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The Diffuse Battlefield and the Corps Raider Brigade

A Monograph
by

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ABSTRACT

THE DIFFUSE BATTLEFIELD AND THE CORPS RAIDER BRIGADE by Major Henry G. Franke III, USA, 71 pages.

This paper is a theoretical analysis of the changing nature of warfare at the tactical level due to the increased use in deep operations of deep-looking intelligence assets and highly lethal and precise weapons. The extension of an extremely lethal battlefield to greater depths will force great dispersion of assets and operations beyond the frontline. I have called this phenomenon the "diffuse battlefield." For now, this condition will favor offensive operations over defensive ones. Diffuse battlefield operations are defined as near-term, offensively oriented, tactical operations beyond the frontline which take advantage of emerging components of the diffuse battlefield. This paper argues that, at least in the near-term, tailored irregular forces operating under a unique set of warfighting principles and supported by dedicated long-range fires will be best suited to carry out diffuse battlefield operations. To expand on this approach, I developed an operating concept with the "Corps Raider Brigade" as the illustrative organization. A qualitative analysis of this operating concept was done by applying the criteria of utility, feasibility, and affordability to the Corps Raider Brigade force.

The ultimate research question was whether the Army should consider incorporating diffuse battlefield operations into its warfighting doctrine and fielding the appropriate forces to execute them. While the Corps Raider Brigade concept was assessed to have great utility in the context of AirLand Battle and AirLand Operations, my first-order analysis questions the feasibility and, most importantly, the affordability of fielding this force. Nonetheless, the diffuse battlefield construct deserves further study by the Army.

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I. INTRODUCTION

Advances in technology have led to both evolutionary and revolutionary changes in the nature of war at the strategic, operational, and tactical levels.[1] Some argue that operational art is itself a product of technological progress.[2]

The introduction of large numbers of accurate, long-range rifles in armies 150 years ago initiated a tactical battlefield condition sometimes called the "dispersed" or "empty battlefield."[3] This condition marked a significant change in the nature of tactical warfare. As the lethality, range, and accuracy of weapons improved over the years, both frontline formations and individuals were forced to disperse to ensure survivability. These improved weapons capabilities, as well as better command and control systems and evolving tactics, have tended to offset many of the effects caused by the reduction in physical concentration of forces. The dispersed battlefield condition continues to characterize the close combat and direct fire areas of the frontline today.

In recent years the development of precision munitions, long-range delivery systems, and deep-looking reconnaissance, intelligence, surveillance, and target acquisition (RISTA) sensors has offered the means to deliver highly accurate and lethal fires into the tactical, operational, and strategic depths of enemy forces. Together with deep-attack air and ground maneuver formations and such nonlethal attack means as electronic warfare measures, these deep-fire systems support deep operations, an integral component of current AirLand Battle doctrine,[4] and deep battlefield shaping operations, as described in the emerging AirLand Operations concept.[5]

Even now, conventional armies remain "soft" behind hardened frontlines, crowding combat support, combat service support, and key command and control nodes in their rear areas. With the proliferation of deep-attack systems and the increasing emphasis on deep operations, this linear approach to warfare must be modified to ensure survivability of the support base. Operation Desert Storm provided the most recent evidence of this growing requirement.[6]

The extension of a highly lethal battlefield to greater depths will force units in the rear to adopt extreme measures for self-protection. These measures might include hardening, individual countermeasures, extended stand-

off prior to employment, and significant dispersion of individual elements both laterally and in depth in order to defeat the enemy targeting process.[7]

In turn, deep operations forces must develop the capability to attack any dispersed critical target set. It will become increasingly difficult to "mass" or "focus" a deep attack against a target set since the target will be better protected and more extended geographically. This suggests the need for substantial dispersion of some deep-attack assets for greater efficiency and timeliness, particularly at the tactical level when dispersed enemy elements tend to mass only at the final moment. Many deep-reaching assets are already dispersed because of their small numbers (often driven down by the cost of systems and their supporting infrastructure), improved capabilities, and need for protection.

I choose to use the term "diffuse battlefield" to identify the phenomenon of extreme dispersion of both assets and operations on that portion of the battlefield beyond the frontline. This differentiates it from the "dispersed battlefield," which will remain a distinctive phenomenon of close combat at the frontline, where combat power must be concentrated to produce decisive results. The diffuse battlefield, however, is an evolution of the dispersed battlefield. It too promises a significant change in the nature of conventional warfare.

This discussion has highlighted both the offensive and defensive facets of the continuing trend toward the diffuse battlefield. In the action/reaction cycle experienced in warfare, an emerging military capability often tends to initially favor either the offense or defense over the other, sometimes with a noticeable lag in the ability to close this gap.[8] Reaction and counteraction can swing the pendulum wildly between the dominance of the offensive or defensive form of a given military capabiility. This asymmetry in capability creates an exploitable window of opportunity for a military force.

The introduction of more efficient rifled small arms 150 years ago is itself a major example of this asymmetry in capability. It took several decades for the armies of the late nineteenth and early twentieth centuries to fully recognize the impact of these weapons, soon complemented by machineguns and improved artillery, and to adapt to the demands of the new dispersed battlefield. During this period the defense clearly dominated the battlefield at the tactical level.[9] A window of opportunity existed which allowed

military forces to fully exploit the defensive use of lethal fires in close combat because opposing forces were unable or unwilling to institute changes to negate this asymmetry. New tactics, equipment, and organizations finally created a more balanced offensive capability by the end of World War I. Another example of an asymmetry in military capability is the nuclear weapon. Forty-six years after their first use in war, nuclear weapons still favor the offense at the strategic level.[10]

Deep operations are inherently offensive in nature, while rear operations are defensive. Operation Desert Storm is being hailed as proof of the growing ability to acquire targets to greater depths and then to effectively deliver precision munitions against them, compared to the lagging capability to defend against such attacks.[11] Some are even suggesting that this asymmetric deep operations capability has fundamentally changed the nature of modern warfare, transforming the offense to the stronger form of warfare at the tactical, operational, and strategic levels.[12]

Even a conservative assessment of these claims suggests that the emerging diffuse battlefield will favor offensive capabilities, at least initially. Taken together with the US Army's current emphasis on the offensive form of warfare,[13] this supports an investigation first of the offensive aspects of the diffuse battlefield. In the context of this paper, "diffuse battlefield operations" are defined as near-term, offensively oriented, tactical operations beyond the frontline which take advantage of emerging components of the diffuse battlefield. This paper will focus on how the Army might carry out such diffuse battlefield operations by fielding a properly tailored force I have dubbed the "Corps Raider Brigade." This force could operate in either the AirLand Battle or AirLand Operations framework.

The ultimate question this paper will answer is whether or not the US Army should consider incorporating diffuse battlefield operations into its warfighting doctrine and fielding the necessary forces to execute them. I will first expand the discussion on the theory of the diffuse battlefield, emphasizing the role of irregular forces in near-term diffuse battlefield operations. I will describe the principles of diffuse battlefield operations and develop an operating concept, using the Corps Raider Brigade force as the illustrative organization. Finally, I will qualitatively assess the utility, feasibility, and affordability of the Corps Raider Brigade force in the

context of today's strategic and fiscal environment. As the proposed vehicle to carry out diffuse battlefield operations, the results of the assessment of this force will determine the recommendation for further consideration of diffuse battlefield operations by the US Army.

II. THE DIFFUSE BATTLEFIELD

This section will expand the theoretical discussion first began in the Introduction on the emerging phenomenon of the diffuse battlefield. A number of advances in the capabilities of modern conventional forces are contributing to the development of the diffuse battlefield.[14]

(1) The range and precision of a growing number of sensors and weapons are increasing significantly. These include systems on space platforms, manned and unmanned aerial platforms, sea surface and subsurface platforms, ballistic missiles, and cruise missiles. Detection, acquisition, and guidance systems are becoming more day/night, all-weather, and multi-sensor capable. Acquisition and targeting of a wide range of stationary and moving targets are becoming easier. Hiding from sensors while on the move, actively operating, or remaining passive is growing much more difficult.

(2) The use of stand-off platforms to support intelligence and target acquisition, nonlethal attack, and the delivery of munitions even to great depths is expanding. Stand-off platforms allow for great dispersion of costly and critical assets normally deployed in small numbers, enhancing their survivability, area of coverage, and the freedom of action in their use. Many such platforms remain far behind the frontline in friendly territory, outside the range of most enemy means of interdiction.

(3) Increasingly lethal precision munitions and area denial munitions (bomblets, fuel-air explosives, and mines) are capable of attacking an extended number of targets. Stand-off guidance or autonomous guidance to the target keeps the acquisition and weapons platforms themselves out of the close engagement area. The ability to attack moving targets is improving. The number of acquired targets exceeds the availability of weapons platforms and munitions, currently limited in number due to their cost. The cost of precision munitions and area denial munitions is being partially offset by the high assurance of kill for each individual munition. Future advances in

technology and manufacturing promise to reduce the cost, weight, and rate of failure of these munitions, supporting greater proliferation.

