility, and visibility for aircraft can be nonexistent. At night, clouds and the vegetation canopy make the jungle floor pitch black. The tall grasses of the savanna and deeply incised streams also reduce ground observation, but aerial observation is nearly unrestricted in these areas.

Key terrain in the jungle consists of those areas that provide either observation or access. The higher elevations are obvious candidates simply because they offer better observation and fields of fire. The control of ridge lines and mountain passes can effectively seal off large unit movements, but small patrols can almost always go around strongholds in the jungle.

As in other areas of the world where settlements are scarce, a village with an airfield, access roads, or fresh water gives the force that holds it an advantage in controlling the area. Rivers can be access routes, and their control often provides a marked advantage; they are therefore considered key terrain.

In the flat deltas and floodplains, any elevated area may be dominant. Urban centers may be considered key terrain on a strategic level; most of the population resides there, and control of the population and facilities associated with a city is often essential to the prosecution of a war.

Natural obstacles in the tropics are formidable, even when they have not been augmented by mines and other man-made obstacles. The vegetation, swamps, and steep slopes reduce movement to a snail's pace. The wide rivers and deeply cut tributaries add to the difficulty in traversing the terrain. Rice paddies in the wide deltas and coastal flatlands channel movement and limit accessibility. Man-made obstacles are especially effective because movement is so channeled in the jungle. The trails are the only means of ground movement, but booby traps and mines along these paths can kill and maim.

No enemy was better with booby traps than the Viet Cong, and many U.S. soldiers paid the price. (Eleven percent of the combat deaths in Vietnam were caused by booby traps.) U.S. units in Vietnam employed obstacles just as

effectively. Wire entanglements, ditches, and mines emplaced around fire bases and base camps proved deadly to the attackers. Other techniques include the use of demolitions to rupture dams and dikes, thereby inducing flooding or the collapse of slopes, sealing off corridors and denying access. In the savanna, natural obstacles are less threatening. Deeply cut gorges still present problems, but the vegetation and slopes are less restrictive. Terrain reinforcement with mines, barriers, wire, and ditches is needed in this more open terrain to restrict and fix the enemy.

Concealment in the tropics exceeds that in any other region. Natural cover is also available. The thick broadleaf vegetation and multicanopy easily conceal a small guerrilla patrol that moves undetected and establishes ambushes at will.

In the tropics during World War II and in Vietnam, the ambush was the most effective and heavily used tactic. Hide positions, such as in deep gorges and mountains, are abundant. Caves dug into the soft deep soil or in volcanic crevasses hide large elements such as logistical bases, hospitals, headquarters, and fighting positions. The Japanese and the Viet Cong used concealment and cover extremely well, and seizing terrain cost many American lives.

Concealment from ground and air observation is good in these areas. The Ho Chi Minh Trail in Vietnam allowed division-sized units with tanks to infiltrate south almost undetected. Ammunition and supply convoys were hidden from aerial and ground attack. The U.S. developed sophisticated sensors to aid in detection; these were either implanted along the trail or operated from aircraft. Interdiction of the trail was an around-the-clock operation; nonetheless, the flow continued around the clock. The multicanopy and thick jungle provided concealment that made targeting extremely difficult.

Deeply cut channels during the dry monsoon and in the savanna provide concealment. Tall grasslands also offer excellent ground concealment, but they are vulnerable to aerial surveillance. In the delta and coastal regions where rice paddies exist, concealment is limited. Dikes provide some ground concealment and cover from direct fire.

Camouflage is effective and easy to employ in most of the tropics because there is no seasonal change in coloration. Using green paint and clothing is often all that is needed. One danger, however, is the false impression that thick vegetation also provides cover. Not all vegetation is cover. Even softwood trees are not a guarantee. Cover is best in underground caves and structures.

Avenues of approach are not as clearly defined in the tropics as in other climatic regions. On the other hand, in the interior jungle and mountains, the only avenues are likely to be ancient trails and mountain passes such as those taken across the Stanley Owens Range of New Guinea by both the Japanese and the Americans. Such avenues as the Ho Chi Minh Trail and the Burma Road were painstakingly constructed—and later used—at great cost in lives.

Trafficability is so restricted by jungle, steep slopes, and swamps that foot movement is the only ground option, and it is slow. Aerial avenues are influenced by the high mountain chains, which also tend to create avenues of approach and channel ground movement. Generally, the only high-speed ground avenues are along the coastal plains where man has cleared the surface, and along beaches. Boats on rivers often provide the best approach.

Avenues of approach are seasonal in monsoon areas. During the dry monsoon, many areas are accessible, but avenues are restricted to the few hard-surfaced roads during the wet season. In Vietnam, such operations as Long Son 719 were conducted during the dry season. Even the rivers are too dangerous in the wet season, and coastal areas are normally flooded. Aerial movement is also restricted because atmospheric conditions are poor. In savanna areas, the terrain is more open, but gorges compartmentalize large unit movements, and avenues of approach are limited by local topography.

We analyze the military aspects of terrain to determine their effect on soldiers, equipment, combat operations, and support operations. In tropical areas, the vegetation, drainage, and slopes point to dependence on aircraft for mobility and to a light infantry force structure. Small-unit tactics dominate in the jungle. Large-scale operations are restricted to the savanna during the dry monsoon season, and along the developed coastal flats. In part two of this series, the focus will be on the way these various factors affect military operations.

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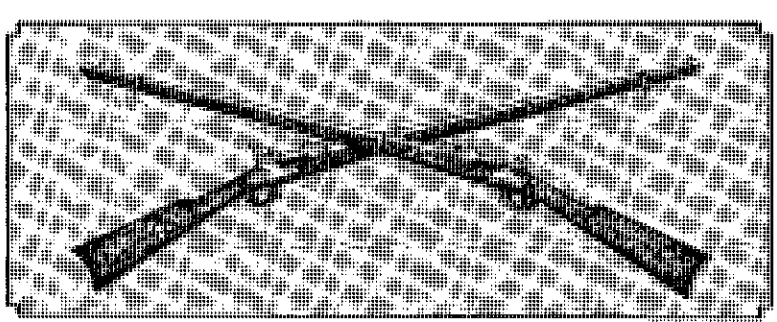


LIGHT INFANTRY COMBAT SERVICE SUPPORT

COMMAND SERGEANT MAJOR DWIGHT E. ANDERSON

FIRST SERGEANT JEFFREY G. BRANDS

Rotations through the National Training Center (NTC) over the years have had a beneficial effect on combat service support (CSS) in mechanized infantry units. Rotations through the Joint Readiness Training Center (JRTC) are now having much the same effect on CSS operations in light infantry units. The lessons learned at the NTC have provided a common ground for both mechanized and light infantry units, and they offer many useful lessons for leaders at all levels.

On the basis of experience gained from numerous NTC rotations, other mechanized infantry assignments, and service in a light infantry division, we would like to share some observations and thoughts relevant to light infantry units. Our comments will focus only on the issues that are organic to a light infantry battalion.

Light infantry leaders should begin to scrutinize CSS operations and improve their units' ability to sustain themselves. To conduct sustained combat operations with the few vehicles they have, light units must place a high priority on CSS planning and execution.

The Support Platoon

The key to effective CSS in a light infantry battalion lies in the task organization of the support platoon. In terms of command and control, the support platoon should have a platoon leader, a platoon sergeant, an ammunition sergeant, and two truckmasters. Training two extra NCOs, beyond the number authorized by the battalion modified table of organization and equipment (MTOE), should not be a problem. Most light units can find a couple of good NCOs or junior enlisted soldiers who can do the job. This is a short-term fix, however, and an MTOE change would be necessary for a long-term solution.

These leaders should be used as follows:

• The platoon leader is located in the field trains, where he is responsible for the organization and timely dispatch of logistical packages (LOGPACs).

• The platoon sergeant is located in the combat trains and is responsible for the security of the combat trains, vehicle movement from the combat trains forward, pickup zone (PZ) operations in support of the battalion aid station, and aerial resupply operations. As the NCO in charge of the combat trains, he is also the operations sergeant. Along with the S-4 and the S-1, he is responsible for the supervision of the administration and logistical (A&L) center and the accurate monitoring of the battalion command net.

• The ammunition NCO operates from the field trains and coordinates for the proper loading of ammunition into the LOGPACs.

• One of the truckmasters is in the combat trains and the other in the field trains. These soldiers are responsible for the vehicles and are the drivers' first-line supervisors.

Field Trains Organization

The battalion field trains operate in the brigade support area (BSA) under the supervision of the headquarters and headquarters company (HHC) executive officer (XO). In mechanized units, the HHC commander supervises the field trains, but we find that the system is more effective with the HHC XO in the field trains while the HHC commander oper-

ates at the tactical operations center (TOC), where he can supervise TOC security, select weapon sites, and perform many other tasks that require his expertise and authority (including helping the S-3 manage special combat platoon assets). Since the HHC XO is also the battalion maintenance officer, he can be more effective in the field trains.

The HHC first sergeant assists the XO in supervising the field trains. He is responsible for security and for the NCO supervision of all the battalion sections and personnel located there. Using all available manpower, he organizes the cooks, kitchen police (KP), drivers, clerks, armorers, and others to perform this important, yet often overlooked, security mission. He ensures that fighting positions are located and dug correctly, that range cards are prepared, obstacles are emplaced, and that guard and reaction forces are established and rehearsed. He coordinates these tasks with the forward support battalion (FSB).

We recommend that a team consisting of mess personnel be identified for each fighting position. This pairing ensures that the critical information regarding security is disseminated by the cooks at each position. The KPs should be rotated periodically from the rifle companies. Placing soldiers with profiles on KP may not be the best solution because of their various limitations, but sometimes it may be the only solution.

The battalion S-4 NCO in charge (NCOIC) and the S-1 personnel services NCO (PSNCO) set up and operate the field trains command post (CP). They operate on the A&L net, using their clerks for radio watch. They track all supply requests sent back from the companies. They monitor this net and pass information to the support platoon leader and the company supply sergeants.

The battle roster of the field trains includes those previously mentioned as well as the company supply sergeants and armorers, the battalion mechanics, and a communication platoon soldier.

Combat Trains Organization

The combat trains area is the heart of the battalion CSS operation. The battalion XO is normally found here. He can go forward to take charge of the TOC as the commander requires, but should plan to spend much of his time overseeing CSS from the combat trains CP.

The battalion S-4, assisted by the S-1, is in charge of the combat trains. Together, they set up and operate the trains CP, monitoring the battalion command net as well as performing as the net control station (NCS) of the battalion A&L net. The S-4 plans the battalion's logistical support. He prepares a CSS overlay that shows main supply routes (MSRs), proposed logistic release point (LRP) sites, barrier supply points, casualty collection points (CCPs), and the like.

The battalion aid station (BAS) is found in the combat trains. Its mission of casualty evacuation and treatment is critical. Since the BAS has only four front-line ambulances, some high mobility multipurpose wheeled vehicles (HMMWVs) from the combat trains might be used to augment them. Additionally, since medics are in short supply, we recommend that in combat the medic drivers be replaced and allowed to go forward on the HMMWVs. Virtually any soldier can drive, but few can perform adequately as medics. The platoon's best medic should be put in charge of triage at the BAS, while the others help him and the physician's assistant. Other medics, of course, are forward with rifle companies.

Movement from the combat trains forward is controlled by the support platoon sergeant. All routes to and from forward CCPs must be rehearsed and clearly understood by all members of the combat trains. In addition, all routes to the medical company location in the field trains must be rehearsed. Again, security is required for any vehicles moving forward from the combat trains, and units must plan and practice the same security measures as for the field trains.

The chaplain locates in the combat trains and must be accessible to the battalion aid station and units to assist those in spiritual need.

The support platoon has many roles in the combat trains. Of the six HMMWVs located there, one is at the disposal of the battalion XO, and we recommend that the mobile subscriber equipment (MSE) be installed on this vehicle. The other five HMMWVs come under the control of the support platoon sergeant. All six vehicles carry emergency Class I (food) and water to support the line units. Class V (ammunition) resupply to the companies also comes from the combat trains. Vehicles in the trains are also used to get a company commander to an operations order briefing or for use in leader reconnaissances. They are requested over the A&L net. Commanders must understand that the vehicles belong to the combat trains and not to the company commander and that they must always return as quickly as possible to the trains.

The selection of a site for the combat trains is crucial to success. The site must allow for good vehicle trafficability and should be near an open area that can be used as a PZ. The unit should have the bean-bag lights, chemlites, and smoke grenades needed to operate a PZ. This capability is

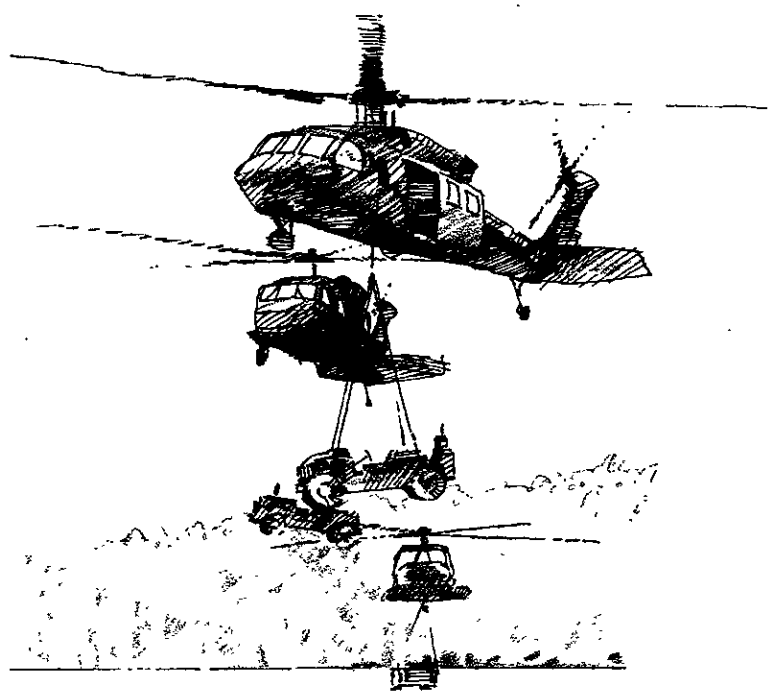
LOCATION OF SUPPORT PLATOON VEHICLES

FIELD TRAINS

1 HMMWV	S-1/S-4 NCOIC
1 HMMWV	Ammunition Section NCOIC
1 HMMWV	HHC Supply Sergeant
1 HMMWV	Support Platoon Leader
3 HMMWVs	Rifle Company Supply Sergeants
2 5-ton Trucks	For moving the MKT and water buffalo
6 1 1/2-ton Trailers	For ammunition, POL, rifle companies, S-1/S-4

COMBAT TRAINS

1 HMMWV	Battalion XO
5 HMMWVs	Combat Trains NCOIC
2 1 1/2-ton Trailers	For ammunition and POL



critical for aerial medical evacuation and resupply operations. *We strongly recommend sending the support platoon sergeant to Pathfinder School.*

The vehicles operating from the combat trains should always move as part of a convoy, secured by an antiarmor section. Lone vehicles are easy targets for enemy infiltrators, especially in low intensity conflicts. The Army would do well to augment a light infantry battalion with a section of HMMWVs that have MK-19s mounted on them, another requirement that will call for an MTOE change.

