

need to worry about providing range space or shutting down conventional airfield traffic during ultralight training periods.

Finally, combat-configured ultralight machines could be pre-packaged for air transport and stored for long periods. Hundreds of ultralights would weigh little and could fit in the cargo hold of any transport aircraft. Considering their effectiveness in performing the air insertion role, ultralights have immense potential for cost saving. Even if deployed in theater, this packaged asset would not actually be used unless the tactical situation called for it.

An Army study of this potential should be conducted with the assistance

of logistic planners, ultralight manufacturers, and the producers of associated military hardware and support equipment. Only then could we measure the true cost-saving potential of using ultralights in a tactical scenario.

That the infantry requires mobility is a vital truth of combat today, just as it was in the past. Army doctrine fully embraces this idea and incorporates the technology of the helicopter to do it well. Ultralight aircraft could also meet the need for infantry mobility and could do the job at a much lower cost.

It is time for Army tacticians and analysts to examine these cost savings and to decide on the best employment plans. It is plain to see, however, that

these savings could be substantial and that ultralights could be used successfully for the insertion task.

Now is our opportunity to examine and adopt airmobile insertion by ultralight. Ben Franklin would expect no less.

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Direct Effective Fire Line

MAJOR THOMAS J. MANGAN III

As a result of the 1991 Gulf War, the role of air power has gained new followers and has expanded rapidly in operational planning. As the Air Force champions the causes of air interdiction, counter-air operations, and new technology, however, the role of close air support (CAS) is seldom mentioned.

CAS is important to the success of ground campaigns and battles, and it may take on even greater importance after the Army's planned force reductions. In future contingency operations, we may have more Air Force assets than ground forces in place when hostilities begin, because the early-deploying ground forces will need more battlefield air interdiction (BAI) and close air support to hold off the enemy until additional ground combat power can be brought to bear.

With our new technological advances, more accurate and lethal

weapons, and better means of target acquisition, the way we see and fight the battle is changing. Support for the maneuver force may no longer only take the form of low and slow CAS aircraft flying overhead. Instead, it may take the form of a combination of battlefield effects close to our own troops. It is in this light that the ground forces need to re-examine the application of CAS. While the principles and techniques of the past are still valid, we can improve the way CAS is planned and executed. One recommendation for integrating CAS into the direct-fire battle is to use what I call the direct effective fire line (DEFL).

The DEFL is a conceptual planning line on the near side of which effective direct and indirect fires are employed against enemy forces. The DEFL is defined by the limit—forward of the forward line of own troops (FLOT)—to

which direct fires can effectively destroy the enemy with a high percentage of first engagement kills. Additionally, observed and controlled indirect fires (directed fires) can be rapidly and effectively adjusted between the DEFL and the FLOT where they will contribute significantly to the successful direct-fire battle.

The DEFL concept grew out of my experience at the National Training Center (NTC) and developed further after I discussed the use of CAS with veteran DESERT STORM A-10 pilots, air support operations center officers, air liaison officers, ground liaison officers, and ground battle participants. The DEFL reflects one aspect of the way air power was successfully used in DESERT STORM and the way its employment can be improved in future conflicts.

Too often at the NTC, the appearance

of CAS aircraft either closed down essential direct and indirect fires or shifted them from the battle in progress. As a result, the force in training had fewer fire and maneuver opportunities and therefore incurred friendly losses, while the enemy enjoyed a respite from both direct and indirect fire.

Since direct and directed fires between the FLOT and the DEFL are effective against the enemy, it is counterproductive to stop ground force fires for the insertion of CAS aircraft. Whether in a single pass or multiple attacks, CAS aircraft (most likely the F-16 in the future) cannot usually deliver greater destructive power than the engaged ground force.

In principle then, fixed-wing aircraft are best employed beyond the DEFL where they can concentrate their power against enemy formations that are not yet decisively engaged by ground forces. This will have the double advantage of allowing the Air Force greater flexibility in tactics while concentrating air power on the enemy's second echelons or reserves. Concentrated attacks against second-echelon forces will help maintain favorable force ratios at the FLOT for the direct-fire, or directed-fire, battle and will reduce the likelihood of air-to-ground fratricide.

The DEFL delineates an area forward of the FLOT—that is, between the FLOT and the DEFL—within which fixed-wing aircraft are not normally used in the CAS role. CAS is used within this area only when the situation is critical, when its use can be decisive, or to engage targets in dead space that cannot be engaged by direct and indirect fires.