(4) The ability of command, control, and communications (C3) systems to pass on real-time targeting information between sensors, weapons, and decisionmakers is improving. Moving targets can now be attacked with a greater chance of interdiction. C3 systems are beginning to share distributed databases, reducing the criticality of individual C3 nodes. Limited sensor and attack assets still demand a time-consuming and resource-intensive targeting process to optimize their use.[16]

(5) Modern conventional forces rely more and more on a growing number of critical C3, combat support (CS), and combat service support (CSS) nodes which are necessary to properly synchronize and sustain high-tempo military operations. Interdiction of even a few carefully selected nodes at the right times and places could severely degrade the effectiveness of an enemy force. Modern mechanized forces also remain tied to readily identifiable surface and air lines of communication, often extremely vulnerable at natural and man-made chokepoints.

(6) Exploitation of the electromagnetic spectrum to improve the capability of sensor suites, guidance systems, and communications continues to advance, despite gains in electromagnetic countermeasures and counter-countermeasures. Application of low-observable and very-low-observable technology (commonly called stealth technology) suppresses the signatures of attack systems and targets alike.

(7) The difficulty in actively interdicting RISTA systems and weapons platforms (particularly stand-off systems which remain dispersed behind the frontline), as well as munitions enroute to their targets, will continue in at least the near-term. These defensive shortcomings will favor the offensive application, rather than the defensive application, of these systems for the foreseeable future.[16]

It is the offensive form of the diffuse battlefield which is more clearly manifesting itself today. In essence, the diffuse battlefield behind the frontline will be characterized by extremes in lethality, with corresponding reductions in the survivability of targeted assets. The well-known phrase, "what can be seen, can be hit, and what can be hit, can be killed," espoused in the 1976 edition of FM 100-5 to describe the growing lethality of tanks on modern mechanized battlefield, now applies here as well.[17]

Defensive measures in the rear are either active (such as air defense weapons) or passive (such as camouflage and radio listening silence) in nature. Despite the growing capability of active defenses deployed to intercept enemy attack systems penetrating to the rear, these offensive systems have a number of inherent advantages over active defenses. Some analysts of Operation Desert Storm's air campaign have recognized several of these advantages.[18] Above all, such an offensive operation retains the initiative, allowing the attacker to concentrate first on critical active defense nodes to gain the freedom to attack other targets. The use of precision munitions permits the attacker to disperse his attack platforms to maximize shock and surprise over an extended area in the shortest period of time, rather than being forced to mass his assets against a limited number of targets to assure some acceptable level of kill when so-called "dumb munitions" are employed. Because active defenses must anticipate attacks, they are necessarily distributed across a geographical area, diluting their ability to fend off overwhelming concentrations of combat power applied against critical targets of the attacker's choosing.

One conclusion from this analysis is that "the best defense is a good offense." Using the methodology just described, the defender must launch a preemptive attack against the enemy's offensive strike capability before it is deployed. The time needed to reconstitute these valuable assets leaves a considerable window of opportunity for further exploitation.

All of these observations highlight early offensive manifestations of the diffuse battlefield. Some airpower advocates suggest that this proven application of advanced technologies has finally validated the assertions of Giulio Douhet, a pioneer airpower theorist. Douhet believed that offensive airpower would readily overpower any defensive measure, either passive or active. Taking the initiative guaranteed success.[19] In fact, this interpretation of the new diffuse battlefield is a narrow one. The diffuse battlefield extends beyond just the realm of airpower.

While offensive aspects of the diffuse battlefield are already recognizable, effective defensive aspects of the diffuse battlefield are slow to emerge. Implementation of capable active and passive defense measures will be challenged by technological requirements, probable high cost, and the general unwillingness or inability of conventional forces to make drastic changes in doctrine and force design.[20] Passive defenses must focus on

the reduction of signatures of units and individual systems (so they are not acquired), improved self-defense capabilities (in case they are acquired and fired on), and on distribution of battlefield functions to eliminate the criticality of any single node (should a system be compromised). Such defensive measures will necessarily require a balanced combination of substantial dispersion of units and individual assets, stand-off and remoted operations for critical nodes, dispersed automated battlefield sensors, greater reliance on the electromagnetic spectrum, automated networking and real-time distributed databases, hardening and self-protecting counter-measures for the majority of systems, stealth technology, greater mobility, redundancy, and proliferation of systems. Active defense measures will require emphasis on area defense systems, proliferated point defense assets, and distributed C3 nodes which can reliably use the electromagnetic spectrum.

These measures generally demand an increase in the number of assets deployed in the rear, while incurring an even greater cost per individual system. Added to this is the challenge of developing the doctrine and force structure to effectively employ them. Until such steps are implemented, the asymmetry in offensive capabilities will remain exploitable.

The AirLand Operations concept already recognizes both the opportunity to exploit this offensive asymmetry and the need to institute a number of these defensive measures. Several emerging elements of the diffuse battlefield are incorporated in AirLand Operations at the operational and tactical levels.[21] Maximum use is made of long-range RISTA and attack systems to force the enemy to react in the way the friendly commander desires and to set favorable conditions for the conduct of decisive operations. Until committed, maneuver forces are dispersed in staging areas far enough back to ensure relative security. The sustainment base is protected by establishing it at great depths from the close battle and maneuver force dispersal areas; logistical assets are projected forward when necessary. Maneuver forces fall back to their dispersal areas for reconstitution at the close of operations.

The operational framework which is put forward in the AirLand Operations concept and which addresses several emerging components of the diffuse battlefield is not an entirely new one. Three distinct precursors to the current diffuse battlefield concept have elicited doctrinal responses with some similarities.

The first came in World Wars I and II with the growing capability of aircraft to bypass the frontline and attack deep into the enemy rear. Even today, aircraft, ballistic missiles, and cruise missiles provide the bulk of the over-the-horizon RISTA and attack systems for military forces. The second precursor was first marked by the widespread use in World War II of partisan and irregular forces to carry out intelligence, sabotage, harassing, and fixing tasks in the enemy's tactical, operational, and strategic rear.[22] The predominant use of guerrilla forces in conflicts in such countries as Malaya and Vietnam after World War II heralded the emergence of unconventional, nonlinear warfare characterized by unsecure rear areas as a modern form of warfare.[23] The development of battlefield nuclear weapons signaled the third precursor to today's diffuse battlefield. The US Army attempted drastic changes in force design and doctrine to accommodate "the atomic battlefield."[24]

These precursors were not false starts, but instead were different manifestations of the diffuse battlefield given the prevailing environment of the time. All still play roles on the diffuse battlefield of today. The so-called "pentomic era" and the fielding of tactical and theater battlefield nuclear weapons after the Korean War have strong parallels with the current approach to the diffuse battlefield. Today, nuclear weapons are being replaced by a variety of precision munitions employed by deep-attack platforms. The precision munition, with its inherent avoidance of collateral damage, has been hailed as modern technology's answer to the unwanted side effects of nuclear weapons employment.[25] In both cases, however, these weapons strongly favor the offense.

To avoid a significant loss of combat forces to nuclear weapons, both US and Soviet doctrine stressed the dispersal of formations at all levels until the final moment forces had to concentrate for decisive action. High tempo of operations and rapid mingling of friendly and enemy forces in the combat area would thwart the targeting and decisionmaking process necessary to effectively employ nuclear weapons.[26] Developing the tactics, materiel, and organizations to make this doctrine a reality in the 1950s and 1960s remained an elusive goal.[27] Even today, it is questionable whether an effective defensive framework could be created to negate the asymmetric offensive capability of battlefield nuclear weapons. (Instead, these weapons have their shortcomings in unavoidable collateral effects and a general

political undesirability.[28]) A similar analysis suggests that offensive diffuse battlefield operations will outpace defensive measures for the foreseeable future.

An additional feature of current US deep operations has been an increasing reliance on both automated and stand-off systems to acquire intelligence and targets, process and assess information, and employ sensor and weapons packages. Despite this trend, the general absence of an extended human presence in the depths of the enemy's rear is considered by many to be a failing in US military capability.[29]

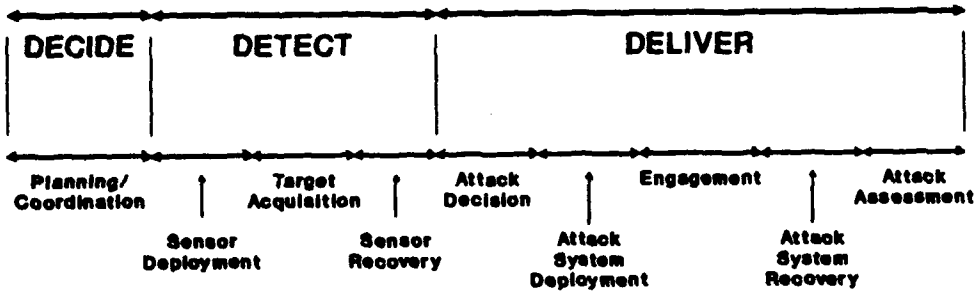
Following the Vietnam War, the US Army refocused on NATO Europe and mechanized warfare. The Army force structure shed itself of most tactical and operational deep-operating units that were capable of conducting human intelligence and raid missions. These units included Special Forces, Rangers, and long-range reconnaissance companies. Except for limited and specialized operations, these forces were seen as having little utility on the mechanized battlefield.