Finally, the combat trains CP must track the battle and be prepared to serve as the alternate TOC when required.

LOGPAC Operations

The field trains' most important mission is the LOGPAC operation. LOGPACs are sent forward when the S-4 designates a place and time for the LRP. The combat trains CP calls the field trains CP and notifies the support platoon leader. He designates a start point (SP) time of departure from the field trains which will ensure that the LOGPAC arrives at the LRP on time. The cooks are given a pick-up time for food and ensure that it is ready on time.

The supply sergeants now enter the picture. They report first to the field trains CP to get the latest supply requests from their companies. Then they check with the S-1 PSNCO and pick up any personnel replacements or mail to go forward to their companies. The supply sergeant next checks with the communications repairman on equipment that has been either repaired or floated from the FSB contact team. The armorer checks with the POL trailer for weapon cleaning products if he needs them. Finally, they stop at the mess team and pick up Class I supplies.

Class I is broken down by platoon. Platoon breaks are much more tactically sound, since light infantry should operate in mutually supporting platoon patrol bases, coming together as a company only when the mission dictates. Initially, the S-4 passes the strength figures for each platoon to the cooks, and the supply sergeant updates these numbers daily.

The supply sergeant checks each of his ration breaks to make sure the proper amount of Class I is present. When issuing T-rations to a platoon of 30, for example, two tray packets of 18 rations are issued. Although the troops receive extra rations, this is the cost of doing business with T-rations. If a hot A-ration meal is requested, it is broken down in the mermites (insulated containers) by platoon. This does not require a lot of extra mermites. One with three separate inserts can usually handle the average break. The only problem with breaks by platoon is a lack of serving utensils. If enough are issued for each platoon, they quickly disappear, ending up in trash bags and being inadvertently thrown out. The answer is to have the supply sergeant buy these utensils and account for them.

The company armorer, with his tool kit, accompanies each LOGPAC so he can repair weapons as far forward as possible. He takes any damaged weapons that he cannot repair to the small arms contact team in the FSB, where they are repaired or a float is issued. The weapons return on the next LOGPAC.

The support platoon leader then organizes the vehicles into a convoy with security front and rear. He gets all the drivers and track commanders together and gives them a final update briefing. The vehicles move out tactically—sandbagged for protection from mines, covers removed from cargo HMMWVs to allow passengers to fire from the vehicle, or to dismount rapidly if necessary. This convoy is

secured by any of several means, normally the antiarmor section vehicles. MPs are ideal for this mission, when they are available.

When the supply vehicles reach the LRP, they move forward to support their units, and the security element secures the LRP. If the enemy situation warrants it, the units must send security elements to pick up their LOGPACs. The supply sergeants have two hours to resupply their companies and return to the LRP.

When a supply sergeant gets to his company, he links up with the first sergeant, who gives him a hard copy of the company's supply requests. The supply sergeant returns the previous hard copy showing the requests that were filled and those that could not be filled. He drops the headquarters element's breakdown of supplies and moves out at once to find the platoons. He links up with each platoon in turn and drops personnel, food, water, mail, radios, and the like, quickly moving from unit to unit. By the time he returns to the headquarters element's location, its soldiers should have finished the meal and have everything ready for him to pick up. He then completes his rounds to the platoons. It is not necessary for a platoon to wait for him to return. The soldiers can simply put all of the residue in bags and set them by the side of the road. The supply sergeant then returns to the LRP; once all the vehicles are in, the convoy returns to the field trains.

Two of the HMMWVs in the field trains merit special consideration. One is dedicated to the HHC supply sergeant, and the other is to the support platoon leader. The first is used to support the mortar platoon, the scout platoon (if appropriate), the TOC, and the antiarmor section. The other vehicle supports the combat trains and brings forward a trailer loaded with fuel cans. On return, the driver takes the other trailer with the empty fuel cans. On the next LOGPAC run, the vehicle comes forward with a trailer containing Class V supplies and returns the one with the residue. This system ensures that food, fuel, and ammunition are never mixed on the same vehicle. All vehicles must carry plenty of extra water cans and exchange them for empty cans in the combat trains. The combat trains must always have plenty of water to support the companies in an emergency.

The supply sergeants return to the field trains and make their rounds in reverse. Serving utensils are taken to the KPs, washed, and returned immediately. Water cans are refilled. Trash is unloaded. Mess equipment is returned to the KPs. Personnel and mail are dropped off at the S-1. Communications equipment is hand-receipted to the communications repairman. Supply requests are dropped off with the S-4 NCO in charge. Finally, the HHC XO conducts a meeting in which to disseminate information concerning the next LOGPAC.

CSS in the Defense

The mechanized infantry units at the NTC are capable of digging elaborate fighting positions. At the JRTC, however, when light infantry units in the defense are attacked by the mechanized opposing force, many of them have difficulty conducting defensive operations against an armored or motorized opponent. A lack of armor, or a lack of antiarmor capability, may be the primary reason for this weakness. But light infantry rifle platoons occupying defensive positions also need readily available pioneer tools to use in preparing defensive positions.

Normally, light infantrymen carry only the standard issue entrenching tool (E-tool), which is capable of performing only light digging chores. The old model wooden handled

E-tool was much more capable. We strongly recommend that the Army find a more suitable multipurpose infantry tool, or start issuing the old model E-tool again.

Another problem in light infantry units is dependence on the small emplacement excavators (SEEs). Instead of waiting for a SEE that may never come, units must develop a sense of urgency and self-reliance in preparing their defenses. We recommend that each company supply sergeant have a trailer loaded with a defense kit in the field trains. Upon receipt of a defensive mission, the trailer would be brought forward on the LOGPAC. The following items should be carried on the trailer: Two D-handle shovels, two picks, and one axe per rifle squad; and a footlocker loaded with communications wire (DR-8), the TA 312 and TA-1 telephones, and a platoon early warning system (PEWS) for each rifle platoon and the headquarters element. Too many light infantry units at the JRTC fail to use company communication hot-loops in the defense, but this can easily be corrected by having the company communication sergeant forward.

Finally, the trailer should contain 3,000 or 4,000 sandbags and enough picket pounders to allow each platoon to work at the same time. These items will suffice until the push package of Class IV (construction and barrier materials)—pickets, 4x4s, plywood, concertina wire, and the like—arrives. The HHC XO should ensure that the Class IV supplies are coordinated with the FSB and that the combat trains can move the Class IV from the barrier supply point to the line companies.

Company XO and First Sergeant Roles in CSS

The company XO should not be in the combat trains. He should be forward with his company serving as a fighting XO. Along with his first sergeant, he moves his company and prepares for the next mission (based on the warning order) until the company commander returns with the operations order. The first sergeant operates the A&L net. One method is to have the XO stay up on the battalion net, while the commander fights the three platoons. The first sergeant co-locates with the company CP and executes all CSS operations. The XO may plan CSS operations, but the first sergeant is the key person to execute them.

During peacetime training, the first sergeant is the senior trainer and trusted advisor. During sustained combat operations, however, he receives the ammunition, casualties, and equipment (ACE) reports, runs the company casualty collection point, and cross-levels ammunition and equipment within the unit. We fully understand that this proposal will meet with a certain amount of opposition from the light infantry community. But mechanized infantry units have long recognized the first sergeant's role in CSS and have reflected this in their doctrine. A careful review of their operating procedures in action will support the validity of this approach.

Essentially, then, the company XO handles all aspects of CSS that are external to the company, while the first sergeant handles internal CSS.

We shudder to think how many young lieutenants have served as XOs in light infantry units and spent all their time in the combat trains. Not only have they learned the wrong lessons about CSS operations, but they have also missed numerous opportunities to be up front learning how to fight a company.

We offer this article, not as the final word on light infantry CSS operations, but as a proposal for which INFANTRY readers will serve as the sounding board. There is still a considerable amount of practical experience to be gained from lessons learned in the past, present, and future combat operations,and JRTC and NTC rotations.

CSS deserves the immediate attention of all leaders. Doctrinal changes in such manuals as Field Manual 7-8 have corrected some weaknesses and ambiguities and have also addressed previous omissions. The roles of key leaders in combat situations—such as the rifle company XO and first sergeant—should be well defined, rehearsed, and easily understood, even by the most inexperienced and recently assigned leader.

The leaders of the light infantry community, working together, can and will correct CSS shortcomings. In the future, light infantry commanders will lead units into combat and be assigned a variety of missions. These commanders must accomplish their missions through ingenuity, intelligence, and continual improvement in the way those missions are supported.

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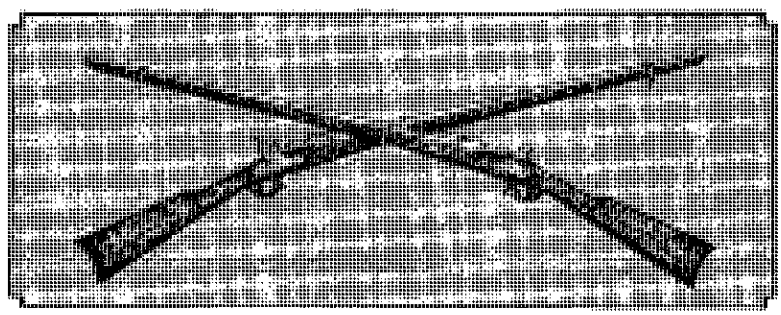
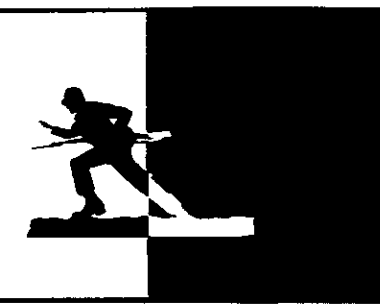


TRAINING NOTES



SEAD Planning
For Air Assault Operations

LIEUTENANT ROBERT L. BATEMAN

Except for the 101st Airborne Division (Air Assault), few infantry units have the resources to conduct full-scale air assault operations. Light infantry units may have the assets to conduct platoon and company insertions, but even they have only rare occasions—such as external evaluations—when they control all the assets needed for a full battalion task force air assault. As a result, few infantry leaders ever have an opportunity to learn about planning for the suppression of enemy air defenses (SEAD), which is required for the air movement phase of any air assault operation.

Air assault operations are also combined arms operations. Too often, however, the training appears to include only two branches—infantry and aviation. Whenever possible, air assault exercises should include field artillery and—depending upon the projected threat level, air defense artillery as well. An especially ambitious battalion training scenario might even be a joint operation with Air Force, Navy, or Marine Corps attack aircraft and the attendant tactical air control party (TACP) provided by the Air Force. These assets aim at one goal—providing security for the assault helicopters while they carry the infantry to the landing zone.

An infantry leader who can incorporate SEAD planning into his original assault plan can effectively map out his ground scheme of maneuver and ensure that the aircraft arrive at the landing zone (LZ) safely and on time.

SEAD is the most critical task of an air assault, even before the actual ground scheme of maneuver. If the assault aviation aircraft are shot down or forced back before they unload the infantrymen, there can be no ground scheme of maneuver. Yet, infantrymen at battalion level rarely plan for and train on this complex phase.

Aviators tend to describe the difference between air movement operations and air assault operations in simple terms: *Air movement takes place behind the forward line of own troops (FLOT), while an air assault crosses the FLOT.* Both are useful to the ground maneuver commander, but the cross-FLOT operation is more complex. All combat operations depend upon the tactical situation and, as any Ranger student learns, the first phase of any operation is security. Planning for a SEAD mission provides that security to the air movement phase of the air assault.

As with any operation, the most important phase of the battle often takes place before anyone fires a shot, during the intelligence preparation of the battlefield (IPB). With a SEAD mission, the IPB is especially important. A unit cannot suppress an enemy air defense site if it does not have precise knowledge of the location and the number and type of weapons that are there.

Planning a mission against a ZSU-23-4 Shilka is different from planning one against a battery of S-60 57mm automatic antiaircraft cannon guided by a Flap Wheel radar. The dispersion of the latter target would require more munitions for suppression, although disabling the radar with pinpoint fires could be an alternative to the wide area suppression of the firing batteries. In either case, though, intelligence is the key. For a successful air assault, an infantry planner must know both the location of the enemy at the objective and the location and strength of enemy positions along his proposed route.

SEAD mission planning uses at least one of three assets: field artillery,

attack aviation aircraft, or close air support (fixed-wing attack aircraft). Of these, the preferred is naturally the field artillery, since it is not vulnerable to counterfire from an air defense unit. But enemy air defense units are not likely to be placed conveniently close to the FLOT and within the range of our available field artillery. Closer to the FLOT, we are more likely to encounter smaller manpacked air defense assets—such as the SA-7 and SA-14, and even such American-made weapons as Redeye and Stinger missiles.

Depending upon the threat, several factors must be considered in SEAD mission planning. Obviously, the location and type of ADA assets to expect are the two biggest questions. But a professional infantry leader should also be at least passingly familiar with the ranges, capabilities, and guidance systems of most major ADA systems.

For example, planning an air corridor around a suspected ZSU-23-4 site could involve a detour of 20 to 25 kilometers, depending upon the terrain, while planning to avoid a static S-60 57mm antiaircraft site might involve only a 10-kilometer circuit. Although the 57mm system should have the longer range, the ZSU-23-4 is a tracked system with an internal fire control radar that determines target range, altitude, and bearing and provides its own firing data. These factors make it much more accurate than the visually guided S-60. Also, the mobility inherent in the tracked vehicle makes it more difficult for planners to know exactly where it might be at the time the aircraft will be in the area (without realtime intelligence), while the towed S-60 is more likely to be unhitched and left in place for longer periods. Given this example, it is probably best to assign a SEAD mission to the ZSU-23-4 sites and plan a route around the S-60 sites.

Determining the length of a SEAD depends upon three items: the range of threat ADA weapons, the terrain along the projected flight route, and the planned method of flight—low-level, contour, nap-of-the-earth (NOE)—determined by mission requirements. For example, nap-of-the-earth is slow

but comparatively safe, while the contour method is fast but exposes a unit to the maximum range of all the ADA systems in the area, therefore requiring more SEAD missions.

Knowledge of enemy weapons is critical here also, especially knowledge of enemy tracking and guidance systems. Essentially, the SEAD should last the entire time the assault elements are exposed to fire from the threat, plus 30 seconds before those units pass through the area and 30 seconds after they leave. A unit that plans to use the contour flight method because the mission requires speed enroute must therefore anticipate firing a longer SEAD mission at each potential enemy ADA location. The reason is that the unit will be tracked visually or on radar for a long time because it will not be masked (concealed) by terrain.

The alternative, flying NOE, means short SEAD missions, because the aircraft will be exposed only for a short period as they fly slowly along a more direct route but place terrain between themselves and the ADA. (The difference between modes of flight decreases when the terrain is flat and without vegetation, as in the desert where there is little to hide an aircraft.)

Finally, the mission objective could be compromised, even when the air assault force is never visually acquired by enemy weapons. ADA radars have a much longer range than the actual munitions they control, and masking can hide a unit from the radar beams as well as the munitions and conceal the final destination. An effective SEAD program can also reduce the threat of compromise.

Indirect Fire SEAD

Because of the accuracy, firepower, and sustainability of the artillery, there are few restrictions on FA SEADs, other than the range of the howitzers. They have the added advantages (as opposed to helicopters and fixed-wing attack aircraft) of not being under any direct threat from the targets and, barring counterbattery fires, can fire several SEAD missions either in succession or simultaneously.