The distance between the FLOT and the DEFL is determined either by terrain restrictions or by the maximum effective ranges of the killing weapons, whichever is shorter (Figures 1 and 2). For light units, the distance between FLOT and DEFL will be much shorter—approximately 1,000 meters. Inherent in this concept is the understanding that direct and indirect fires can normally destroy targets inside the DEFL area more quickly and effectively

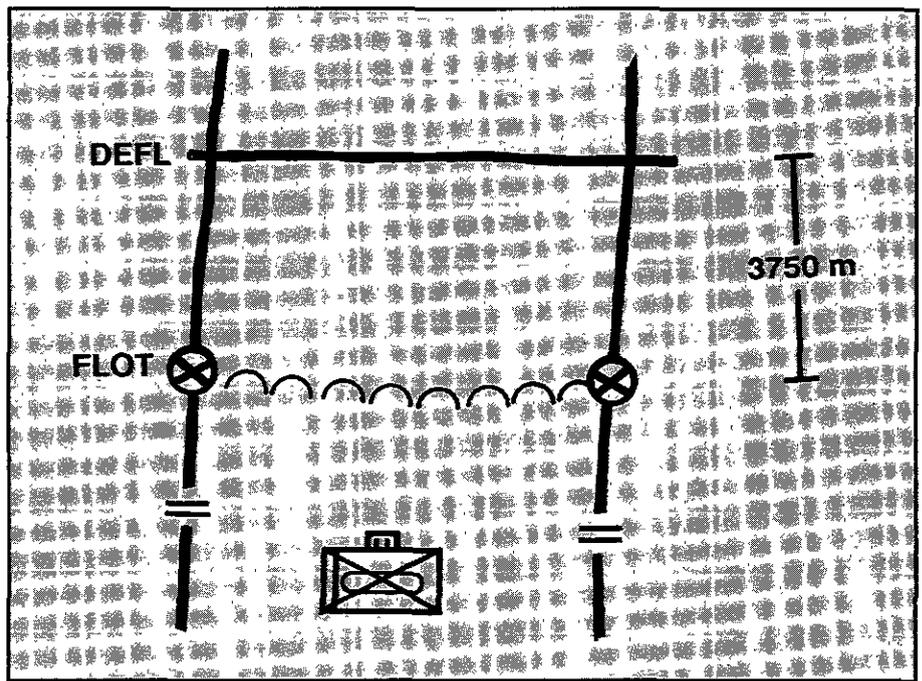


Figure 1.