As often happens, a study of our potential enemies' doctrine helped to reopen the case for employing light units in the enemy's rear. The North Koreans were (and still are) expected to deploy massive unconventional warfare forces throughout the Korean peninsula if conflict erupted again.[30] More prominent, however, were the Soviets' plans to use large numbers of Spetsnaz and desant forces to perform intelligence and direct attacks to tactical, operational, and strategic depths.[31]

The Army began to expand the use of such forces in the last decade, acknowledging the continuing utility of light forces to carry out intelligence and attack missions in the enemy's rear even on the modern battlefield. (Many of these units also have a major role to play in low intensity conflict.) Special Forces and Ranger units multiplied, airborne and air assault forces were given new missions, and long-range surveillance units were fielded. It will be argued later that new organizations are needed to properly leverage the diffuse battlefield condition, but current light forces do add a major capability in support of deep operations.

A significant human presence beyond the frontline provides substantial benefits. Unique human attributes can be leveraged directly in the battle area. Properly augmented, a human being can operate day and night and in all kinds of weather and terrain. Even in this age of technological marvels,

Figure 1
TARGETING PROCESS TIMELINE



the human being remains a very capable multi-function sensor and data processor.[32] The human brain can decide the value of a given potential target based on a host of indicators not codeable in any machine. Humans are flexible, able to learn during operations, and adaptable to changing conditions and unforeseen circumstances. Independent judgment and decision-making can be carried out even under broad-based guidance. Most importantly, the ability to perform all of these functions in parallel offers substantial savings in time. Individually or in small teams, human beings present small signatures and can avoid detection. No automated or remoted system will be able to combine all of these attributes anytime in the near future.

It is these human abilities, combined with the promise of reducing the time necessary to carry out intelligence and raid missions, which can have the greatest impact at the tactical level for diffuse battlefield operations. Such operations follow the generic timeline shown in Figure 1. The timeline is shown in the context of the current decide-detect-deliver cycle which drives the targeting process.[33] Opportunities for saving time during operations by fully leveraging this human presence exist throughout this timeline.

It is at the tactical level that time is the most precious commodity. The tactical commander has little time to assess the situation and act, react, or counteract in order to carry out the mission, particularly during continuous, high-tempo operations. The commander's tool to fulfill this requirement is the intelligence preparation of the battlefield (IPB) process,

which relies on the ability to template enemy formations and actions.[34] The IPB process serves as the foundation for the commander's priority intelligence requirements, the collection management plan, the targeting process, the synchronization matrix, and the development of decision points, branches, and sequels.

These products are necessary to allow the commander to focus scarce resources on the battlefield. Deep-looking RISTA assets and deep attack systems are critical to shaping the battlefield, but they are only available in small numbers and most remain under the control of higher echelons. They must be carefully husbanded and synchronized through the collection management plan and the targeting process, and the results of their employment fed back into the intelligence and planning cycle.

Unfortunately, the dependence on templating and highly synchronized plans creates a significant vulnerability. Templating has been fostered to take advantage of relatively predictable Soviet warfighting doctrine. However, the less rigid an enemy is in his doctrine, tactics, and procedures, and the more imaginative he is in planning his operations, the more the templating process merely represents an educated guess. (After the recent end of the Cold War, even the Soviets are changing their organizations and doctrine at such a rapid pace that US armed forces are having difficulty staying abreast of their latest innovations.) If the templating is in error or the enemy effectively uses deception, synchronized operations may be severely disrupted. Tactical commanders will have little time to salvage plans and reissue new orders. Yet it is at the tactical level that IPB and its related processes seem most inflexible and difficult to adjust when time is limited. Thus it is at this level that dedicated, capable, and flexible deep operations assets are most important in order to provide the commander the additional time he needs.

An extended human presence beyond the frontline offers a significant opportunity to make up for some of the shortcomings discussed so far. Thus a properly designed force capable of remaining in enemy-held territory is a major ingredient necessary for near-term diffuse battlefield operations at the tactical level.

III. THE ROLE OF IRREGULAR FORCES IN DIFFUSE BATTLEFIELD OPERATIONS

This section will examine the role of an extended human presence beyond the frontline in the conduct of diffuse battlefield operations. I will show that this presence requires a specialized irregular force in order to ensure survivability while maintaining capability. First, I will discuss the challenges facing current deep operations forces on the more stressing diffuse battlefield. Then I will present the capabilities that irregular forces offer to address cited shortcomings, and how such forces can be tailored to operate on the diffuse battlefield. Finally, I will summarize key aspects of the theory and principles for diffuse battlefield operations based on these irregular forces. This discussion will highlight some significant differences in the conduct of diffuse battlefield operations as compared to today's conventional operations, suggesting possible fundamental changes in the nature of future warfare.

A. Assessment of Current Deep Operations Forces

Current deep operations forces can be classified as either non-penetrating or penetrating, depending on which side of the frontline they operate. Non-penetrating assets include stand-off intelligence and attack platforms which remain behind the frontline in friendly territory at all times. Penetrating assets are intelligence and attack forces which penetrate or bypass the frontline in order to operate in unsecured or contested territory. To effect penetration and return, these forces either mass or infiltrate. Note that the tendency is to assign the intelligence and attack functions to different deep operations elements. This often creates a lag between target acquisition and attack while assessment and interfacing takes place.

Today's deep operations forces face significant challenges on the emerging diffuse battlefield. The central issue driving the diffuse battlefield phenomenon is the dynamic between lethality and survivability and the affect of this dynamic on force effectiveness. As noted in the previous section, the offensive form will continue to dominate the diffuse battlefield for some time to come, but it must adjust to the growing lethality of active defense measures and the difficulty in attacking targets which will be greatly dispersed. Offensive capability must be maintained while implemen-

ting survivability measures. Currently, there are two general approaches to doing this. First, forces may concentrate overwhelming combat power as rapidly as possible, so that speed, shock, and surprise serve as defensive means. The alternative, following the maxim of "don't look conspicuous -- it draws fire," is to disperse to reduce their signature and evade detection altogether.[35]

To ensure survivability, non-penetrating systems maximize stand-off to avoid interdiction. Unfortunately, this reduces the effective range beyond the frontline. Significant stand-off requires over-the-horizon capabilities, so that intelligence and attack platforms must be airborne and/or long-range munitions must be aerial projectiles. Ballistic and cruise missiles offer the greatest ranges. Non-nuclear munitions employed against point targets require precision warheads or terminal guidance for necessary accuracy. Area attack or denial munitions are best used against massed enemy assets or mobility chokepoints.

Penetrating forces breach the frontline by massing or by infiltration. Massed forces, such as fixed-wing aircraft, Army attack aviation, ground maneuver formations, and airborne and air assault forces, have large signatures and must plan on being detected early on. They must be prepared to fight through the ground or aerial breach of the frontline and to the target, maximize their effect on the target in the shortest time, and return across the frontline or await rapid link-up to replenish and reconstitute combat power. Such forces do not operate independently for long periods beyond the frontline because, once acquired by the enemy, they face the continued threat of interception and interrupted sustainment. They are normally targeted against massed, hardened enemy elements or critical support assets which promise the greatest payoff for the investment made. As enemy defensive measures expand to improve his survivability, friendly attack formations tend to gain in mass to overwhelm these additional capabilities, creating a cycle. Deep operations planning requires more time and greater synchronization, reducing flexibility.[36] The need to concentrate major resources to such a deep operation and the time required to replenish expended combat power both increase the risk that failure could unhinge the entire operation.

The US Army has been responding to the growing hazards to penetrating systems in a number of ways. One notable example is the high-priority unmanned aerial vehicle (UAV) program aimed at supporting intelligence

collection. Being unmanned, the survivability of a UAV would be less critical, allowing for a smaller craft with a reduced signature. Not requiring a protective escort, UAVs would be employed singly beyond the frontline, limiting the possibility of enemy detection. The UAV marks a response to diffuse battlefield conditions.[37]

Infiltrating forces are inherently light in order to reduce their signature and thwart detection until they take action. They lack the mass and firepower to directly attack large hardened targets, and thus orient on isolated, "soft" support nodes. These light forces, such as airborne and air assault forces after their insertion, often have isolated intelligence, limited mobility, and short-duration sustainment. They are extremely vulnerable when massed or when in contact with the enemy, so that they usually attempt to avoid decisive engagement.

This review of the strengths and weaknesses of current deep operations forces in terms of effectiveness and the lethality/survivability dynamic can be combined with earlier observations in Section II to develop criteria for offensive diffuse battlefield operations at the tactical level. These criteria include: (1) maximum use of stand-off platforms, where feasible; (2) an extended human presence beyond the frontline in depth and time to provide continuous human intelligence and allow decisionmaking directly on the battlefield; (3) reduced signature of elements operating beyond the frontline to negate enemy detection means (if a target is not acquired, it cannot be effectively attacked); (4) minimum resources needed to successfully conduct penetrating deep operations; (5) maximum stay time for deep operations forces beyond the frontline; (6) reduced targeting process timelines; (7) optimum flexibility in order to acquire and attack multiple unexpected targets (so-called targets of opportunity); and (8) the ability to acquire and attack dispersed, hardened targets.

Certainly the current inventory of deep operations forces need not be abandoned to satisfy these requirements. However, these criteria do suggest that a new orientation is necessary in fielding new forces and in balancing the roles that all forces play on the diffuse battlefield.

Two complementary capabilities made more effective by major applications of technology could meet the stated criteria. First, firepower would be provided almost exclusively by long-range ballistic and cruise missiles, launched from stand-off platforms and capable of carrying both precision

munitions and area denial munitions. The other, unburdened of the need to carry heavy armaments, would consist of light forces operating continually beyond the frontline and observing modified irregular force principles. The primary weapons for this force would be dedicated and responsive stand-off missile platforms. In the near-term, the range of these attack systems and emplacement of light forces will limit the depth of diffuse battlefield operations. Current deep operations forces would focus on massed enemy formations or would maneuver deep in anticipation of link-up with follow-on forces.