There are two main methods of controlling the SEAD fires of the field artillery. The first is to synchronize the SEAD missions with the H-Hour sequence; the second is to fire the SEAD on command. Both methods are workable, but each has special considerations that affect their employment. Often, it is best to mix them on the basis of the METT-T factors found along the air route.

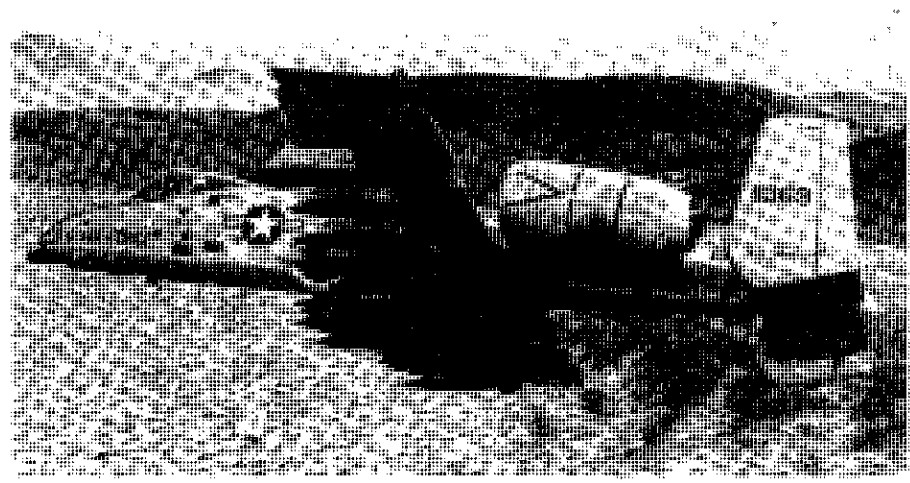
H-Hour synchronization entails firing planned SEAD missions along the route and incorporating the timing of these fires to coincide with the H-Hour. (In an air assault, this is the time the first lift is to arrive at the LZ.) This method provides a solid timeline on which the H-Hour may be moved but the time of impact of individual SEAD missions may not. Command and control are therefore simpler because all elements work on the same timeline. Using the H-minus times specified, the SEAD

will automatically deliver suppressive fires at times that should coincide with the time the air assault units fly through the threat area.

The drawback is a loss of flexibility; mission time of impact cannot change unless a new H-hour sequence is initiated, all the units involved are informed, and a new time sequence begins. This requires secure, uninterrupted communications and a higher headquarters that allows a change in H-Hour. This leaves the possibility that the air assault element will slow down or speed up at some point after the LD time, but before H-hour. If this happens, the result could be much the same as that of the World War I infantrymen who fell too far behind a creeping artillery barrage; the artillery support continues forward, leaving the unit exposed to an enemy who is no longer suppressed as planned.

The other method is flexible control of the SEAD fires by the air mission commander or air battle captain (AMC/ABC). In this method, targets are pre-plotted, but they fire on command from the AMC/ABC when he arrives at an aerial checkpoint (ACP). This ACP acts as a trigger line and should be planned on the basis of the predicted air speed of the aircraft, the time it will take the FA to lay its guns, and flight time of the artillery rounds so that the rounds hit while the aircraft are still outside the threat area. By firing each SEAD just before the aircraft actually arrive (as opposed to the time when they should arrive), there is no guesswork. The tradeoff is the need for even more communications over the net.

By combining these methods of control, the infantry leader can plan a flexible SEAD that requires little command and control just before H-Hour—the most critical time. Flexible, on-call SEAD missions controlled by the AMC/ABC should be established for most of the air route to and from the LZ. Then, at a predetermined point five to ten minutes from the LZ, an H-Hour sequence can be initiated with a time hack to all stations from the AMC/ABC. From this point on, the FA SEAD missions are automatic and require no more radio transmissions. This frees the AMC/ABC and allows him to control the close-in battle as it develops up to the point when the infantry lands on the LZ.



An air assault unit leader should have some knowledge of fixed-wing aircraft and their SEAD capabilities.

The relative inflexibility of the H-Hour SEAD plan is offset by the benefit of lightening the load on the AMC/ABC and permitting him to manage the other assets that may be under his control (attack helicopters, fixed-wing attack jets, and the like). Additionally, there is less concern over the exact timing needed for the H-Hour SEAD because the aircraft are already very close to the LZ.

The biggest drawback to FA-supported SEAD is FA response time. By the time a FA unit can fire an accurate, unplanned immediate suppression SEAD mission, the engagement of aircraft moving at 120 knots by missiles flying at supersonic speeds may be over. Closing this gap and providing SEAD beyond FA range is the role of the attack helicopter.

Attack Helicopter SEAD

Attack helicopters are obviously the most flexible aircraft for the SEAD mission and the most responsive for unexpected threat suppression. Still, they have a major drawback in that they are in flight themselves and therefore susceptible to the same ADA weapons they are trying to suppress.

In an air assault, attack helicopters fill two roles—close escort and route reconnaissance. Since the aviators know best how to employ their weapons, specific planning for these two assignments should be left to them. But infantry leaders might benefit from the following guidelines for employing attack helicopters in the air assault:

- Conducting SEAD missions against sophisticated ADA systems requires time and detailed planning. Often this means an attack helicopter element will conduct a deliberate attack that is independent of the air assault against the site. With limited aircraft assets, the attack aircraft on a route reconnaissance may be forced to plan for this contingency. This means the route reconnaissance aircraft will need to be well forward of the lift element (separated by time or distance) so they can conduct a safe, low-level, deliberate attack before the lift elements arrive in the threat area.
- Close escort aircraft, usually flying on the flanks of the lift elements, are there to provide immediate suppression on previously undetected ADA sites that may fire on the lift elements. These aircraft are under the control of the AMC/ABC, not the air assault task force commander. Their sole mission is escort, with the possible follow-on mission of preparing the LZ before the actual insertion. They should not attack any targets of opportunity that may be spotted enroute until they have completed their primary mission.
- Attack helicopters have three basic types of weapon systems—guided missiles (TOW/Hellfire), unguided rockets (2.75-inch "Hydra" free flight aerial rockets [FFAR]), and cannon (AH-1Fs

have 20mm "Gatling" guns, and AH-64s carry 30mm chain guns). An infantry leader should be familiar with these weapons, their capabilities, and the sighting systems used to control them. Otherwise, he may plan for missions and assign tasks that exceed the capabilities of the aircraft available. For example, he might plan a SEAD using AH-1F helicopters at night against a mechanized threat system (ZSU 57-2, SA-9) that has a large thermal signature. Knowing the enemy should be engaged at the maximum possible range, he plans for a four- to eight-kilometer Hellfire shot. When he takes his plan to the aviators, however, he finds he must scrap it—first, because AH-1s cannot fire the Hellfire fire-and-forget missile (only TOWs) and second, because the AH-1 lacks thermal imaging equipment. This leaves the AH-1 pilots trying to fire a four-kilometer TOW shot, using only night vision goggles, at a camouflaged target that they must find, identify, and track from a helicopter bouncing along barely 50 feet off the ground.

• Attack helicopters equipped with 2.75mm FFARs can fire both direct and indirect fire missions. Normal range for an indirect fire shot is 5 to 6 kilometers. When firing indirect the 2.75mm FFAR is an area weapon with a target box of 200 by 400 meters. These rockets have warheads of various size (most are 10 pounds), and fuze settings that may be changed depending upon the planned target.

Fixed-Wing Attack Aircraft

Planning for such fixed-wing attack aircraft as the A-10, F-18, EF-4, or EF-111 is generally well beyond the scope of an infantry battalion air assault. The best way for the infantry commander to plan the use of these assets, if they are available to provide direct support, is to give the Tactical Air Control Party (TACP) all the information possible and ask how to use them. Once again, however, this is an area in which the professional infantry leader should have at least a passing knowledge of the supporting systems. He should remember that the TACP moves with the infantry and may also become inaccessible when he most needs to contact them.

By planning for SEAD as an integral part of his air assault operation, the infantry leader can help make sure his mission has the best chance of succeeding on the ground because all his assets arrive alive and intact when they reach the LZ. Using the combined arms approach and providing for both flexible and responsive command and control in his SEAD plan, he develops a plan that provides security to his element as well as to the aviation unit. With his thorough knowledge of both threat and friendly weapons, he can develop a realistic risk assessment and plan the measures he can take to lower the risk. For these reasons, the SEAD plan must be an important part of the infantry leader's planning.

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Medical Operations
In a Mechanized Infantry Battalion

LIEUTENANT MICHAEL W. SMITH

One of the most difficult missions on any battlefield is taking care of casualties. The mental and physical stress of battle soon drains a task force of its ability to render treatment quickly and to evacuate casualties from the front line to the battalion aid station.

Unfortunately, the medical platoon in a 1,000-man task force is authorized only 38 men, and only 25 of these deploy forward with the maneuver companies. Furthermore, since the platoon is not always at full strength, medical support in any future conflict will clearly require careful planning and a team effort.

The experiences of one mechanized infantry battalion—the 3d Battalion, 12th Infantry, 1st Armored Division—in preparing for a rotation to the Combat Maneuver Training Center (CMTC) may help other battalions plan their own medical support.

Under the modified tables of organization and equipment, a mechanized infantry battalion's medical platoon is organized into four sections—headquar-

ters, treatment, ambulance, and combat medic (Figure 1).

The headquarters section is responsible for planning and carrying out health service support. The section, with only the medical platoon leader and the platoon sergeant, oversees all logistical, operational, and administrative details within the platoon.

The treatment squad is made up of two trauma treatment teams (each with an M577 vehicle and a 2½-ton truck). Each of these teams is capable of operating independently for as long as 24 hours. The squad is staffed by a physician's assistant and six medics (and, during wartime, a battalion surgeon). It is responsible for providing advanced trauma management for wounded soldiers and logistical support for front-line medics and combat lifesavers (non-medical soldiers who have been trained to provide emergency care as a secondary mission). *(See also "Combat Lifesaver Training," by Lieutenant Kyle C. Campbell, INFANTRY, May-June 1992, pages 38-39.)*

The ambulance section—eight evacuation sergeants, eight medics, eight M113A3 armored ambulances—is responsible for evacuating casualties from the maneuver companies to the battalion aid station (BAS).

The combat medic section—13 medical specialists (MOS 91B)—deploys forward with the front-line companies to provide immediate medical treatment to casualties. The medical platoon leader must decide how to task organize and deploy these assets to support the task force commander's intent.

When the 3d Battalion, 12th Infantry, began planning health service support for the CMTC, staff members knew they would need to position medical assets forward with the companies while retaining the ability to evacuate the wounded to the BAS.

The first step, therefore, was to attach an M113A3 ambulance to each maneuver company to form a company aid post in the company trains. The four remaining medical tracks were kept under platoon control to provide medical support to the scouts, the mortars, and the companies that were expected to have the highest casualties.

The company aid posts operated at company level the same way the battalion aid station operated at battalion level. Casualties were evacuated from the platoons to the aid post, where the senior medic would supervise the reinforcement of treatment, the triage of casualties, and the loading of the wounded for evacuation.

The battalion's standing operating procedures (SOPs) required that each platoon designate a primary vehicle and an alternate vehicle for evacuation. Before deployment, each combat vehicle was provided with a rigid litter to help evacuate casualties safely. The platoon sergeants were required to lead the designated evacuation vehicles on a route reconnaissance to the company trains. The ambulances deployed to the company aid posts with enough medical supplies to operate for 72 hours before needing resupply.

With the ambulances on site to provide continuous medical support to the maneuver companies, the question was How would casualties be evacuated from a company aid post to the BAS? The final solution was that each company would designate one of its 2½-ton trucks in the company trains to be used

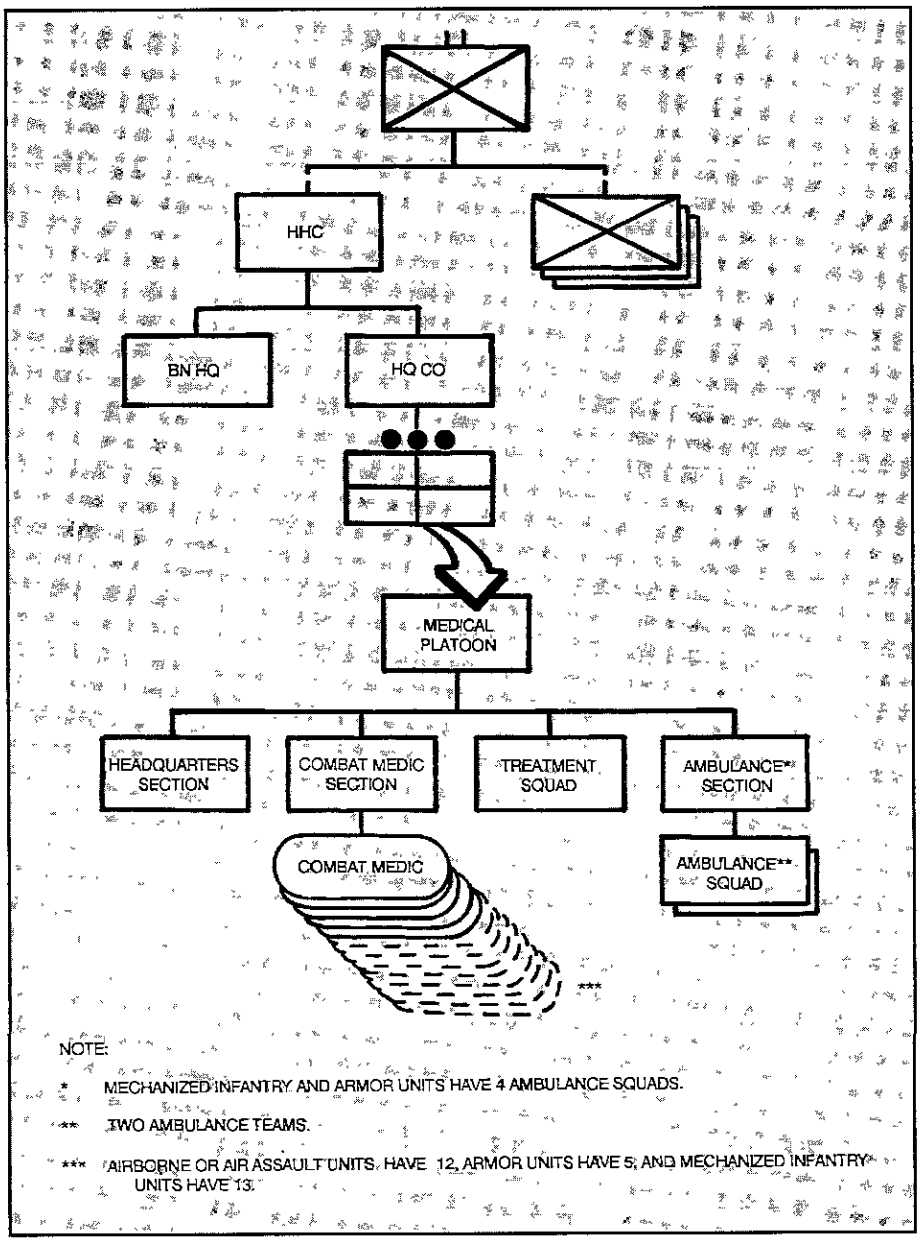


Figure I. Medical platoon, heavy battalion. (Taken from FM 8-10-4.)

only for medical evacuation. The truck, co-located with the company's ambulance, would transport the wounded to the battalion aid station. Evacuation vehicles were required to fly red flags if they carried litter-urgent casualties and yellow flags if they carried chemical casualties. When several vehicles arrived at the same time, these flags helped speed the triage of the wounded.