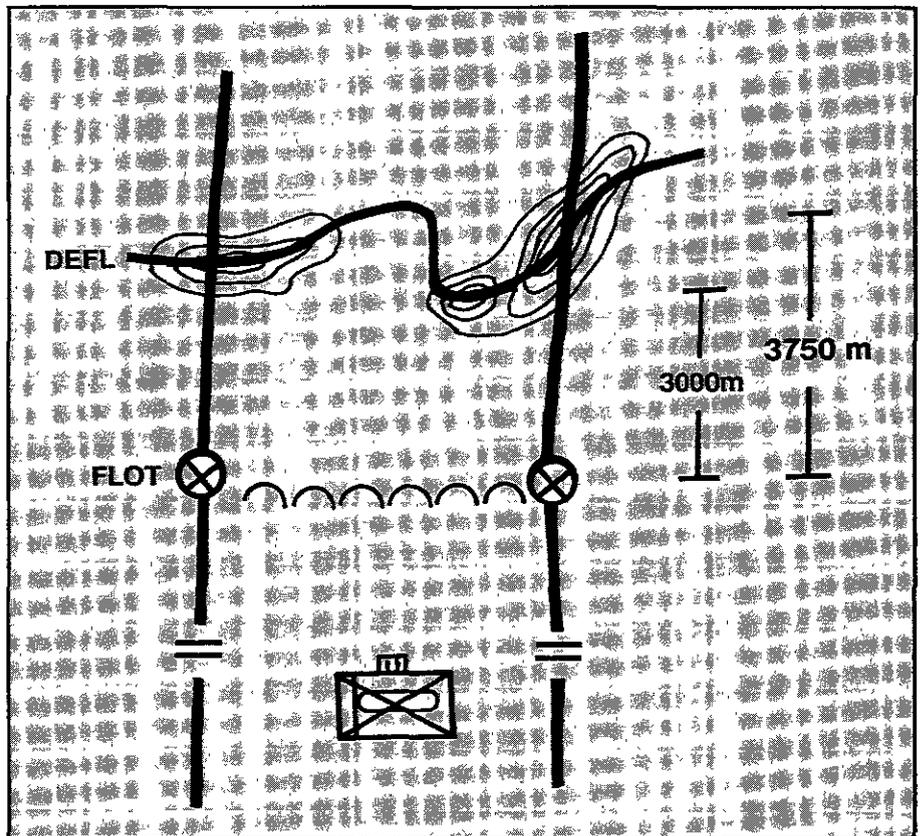


Figure 2.

than CAS aircraft can. When fixed-wing aircraft are allowed inside the DEFL, both direct and directed fires may have to be shifted or canceled to permit execution of the air strike.

The DEFL is a conceptual planning line, not a new control measure or a phase line; it does not adversely affect existing control measures or such planning tools as engagement areas. The

DEFL serves to delineate the area in which fixed-wing aircraft can be used to best advantage without the loss of massed direct or directed fires on the enemy. It is permissive in that it does not restrict commanders from using ground or air power in any manner. Its function is to help the planner prepare his battle as it pertains to the use of air forces.

The DEFL concept also supports AirLand Battle as a technique for applying the tenets of depth and synchronization. It supports depth by allowing battalion and brigade planners to look deeper into the enemy's formation for the use of—and the effects of—close air support. It supports synchronization by dividing the battlefield into workable and complementary areas for the air and ground forces. Fixed-wing aircraft and ground forces can then operate simultaneously rather than sequentially against a larger force and destroy the enemy in depth before he can mass or pose a critical threat.

Depth is defined as the extension of operations in space, time, and resources; momentum in the attack and elasticity in the defense derive from depth. Momentum in the attack is achieved and maintained when the enemy's committed forces are adequately fixed, and his uncommitted forces are interdicted or otherwise prevented from interfering. Elasticity in the defense is achieved and maintained when uncommitted enemy forces are delayed or prevented from interfering with the defense of forward deployed or counterattack forces.

Enemy forces beyond the DEFL are not likely to be decisively engaged while those within the DEFL are. Hence, forces beyond the DEFL constitute a *de facto* depth or second-echelon force with immediate availability to the enemy commander. Applying CAS beyond the DEFL, whether in the attack or the defense, adds depth to the engagement by preventing uncommitted enemy forces from interfering with the friendly unit's scheme of maneuver. Since the enemy's immediately available "depth" forces (those just outside the DEFL) are being destroyed at the

same time as those in the decisive engagement (inside the DEFL), the synchronization of the weapons' effects is achieved.

Synchronization is defined as the arrangement of battlefield activities in time, space, and purpose to produce maximum relative combat power at the decisive point. Synchronization is both a process and a result. Activities are considered synchronized if their combined effects are felt at the decisive time and place.

By using the DEFL as a planning tool, leaders achieve the synchronization of both the process and the result of an engagement. The enemy force straddling the DEFL finds its units in the first and second echelons being engaged simultaneously (Figure 3). While the enemy's first-echelon forces are destroyed in the direct-fire battle, the elements of the second echelon are destroyed by close air support. The surviving elements of the second-echelon force then cross the DEFL and pass

directly into the decisive direct-fire battle. In effect, the second-echelon force is attacked sequentially and in depth, while the entire enemy force is attacked simultaneously throughout its depth.

The following scenario will serve as an example:

As part of a larger attacking force, a friendly battalion encounters a well dug-in enemy defense. During the ensuing battle, the enemy is steadily and systematically destroyed by our weapon stand-off capabilities. While the battalion engages targets within the DEFL, an enemy counterattack force, a tank battalion plus, is assembling beyond direct-fire range. Although CAS aircraft are available, their overflight of the direct-fire battle area would reduce the rate of target destruction and give the enemy an opportunity to maneuver within his own effective fire range.