B. Traditional Irregular Forces

An examination of the diffuse battlefield operations criteria reveals the significance of exploring traditional irregular force operations. A study of earlier irregular forces employed in support of conventional operations would bring out the principles under which these forces operated. These in turn would serve as a point of departure in developing operating principles for diffuse battlefield operations.

The most familiar uses of irregular forces to support conventional operations took place in the Middle East theater during World War I under the guidance of T.E. Lawrence; during the Chinese Civil War (1921-49), as chronicled by Mao Tse-Tung; and on an unprecedented scale in several theaters during World War II. These forces have been variously called guerrilla, irregular, partisan, resistance, unconventional, and special (commandos, raiders, marauders, rangers, and so on) forces. While these names seem to imply varying degrees of non-military force constituency, the reality is that these labels are often used interchangeably. Definitions in current joint and Army publications do not clarify the situation.[38] Rather than being based on the composition or tactics of a force, labels tends to reflect the particular mission, political situation, strategic military environment, or period in history. Ultimately, however, all of these forces appear to follow a common set of principles. Thus I will choose to use "irregular" as a generic label when addressing such forces.

Modern irregular forces usually trace their origin to the Spanish guerrillas which harried Napoleon's occupation forces during the Peninsular Campaign from 1808 to 1814.[39] Modern irregular forces derive their effectiveness by leveraging the inherent vulnerabilities of modern conven-

tional forces.[40] Deployed conventional forces rely on sustainment from support bases often far removed from the frontline and on lines of communications which tend to become extended during operations. Combat forces are concentrated in the frontline not only to conduct decisive operations, but also to protect their rear area from enemy action. Consequently, economy of force measures behind the frontline cause the rear area to be relatively poor in combat power.

A review of irregular operations specifically conducted in support of conventional operations during World War I, the Chinese Civil War, and World War II provides the following observations.[41] Irregular forces were effective because of the linear nature of conventional operations at the tactical, operational, and strategic levels. Irregular operations themselves were inherently nonlinear; presented with no frontlines, conventional forces found it very difficult to respond to their presence.[42] Irregular forces were able to conduct effective intelligence and raiding missions throughout the tactical, operational, and strategic depths of the enemy.

Irregular forces were, almost by definition, an economy of force measure. These forces were used because of shortages in weapons, vehicles, communications equipment, ammunition and other supplies, military training, and military leadership (the products of technology and mass production). Irregular operations were necessarily supplementary to conventional operations in every theater, serving to buy time, to fix enemy forces on additional "fronts," and to force the enemy to redirect resources and manpower away from frontlines.[43] As expected for any supporting effort, irregular operations were not judged as decisive in any theater.[44]

In comparison to their size and relative combat power, properly employed irregular forces often had an inordinate effect in the moral, physical, and cybernetic domains on the battlefield. The moral effect of continuous harassment and unexpected attacks at any place and time in the rear could significantly reduce the effectiveness of conventional forces.

Irregular forces were characteristically light forces, which translated into both a weakness and a strength. Irregular forces had to avoid decisive engagement with heavier conventional forces whenever possible in order to preserve the force. Combat actions usually took the form of raids, allowing the irregular force to quickly disengage and disperse before the enemy could react. To avoid detection and the probability of compromising large parts of

the force, irregulars were often dispersed in smaller elements across the battlefield. This dispersion of light forces improved survivability, increased their area of influence, and allowed these forces to "live off the land" without overtaxing any given local area. In order to disperse and hide, irregular operations required either a geographically extensive battlefield or restrictive terrain. Light forces required less support, allowing forces to operate with intermittent sustainment and interrupted lines of communications for extended periods. Light forces could maintain an extended presence in the enemy's rear. Periodic recovery at secure bases and support of the local population were usually necessary.

As an economy of force measure and a means to enhance survivability, dispersion was a key facet of irregular operations. Mao likened dispersion to "a fisherman casting his net." After dispersal, concentration and shifting of forces provided the irregular force commander the greatest flexibility in the use of his forces in any number of situations.[45]

Properly coordinated conventional and irregular operations yielded a synergistic effort, with irregular forces normally fulfilling the supporting role. However, thorough integration of these efforts, particularly at the tactical level, was hampered by differences or shortcomings in communications, mobility, and firepower. To overcome these difficulties, irregular forces tended to operate autonomously within a general set of guidelines developed by a higher-level conventional headquarters. This allowed dispersed irregular units the flexibility to selectively attack the most promising and most vulnerable targets of opportunity. Thus, irregular operations usually had their best effect at the operational and strategic levels, when time was less critical. Lawrence acknowledged both the challenge of tactically integrating irregular and conventional forces and the danger of overly restrictive requirements placed on irregular forces.[46]

The essential asymmetry between conventional and irregular forces was successfully exploited through irregular operations conducted in each of the conflicts studied. Conventional forces proved less adaptable to the threat of irregular operations behind their frontlines. While conventional forces were designed to fight similiar conventional forces, irregular forces were specifically tailored to make the most of their adversary's inherent conventional force vulnerabilities and to minimizeg the effect of their own limitations.

These observations can be summarized as a set of principles for traditional irregular operations conducted in support of conventional operations.[47] (1) Irregular operations serve as an economy of force effort in support of conventional operations; they are not expected to produce decisive results. (2) Whenever possible, irregular operations are coordinated with conventional operations for maximum effect. (3) Irregular forces are tailored to exploit the inherent vulnerabilities of conventional forces. Asymmetry between such forces makes it difficult for conventional forces to effectively halt the irregular threat. (4) Irregular forces orient on providing intelligence and carrying out raiding and harassing operations in depth. (5) The greatest pay-offs for irregular operations are intelligence, the enemy's diversion of resources to stop the threat, and the moral effect caused by unexpected strikes in the rear. (6) Normally deployed as light forces, irregular forces are dispersed in depth in the enemy's rear to maintain an extended presence. This allows constant pressure on the enemy and the attack of key targets of opportunity. (7) Whenever practical, irregular units operate semi-independently under the umbrella of general guidelines to retain flexibility. (8) Minimum signatures ensure the survivability and staying power of irregular forces. Dispersion allows light forces to avoid detection and cover a greater portion of the battlefield. (9) To preserve the force, irregular forces minimize direct contact with the enemy unless the result is worth the possible cost. (10) Nonlinear operations require at least short-term independence from support bases and lines of communications. Prolonged activity depends on support bases which are isolated from the effects of the battlefield.

These operating principles support the assertion that irregular forces of some type will satisfy nearly all of the criteria established for diffuse battlefield operations. The question is: How should these principles be modified in light of the capabilities offered by advanced technologies to improve the effectiveness of light forces on the diffuse battlefield?

C. Principles for Diffuse Battlefield Operations

Again, ensuring survivability while retaining effectiveness remains the key issue. The apparent contradiction is in the assured survivability and capability of light forces operating for extended periods beyond the

frontline on the increasingly lethal conventional battlefield. The solution is in taking the traditional irregular force principles to greater extremes.

The first step is to develop measures to reduce the signature of these forces as much as possible. If a force is not detected or acquired, it is naturally difficult to interdict. The first guiding principle now is to avoid direct contact with the enemy at all times. Targets are attacked only from stand-off platforms. Note that when traditional irregular forces conducted raids, this disrupted the friendly intelligence gathering process. "Stand-off raids" allow the same teams who are directing attacks to continue collecting intelligence, including battle damage assessment, without moving. Irregular forces can now simultaneously conduct the dual functions of intelligence/target acquisition and attack. Combining these two functions can greatly reduce the targeting process timeline for a variety of targets.

The traditional raid not only alerted the enemy to the presence of irregular forces, but also required them to mass and maneuver to carry out the attack. Concentration and movement of forces also drew attention to and increased the vulnerability of light forces. The second guiding principle is to always avoid massing of forces, eliminate tactical maneuver, and minimize movement.

The third principle is to maximize dispersion using the smallest possible teams.[48] This supports the second principle by allowing the greatest coverage of the battlefield without the need to reposition teams. It also reduces the signature of individual elements. Instead of physically focusing intelligence and attack assets on limited parts of the battlefield for given periods of time, the entire tactical battlefield beyond the frontline remains constantly under observation. The focus of operations is directed by the higher commander's intent and concept and is shifted electronically. Unexpected targets of opportunity can be acquired and interdicted immediately, and overreliance on templating (particularly of non-Soviet forces) is avoided.

To provide the greatest flexibility, dispersion of teams is homogeneous. Mao's "fisherman's net" becomes a deployment grid, with a team at each nexus.[49] Although adjustments are made for terrain and other environmental and situational factors (METT-T), teams do not concentrate in restrictive terrain to ensure survivability. Instead, other passive measures provide protection. The fourth principle is the use of the deployment grid

to establish low-density, homogeneous coverage throughout the battlefield to maximize flexibility and freedom of action.