Battalion SOP required the first sergeants to lead the drivers of these non-standard evacuation vehicles on both primary and alternate routes to the battalion aid station. The drivers put snow chains on their tires to help negotiate the rough, muddy terrain of the CMTC. Some companies also installed radios in their 2½-ton evacuation vehicles so they could maintain communication with the aid station. By cross-stacking litters on the floor of the truck bed and across the troop seats, each company could carry 12 litter patients per trip, as opposed to four in an M113A3 ambulance. Since a company lost all its medical assets each time its ambulance left the company trains, the truck helped tremendously.

The battalion's plan for front-line medical treatment emphasized the use of combat lifesavers. To meet the Army's standard of treating a wounded soldier within five minutes, the battalion began an intensive combat lifesaver training program, and required a certified combat lifesaver on each combat vehicle crew.

The program called for the battalion's combat lifesavers to receive 40 hours of classroom and hands-on training in emergency First Aid, shock management, and intravenous therapy. Because of the high mortality rates among scouts and the independent employment of the battalion mortar platoon, every soldier in MOSs 19D and 11C underwent the one-week battalion-run combat lifesaver program. Soldiers from the S-2 and S-3 sections were also combat lifesaver qualified so they could provide medical coverage for the tactical operations center (TOC).

As a result of this training, combat lifesavers were soon an integral part of casualty management on the front lines.

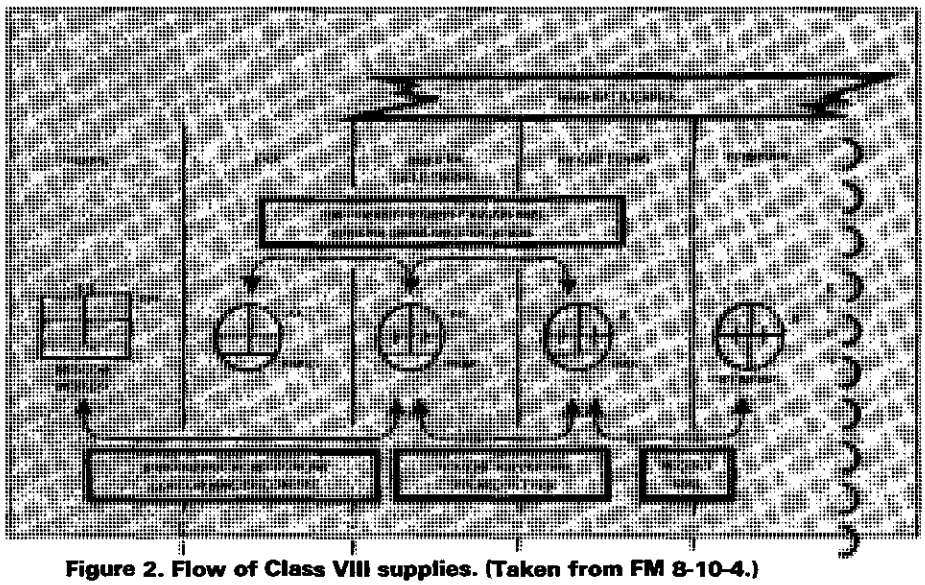


Figure 2. Flow of Class VIII supplies. (Taken from FM 8-10-4.)

With more than 100 trained combat lifesavers in the battalion, soldiers were guaranteed medical treatment from their buddies in the first critical minutes following a wound.

To ensure that a battalion's health service support plan supported the commander's intent, the medical platoon leader must plan the medical portion of the combat service support (CSS) plan. Class VIII medical supplies on the battlefield do not flow the same way as other classes of supply. The division medical supply office in the division rear pushes medical supplies to the medical company in a forward support battalion. The forward support medical company (FSMC) pushes the supplies down to the supported battalion aid stations (Figure 2).

Class VIII resupply on the battlefield is normally conducted by the evacuation vehicles. As non-standard evacuation vehicles transport casualties from companies to the BAS, the company medics send their supply requests with the drivers to the medical supply NCO at the aid station. The evacuation vehicles—restocked with medical supplies—return to their companies to deliver those supplies to the combat medics.

To simplify Class VIII resupply in our battalion, the medical supply NCO acquired several mortar ammunition crates before our deployment. Marking these crates with medical emblems, he packed Alpha boxes (containing assorted field dressings and cravats), Bravo boxes (intravenous solution and IV starter sets), and Charlie boxes (assorted sick-call items and field medical cards). These boxes were equally divided and loaded onto the 2 ½-ton trucks assigned to the trauma teams.

When the BAS was established, the medical supply sergeant positioned these preconfigured push packages along the route the evacuation vehicles used to enter or exit the BAS. As casualties were unloaded, the medical supply sergeant loaded push packages onto the trucks to be taken back to the company aid posts. At the company aid posts, the medics sent medical supplies forward on platoon evacuation vehicles to the combat lifesavers. On subsequent trips to the BAS, the drivers exchanged empty crates for crates of medical supplies.

To refine this plan, the medical platoon leader and platoon sergeant held a series of CSS meetings with key company leaders to discuss the concept of casualty evacuation (CASEVAC) from the battlefield. These meetings were excellent opportunities to chalk-talk and rehearse the CASEVAC plan. After final adjustments, an easy-to-follow medical tactical SOP checklist was developed. Each key leader (in the rank of sergeant and above) and each medic kept a copy of this SOP in his pocket so he could ensure that the medical sup-

port plan was closely followed. To build cohesion, the battalion attached line medics to their companies during the battalion's gunnery training several weeks before the rotation to the CMTC. For four weeks, the medics lived and trained with the soldiers they would support.

After months of preparation, the 3d Battalion deployed into the maneuver "box" at the CMTC. It was time to put the new medical support plan to the test. The company first sergeants were responsible for ensuring that company aid posts were established and that route reconnaissances were conducted. Trauma treatment teams were deployed as far forward as the tactical scenario allowed. During the mock battles—and for several hours after they ended—first sergeants led convoys of non-standard evacuation vehicles to the BAS.

The battalion's emphasis on combat lifesavers also benefited the task force. In simulation the combat training centers average a 90 percent *died-of-wounds* rate for litter-urgent casualties. The medical skills of these combat lifesavers enabled the battalion reduce the *died-of-wounds* rate to 60 percent—still too high, but much better than the average.

During a movement to contact—the most difficult operation to support medically—the combat lifesavers treated casualties spread over the entire battlefield with only an eight percent *died-of-wounds* rate for urgent casualties. These lower rates were attributed to the battalion SOP requirement that all litter-urgent casualties be evacuated before litter and walking wounded casualties. The CMTC rules allow two hours for getting litter-urgent casualties to the BAS before they are listed as *died-of-wounds*, while litter casualties have four hours and walking wounded have 24 hours to reach the BAS.

The battalion's health service support plan succeeded because soldiers wounded on the battlefield received quick and proper medical treatment and prompt evacuation to the battalion aid station. Trauma treatment teams, led by the physician's assistant, provided excellent treatment in stabilizing and resuscitating patients. Using the Class VIII push packages, the medical supply NCO kept the aid posts and the combat lifesavers well stocked with medical supplies.

From this rotation, our battalion learned many lessons and subsequently implemented them:

Medical assets should be positioned as far forward as the tactical scenario permits. A battalion should include a medical support annex to its operations order to ensure that the commanders know the exact locations of all their medical assets. This annex should provide information that includes the positions of medical assets (BAS, split trauma teams, NBC aid station, ambulance exchange points, and FSMC), triggers for moving medical assets, medical task organization, priority of evacuation, MEDEVAC frequencies, and a concept of medical operations (Figure 3).

This matrix is an easy-to-follow guideline for medical support. It is important that first sergeants receive it and rehearse it within the company before a battle. The medical platoon leader must be present when the OPORD is briefed to the commanders, because he is the best qualified person to brief medical support and answer any questions pertaining to the plan.

During the planning phase, the medi-

ANNEX P MEDICAL MATRIX TO OPORD #

ELEMENT/ TRIGGER TO MOVE				
BAS				
TREATMENT TEAM A				
TREATMENT TEAM B				
NBC AID STATION				
AXP'S				
FORWARD SUPPORT MEDICAL COMPANY				

MEDICAL FREQUENCY: _____ MEDICAL CALL SIGN: _____

MEDEVAC (REAL) FREQUENCY: _____ MEDEVAC CALL SIGN: _____

ELEMENT: UNIT RESPONSIBLE FOR EVAC:

SCOUTS: _____
MORTARS: _____
ADA: _____
ENGINEERS: _____
TOC: _____

PRIORITY OF EVACUATION: _____

TASK ORGANIZATION CONCEPT OF EVACUATION:

TEAM ALPHA	
TEAM MECH	
TEAM YANKEE	
TEAM DELTA	
SCOUTS	

4-2

Figure 3. Medical support annex to operations order.

cal platoon leader must coordinate with other staff officers to ensure that the medical plan supports the mission. He can learn from the S-2's intelligence reports where the enemy is expected to hit the hardest. He can then position additional medical assets with the companies that are expected to suffer the most casualties. From the S-3, he can gain information on the tactical situation, timelines, and follow-on missions.

The medical platoon leader must ensure that he receives copies of all overlays, because the medical teams moving around the battlefield must be made aware of engineer obstacles, minefields, expected avenues of enemy approach, and company battle positions.

In developing the battalion's CSS plan, the medical platoon leader must also work closely with the S-4, who helps by providing information on supply routes and locations for the combat trains. The medical platoon leader must make sure site selections allow for quick evacuation, MEDEVAC landing zones, and avenues into and out of the triage area. He must provide the S-4 with the locations of primary and alternate evacuation routes, ambulance exchange points, BAS locations, and the location of the FSMC so the S-4 can plot this information on the CSS overlay. Coordinating with the chemical officer can help medical planners anticipate chemical attacks, especially in the defense.

In the battalion OPORD, the company closest to the scouts' screen line should be tasked to help evacuate scout casualties. These casualties receive immediate treatment from the combat lifesavers within their platoon. The scout platoon sergeant evacuates the casualties, using scout vehicles, to designated companies, where the casualties become the responsibility of those companies. The TOC and the mortar platoon are responsible for evacuating their casualties to the BAS.

The battalion signal officer (BSO) can provide medical tracks with dual net capability to help the medical platoon disseminate medical support plans. Although the ambulances are authorized only one radio each, they can be equipped with auxiliary radio receivers (RT-442), and the platoon leader's vehicle can be equipped with two radios with secure capabilities. With this dual net capability, the tracked ambulances positioned at company aid posts can monitor the company nets to track the flow of incoming patients and still talk with the battalion aid station. The signal officer can designate one of the battalion's alternate frequencies as the medical platoon internal frequency. With this internal net, the medical platoon can conduct radio rehearsals before each mission without tying up the administrative-logistical net.

PACKING LIST FOR COMBAT LIFESAVER RESUPPLY CHEST

NOMENCLATURE	QUANTITY
Tubing, Non-Metallic Rubber	1
Povidone-Iodine Ointment	5
Ringers Lactate 500-ml	3
Dressing, First Aid, Field	8
Bandage, Muslin Compressed	6
Pad, Povidone-Iodine	8
Intravenous Injection Set	3
Airway, Pharyngeal	1
Catheter and Needle	3
Splint, Universal, 36"x4.5"	1

Medical platoon leaders should also use logistical release points to meet with first sergeants and ensure that they understand the health service support plan. While the companies are being resupplied, the medical platoon leader and the first sergeants can conduct a quick CASEVAC rehearsal.

During the CMTC rotation, our battalion learned that every soldier plays a key role in health service support on the battlefield, and that a strong combat lifesaver program is essential to saving lives. The battalion continues to train non-medical soldiers in the skills they need to stabilize wounded soldiers for evacuation to the battalion aid station. The physician's assistant supports the training by conducting intensive annual recertification classes to ensure that these soldiers maintain their proficiency.

The use of non-standard evacuation vehicles enables medics to stay on site and render medical treatment. Using trucks, the companies can evacuate more casualties each trip. Conducting route reconnaissances before a battle enables the first sergeants to ensure that their wounded quickly reach the aid station.

A strong medical resupply system is crucial to the process of ensuring that company aid posts and combat lifesavers have the supplies they need to provide treatment far forward. The use of preconfigured push packages simplifies the task of getting these supplies where they are needed. This system worked so well in the exercise that the battalion's forward support medical company now stocks the push packages to resupply battalion aid stations. The platoon medical supply NCO now stocks medical supplies in specially marked discarded 25mm ammunition boxes to be stored externally on Bradley fighting vehicles. These boxes hold enough medical supplies to restock each combat lifesaver bag three times (see packing list). Each soldier carries two field dressings in his First Aid pouch to enable the medics and combat lifesavers to bandage both an entrance and an exit wound.

As the battalion's subject matter expert on health service support, the medical platoon leader must be actively involved in the orders process. It is his responsibility to ensure that medical assets are positioned where they are most needed.

Since many medical platoon leaders deploy with an understrength platoon, health service planners may find the CASEVAC plan the most effective means of ensuring that casualties receive prompt medical treatment and evacuation from the battlefield.

Medical support on the battlefield is a difficult mission, but with planning and a dedicated team effort, it is a mission that can be accomplished effectively.

Lieutenant Michael W. Smith was serving as medical platoon leader of the 3d Battalion, 12th Infantry, 1st Armored Division in Germany when he prepared this article. He served in the same capacity during battalion's 1991 CMTC rotation. He has completed the Army Medical Department Officer Basic Course and has also participated in a rotation at the National Training Center.

The Company FSO
A Learning Process

CAPTAIN DAVID B. HILBURN

The company fire support officer (FSO) is a key member of the combined arms team. He brings to the company his extensive knowledge of the principles, capabilities, and organization of fire support, which he must share with the unit's leadership. They, in turn, must familiarize him with the equipment, capabilities, and missions of the supported unit. The success of their relationship rests upon this learning process, and once it is complete, the result is a confident, combat ready force that can effectively plan for and execute a fire support plan to complement the scheme of maneuver.

The synchronization of fires as part of a maneuver plan is the responsibility of both the fire support officer (FSO) and the combined arms commander. In many units, however, the company FSO is rarely seen while the company is in garrison. The purpose of this article is to highlight the unique training, missions, and qualifications of the FSO.

When the company moves out for a major deployment or a rotation to one of the combat training centers, the FSO and half a dozen soldiers are part of the combined arms force. The FSO must accompany the commander to the battalion operations order (OPORD) brief and take notes to help him prepare for the company level OPORD in a few hours. But he must also transmit information that is more detailed than that in the battalion FSO's brief.

If the company FSO is integrated into company training and becomes as well-versed in tactics as the other lieutenants in the company, he will be able to contribute as much firepower as a fourth platoon leader could, and probably more. Field artillery observers at the Joint Readiness Training Center (JRTC) estimate that a good company FSO is responsible for 80 percent of a light infantry company's firepower during a rotation.