Planning for CAS beyond the DEFL, the commander requests attack helicopters and organizes a division-level

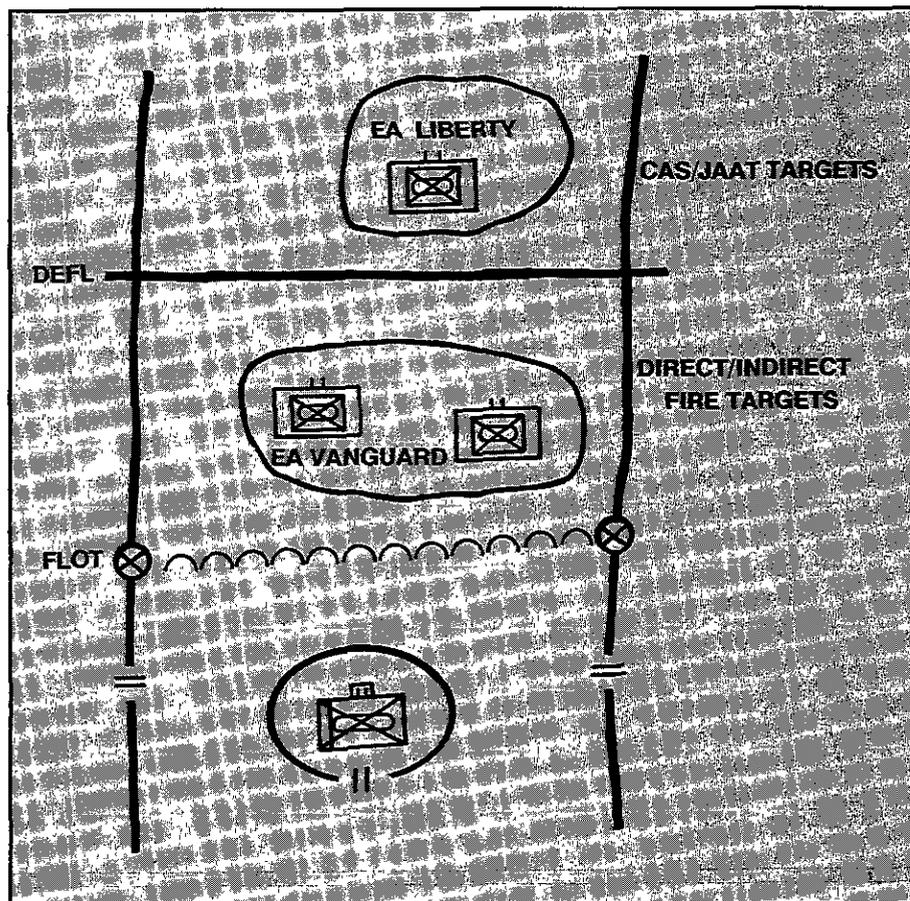


Figure 3.

deep joint air-attack team (JAAT). The attack helicopters maneuver under the suppression of enemy air defense (SEAD) provided by the artillery and destroy the air defenses of the counter-attack force. While the helicopters are re-positioning for a renewed attack, the CAS aircraft begin to destroy the armor unit. Working together, the deep JAAT operation destroys more than 34 armored vehicles in a matter of minutes.

During the entire deep JAAT operation, the ground maneuver battalion was able to maintain direct and indirect fires on the dug-in enemy short of the DEFL, except for one company that briefly shifted fires during aircraft ingress and egress. If the available CAS had been used inside the DEFL, the enemy counterattack force may have had a chance to influence the battle adversely, while the CAS may have achieved limited results against the dug-in enemy. By projecting their support beyond the DEFL, CAS aircraft had more freedom of maneuver were not under pressure to leave the area so the ground units could resume fire, and played a key role in defeating the enemy force as a whole.

In applying the DEFL concept, CAS is used to destroy targets that cannot readily be engaged by direct or indirect fires, and to help maintain a favorable force ratio at the FLOT for the direct-fire battle.

CAS within the DEFL is still possible, however, if one of the three criteria for its use can be identified—the situation is critical, the use of CAS inside the DEFL will be decisive, or stand-off weapons can still be used from behind the FLOT. Instead of automatically requesting CAS, the commander of the engaged ground force must first decide whether the use of CAS inside the DEFL will contribute to his battle, or if he can accomplish the same purpose with direct and indirect fires.