The fifth principle supports the simultaneous conduct of two types of attack operations. The first is the focused and synchronized deep attack efforts which are triggered by decision points identified in a centralized targeting matrix. Targets are developed through the decide-detect-deliver cycle of the current targeting process. The second is autonomous operations by individual teams to attack targets of opportunity which they judge to be high payoff. While general attack criteria are developed based on higher commanders' intent and concept, here the targeting process follows the detect-decide-deliver cycle. Assessment by higher levels of authority before attack is done only as time permits. Attack guidelines on targets of opportunity orient on degrading the enemy's moral, cybernetic, and key sustainment factors, rather than on simple attrition. The ability to attack targets of opportunity at will allows irregular forces to apply constant pressure on the enemy by harassing him at unexpected times and places. These dual attack options leverage the flexibility and shorter attack response times inherent in these irregular forces. This capability will become more critical in the future as key targets in the enemy's rear begin to disperse and to harden for protection.

The sixth principle reaffirms that deep-operating irregular forces remain an economy of force measure in support of conventional forces. Deep operations continue to shape the battlefield and set the conditions for subsequent decisive action by conventional forces in close combat. The AirLand Operations concept is based on the precept that, for years to come, other nations' conventional forces must still close with US forces to initiate decisive action.[80] Even on a nonlinear battlefield, this enemy orientation against US forces will create linear conditions at least at the tactical level.[81] There will continue to be a battlefield beyond the frontline. Note that these irregular forces are tailored to support linear and nonlinear conventional operations. Their utility in unconventional warfare is requires further analysis.

Close integration of irregular forces with tactical conventional forces is required by the seventh principle. Tactical conventional commanders will directly command and control irregular forces. Real-time, distributed, and interactive databases and over-the-horizon communications will be needed

to tie together dispersed irregular teams, stand-off attack platforms, and conventional forces, to include other deep operations forces.

The eighth principle highlights the need for reliable access to and maximum use of the electromagnetic spectrum. Failure to do so would create a major vulnerability for irregular deep operations.

An extended and extensive human presence beyond the frontline is the basis of the ninth principle. The irregular force commander is the major ground force commander on this portion of the battlefield and serves as the "directed telescope" for the higher-level conventional commander.[52] In some instances, the irregular force commander may directly orchestrate all deep operations on his portion of the battlefield, particularly when unplanned operations are necessary. The number of teams which are prepared to take control in the absence of the commander must be multiplied. The emplacement, reorientation, and recovery of the entire irregular force are a key challenge to the continuity and effectiveness of operations.

Finally, the tenth principle requires "diffuse sustainment" of irregular forces. This approach to sustainment must take into account: operations greatly extended both in space and time; small, highly dispersed teams which are deployed in great numbers but which are limited in their movement on the battlefield; the limited load-bearing capacity of the individual soldier and team; and the inacessibility of secure support bases throughout operations. Small dispersed teams make scavenger logistics a realistic supplementary option. Sustainment will continue to be a critical issue for irregular forces.

The interrelationship of these operating principles and the synergistic effect created when they are applied together is apparent. These modified principles illustrate the evolution of irregular forces to the diffuse battlefield and highlight some key differences between diffuse battlefield irregular forces and traditional irregular forces.

Traditional irregular forces in the twentieth century are inherently characterized by two closely interacting factors. (1) Irregular forces are an economy of force measure made necessary by a dirth of mass and resources, usually the products of technology. Given the availability of numbers and technology, a force would otherwise tend to shape itself into a conventional motorized or mechanized force. (2) Already a light force because of the absence of most of the trappings of modern mechanized units, irregular forces

capitalize to the fullest on the strengths of light forces in order to operate against mechanized forces by targeting their vulnerabilities. Diffuse battlefield irregular forces, on the other hand, maximize the strengths of light forces on the conventional battlefield while exploiting in every possible way the capabilities offered by technology to negate their weaknesses.

In this way these forces can ensure their survivability while enhancing their capability and lethality. With the aid of advanced technologies, irregular forces need not and will not mass in order to strike. They do not rely on maneuver and movement to apply combat power. They are directly integrated with conventional forces at the tactical level, yet are still capable of autonomous operations over an extended area of influence. They are able to provide real-time intelligence in depth and can directly act on that intelligence with their own stand-off raids. Finally, they maximize the human factor by maintaining a prolonged human presence dispersed throughout the battlefield.

This discussion also highlights the shortcomings of light forces currently employed in deep operations when expected to operate successfully on the diffuse battlefield. Today's light forces, which include long-range surveillance units, light infantry division units, and special operations forces, lack the proper equipment, sustainment capabilities, organization, training, and focus required to apply the diffuse battlefield operating principles. In addition, the Army lacks the stand-off attack platforms with the capability and numbers necessary to support diffuse battlefield operations. Appendix 1 expands this analysis more fully.

D. Theoretical Considerations

The modified operating principles, tending to extremes in response to the challenges of the diffuse battlefield, have a number of theoretical implications concerning the nature of warfare as practiced by diffuse battlefield operations forces. Several of these depart markedly from current US warfighting philosophy and doctrine.

Diffuse battlefield operations are firepower-oriented, rather than maneuver-based. While the AirLand Battle tenets of agility, initiative, depth, and synchronization still apply, depth and initiative receive increased emphasis. Diffuse battlefield operations reinterpret a number

of the traditional principles of war.[83] With the renewed focus on targets of opportunity, the objective is less well-defined. Many individual operations will be spontaneous, carried out only in the general framework of the commander's intent. Diffuse battlefield operations are inherently offensive. Initiative remains in the hands of the irregular forces, since all attacks are initiated by them. The use of stand-off attack weapons means that all engagements are "one-way." Irregular forces never physically mass. Although firepower may be concentrated against key massed targets during major deep operations, the emphasis on attacking selected critical nodes and on applying constant pressure throughout the depths of the enemy's rear argues against the habitual massing of combat power. Dispersion on the diffuse battlefield leads to "single-on-single" and "many-on-many" target acquisitions and attacks.

Diffuse battlefield operations are currently economy of force operations in support of conventional operations, which in turn are focused on the close fight. In the tactical sense, irregular forces and their supporting stand-off attack platforms do not maneuver. These forces remain dispersed throughout operations to reduce their vulnerability to interdiction. The movement of enemy forces and the attendant reduction in protection are actually levered against the enemy. The enemy is placed in a position of disadvantage by selective application of firepower. Reliance on autonomous operations dilutes unity of command with the allowance for decentralized decisionmaking to engage targets of opportunity. Nonetheless, irregular forces do operate under one overall commander, who in turn is directly responsible to the higher-level conventional commander.

Security and surprise are key facets of diffuse battlefield operations. Simplicity is fostered by fielding a single integrated unit with dedicated fire support, all under one commander. Planning and coordination is less complex, and dynamic synchronization is improved. Minimum movement ensures the greatest familiarization with the terrain. The departure from mass and maneuver is the most profound difference between these operations and current conventional operations.

Unique aspects of the diffuse battlefield and the operations of irregular forces on it can also be highlighted by a comparison with other theoretical constructs which describe particular approaches to conventional warfare. Simpkin has developed one model describing maneuver warfare in

terms of classical mechanics. The combat power of a military force is derived in part from its momentum, the product of its mass and velocity. His basic maneuver model uses a mobile force to fix the enemy while a mobile force maneuvers to develop leverage against the enemy. The fixing force serves as the hinge and base for this lever arm. In the framework of classical mechanics, the mobile force is a concentrated solid mass at the end of the lever arm.[54]

On the other hand, Liddell Hart's "indirect approach" to maneuver warfare is based on the "bursting dam" analogy, suggesting the use of concepts from fluid dynamics. Here the pressure of a military force against the enemy, like a body of water behind a dam, seeks out points of weakness and breaks through them. The mass of the force flows through these holes, widening them more and more by erosion, until the enemy structure loses coherence and collapses.[55]

The theoretical basis of the diffuse battlefield is found in the key modifier, "diffuse." This word immediately brings to mind the actions of a gas in a container. A gas will tend to fill the container uniformly, creating a homogenous mixture of minimum density at any given point. This concept describes operations on the diffuse battlefield as well. Rather than concentrate mass, elements of an irregular force seek extreme dispersion. Enemy (as well as friendly) conventional forces can flow through this diffused mass, allowing the greatest possible coverage and influence by the irregular force. The enemy cannot decisively engage or avoid this force with conventional assets unless these assets are dispersed, disrupting the tempo and momentum of their operations.

The application of force in each of these models is worth comparing. In Simpkin's model, force is applied as single, swift, and decisive blows carried out by massed, maneuvering forces. Liddell Hart's construct envisions irresistible pressure applied at the enemy's weakest points to gain access to his rear. On the diffuse battlefield, force is applied in two ways. First, constant pressure is maintained throughout the depths of the enemy by multiple limited attacks which have a cumulative effect. Second, impulsive force is applied as a set of simultaneous blows against critical nodes using precision munitions and against key area targets with area denial munitions. Each strike is carried out in as short a time as

possible, resembling the instantaneous impulse of force which can produce a sudden shock wave.

Similiarities in these models are also significant. Each focuses the application of force on creating shock in order to maximize the moral effect. Each also assumes an essential asymmetry between friendly and enemy forces, with the enemy habitually taking on a linear disposition.

This completes the development of the conceptual framework for diffuse battlefield operations using irregular forces. Diffuse battlefield operations are seen as an extension of deep operations based on modified irregular force operating principles and the application of focused technologies. The next step is to develop a more detailed operating concept for the conduct of diffuse battlefield operations.