The Field Artillery School at Fort Sill, Oklahoma, has a dual focus in the Field Artillery Basic Course—turning second lieutenants into both FSOs and battery fire direction officers. In the 16-hour course, 124 hours are devoted to observed fire procedures. (Most of the procedures learned during this phase of training come from Field Manual 6-30, *Observed Fire Procedures*.)

Once assigned to a battalion, a lieutenant normally serves as either platoon fire direction officer, platoon leader, ammunition officer, or company FSO. Until recently, though, most lieutenants in a direct support artillery battalion were initially assigned as company FSOs. The Field Artillery community at large realized that FSOs assigned to maneuver companies did not have the routine artillery knowledge they needed to be fully successful.

Presently, many Artillery lieutenants complete duty with a firing battery or their battalion before becoming company FSOs. But there are more TOE (tables of organization and equipment) positions for company FSOs than for platoon fire direction officers or platoon leaders. While most Field Artillery commanders would probably like to slot a lieutenant in a battalion or firing battery job, the number of jobs available makes it unlikely that every lieutenant can be assigned to a battery.

The primary trainer for a company level FSO is the battalion FSO. All FSOs are assigned to the headquarters battery of the direct support battalion. The company FSO trains on the use of the digital message device (DMD), the fire support team (FIST) DMD, and other technical aspects of fire support.

While the battalion FSO can train the company FSO in the use of fire support, the maneuver company commander also shares this training responsibility. Like other new officers assigned to an infantry company, the company FSO and the fire support team need instruction on company and battalion standing operating procedures (SOPs) and small unit tactics.

One of the first things a company commander must understand is that he and the company FSO do not speak the same tactical language in discussing the desired effects of fire support. To an infantry commander, to *destroy* an enemy element means to completely degrade the unit's ability to wield combat power. To his FSO it means using high explosive and improved conventional munitions to cause 30 percent casualties or material damage. Obviously, problems could arise from unfamiliar tactical language. FM 6-20-20, *Fire support at Battalion Task Force and Below*, offers explanations and common definitions that will help overcome these problems.

The company FSO's integration into routine company activities helps him form a functional relationship with the rest of the company. The Artillery lieutenant, like the Infantry lieutenants, is eager to establish a rapport with the

commander and to become part of the company team. Including the FSO in terrain walks, officer professional development sessions, and routine field training can build the company team faster and overcome the tactical language barrier.

Once the company FSO is integrated into the company planning process, he begins to understand the nuances of small-unit tactics. At the battalion OPORD, when the FSO hears such phrases as *movement to contact* and *deliberate attack*, he should think of specific fire support procedures to support the company commander's portion of the operation. Although the FSO understands the nature of the operation, he must discuss specific guidance with the commander so that fire support can be integrated to accomplish the overall intent for the mission.

Company commanders have historically done a poor job of communicating this guidance and intent to their FSOs. The commander's intent should include the following:

- What are the priority targets?
- When does priority of fire support shift within the company?
- How are FIST vehicles used in the company sector?
- Who controls the mortars?
- How much ammunition is available for the mortars?
- Has the company been allotted any final protective fires (FPFs)?
- What restrictive fire support coordinating measures are in effect?
- What events designate firing illumination or smoke?
- Where are obstacles sited in the company sector?
- Where are friendly forces positioned?
- What fire support assets are readily available to the company?

After receiving the commander's guidance and his fire support tasks, the FSO begins company fire support planning. He gives the commander a fire support estimate for each course of action that is wargamed. Additionally, the FSO should know how many minutes of smoke and illumination are available to the commander.

While the platoon leaders make sector sketches, the FSO makes a sketch of the surrounding terrain. The sketch includes prominent terrain features, along with distances and azimuths to them. Terrain sketches help in planning fires and make the execution of on-call targets easier for the commander. The company FSO refines target locations for the battalion FSO and submits a target list to him, if bottom-up fire planning is authorized. (Bottom-up fire planning allows company FSOs to contribute to the battalion fire plan by submitting targets to the battalion FSO. In top-down fire planning, the type normally used, targets developed during the IPB process at brigade are handed down to lower-level FSOs.)

CRITICAL ITEMS

The company FSO assists the company commander in preparing the company OPORD by producing three critical items: *the fires paragraph, the fire support plan*, and the *fire support execution matrix.*

The Fires Paragraph. His first critical contribution to the company OPORD is the fires paragraph, paragraph 3(b) of the OPORD, which contains fire support tasks and the purpose for shaping the battle. The commander must specify the purpose and intent of fire support as it applies to the commander's intent for the operation at both brigade and battalion levels.

The second item in the fires paragraph is the priority of fires within the company. The commander must specify the priority so the company FSO can coordinate the resources to weight the main effort. Schedule of fires, the third element of the fires paragraph, refers to *preparatory fires*, *counterfire*, *groups*, and *series* that either use most of the fire support means or divert some of the fire support means available to the commander. A good example of this is a division artillery preparation fired 15 minutes before a unit crosses the line of departure. These preparations may divert direct support battalion guns that would otherwise fire on priority targets for the maneuver commander. During the movement of the direct support battalion, field artillery assets will not be available to the commander. The commander's mortars are his own most responsive fire support asset. When covering the schedule of fires, a good FSO should mention the consequences of losing field artillery assets and how the commander can overcome these shortcomings by using his mortars.

The last item in the fires paragraph consists of special instructions for the use of illumination, smoke, or Copperhead guided munitions against high payoff targets.

The Fire Support Plan. The second critical contribution the company FSO makes is the fire support plan, which is normally in the *tasks to combat support units* portion of the execution paragraph. The company FSO relays information concerning air assets, chemical munitions, naval gunfire, and other indirect fire assets.

The company FSO is responsible for writing the field artillery plan, which should be at least three paragraphs. (After the first OPORD, however, the FSO generates fragmentary orders (FRAGOs) to the plan and the number of paragraphs may differ from the OPORD to the FRAGOs.) First, a general paragraph elaborates on the purpose and nature of fires not covered in the fires paragraph of the concept of the operation portion of paragraph 3a(2). The second paragraph is the order of combat, which lists the artillery battalions that directly support the maneuver brigade, battalions with general support reinforcing missions, and any battalion reinforcing the direct support battalion. Field artillery units with missions of general support are omitted from the *organization for combat* paragraph, because those units do not normally give first priority calls for fire to the brigade.

The last mandatory portion of the fire support plan is the fire support coordination measures paragraph. Just as paragraph three has coordinating measures in the last paragraph, the fire support plan also has coordinating measures covering additional fire support

coordination measures, fire support succession of command, and rehearsal instructions.

The most critical contribution the company FSO makes is the fire support execution matrix. The matrix is the fire support plan in table form. Just as a maneuver execution matrix synchronizes the actions of a unit, the fire support matrix synchronizes the fire support assets available to the combined arms commander. The matrix contains three parts: *labeling*, *body*, and *specialized or contingency information.*

The fire support matrix is labeled across the top with the same phases that are on the maneuver matrix. A *notes* column, legend, or checklist may be added to clarify information that falls into the matrix data. The body contains, among other information, field artillery and mortar priorities, on-order priorities, priority targets and FPFs, triggers for firing targets, back-up initiators for targets, CAS sorties, locations of combat observation and lasing teams (COLTs), and artillery delivered scatterable mines. Other specialized or contingency items of information that should be included are actions on the loss of the company FSO, radio nets, and a legend explaining the information in the body of the matrix.

With the fire support matrix, the FSO should include a target overlay, a field artillery and mortar range fan, and a series of trigger cards for each target that the company is responsible for initiating.

The range fan graphically represents the firing limitations of the company and battalion mortars. Using the range fan, the FSO and the commander can best decide how to engage a target, and with which assets.

The trigger cards can be three-by-five index cards, each with an enemy action that triggers the target to be fired, the radio frequency to use in calling in the target, and the redundant (backup) executor of the target if the primary executor was not able. Trigger cards can be as elaborate as the maneuver, fire support, and intelligence battlefield operating systems in a synchronization matrix. Trigger cards are effective reminders of what to do when the company continues operations for several days and suffers from reduced effectiveness due to loss of sleep. Cards passed out during rehearsals can reinforce the fire support plan and identify any remaining gaps.

Before the maneuver and fire support plan rehearsals, the commander and the company FSO must decide how fires will be cleared within the company during the battle. The clearance of fires is the process of approving or obtaining approval for attacking targets with indirect fires, both inside and outside the boundaries of the unit for which the fires are provided.

The clearance of fires must consist of a verbal response or an automated response before the mission is fired by mortars or field artillery. In recent years, silence on the firing net has implied consent, but observers at the JRTC have observed that a positive method of control is required to avoid the possibility of friendly casualties.

At the company level, the solution for clearing fires is to develop and disseminate the fire plan through an integrated maneuver and fire support rehearsal. The company FSO calls in all targets that he or the observers see, whether they are in the company sector or not. The battalion FSO is the first formal clearer of fires for a battalion or task force.

The employment of the company FSOs on the battlefield must be jointly determined by the battalion commander and the battalion FSO, on the basis of the tactical plan. The company FSO may be positioned with the company commander, with the FIST vehicle, or on some terrain from which the FSO can best control fires for the company commander.

One advantage of having the FSO positioned with the commander is the response time for fires. If the FSO is with the commander, the fire support NCO stays with the FIST vehicle. While the NCO in charge acts as track commander, a less experienced soldier often controls calls for fire from the company to the battalion. A commander's reluctance to let the FSO position himself to best control fires arises from unfamiliarity with the FSO and his fire support abilities.

The employment of the platoon forward observer (FO) is the responsibility of the company FSO. A good working relationship with the fire support team normally relieves anxiety. The platoon FOs may call for fire themselves (*decentralized*), call for fire on a specified net to a predesignated firing unit (*predesignated*), go through the company FSO with each call for fire (*centralized*), or use a combination of all three. The control of forward observers is based on their tactical competence and experience. Placing additional personnel on the communications net to approve fires improves control but sacrifices speed.

During the battle, the FSO is responsible for monitoring the company command net, the battalion mortar direction net, the company mortar net, and the field artillery direction net. Depending on the FSO's employment option, he may have to delegate the responsibility for monitoring specific nets to members of his fire support team.

The company command net, however, must always be monitored by the FSO if he is separated from the company commander. The FSO stays abreast of developments on the battlefield and anticipates changes in the tactical situation to execute the fire support matrix. Finally, the FSO must train to assume command of the maneuver company for short periods in case the commander is wounded.

Throughout mission planning, preparation, and execution, the FSO is an integral part of the company. If his skills and the capabilities he represents are properly used, his contribution of flexible, responsive fire support makes him an indispensable element of the combined arms team.

Captain David B. Hilburn is a G-3 training officer in the 82d Airborne Division. He previously served in the 1st Battalion, 6th Infantry, 1st Armored Division. In addition to the Infantry Officer Advanced Course, he also attended the Field Artillery Advanced Course. He is a 1987 graduate of the United States Military Academy.

JRTC
National Guard LRS Lessons

THOMAS E. CARLSON

The Army's Joint Readiness Training Center (JRTC) offers a realistic training environment that can help hone the leadership skills and the tactical proficiency of long range surveillance (LRS) units, especially those in the U.S. Army Reserve and the Army National Guard.

My unit of the Maryland Army National Guard trained at the JRTC. On the basis of my experience as an LRS team leader in that rotation, I would like to share some of the lessons we learned.

To train and then perform well at the JRTC, a National Guard LRS team leader must focus his attention on several phases which, when well executed, will produce favorable results and invaluable lessons.

Developing Unit METL

Since an LRS team is essentially self-supporting when it is deployed, extensive pre-deployment planning is required. The team leader must come up with a focused mission essential task list (METL) and an effective plan for implementing it. And he must do this as far in advance as possible, working closely with the detachment or company commander. The result should be a METL that satisfies the training needs of both the individual team members and the unit, and that includes several key areas.

The first, and possibly most important, of these areas is communications training, particularly for the junior team members, who will be expected to help the radio telephone operator (RTO) in addition to conducting surveillance. They must be trained to the team standard on communications procedures, antenna construction, and the use of reconnaissance, surveillance, and target acquisition (RSTA) devices.

The second important aspect to be trained is patrolling, because the deploying LRS teams have to be able to depend upon each other in the field. It is particularly important to ensure that team standing operating procedures (SOPs) are developed and practiced, and that immediate action drills become second nature. SOPs for hide-site construction and surveillance techniques should also be established and practiced.

For a National Guard LRS unit, these tasks require focused and well-planned training. This training should enable each team member to serve in a duty position at least one level above his own. An excellent tool that allows team development to continue between drills is the LRS correspondence course. It provides excellent review and reference material, and it is a prerequisite for the Reserve Component LRS Course offered at Fort Benning, Georgia. Team leaders should regularly monitor the progress of their team members, however, to ensure that they derive the maximum benefit from the course.

A National Guard LRS team can expect to receive its JRTC mission several months ahead of its deployment date. Team leaders must do extensive mission planning outside of their scheduled drills to allow for METL training during the drills. Specifically, the leader must task the team members with appropriate parts of the planning process. This will do two things: It will build the skills and confidence of each team member, and it will help build a cohesive reconnaissance team with a higher esprit de corps.

When the mission is issued, the leader should be aware that it may change several times before deployment. It is probably best, therefore, to develop a flexible, general operations plan that can readily be changed before infiltration.

Additionally, the LRS leader should relentlessly pump the S-2 for information about enemy disposition, locations, strength, and particularly for recent aerial photographs of the area in which the team will be operating. Overlays should be made of routes, avenues of approach, landing zones (LZs) and pickup zones (PZs), and points to be observed. The aerial photos can be used to update map information, and the team members should study the information until they can brief all phases of the mission using a sterile map.

There is always a possibility that the LRS team will be issued an unrealistic mission. There are many possible reasons for this, not the least of which is a lack of understanding of the LRS concept. The LRS has a different mission from that of a scout platoon or a Special Forces reconnaissance element. This problem can be corrected by briefing commanders and staffs on LRS capabilities, missions, and limitations. Since the LRS unit is often the first ground

intelligence asset, it can provide crucial information to intelligence and maneuver units when it is properly used. But the reconnaissance teams have physical limitations, and the tasking agencies must understand this.

Once deployed to the infiltration support base, the team will begin its isolation and final preparations for infiltration. If possible, the LRS teams should be deployed to the isolation base well ahead of the maneuver force—another fact that may have to be explained to the tasking agencies. This early deployment allows the teams to become acclimated and to isolate properly before their insertion.

Isolation must be effectively coordinated with the JRTC staff. At the time of our deployment, for example, we were not provided with an isolation area, and had only limited areas for rehearsal or maneuver. Eventually (24 hours before insertion time), we received an isolation room that both deploying teams had to share. Although this was not an ideal situation, the isolation was played out as realistically as possible to get the full training value. In cases where an isolation area is not provided, the team can move into the field and establish its own security while planning.

Whether in an established isolation area or a field area, isolation procedures must be enforced. Team members must not discuss their mission with anyone outside their team and the headquarters element. Liaison officers should be used as much as possible for coordination between the team and external agencies. This not only helps enforce the isolation, it also frees the team leader to complete his mission planning.

Isolation also allows for a more focused reaction to changes in the mission, which should be expected and may come rapidly. Our team received several mission changes from the time we received our initial operations order to the time we were inserted. Some of these changes occurred during our last 24 hours of isolation.