In the first case, recognizing that favorable force ratios at the FLOT may not always be attainable, CAS within the DEFL may be required to remedy a critical situation for the ground forces. For example, an impending armor breakthrough in a defended sector may require CAS as a remedy for the loss of

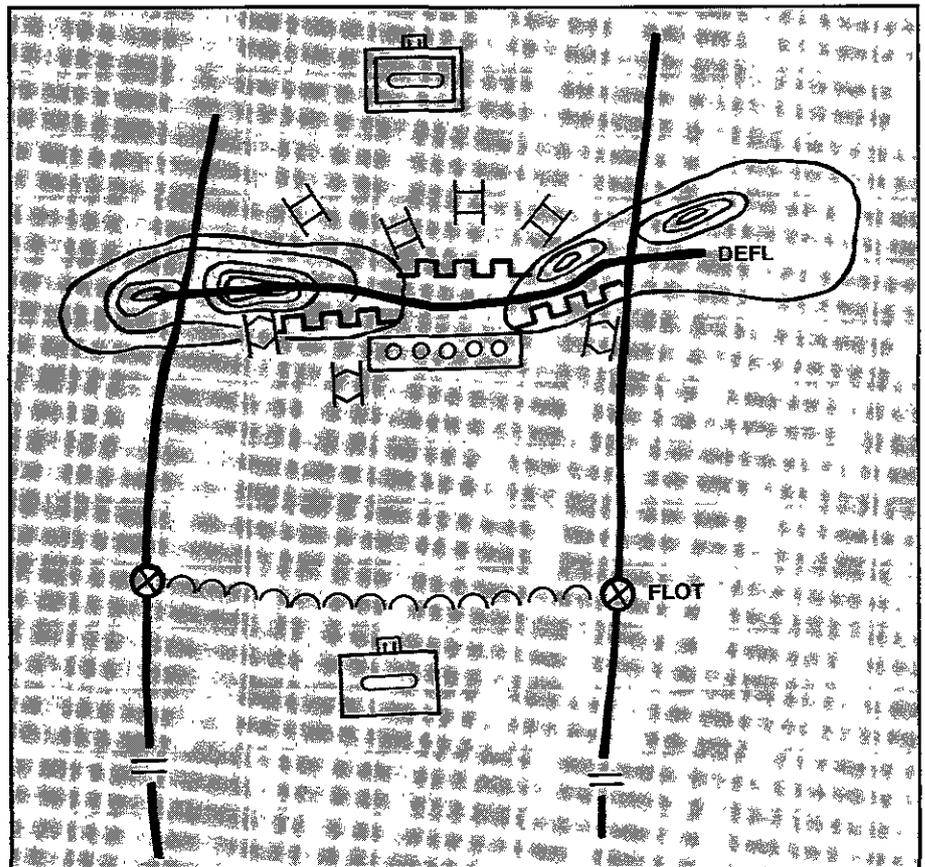


Figure 4.