IV. THE CORPS RAIDER BRIGADE CONCEPT

Based on the modified principles developed in the previous section, I will present an operating concept for diffuse battlefield operations by building an illustrative organization called the Corps Raider Brigade (or CRB). Unique issues on force structure, materiel, doctrine and tactics, leadership, and sustainment will be discussed. The Corps Raider Brigade concept is not offered as the final or optimum answer to implementing diffuse battlefield operations, but it will be definitive enough to test the utility, feasibility, and affordability of diffuse battlefield operations in the near-term.

The Corps Raider Brigade concept will be developed using a blueprint approach. First, application of the operating principles will provide the framework for the force. Then detail will be added to this framework by describing the force's battlefield processes, tasks, and assets. Finally, the Corps Raider Brigade's place in both AirLand Battle doctrine and the AirLand Operations concept will be assessed. Significant issues will be discussed as they arise.

A. Development of the Operating Concept

Any diffuse battlefield operations force must address the challenges of survivability and effectiveness by continually maintaining the smallest

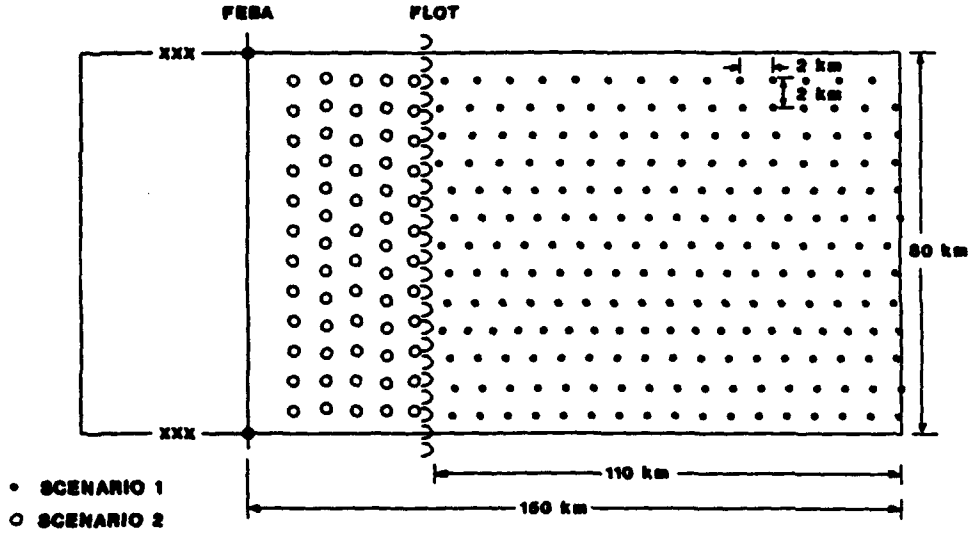
possible signature, avoiding direct contact with the enemy, and providing the greatest coverage in its area of operations. This is done by maximum dispersion of elements across a homogeneous grid. Elements never mass or concentrate on the battlefield. Once the force is emplaced, maneuver is not required, and movement is kept to a minimum. The question of the extent that elements will avoid direct contact and movement on the battlefield is an essential issue which will be addressed throughout this section. At the extreme of no direct action and no movement whatsoever, several limits are placed on operations.

For maximum flexibility, this force is a dual-function organization with every deployed element as alike as possible. Each element carries out the intelligence/target acquisition function or the attack/raid function at any time, and is capable of both simultaneously. The intelligence function remains the "first among equals." The attack function depends on munitions or electronic warfare measures delivered from stand-off platforms so that the locations of forward-deployed elements are not revealed. The key role of these elements is to direct and time fires precisely. For this reason, "raid" is an appropriate label for these stand-off engagements. Traditionally, a raid means a sudden, unexpected penetration of enemy territory to gain information, confuse the enemy, or destroy enemy assets, followed by the quick withdrawal of the attackers.[56] In diffuse battlefield operations, there is no direct contact in the engagement area. However, the result, including the moral shock effect, is identical.

At the tactical level, the diffuse battlefield operations force is an asset assigned to a corps. It is at corps level that long-range deep operations are habitually planned, coordinated, and executed.[57] The corps has the necessary command and control structure, links to national and theater assets, long-range RISTA systems, stand-off attack platforms, and ground and aerial maneuver units to properly complement and exploit diffuse battlefield operations. (Appendix 2 shows the current corps deep operations capabilities and compares them with division deep operations assets). The corps will remain the focus for the conduct of ground operations in the AirLand Operations concept, particularly in the case of contingency operations.[58]

A key distinguishing characteristic of the diffuse battlefield operations force is the distributing grid used to deploy its elements. This grid

Figure 2
GRID SIZE PLANNING SCENARIOS



should be relatively low density and homogeneous. While the grid density (the number of elements populating a given unit area) will be affected by environmental and situational considerations, a baseline planning figure of one team per four square kilometers is appropriate. Normally a team is assigned responsibility for a two-kilometer by two-kilometer box. This ensures that under most adverse weather and terrain conditions, a team's augmenting sensors can keep its entire area under surveillance. Elements also can readily back up adjacent boxes when necessary. Figure 2 illustrates this distributing grid concept.

The location of the force on the battlefield is not fixed, but for planning purposes two scenarios suggest themselves. Each uses a planning figure of 80 kilometers for the width of a typical corps sector. Both also assume 150 kilometers as the extreme depth of the grid. This is the most commonly given planning figure for the extent of a corps' area of operations.[88] Normally, covering force operations, either controlled by the corps or individually by its divisions, take place beyond the forward edge of the (main) battle area (FEBA) and behind the forward line of own troops (FLOT). Corps deep operations are then conducted beyond the FLOT. The first scenario assumes the FLOT to be 40 kilometers in front of the FEBA. Other considerations in using the 40-kilometer figure include the

brigade extended close combat area and the normal range of division deep operations[80] (see Appendix 2 for division deep operations assets). The second scenario assumes the extreme case of the FEBA also being the FLOT, with corps deep operations beginning anywhere beyond the FEBA. As with other deep-operating light forces, the deployment of diffuse battlefield operations forces does not determine the location of the FLOT. Figure 2 portrays both scenarios.

The typical deployed element of the force is the two-person team. This keeps the signature as small as possible, while providing for a 24-hour capability. The most significant issue here is the moral effect of isolation on the battlefield. These small teams will be lightly equipped for self-protection; mutual support will depend on fires directed by other teams, which will be of questionable effect in extricating compromised teams.[81]

The size of a corps' diffuse battlefield operations force will about that of a large brigade-sized unit. Given the first scenario, the grid size would be 8800 square kilometers. With two-person teams deployed every four square kilometers, forward-deployed strength would be 4400 individuals manning 2200 sites. In the second scenario, the area of operations would be 12,000 square kilometers, requiring 6000 individuals forward to man 3000 sites. Either case is certainly an extreme one, but each provides a planning ceiling.

Finally, this force is a combined arms team consisting of forward-deployed elements and a support base located behind friendly lines. Stand-off attack platforms dedicated to providing fire support would be organic assets belonging to the irregular force commander. Communications systems, intelligence fusion and processing systems, and unique sustainment elements would round out the force. The distribution of battlefield functions among all forward-deployed teams essentially presents no critical nodes whose compromise would severely damage the effectiveness of the force as a whole.

The size, activities, and level of higher headquarters lead to "Corps Raider Brigade" as the designation for this force. This force performs six battlefield processes: intelligence/target acquisition; attack/raid; command, control, and communications (C3); integration; mobility; and sustainment. The following discussion will expand on each process by presenting its subordinate tasks and the procedures and assets necessary to carry each process out.

B. Battlefield Processes, Tasks, and Assets

(1) Intelligence/Target Acquisition. The Corps Raider Brigade provides the corps commander with a distributed human intelligence capability throughout the depths of his area of operations beyond the frontline. The brigade commander serves as his "directed telescope" on the immediate battlefield. Intelligence is real-time and surveillance is long-term. Since each team normally remains at one site, its members become very familiar with their area of responsibility. With a direct human presence, assessment takes place directly on the battlefield. One concern must be the natural human tendency to adhere to preconceptions. Collected intelligence is processed, fused in real-time, and then distributed by means of an interactive database maintained by every team. This shared database is fused with other corps and division intelligence to provide an overall intelligence picture available in real-time to forward-deployed teams. Distributed and secure communications, as well as automated data processing, are critical to this function.

Besides the obvious support to intelligence preparation of the battlefield, the targeting process, and the decision support template, certain intelligence tasks will be enhanced. The corps commander gains a unique perspective of the battlefield beyond the frontline.[62] Terrain and weather effects are observed firsthand.[63] CRB teams provide continuous surveillance in depth on all possible avenues of approach for friendly deep operations forces and for general forces conducting offensive operations. Teams monitor the status of the local civilian population. Properly equipped, teams conduct "over-the-horizon" electronic support measures to monitor and locate key enemy nodes through voice, non-voice, and electro-optical interception. Teams can also support operations security by monitoring friendly emissions.