The use of subordinates and good task organization will build cohesion and keep team members involved and well informed. A failure to do this may leave the team leader burned out by infiltration time, and the team will be not be as well prepared. A good, highly coordinated isolation area will also ease the planning for infiltration, exfiltration, escape and evasion, and resupply—all of which are vital to mission accomplishment. These plans must be highly detailed and well coordinated, because each will reduce the team's chances of compromise.

During the air mission brief, the leader should make sure the supporting aviation units get a thorough briefing on the area of operations. The briefing

should use both maps and aerial photographs to reduce the team's chances of being inserted into the wrong LZ, for example.

Isolation also allows the team to make uninterrupted final preparations. During this time, the team leader can ensure that the soldiers fully understand the SOPs for equipment and sensitive items, that uniforms are "sterilized," and that the MILES (multiple integrated laser engagement system) gear is zeroed to the weapons. He can also see that each team member is carrying roughly the same load; cross-loading helps ensure that the team will still be capable of completing its mission if it loses a team member.

The team should be camouflaged for the environment; burlap strips and pieces of camouflage netting are a simple but effective way of doing this. Additionally, the team will use isolation time to make sure communications and RSTA equipment is functioning properly. A team using AM communications should ensure that the frequencies have been disseminated on a need-to-know basis and will work over the distances involved. All equipment must function to specification, and all team members must know how to use it. A team that cannot rapidly and accurately report intelligence is obviously less effective than it might be.

Water resupply is another important aspect of mission planning, because dehydration can lead to decreased efficiency and to real medical emergencies. Because of the enemy situation and the local weather, local resupply may not be a feasible option at the JRTC. Each of our deploying teams carried two full five-gallon water cans with them. One team rigged the cans so they could be carried by a two-man team. The other team carried them in rucksacks, which worked much more effectively.

The final part of isolation is the briefback to the commander, which representatives of the tasking agency should also attend. This briefing is extremely important because it lets the commander know whether the team is truly prepared for the mission. Each team member must be prepared to brief his part of the mission, and the team leader will probably be asked to estimate the team's chances of mission accomplishment, and to explain why. His failure to be honest in this assessment, either with his superiors or himself, can lead his team to mission failure or, in the real world, to death or capture. During this briefback, it is also possible that problems noted can be corrected quickly so that the team can deploy.

During the mission phase, there is one important thing for the leader to remember: Although good planning, coordination, and rehearsals will reduce the possibility of error or misfortune, things are still likely to go wrong at some time during the mission. During our training, for example, one team inserted during limited visibility, moved to its first mission support site, and sent out a surveillance team. At

dawn, however, it became apparent that they were located in the middle of the enemy's brigade support area, and the team sustained 50 percent casualties.

The LRS team must make the most of limited visibility, terrain masking, and stealth. Cover and concealment are limited at the JRTC, and movement is channeled, affecting friendly and enemy units equally.

During movement, the team leader must ensure that the enroute recorder keeps a detailed log of any signs of enemy activity, aircraft movement, or any other information the leader may designate. When on an observation post or a reconnaissance, a team member must keep detailed logs and make objective sketches (or have the most skilled artist on the objective make them). The more detailed the sketch and the information, the more valuable it will be to the S-2.

As often as possible, each member of the team should copy the information and the sketches of the other team members. The Ranger concept of the "lone survivor" is a very real possibility. The more this soldier has when he returns, the more valuable he will be to the intelligence agencies.

Two other important considerations for the mission are the team's ability to report information quickly and accurately and its ability to react to changes in the situation or the mission. The team's ability to report depends upon functioning equipment and good site selection for communication. Using aerial photos during the planning process will aid site selection.

In case transmissions are being jammed or the equipment is inoperative, however, the team should have a planned "no-commo" resupply. This also applies if, after a set period, there is no communication between the team and the base radio station. After this time period, another option is to use the escape and evasion plan. Before resorting to either of these plans, however, the team should take every possible step to ensure that it has good communication.

To ensure its ability to react to changes in the situation or the mission, which will happen frequently, the team must be self-reliant and flexible, because tasking agencies may not be able to support these changes.

If the situation becomes unfavorable, or the team is compromised, the escape and evasion plan may have to be executed. This plan must allow for execution during each phase of the mission, and must be well coordinated with the supporting units. Although our team's plan could have been better, we were fortunate enough to link up safely with a familiar element when we executed it. The fact that an LRS team is not uniformed and equipped like conventional units can lead to problems when it encounters other units. The thorough coordination of the team's recognition signals for friendly units and aircraft will also reduce the team's chances of being shot by friendly forces.

The LRS team participates in two debriefings at the JRTC, each requiring different information. First, it briefs the forward unit commander or his S-2 on any intelligence that is of immediate importance to his area of operations (AO). The team does not divulge information that is not pertinent to the commander's AO and mission. It does maintain security and refrain from discussing its identity or its mission.

The team then exfiltrates to an isolation area for a formal debriefing with the commander (or his representative) and the G-2. The team should be given adequate time to prepare for this second debriefing. Patrol logs should be consolidated and arranged chronologically, and any cryptographic material should be accounted for and collected. Objective sketches should be compiled, and any film used should be collected with a photographic log attached to it. This log should include the date, time, and location, and a description of the photograph. Overlays with map changes and routes are also used in the debriefing.

The formal debriefing follows a specific format, and each member briefs a portion of the mission. Again, this builds experience and morale. Maps, overlays, or terrain models should be used to increase effectiveness and clarity, as well as to illustrate key points. All information should be briefed; even something that seems trivial may have great value to the intelligence community.

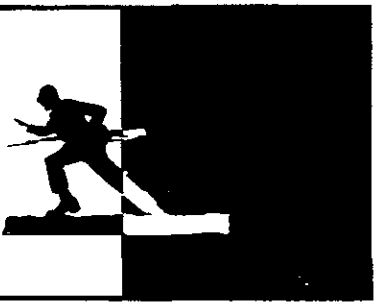
Although this debriefing can be considered an after action review (AAR) for the mission, a formal AAR should be conducted following a short rest and refit period. The AAR is an excellent tool when conducted properly. Team members need to be honest about what happened, and either the team leader or the observer–controller attached for the mission needs to keep the AAR focused.

The JRTC offers an excellent environment for building a cohesive and effective LRS team. The intensive training will build the competence levels of all the team members. Most important, it provides lessons that are quickly learned, particularly in the development and implementation of a team METL, mission planning, and improved flexibility and reaction to changes in the mission.

The time and effort invested in contingency planning during the isolation period has potentially high payoffs when time is short and changes occur. Additionally, the proper use of liaison officers in all phases—isolation, mission, and extraction—is key to success. This is especially crucial when a linkup with forward friendly units is planned. The JRTC provides endless possibilities and, with proper planning and training, will produce a highly skilled and combat-ready LRS team.

Thomas E. Carlson began enlisted service in 1986 and served on active duty with the 75th Ranger Regiment. He subsequently led a long range surveillance team in the 129th Infantry Detachment (LRS), Maryland Army National Guard and is now an ROTC cadet at James Madison University.

ENLISTED CAREER NOTES



EOA AND ASSISTANT IG ASSIGNMENTS

The Enlisted Infantry Branch at the Total Army Personnel Command (PERSCOM) is looking for qualified senior NCOs in the ranks of staff sergeant (promotable) through master sergeant/first sergeant for Equal Opportunity Advisor (EOA) and Assistant Inspector General (AIG) assignments.

A major consideration is that these NCOs have served in troop-related assignments immediately preceeding one of these assignments.

To qualify, an NCO must meet the following prerequisites:

- Be a high school graduate or equivalent.
- Not have had a previous tour as EOA or AIG.
- Meet body weight standard in accordance with AR 600-9.
- GT score of 110 or higher.
- Latest self-development test (SDT) score of 60 or above.
- Selected for or graduate of the Advanced NCO Course.
- Have two years remaining service.

For EOA only:

- Rank of staff sergeant (promotable) or sergeant first class with less than two years time in grade.
- Less than 15 years time in service.

Assistant Inspector General duty is now a three-year stabilized tour, and Equal Opportunity Advisor duty is a two-year stabilized tour, upon completion of the course.

Any qualified senior NCO who would like to volunteer for one of these assignments should submit DA Form 4187, Personnel Action Request, through his personnel service center.

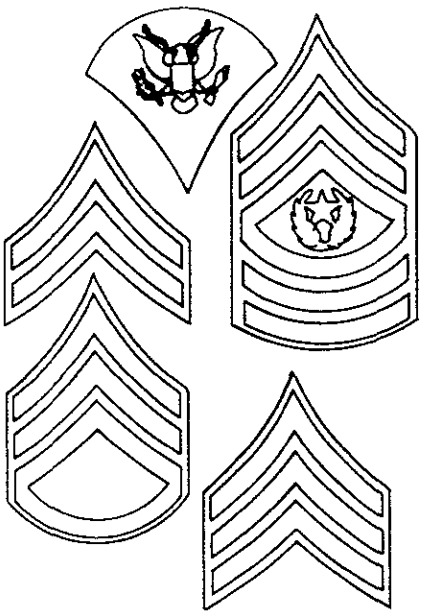
GT SCORES

Senior NCOs should review their soldiers General Technical (GT) scores and encourage their subordinates to strive for minimum scores of 110.

Noncommissioned officers who have GT scores below 110 should be encouraged to seek guidance through their local education centers on ways to raise those scores. An NCO with a low score may be ineligible for many military schools and may not be considered for certain career enhancing assignments.

DEFENSE ATTACHE SYSTEM ASSIGNMENTS

Army noncommissioned officers in the ranks of sergeant through master sergeant/first sergeant who are looking



for challenging and rewarding career opportunities worldwide are being sought for duty in the Defense Attache System (DAS).

The DAS is now recruiting highly motivated and qualified NCOs seeking joint service staff assignments in American embassies throughout the world. Selected NCOs are given an opportunity to represent the United States Army in diplomatic assignments in Europe; North, Central, and South America; Africa; the Far East; and the Middle East.

NCOs considering attache duty must be able to obtain clearance for special intelligence and must have GT scores of 115 or higher, CL scores of 120 or higher, and typing scores of 40 or more words per minute. Soldiers must also test 100 or higher on the Defense Language Aptitude Battery (DLAB) or be skilled linguists. Computer (word processing) skills are also helpful. All family members must be U.S. citizens and meet the medical standards for the country to which the NCO will be assigned.

Prerequisites, application procedures, and countries available in the program can be found in AR 611-60. For additional information, anyone who is interested may contact SFC Currier at DSN 923-2134/7361 (extension 2633), FAX 923-5352; or commercial (410) 677-2134/7361, extension 2633, FAX (410) 677-5352.

U.S. MILITARY ACADEMY PREPARATORY SCHOOL

The U.S. Military Academy Preparatory School (USMAPS) provides a unique opportunity for enlisted soldiers to gain appointments to the academy and become officers. Unfortunately, the school does not receive applications from all deserving candidates. The deadline for the class of 1994 is 1 May 1993.

The school's primary emphasis is on academics, mixed with military training, physical conditioning, and the development of leadership traits. Students are also required to compete in either intramural or varsity team sports as part of their preparatory training.

While the school focuses primarily on preparing students to pass the USMA entrance exams, the course is also designed to prepare students to succeed at the academy. The students gain valuable leadership experience

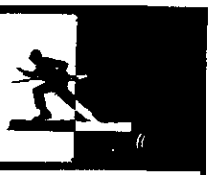
through serving in the student chain of command, conducting peer evaluations, and competing in map reading and drill and ceremony competitions.

Applicants must meet the following qualifications:

- Be U.S. citizens or able to become citizens before 1 July of the year they graduate from USMAPS.
- At least 17 years of age but not over 21 prior to 1 July of the year in which attendance is desired.
- Unmarried, with no legal dependents.
- High School graduates or GED equivalent.
- Medically qualified for admission to the Military Academy. Vision must be correctable to 20/20 with glasses. Pregnancy results in medical disqualification.
- Of high moral character, with no civilian or military felony conviction and no history of venereal infection or of alcohol or drug abuse.
- Highly motivated toward careers as officers.

Anyone who is interested may obtain further information by calling the Admissions Office, DSN 992-1807/1808, commercial (908) 532-1807/1808; or by writing to Commandant, USMAPS, MAPS-ADM, Fort Monmouth, NJ 07703-5000.

SWAP SHOP



KEEPING THE M17 MASK IN ITS CARRIER

A soldier's basic protection against a biological or chemical threat is his M17 series protective mask. Although the mask itself works well, the carrier it is stored in does not. The biggest drawback is that the flap used to keep the mask in the carrier will not stay snapped, and it usually opens at the most inappropriate time—during critical individual movements while assaulting an objective, or while on night patrols in thick vegetation or a swamp.

Some soldiers have tried to solve this problem by wrapping tape around their carriers. By far the most popular method is to wrap the carrier leg strap tightly around it and then connect the leg strap hook to one of the metal rings on the carrier. Because the metal rings are between the carrier and the soldier's body, however, they are not easy to reach.

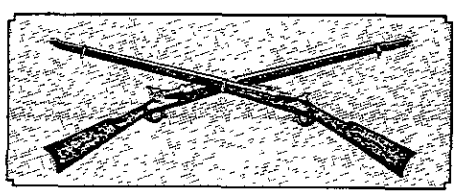
Both of these methods keep the mask in the carrier, but they do not allow the soldier to retrieve the mask in the prescribed, life-saving time standard of nine seconds. I have found that a standard Kevlar helmet camouflage band works well. This is an issue item and costs about 35 cents.

To use the helmet band with the mask carrier, unsnap the M256 decontamination kit carrying pocket, stretch the helmet band around the mask carrier, place the band under the decontamination kit pocket flap, and snap the flap closed. The helmet band is tight enough to keep the mask in the carrier yet elastic enough to allow it to be removed easily. By hooking the band with the thumb and pushing down or pulling up, a soldier can gain immediate access to his protective mask. The helmet band will still be attached to the carrier by the decontamination kit pocket flap for reuse. A safety pin can also be used to double-secure the band to the carrier. The luminous tape sewn on the helmet band also helps a soldier find the carrier at night when he is not carrying it. With practice, a soldier can retrieve and don his mask within the time standard.

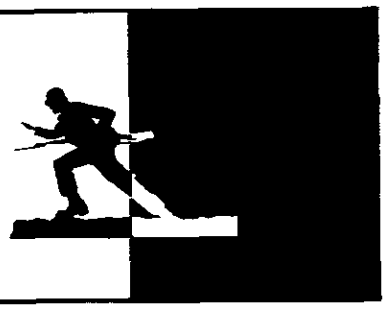
I have carried my mask this way for several years, and it has never failed me. I've parachuted from aircraft, rappelled, conducted water operations, low-crawled, and breached concertina wire, without having the carrier inadvertently open. And it never prevented me from meeting the standards during EIB and CTT training and testing.

The need for a new carrier for the M17 series mask is obvious; meantime, though, we have to use the one we have and make sure the mask is handy when it is needed.

(Submitted by Staff Sergeant Brent Holman, Fort Harrison, Indiana.)