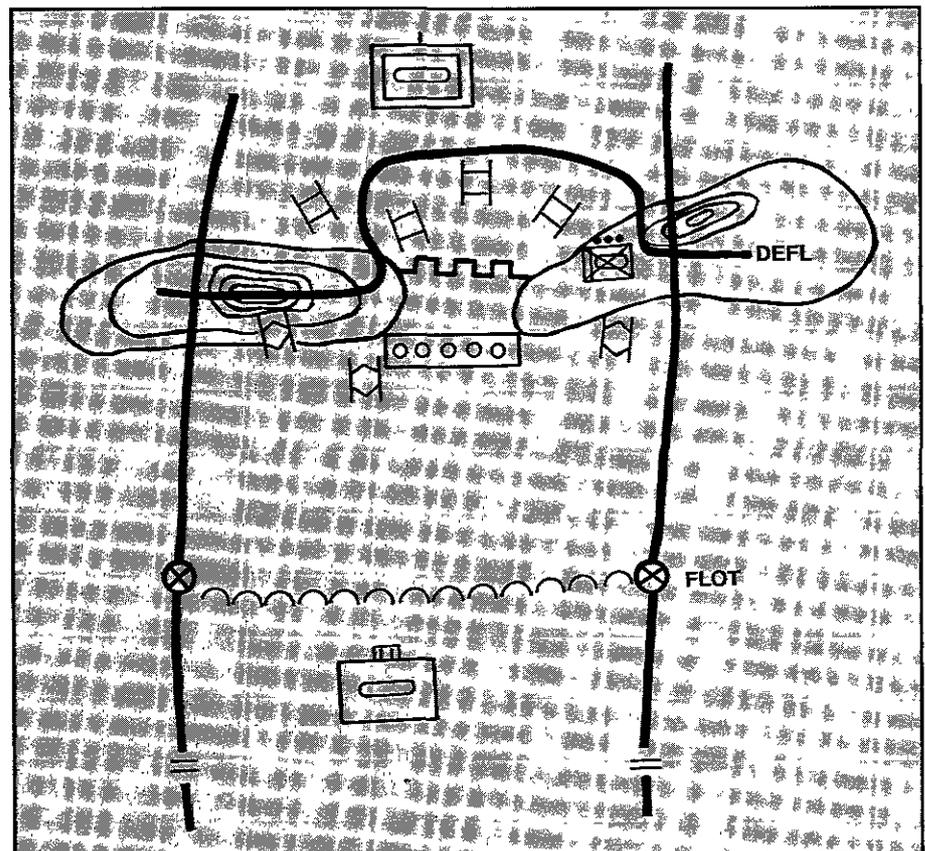


Figure 5.

massed antitank fires, or for an insufficient number of these fires. In this case, the application of air power contributes to the direct-fire battle instead of detracting from it.

In the second case, the direct-fire or indirect-fire battle may be going well, and the opportunity to defeat the enemy decisively is at hand, but the ground forces lack the firepower or mobility to do so. CAS may then be used within the DEFL. As an example, an attacking enemy may have suffered attrition within an engagement area but has not yet been defeated. In order to counter the enemy's maneuver, the friendly force may need to re-position for a counterattack. During the period of re-positioning, CAS can be concentrated in the area of reduced direct fires to cover the move and contribute to the decisive defeat of the enemy. CAS can also be used inside the DEFL to attack targets in dead space that cannot be attacked effectively by the available direct or indirect fires. In both instances, the use of CAS aircraft within the DEFL contributes to the decisive defeat of the enemy in the direct-fire battle by affording ground forces the opportunity to employ direct and directed fires more effectively.

In the third case—with ever-increasing stand-off capabilities of such weapons as the Maverick missile, low-level laser guided bombs, and automated target hand-off systems—it is increasingly possible for CAS aircraft to launch ordnance from behind the FLOT. Such attacks will require greater coordination from ground forces in identifying the target. But the benefits could be greater survivability for the

aircraft and sustained direct fires during the decisive engagement.

CAS from behind the FLOT would probably result in a partial or total shift of indirect fires, but it would not require that all direct fires stop at the same time. In all cases of CAS within the DEFL, such factors as target identity, target obscuration, and masking fires must be considered. These factors are less important when CAS is employed beyond the DEFL.

The DEFL itself is flexible, depending on the weapon characteristics and the terrain. An example of the way it aids in CAS planning is demonstrated in the following attack scenario:

The attacking battalion DEFL extends to the limits imposed by the terrain and includes the forward enemy positions (Figure 4). Enemy forces on the reverse slope cannot yet be engaged, but they offer excellent CAS opportunities without limiting the attacking unit's use of artillery inside the DEFL and in support of its first assault.

Dismounted infantry and the accompanying forward observers establish far-side security for the breach teams and can now place observed fires on the enemy platoons in the second echelon (Figure 5). The enemy vehicles directly behind the obstacle are within the DEFL and would not normally be a CAS target. If the target can be destroyed by Dragon fires or artillery directed from the security forces, CAS should focus on the second echelon tank platoon; if the targets are in defilade and cannot be engaged by direct or directed fires, CAS may be used to destroy them. In the latter case, the use of CAS inside the DEFL is decisive to the out-

come of the battle. Once the targets are destroyed, CAS is refocused on the targets beyond the DEFL.

In pushing air support outside the direct-fire battle area—that is, beyond the DEFL—CAS aircraft find their most favorable operating area beginning anywhere from four to six kilometers from the FLOT. It may be no coincidence that air power, whether fixed-wing or rotary, finds this depth a place in which to begin the final and decisive destruction of the enemy. The use of the DEFL lends itself to planning deep JAAT as a norm. Consequently, deep CAS and deep JAAT will require better and more frequent joint SEAD to improve the survivability and effectiveness of the aircraft.

The direct effective fire line concept is a convenient tool for planning CAS. It does not limit the options for CAS but improves the effects by helping produce depth and synchronization at battalion and brigade level.

The products and the process of AirLand Battle begin in the planning stage. The DEFL concept helps divide target group responsibility in time and space between the air and ground forces, establishes criteria for CAS within the direct-fire battle area, and gives air forces a wider range of options in flying close air support.

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