A detailed real-time intelligence picture of the enemy's approach can mean a better understanding of the enemy tactical commander's intentions. It can also identify enemy deception at the tactical level. The CRB can support or conduct friendly deception and help assess its effectiveness with timely feedback. Broad coverage provides a capability of growing importance on the nonlinear battlefield -- knowing exactly "where the enemy isn't."[64] This reduces the risk of surprise from the unexpected. Any team would correct digitized maps accessed in the database with the latest terrain changes observed since their last update. Finally, CRB teams provide real-time

Figure 3
FIRE BOX SCHEMATIC

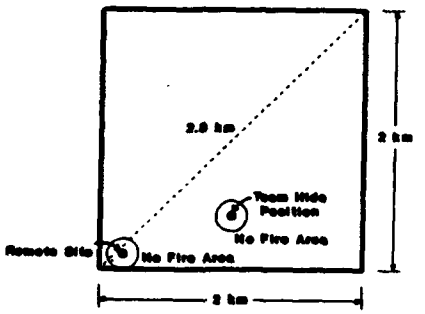
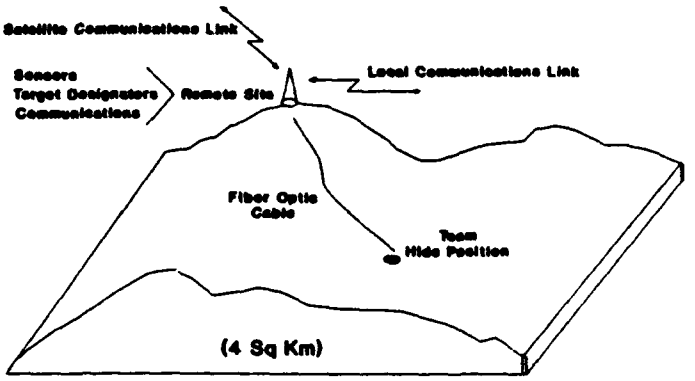


Figure 4
EXAMPLE FIRE BOX LAYOUT



battle damage assessment for all deep attacks. Figures 3 and 4 illustrate an approach to the surveillance of a team's area of responsibility (called a "fire box").

The issue of no direct contact and mimimum movement impacts the intelligence function. Absolutely no direct contact means that enemy prisoners of war would not be sought out for intelligence, and CRB teams would avoid contacting local civilians and partisan groups for intelligence.

Several unique assets are necessary to support the intelligence process at the team level. For additional team protection and capability, remote sensors allow for local stand-off collection. One interesting approach would be the use of miniature sensors mounted on small balloons or model-sized aircraft. All team and individual augmenting sensors would have to conform to stringent weight, volume, and power requirements to minimize loadbearing demands.

(2) Attack/Raid. A primary object of the intelligence/target acquisition process is to support the attack function of the CRB. CRB teams direct stand-off fires and electronic warfare attacks either against predesignated targets as part of the corps' synchronized deep operations or against targets of opportunity. Engaging targets of opportunity at will allows the CRB to maintain constant pressure throughout the enemy's depths by means of continuous harassing attacks on the most lucrative targets. Many high pay-off targets will be targets of opportunity which avoided focused areas of attention (named and targeted areas of interest), were not acquired by

other systems, or were too dispersed to be readily attacked by other means. A fundamental aspect of CRB attack operations is the ability to effectively engage targets as soon as they are acquired. Short attack timelines are particularly crucial at the tactical level.

Targets fall into one of three general classes. The first includes single or dispersed critical nodes; precision munitions are best suited for these targets. The second class encompasses massed assets or formations, such as combat reserves in assembly areas. Area denial munitions or multiple precision munitions are the weapons of choice here. Current penetrating deep operations forces which mass in the attack can deliver large numbers of precision munitions against such high-density targets. Lines of communications and transport make up t e third class. These are most vulnerable at natural or man-made chokepoints, but both area denial munitions and precision munitions can be used to some effect anywhere against these targets.

Supported by dedicated long-range, stand-off attack platforms, forward-deployed CRB elements can carry out a wide variety of raid missions to produce any number of effects on the battlefield or responses by the enemy. Besides harassing operations to disrupt the tempo of enemy operations and to reduce enemy morale, other specified missions could include: counter-reconnaissance; command, control, and communications countermeasures tasks; clearing air or ground corridors for friendly deep attack or counterattacking forces; security missions in support of deep attack or counterattacking forces; stand-off spoiling attacks; delay of segments of the enemy force; stationary exploitation and pursuit operations; and possibly active air defense operations. CRB elements could also serve as back-up or redundant forces to other deep attack forces.

Not only would CRB teams help to determine the best routes beyond the frontline for deep attack forces, they could neutralize enemy assets (notably air defense and anti-armor systems) which might interfere with the passage of these forces. Security operations, to include some version of screen, guard, and cover missions, would protect the flanks, rear, and even lines of communications of penetrating deep-attack forces despite their rapid forward or rearward movement. Delay of parts of the enemy force would entail fixing, blocking, turning, or canalizing. CRB elements would support the unique capability of guiding the emplacement of "over-the-horizon" obstacles and then covering them with stand-off fires. Enemy forces resorting to a

retrograde or retreat would be subject to a true stationary exploitation or pursuit by the CRB. As the enemy passed through the CRB grid, properly timed fires and obstacles would be applied in depth along any route the enemy attempted to use. Given the appropriate local stand-off air defense weapons, enemy aircraft would have to literally pass through a gauntlet on their way to the frontline.

These missions demonstrate the flexibility of a coordinated stationary grid made up of small teams. The passage of enemy or friendly forces through this grid creates the necessary momentum for operations. The possible effects on the enemy can be expressed in a number of ways: limiting enemy freedom of action, separating forces in space and time, isolating the close combat area, shaping the battlefield and setting the conditions for decisive battle, tying up or diverting enemy forces, creating shock and damaging morale, or attriting, neutralizing, defeating, or destroying segments of the enemy force.

Attack assets can be battlefield stand-off or local stand-off systems. Battlefield stand-off attack systems are those long-range platforms discussed earlier that are capable of launching ballistic or cruise missiles on demand.[65] CRB teams would be able to choose the appropriate munitions package for a given target. Packages would include various types of point-target precision munitions using stand-off guidance for moving targets or autonomous guidance for stationary targets. Other packages would carry area denial munitions, such as multiple precision submunitions, scatterable mines, or remote jammers. When guiding precision munitions to target, the guidance means is designed not to give the location of the team away. Thus the source of the guidance beam is itself remoted and controlled through a fiber optic or other low-probability-of-intercept link.

Local stand-off attack systems would provide teams added flexibility in neutralizing critical nodes without relying on long-range platforms, but would be limited by the loadbearing capacity of each team. These assets might consist of stand-off rockets, mines, and jammers activated through command links. The use of "over-the-horizon" jamming is particularly useful because the proximity of targets reduces transmitter power requirements and collateral effects on friendly systems.

The issue of no direct contact suggests that direct action against a target is normally not an attack option. CRB teams will only be equipped

with individual arms for limited self-protection. However, there may be vulnerable targets of such high priority that direct action will be necessary as a last resort. In these cases, the brigade commander must determine the appropriate attack criteria. Another issue is the possibility of CRB attack capacity being overwhelmed by multiple, massed targets rapidly passing through narrow fronts. Effective area denial munitions and a coordinated in-depth "gauntlet" could successfully attrit such formations. A final concern is how to guarantee high-assurance coverage of decision points, named areas of interest, and target areas of interest. One option is the deployment of a back-up team in the vicinity of each primary team assigned to one of these critical areas.

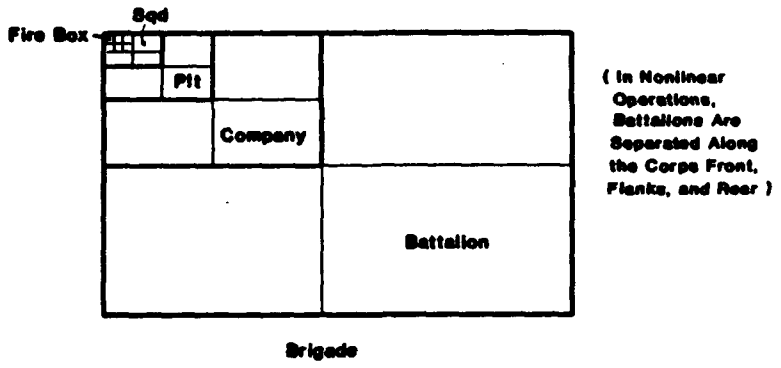
(3) Command, Control, and Communications. Freedom of action within the electromagnetic spectrum is crucial to the CRB. The communications network must provide real-time connectivity between all teams and between the CRB and other corps units. Communications must be secure, anti-jam, low probalitity of intercept, and high data throughput. As an over-the-horizon force both internally and externally to corps, the most responsive communications support would be provided by extremely high frequency (EHF) links through satellite or loitering airborne platforms.

A distributed nodal switching system would tie together adjacent teams and allow automatic work-around relay of messages and data between teams. While similar in philosophy to Mobile Subscriber Equipment (MSE) in this respect, every team would be a potential node, rather than relying on the limited number of nodes used with MSE. Data-burst transmissions, low-power links, and automated tight-beam transmitters would reduce the chance of detection. All equipment must small and lightweight, and external interfaces must be compatible with conventional forces communications systems.

To maintain positive control of the unit, locations of all teams would be automatically updated in the distributed database using Global Positioning Satellite (GPS) transponders. These would be an integral component of all communications equipment.