OFFICERS CAREER NOTES



A MESSAGE FROM YOUR ASSIGNMENT OFFICERS

We, the assignment officers at Infantry Branch, Total Army Personnel Command (PERSCOM), need your help so we can serve you better. The following are some steps you can take that will make your career management more effective and efficient:

Let us know how to get in touch with you. We get a weekly update on each officer's current unit of assignment from the Standard Installation/ Division Personnel System (SIDPERS). Unfortunately, though, the unit addresses on the system are not always detailed enough for us to find you on the first try. We need for you to send us both your current unit address and your home mailing address. We routinely send out mass mailings to officers' home addresses, and about 20 to 40 percent are returned because the officers have moved and have not updated this information. We now put a special instruction to this effect on every Request for Orders (RFO).

In addition to addresses, we need your home and duty telephone numbers. If you are overseas, we would like both the military and commercial numbers. Without this information, it may take us several days to find you.

Let us know what you are doing now. Currently, 22 percent of the infantry officer records on SIDPERS do not show current duty titles. This information is important to your career management, because many decisions on future assignments are based on it. Promotion and selection boards also require current information.

Include your current duty title when you send us a change of address or telephone number. Also follow up locally to make sure proper SIDPERS transactions have been made each time you change jobs.

Work to get officer record brief (ORB) corrections made through your installation. Your local command is staffed with record specialists to make these changes, and Infantry Branch is not. These specialists can fix more than 90 percent of the information and will mail us the data on any entries they can't fix.

The system will work if you do your annual birth-month audits and check corrections on the feedback copies you get several months later. Don't wait until your board is about to convene to get things straight.

Take an active part in the assignment process. The ideal time to start talking is eight to nine months before completing your tour—the date of return from overseas (DEROS) if serving outside the continental United States (OCONUS), 24 months time on station if within CONUS. If you are six months or less from completing a tour and have *not* talked to an assignment officer, you are behind schedule. If you call too early, we may not have requirements for the period when you will be available. If you call after you're available to move, you may have fewer options.

Get your assignment officer's professional development guidance and recommendations; talk these over with your mentor and your family; and make a decision. Unless you commit to a certain assignment, we will continue offering it to other qualified officers. Officers who can make their decisions within 24 hours typically get what they want from the available options.

Actively prepare for boards. Assignment officers begin reviewing files for a board about a month before the convening date. Ideally, by that time, we will have the special board ORB that you signed (it has X's over certain information), a current photo, and a complete microfiche.

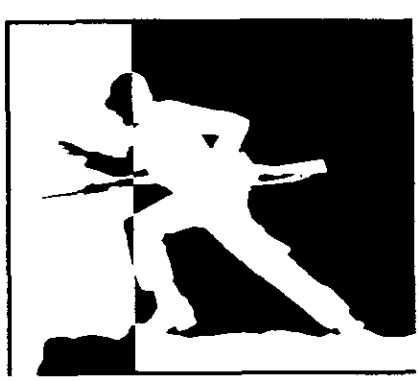
Order your ORB and microfiche about a year ahead from Officer Records Section (not from Infantry Branch) at the following address:

Commander
PERSCOM
ATTN: TAPC-MSR-S
200 Stovall Street
Alexandria, VA 22332

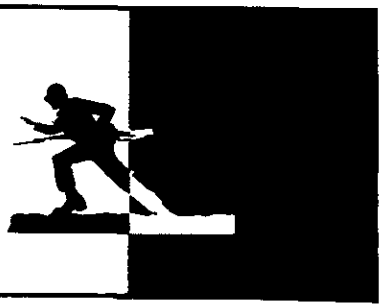
When you receive your ORB, check to make sure all your officer evaluation reports (OERs) are on it. Also check to make sure that *orders* for all awards, decorations, Ranger tab, and the like, are shown on the bottom of the fiche. If you get your photo to us several months early, you can call and we will give you our comments on it.

The special promotion board ORB that you sign is what goes before the board. Virtually all of these have some corrections, so don't be overly concerned if that last Army Achievement Medal hasn't been printed out—just handwrite it on the ORB. The single most important thing you can do is to see that your ORB is accurate.

With your help, we can provide you with professional advice, assignment processing, and board preparation. If you have any questions or recommendations, please let us know.



BOOK REVIEWS



We have received several Army Center of Military History publications that you should find of considerable interest and value:

• **EBB AND FLOW: NOVEMBER 1950-JULY 1951. By Billy C. Mossman. United States Army in the Korean War. CMH Pub 20-4-1, Softbound, 1990. 551 Pages. GPO S/N 008-029-00211-6, $28.00.** This is a solid, well-done history of the military operations during a critical period in the Korean War, from the time of the Chinese intervention through the period of recovery by the Allied forces under the command of General Matthew Ridgway. It is the third and last volume in the Center's combat operations sub-series.

The author, who was then a U.S. Army officer serving in the Far East as a military historian, concentrates on the events as seen at corps level. But there are times when he drops to the division and even lower levels of operation, such as the 2d Infantry Division's terrible ordeal at Kunu-ri and the Army and Marine operations in northeast Korea near the Chosin Reservoir. His battle descriptions are quite vivid. This volume has been a long time in coming, but we feel it is worth the wait.

• **THE U.S. ARMY GHQ MANEUVERS OF 1941. By Christopher R. Gabel. CMH Pub 70-41-1, Softbound, 1991. 227 Pages. GPO S/N 008-029-00242-6, $7.00.** The maneuvers in Louisiana and the Carolinas between 15 September and 27 November 1941 were the largest ever conducted by the Army, and they have never been duplicated in size or scope. By the time the maneuvers ended, it was generally agreed they would have considerable effect on the way the Army would be organized to fight in World War II, if it was called on to do so.

The maneuvers also gave the Army's leaders a chance to observe and grade its higher level commanders—division, corps, and army—in action in the field directing large numbers of men and sizable amounts of equipment. It is interesting to note that most of the 42 such commanders were either relieved or reassigned to new commands during 1942 (including 20 of the 27 participating division commanders). Only 11 of the 42 commanders went on to significant combat commands during the war.

Numerous lessons came out of the maneuvers, and many of them should be of value to today's trainers. Perhaps the major lesson was one that everyone feared—the U.S. Army of late 1941 was not yet well-trained enough or properly equipped to battle a major foe.

• **A SOLDIER SUPPORTING SOLDIERS. By Lieutenant General (Retired) Joseph M. Heiser, Jr. CMH Pub 70-40-1, Softbound, 1991. 323 Pages. GPO S/N 008-029-00217, $12.00.** This is the second in a series of publications prepared by former senior Army logisticians. This one, like its predecessor by General Carter Magruder (CMH Pub 70-39), offers the author's first-hand experiences on the organization and functioning of combat service support, along with the leadership lessons he wants future logisticians to study.

• **MILITARY POLICE. Compiled by Robert K. Wright, Jr. Army Lineage Series. (CMH Pub 60-9-1, Softbound, 1992. 226 Pages. GPO S/N 008-029-00219-1, no price listed.** This volume, a part of the Center's lineage series, contains compact histories of the 109 military police organizations (commands, camps, centers, brigades, groups, and battalions) that are authorized distinctive heraldic devices. Included are the histories of all Regular Army and Army Reserve military police units active between 1962 and 1987, as well as histories of all Army National Guard military police organizations active as of 30 September 1987. The book also has a section of color illustrations of the heraldic items (prepared by the Army's Institute of Heraldry), a bibliography, and a glossary of lineage terms.

• **A GUIDE TO U.S. ARMY MUSEUMS. By R. Cody Phillips. CMH Pub 70-51, Softbound, 1992. 118 Pages. No S/N or price listed.** This guidebook updates two previous publications, the last printed in 1975. Its format makes it easy to use, and each entry contains the basic information a person needs to determine a museum's theme and collection, its location, and the programs and services it offers. (The National Infantry Museum's listing is on pages 38 and 39.) The user should note that the guidebook has information about both museums and historical holding sites, the latter being activities with fewer resources and public programs, and about Active Army, Army Reserve, and Army National Guard museums and historical holding sites. The Center has not included any mention of facilities that are closing or those that may not be accessible to the public in the immediate future.

Finally, you should get the Center's latest index of its publications: **PUBLICATIONS OF THE U.S. ARMY CENTER OF MILITARY HISTORY. Compiled by Wyvetra B. Yeldell. CMH Pub 105-2, Softbound, 1992. 72 Pages. No S/N or price listed.** It is available to Army publication account holders from the Baltimore publications distribution center. Information about its availability can also be obtained from the U.S. Army Center of Military History, ATTN: DAMH-ZBP, Washington, DC 20374-5088. The brochure offers a comprehensive listing of all the Center's current titles and of other titles for which the Center is responsible.

THUNDERBOLT: GENERAL CREIGHTON ABRAMS AND THE ARMY OF HIS TIMES. By Lewis Sorley. Simon & Schuster, 1992. 384 Pages. $25.00. Reviewed by Major General Albert H. Smith, Jr., U.S. Army Retired.

Readers of this long-awaited biography must reach one basic conclusion from it: Creighton Abrams was the best kind of military leader our Army can produce. Without doubt, he will be remembered as a great and good man.

Sorley's absorbing book follows Abrams' advancement from high school success through West Point graduation and service in three wars to his final job as Chief of Staff of the Army. At the same time, it provides a military oriented view of American history from 1932 through 1974.

While the narrative focuses on Abrams' military achievements, it also reveals a lov-

ing husband and a caring father. He married Julie Harvey following graduation, and the two formed a team that came to be admired and respected throughout the Army. Her strength of character matched his, as did her integrity, intelligence, and sense of self. Their enduring mutual trust and dependence provided bedrock support throughout his life.

This book is based on what his superiors, subordinates, and peers thought of Abrams during his 38 years of service to his country. Their recollections, anecdotes, and quotations show a fearless warrior, a remarkably capable administrator, and a leader who inspired confidence in young soldiers—and who never forgot their needs. He was a man of unquestioned integrity and high intelligence whose honest evaluations were important to three Presidents—Kennedy, Johnson, and Nixon.

During World War II, General George S. Patton, Jr., described Abrams as the world's champion tank commander. Later, during the Vietnam War era, Sir Robert Thompson (a noted British analyst) called him the greatest American general since Ulysses Grant. To the men of the 37th Tank Battalion, he was the bravest of the brave.

Combat veterans of World War II—and, for that matter, our soldiers of today—will especially enjoy Chapters 3, 4, and 5. These chapters tell how Abrams' 37th Tank Battalion led the 4th Armored Division and Patton's Third Army across France and Belgium into the heart of Germany—and finally to Czechoslovakia. The actions in which they defeated determined, numerically superior German forces along that road to ultimate victory are described in vivid detail by the soldiers who fought for and with Abrams. He was their peerless leader, their key to victory and survival on the battlefield. They would follow him anywhere.

Chapters 6 to 12 cover the Abrams story from July 1945 until he was named Vice Chief of Staff of the Army and promoted to General in September 1964: He graduated from the Army War College in 1953, and was successively Chief of Staff of I, X, and IX Corps, U.S. Army, in Korea. His first star came in February 1956; his second, June 1960; and his third, August 1963. He commanded the 3d Armored Division, 1959-1960, and V Corps in Germany, 1963-1964.

While assigned to the Office of the Deputy Chief of Staff for Operations, 1962-1963, Major General Abrams played a vital role in resolving the civil rights crises of that era. He was sent by the Chief of Staff to Oxford, Mississippi, in 1962 and to Birmingham and Tuscaloosa, Alabama, in 1963 to be his eyes and ears on the ground and to make any immediate decisions that were required regarding the employment of Army troops. After Tuscaloosa, Robert Kennedy wrote to Secretary Vance expressing high regard for General Abrams and appreciation for his competence, patience, and advice. Abrams had served his President well during very difficult times.

From mid-1964 (when he became Vice Chief of Staff) until he was nominated in June 1972 to be the Army's next Chief of Staff, Abrams devoted all his energies to preparing for and fighting the Vietnam War. Lewis Sorley devotes 155 pages to telling that story—of what happened in Washington and Vietnam during those eight turbulent years. Once again, using eye-witness accounts to fill in the details, the author provides a fascinating text that takes the reader from Abrams' headquarters in Saigon to remote outposts, to critical areas of the combat zone, to meetings with the President and his National Security Council and to a hundred other locations where the presence of the Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV) was needed.

Despite decreasing support from the homefront and ever-changing missions from the White House, Abrams knew he could get the job done. His determination and confidence remained steady and inspired all those under his command to do their best. He almost succeeded in making Vietnamization work, and that singular accomplishment enabled him to execute a most difficult phased withdrawal of American forces. Unfortunately, he was a successful supreme commander in an unwinnable war.

Defense Secretary Melvin Laird persuaded President Nixon to appoint Abrams Chief of Staff of the Army because, "the Army needed a leader like Abe at the helm." Two years later, as a result of his inspiring leadership, the Army had largely recovered its pride and professionalism. Sadly, for all Americans—especially those in uniform—this great man died on 4 September 1974.

The author is to be congratulated on a superb historical work. He also deserves a special salute for the wonderful photographic summary of Abrams' military career found at the book's center. His well-organized acknowledgments, notes, selected bibliography, and other sources, plus a fine index, will assist all those who use the book as a basic reference.

Finally, I agree with the enthusiastic reaction of General John Galvin (former NATO commander), "A book that must be read—and not just by soldiers!"

A FROZEN HELL, by William R. Trotter. Algonquin Books, 1991. 283 Pages. $22.95. Reviewed by Major Michael R. Jacobson, United States Army Reserve.

This excellent book covering the Russo-Finnish Winter War of 1939-1940 is one that all light infantrymen, sappers, and 6th Infantry Division personnel should read. It discusses how a small, well-trained, well-motivated, and well-led Finnish Army defended against a larger, better-equipped Russian Army.

The Finnish Army demonstrated that leadership, training, and defending their homeland were the factors that enabled their soldiers to defeat a numerically superior and much better-equipped Army.

The book covers the small-unit level and the relationship between the military and foreign policy. This war is not normally studied, sandwiched as it was between the invasions of Poland and the invasion of Norway and Denmark, but it is worth studying.

CRUEL APRIL: THE FALL OF SAIGON. By Olivier Todd. W.W. Norton, 1991. 470 Pages. $24.95. Reviewed by Dr. Joe P. Dunn, Converse College.

Olivier Todd was a leftist French Journalist when he covered the Vietnam War from 1965-1973. But the agony of the Vietnamese under "the red fascists, the Prussians of Asia," since 1975 transformed his perspectives. He now believes that if the United States had been able to preserve South Vietnam, the worldwide anticommunist revolution today would be sweeping away the evil regime in Hanoi. He says that the American withdrawal, or defeat, postponed an inevitable democratic process in Indochina, but the forces of true Vietnamese democratic liberation will ultimately prevail.

His book is the most detailed account now available on the final four months in the spring of 1975 when North Vietnam took over the South. The collection of portraits of the American and Vietnamese who played roles in this sad drama is poignant, a saga of the collapse of a small nation and the inability of a great power to respond. Todd provides abundant evidence to challenge most of the sterile cliches about the South Vietnamese in the final days, and makes it impossible to dismiss them easily as Americans tended to do. The book is a

revealing and disturbing account.

Originally published in French in 1987, this volume suffers some in translation. The use of present tense throughout is awkward at times. Despite these minor flaws, though, it is a fascinating book that demands attention.

UNDERSTANDING DEFEAT: HOW TO RECOVER FROM LOSS IN BATTLE TO GAIN VICTORY IN WAR. By Colonel T.N. Dupuy. Paragon House, 1990. 312 Pages. $24.95. Reviewed by Lieutenant Colonel Cole C. Kingseed.

This book is Trevor Dupuy's latest attempt to compel military planners and their supporting analysts to understand the factors that contribute to success, as well as defeat, on the battlefield. His underlying assumption is that a nation that understands defeat in battle is more likely to avoid it, or, if it is unavoidable, at least mitigate its consequences. To support his thesis, Dupuy uses examples of history's great captains and applies scientific analysis to show how defeat can be turned into success.

The author, a career officer and respected military theorist, proposes that the causes of defeat fall into three general categories: unfavorable circumstances beyond the control of a commander, unfavorable circumstances a commander may influence, and the failure of command. Dupuy also makes some interesting observations: The acknowledgement of defeat does not frequently appear to have been caused by the number of casualties; moreover, the outcome of war more likely depends on other considerations than on the mere fact of who won the first battle, particularly if the war lasts more than one year.

On the debit side, this book contains numerous facts that are superfluous at best and contribute little to the author's basic thesis. Is it important, for example, that Eugene of Savoy had only a 50 percent success rate against French generals whose names began with V? Other conclusions are highly questionable, such as that Robert E. Lee's loss at Gettysburg was chiefly due to the overwhelming numbers of his antagonist.

Unfortunately, the book offers little that is new to the reader's comprehension of transforming defeat into victory. Aside from identifying certain commanders whose tenacity and perseverance converted initial setbacks into ultimate victories, the author fails to identify other factors that convincingly support his thesis. Computer programmers and war game enthusiasts will find the appendix outlining simulation of defeat entertaining, but this book does not measure up to the author's former works.

FROM PUSAN TO PANMUNJOM. By General Paik Sun Yup. Translation by Bruce K. Grant. Brassey's (US), Inc., 1992. 254 Pages. $24.95. Reviewed by Lieutenant Colonel Donald C. Snedeker, United States Army Retired.

On Sunday, 25 June 1950, Colonel Paik Sun Yup was commander of the Army of the 1st Republic of Korea (ROK) Infantry Division. As he says in the preface of this book, he is "one of the few soldiers left alive who spent the three years, one month, two days, and seventeen hours of the Korean War, from the beginning of the Sunday invasion until the armistice in 1953, as a field commander in the lines." In typical understatement, he adds, "I hope, then, that this book will add in some small way to the literatures of the war and of the Korean Army."

This is not just another book about the Korean War, or just another memoir by an eyewitness. One word characterizes what is unique about it—*perspective*. The story is told through Korean eyes and a Confucian temperament.

Paik served in a series of unique and important positions. He commanded the 1st ROK Division from north of Seoul through the disastrous retreat to the Pusan Perimeter, then in the victorious attack back north, then once again south as the Chinese intervened. In April 1951 he was promoted and became the commander of the I (ROK) Corps, the only major non-U.S unit responsible for its own defensive sector. While serving as corps commander, he was also selected to be the sole ROK representative to the armistice talks with the North Koreans and the Chinese. Still later, he was twice selected to serve as the Chief of Staff of the ROK Army.

The details of his successes and failures are fascinating, and often incredible. For example, his 7,000-man force—composed of the remnants of two divisions "fresh" from a 200-mile retreat, with only 15 105mm howitzers for fire support, and without a military map of its defensive area—was required to defend a 25-mile wide sector at the critical juncture of American and ROK forces on the Pusan Perimeter, opposed by a North Korean force three times stronger in manpower and ten times stronger in firepower—and all this with a 29-year-old brigadier general.

Paik's narrative is straightforward, no-nonsense, and honest. From his description of the pleasures and difficulties of conducting coalition warfare with Americans, to his evaluations of his own subordinates, contemporaries, and superiors—including President Syngman Rhee and a host of American generals from MacArthur to Ridgway to Van Fleet—he pulls no punches. He is as generous or as critical in discussing others as he is discussing himself.

It is Paik's relation of events in the perspective of Korean history—not American history—that makes this book required reading. Bruce K. Grant's translation from the original Korean is masterful; it gives the reader not only a sense of Korean history but also of Korean ancestry, culture, religion, and tradition. One example will illustrate this point:

In October 1950 the United Nations Command had crossed the 38th parallel and was closing on the North Korean capital of Pyongyang—which Paik had fled earlier as a refugee. The original plan was to have the two American divisions of I (U.S.) Corps attack and seize the town, but Paik explained *his* plan to liberate *his* hometown—a plan patterned on the successful Japanese attack on the same city during the Sino-Japanese War in 1894. After convincing the I Corps commander to include the ROK 1st Division in the attack, Paik melded Korean and American cultures by executing his battle plan "Patton's way." His own words best describe the result: *The youthful, homeless refugee who had fled North Korea only five years before was now returning as a general officer at the head of fifteen thousand American and Korean troops poised to capture his own home.... No words can convey the emotions that swept me.... The sight of the ROK 1st Division in assault was the grandest panorama I shall behold in my lifetime. No spectacle in a Hollywood war movie could run even a close second to the reality of our charge.* A western general might have left it at that, but not a general raised in the ways of Confucius: *I knew, of course, that collateral damage was unavoidable during combat in an urban area, but if I were to destroy cultural monuments deliberately in my hometown, future generations would scorn me forever.*

In short, read this book. You will be a better soldier for the effort.

HAIG'S COMMAND: A REASSESSMENT. By Denis Winter. Viking, 1991.

362 Pages. $24.95. Reviewed by Major Harold E. Raugh, Jr., United States Army.

The controversy surrounding the performance of Field Marshal Sir Douglas Haig as Commander-in-Chief of the British Expeditionary Force during World War I began even before the last shots were fired in 1918. This most recent salvo further damages Haig's reputation and also calls into question the credibility of Britain's official war histories.

Denis Winter, the author of two previous books on Great War topics, dissects Haig's military career, focusing on his performance during the cataclysmic campaigns of 1916, 1917, and 1918. Using mainly official Australian and Canadian military documents—many of which include much fuller and more detailed accounts of events than documents in Great Britain (if they still exist)—the author has shown that "Haig...systematically falsified the record of his military career," especially by re-writing his diary for publication after the war to justify his own version of events. In addition, Winter demonstrates that the British official history of the war was distorted purposely and methodically, and that documents that would have revealed weaknesses and criticisms of the higher direction of the war have been destroyed.

Four dozen superb photographs and nine well-drawn maps enhance the text. Thirty-eight pages of biographical sketches of leading participants in the study are especially welcome. The first appendix, "Sources Used: An Evaluation," is generally interesting, although the locations of some of the listed manuscript sources are inaccurate. The second appendix, "Haig: A Political Intriguer?" is much more problematic and speculative, which detracts from the author's research and assessment of the source material's reliability.

Nonetheless, Winter's book confirms many of the actions and traits that had been suspected about Haig and his self-serving role in bending history. Perhaps of greater significance is the lesson that official war histories should be honest, accurate, and critical. The success of a future conflict may depend upon an official historian's candid and objective spadework.

MOSBY'S RANGERS. By Jeffry D. Wert. Simon and Schuster, 1990. 384 Pages. $22.95. Reviewed by Major Don Rightmyer, United States Air Force.

One of the most famous of Confederate cavalry leaders was Colonel John S. Mosby. Although his story has been told several times before, this book is the first attempt to provide an objective history of him and those who served with him in Mosby's Rangers (in the author's words, "to tell their story frankly and without the veneer of romance....").

Mosby began his military service to the South in 1861 as a junior enlisted man until General J.E.B. Stuart noticed his talent and boldness, which led to Mosby's selection for increased rank and responsibility. This book deals principally with the 28-month period from early 1863 to the war's end when Mosby operated his unit, the 43d Battalion of Virginia Cavalry, as an independent command.

Mosby and the 1,900 men who served with him between 1863 and 1865 operated largely in the Virginia counties of Fauquier and Loudoun, an area of 125 square miles widely known as "Mosby's Confederacy." While Mosby was also active in the 1864 Shenandoah campaign and the earlier Maryland and Pennsylvania campaigns, it was primarily within the confines of this "Confederacy" that his units operated.

Beginning in January 1863 with a company of 15 men, Mosby eventually commanded a regiment with two battalions of eight companies. While their successes and failures varied from month to month, Mosby's Rangers were mainly effective in harassing Union troop concentrations, railroads, and supply depots. They also captured some senior Union leaders during audacious night raids. It was largely due to popular support for Mosby among the civilians in his area of operations that he was so consistently successful and able to escape defeat from increasingly stronger Federal cavalry opposition.

Wert brings to this book an in-depth knowledge of Mosby and the Virginia campaigns, building on his earlier book, *From Winchester to Cedar Creek: The Shenandoah Campaign of 1864.* This latest volume succeeds in presenting a comprehensive analysis of this Confederate partisan ranger unit and a good study of unconventional warfare in this one sector of Civil War military operations.

RECENT AND RECOMMENDED

ARMY FORCE STRUCTURE: LESSONS TO APPLY IN STRUCTURING TOMORROW'S ARMY. Prepared by the National Security and International Affairs Division, U.S. Government Accounting Office, 1990. GAO/NSIAD-91-3. 62 Pages. USGAO (P.O. Box 6015, Gaithersburg, MD 20877). $2.00, Softbound.

RE-ENTRY: HOW TO TURN YOUR MILITARY EXPERIENCE INTO CIVILIAN SUCCESS. Second Edition. By Keith O. Nyman. Stackpole Books, 1990. 192 Pages. $13.95.

OFFICER CANDIDATE TESTS. Second Edition. By Solomon Weiner. ARCO-Prentice Hall Press, 1990. 402 Pages. $15.95.

THE U.S. NAVY: A HISTORY. By Nathan Miller. A Quill Book. Morrow, 1990. 308 Pages. $10.95.

THE DAY THE CHINESE ATTACKED: KOREA, 1950. By Edwin P. Hoyt. McGraw-Hill, 1990. 255 Pages. $19.95.

THE COMPLETE AR-15/M16 SOURCEBOOK: WHAT EVERY SHOOTER NEEDS TO KNOW. By Duncan Long. Paladin Press, 1992. 224 Pages.

SWORD OVER RICHMOND. By Richard Wheeler. HarperCollins, 1991. 371 Pages. $10.95, Softbound. (First published in hardcover in 1986.)

WITNESS TO APPOMATTOX. By Richard Wheeler. HarperCollins, 1991. 255 Pages. $10.95, Softbound. (First published in hardcover in 1989.)

GENERATIONS: THE HISTORY OF AMERICA'S FUTURE, FROM 1584-2069. By William Strauss and Neil Howe. Morrow, 1991. 538 Pages. $22.95.

AN UNCERTAIN HOUR: THE FRENCH, THE GERMANS, THE JEWS, THE KLAUS BARBIE TRAIL, AND THE CITY OF LYON. By Ted Morgan. Morrow, 1990. 416 Pages. $21.95.

UNITED STATES FOREIGN POLICY IN THE 1990s. By Harold R. Moroz. Carlton Press (11 W. 32 Street, New York, NY 10001). $12.95.

SOLDIER'S STUDY GUIDE: HOW TO PREPARE FOR PROMOTION BOARDS AND ADVANCEMENT. By Command Sergeant Major Walter J. Jackson. Stackpole Books, 1990. 128 Pages. $13.50.

PERESTROIKA ANNUAL: VOLUME 2. By Abel G. Aganbegyan. Brassey's (US), 1990. 312 Pages. $23.95.

AIRWARS AND AIRCRAFT: A DETAILED RECORD OF AIR COMBAT, 1945 TO PRESENT. By Victor Flintham. Facts on File, 1990. 424 Pages. $40.00.

YAMAMOTO: THE MAN WHO PLANNED PEARL HARBOR. By Edwin P. Hoyt. McGraw-Hill, 1990. 281 Pages. $19.95.

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From the Editor

The Long Road — A Lesson Learned

The General Headquarters Maneuvers of 1941 were part of a rigorous self-examination that the United States Army undertook during the months preceding America's entry into World War II. The mobilization that President Roosevelt had ordered early in September of 1939 had set the Army on the long road to recovery from years of neglect. General George C. Marshall had little cause for optimism, however, as he reviewed the comments on the final phase of the maneuvers. Small unit training had not received the attention it deserved; doctrine had not kept pace with the development of the tank and the dive bomber; such basic lessons as noise, light, and communications security had been neglected or forgotten; and lack of attention to safety— yes, even in 1941—was causing needless injuries to soldiers.

The materiel situation was little better; much of the Army's equipment was of an earlier generation. As an example, the cover of our last issue depicted a soldier of the 165th Infantry, 27th Infantry division, in the Gilbert Islands in 1943; he was armed with a Model 1903 Springfield rifle, our principal infantry weapon until 1939. Springfields were common in the Pacific Theater in the early years of the War, until soldiers were issued the replacement M1 Garands. As production of the M1 caught up with demand, units were issued the new rifles in training and deployed overseas with them. This issne's cover is based upon a combat photograph of 7th Infantry Division soldiers clearing enemy positions on Kwajalein Island in 1944; by then these units were equipped with both the M1 Garand and the M1 Carbine.

Weapons development and production shifted into high gear, and as information became available on the design and effectiveness of our enemies' weapon systems, the American industrial base used some of the Axis powers' own technology to improve our weapons even further. The United States was fortunate; there was still time to recover from a poor start and achieve victory. But the cost was high; delays in the development of armor-defeating munitions and tank armor cost American lives when rounds failed to destroy German tanks with the first hit, while German high-velocity rounds easily penetrated early U.S. tanks, with catastrophic results. Likewise, the 37mm antitank gun used by U.S. forces early in World War II was effective only against the most lightly armored vehicles; it was eventually replaced by a heavier weapon. In spite of early setbacks, the United States and her Allies were able to overcome their disadvantages and defeat the Axis powers.

Fifteen years later an unprepared American force went into action in Korea, with disastrous results. This time it was only after tremendous sacrifice on the part of the United States and other United Nations' forces that peace was restored.

Recent history presents a more positive picture of our preparedness; in the Gulf War, the United States enjoyed the technological advantage. The catastrophic losses of the Iraqis clearly show the cost of finishing in second place on the modern battlefield. We do not know where the next significant threat to our national interests will emerge, nor do we know what form that threat may take, but we cannot afford to become complacent. A technological advantage is a fleeting thing, and in today's world of rapid force projection, quantum improvements in weapons development, and political instability, we must be able to react quickly and decisively against any threat.

Maintaining our technological preeminence lies in the domain of the research and development community, and in the hands of our senior leaders who must communicate the need for the funding to sustain the development and testing of the systems we will rely upon in the future. But the responsibility for training and leading the soldiers who must effectively use that equipment lies in our own hands. Significant improvements are being made today through the commonsense decisions of innovative leaders at all levels. In his comments on the maneuvers of 1941, Lieutenant General Leslie J. McNair had this to say about the role of unit leaders:

The coming months of . . . training are a challenge to leadership. It is not pep talks and verbose programs which will count, but rather skill in the practical conduct of training, based on solid knowledge on the part of both commissioned and noncommissioned leaders.

Sound familiar? You bet! Innovation and information- sharing are no less important today than in 1941, and INFANTRY Magazine is one way to share your experience with the combined arms community. Give us a call or send a letter outlining an idea you think is worthwhile, and we'll give you feedback. Check out this issue; you will see that your peers are already seizing the opportunity.

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