Command is exercised through successive groupings of adjacent fire boxes, each grouping under a single commander (see Figure 5 for an illustration). Autonomous operations are controlled at the lowest level possible. Distributed communications and a shared database support the immediate transfer of command at any level. One major issue concerns the

Figure 5
C2 HIERARCHY BASED ON FIRE BOXES



extent that the brigade commander or his subordinates command or control other deep operations forces operating in the local area. The corps commander and his major unit commanders may have the clearest view of the "big picture," but once their deep operations forces are deployed forward, CRB commanders on the ground are most familiar with the immediate tactical situation.[88]

(4) Integration. The requirement to synchronize in real time the efforts of every deployed team (internal integration) and the operations of the CRB in support of the parent corps (external integration) leads to integration as a distinct process, despite its close relation to the C3 function. Intelligence and attack operations status are shared in real-time by all teams by means of the distributed database. This database serves as the operational backbone for the CRB. Automated data processing and fusion systems which support this database remain behind the frontline for protection.

An overriding issue facing the CRB is the matter of avoiding fratricide, particularly when other deep operations forces are deployed forward. In this model, teams are deployed relatively uniformly every four square kilometers, which can put at least one team at risk during any deep attack. While precision munitions produce less collateral damage, area denial munitions could pose a significant threat.

Proper control measures are a necessity to coordinate fires and protect the teams (they also minimize unnecessary duplication of effort). Internal

to the CRB, the basic control measure is the fire box. Real-time, computer-derived graphic aids built from the database display the extent of the fire box to each team. The location of every team is maintained in the database and is automatically accessed by fire direction systems to determine no fire areas before each engagement. The graphical display of adjacent teams creates an "electronic visual awareness" of neighboring elements and could reduce individual feelings of isolation.

These same interactive displays must be available to other deep operations forces and to fire direction centers controlling deep fires. Depending on the attack option, CRB teams would receive protection through the use of no fire areas, identify-friend-or-foe devices, or adequate warning to ensure proper cover.

(5) Mobility. This function encompasses both force mobility and local mobility. Force mobility supports the emplacement, reorientation, and recovery of the force as a whole. Local mobility provides for the movement of individuals and teams on the battlefield itself. Force mobility will be a major challenge, raising a number of issues: (a) how deep can the grid be extended in a given situation and under different time constraints? (b) how is the force emplaced in territory already under enemy surveillance or in enemy hands? (c) how is the force displaced forward during corps offensive operations or reoriented when the corps is moved about the battlefield? These issues will be discussed in greater detail later.

The force can be emplaced in a number of ways, including airborne or air assault insertion, forward infiltration aboard covering force vehicles, as stay-behind forces when other corps units displace rearward, or by employing specialized individual or team vehicles. An issue here is the likely difficulty in coordinating the movement of individual teams or packs of teams across a broad front during emplacement and recovery in order to avoid fratricide. Normally, emplacement and recovery only take place during pauses in operations in order to reduce these complications.

A light force need not be a force on foot; team mobility is a necessity on the diffuse battlefield to overcome one of the otherwise inherent shortcomings of light forces. No matter the option for force emplacement, CRB teams must be equipped with individual transport means which still allow for reduced signatures and which can support both force and local mobility. Motorcycles, small individual aircraft such as ultralights, or even

inobstrusive civilian vehicles are possibilities, depending on the situation. A team's transport could be matched to the planned depth of its employment. This minimal motorized transport would also greatly increase a team's load-carrying capacity and thus its endurance on the battlefield.

(6) Sustainment. A key requirement for the CRB is an extended presence on the battlefield, measured in days or weeks. Teams are dispersed over hundreds of square kilometers but must keep movement to a minimum. Sustainment of this force is its greatest challenge, demanding a radical approach to sustainment. This "diffuse sustainment" philosophy avoids the common practice of centralized logistics points on the battlefield.

Light forces generally require less supply and maintenance support than do heavy forces. CRB team equipment will be designed to use a minimum of expendables (such as batteries). Since teams avoid direct contact and minimize movement after emplacement, ammunition and fuel resupply is all but eliminated. With the proliferation of teams, a maintenance failure at any given site will not adversely affect force operations.

Sustainment is carried out in three general ways, balanced by the circumstances of the particular situation. Each team carries a basic load, made more substantial with the use of team vehicles. On the battlefield, emergency resupply would be done through foraging off the land or scavenging from local population or enemy resources.[87] The need to avoid contact and movement would limit these activities. The primary resupply effort would come from proliferated light and heavy caches "seeded" throughout the battlefield. These would be pre-positioned before operations by air or ground or distribute as necessary during operations by such means as cargo UAVs.[88] Features such as low-power beacons and anti-tamper devices would enhance the utility of caches.

A significant sustainment issue is adequate and timely medical aid and evacuation support. This will remain a possible morale detractor and a challenge for any diffuse battlefield operations force.

C. AirLand Battle and AirLand Operations Frameworks

The discussion on the placement and operations of the Corps Raider Brigade has generally been in terms of current AirLand Battle doctrine and linear warfare. Diffuse battlefield operations forces can play a key role in both the AirLand Battle offensive and defensive frameworks by supporting deep

Figure 6
AIRLAND OPERATIONS
THEATER DESIGN

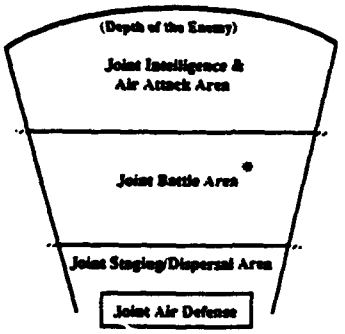
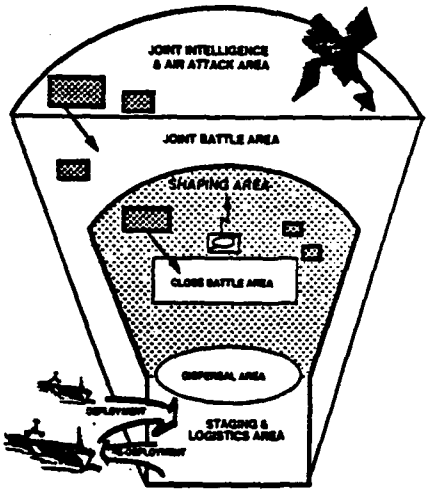


Figure 7
AIRLAND OPERATIONS
JOINT BATTLE AREA



operations and reconnaissance and security operations.[69] In the offense, they can support the four phases of preparation, attack, exploitation, and pursuit at least to the depths of the initial tactical laydown without displacing the force itself. In the defense and in retrograde operations, they have the unique ability to remain in place and continue operations, even after the withdrawal of covering or delaying forces. The CRB can complement any deep operations or security force in a variety of situations, and in some cases replace them.

The Corps Raider Brigade promises to have as great or even greater utility within the framework of the AirLand Operations concept. It is in the AirLand Operations concept that the philosophy of the emerging diffuse battlefield finds its closest parallel.

In the AirLand Operations-oriented theater campaign, the theater of operations is structured as shown in Figure 6.[70] The joint battle area is the focus for Army operational and tactical level combined arms activities, although Army special operations and intelligence assets will operate in the joint intelligence and air attack area and Army CS, CSS, and security forces will support the joint staging/dispersal area.

Army operational and tactical activities may be linear or nonlinear in character, but are oriented on the enemy or key events rather than on

terrain. These activities take place in the joint battle area on the extended battlefield depicted in Figure 7.[71] The shaping area is established early to provide security, gain intelligence on the enemy, and to shape the battlefield and set conditions for decisive action. These efforts support the development of the close battle area on terms advantageous to friendly forces. Maneuver forces concentrate at the proper time and place to establish the close battle area and conduct decisive operations against the enemy.

Depending on the parent corps' mission, the CRB can operate on the periphery of a segment of the close battle area, or it can occupy a portion of the shaping area. In contingency operations where the corps is the major ground unit, or when the corps is operating independently in support of a campaign, the CRB is ideally suited to establishing the bulk of a corps shaping area by itself. The shaping area represents an economy of force measure which is inherently nonlinear in character. Maneuver forces must be able to travel anywhere through this area and expect intelligence and security support to the front, flanks, and rear of traveling formations. The CRB has the flexibility to not only orient "deep," but also all-around, supported by its over-the-horizon communications and dispersed infrastructure. The shaping area is an early embodiment of the diffuse battlefield, and the CRB is specifically tailored in its structure, equipment, and doctrine to operate in this area.[72]

In this section I have developed a diffuse battlefield operating concept with the Corps Raider Brigade as the illustrative centerpiece. Firmly based on the operating principles enumerated in Section III, the CRB concept meets all of the diffuse battlefield criteria developed in the same section. The Corps Raider Brigade is an amalgamation of conventional force and traditional irregular force structures to best address the challenges of the diffuse battlefield. Nonetheless, a number of issues remain open in developing this concept. The major concerns are in communications, force mobility, fratricide avoidance, moral effects of physical isolation of every team, and sustainment within the limits of force load-carrying capacity.

The force development process carried out in these pages was only to the first order, and the analysis of this force in the next section will only be to the first order. The quantitative analysis necessary to optimize this organization demands additional resources beyond the scope of this work.

V. ANALYSIS OF THE CORPS RAIDER BRIGADE CONCEPT

The Army recognizes the need to maintain a technological and doctrinal lead over possible adversaries, but the strategic security environment after the end of the Cold War makes the identification of the threat a confusing proposition. In addition, the current trend in shrinking military budgets and force structure limits the options open to the Army in modernizing its forces, particularly those options which demand quantitative increases of any resource. In part, the AirLand Operations concept was developed with these constraints in mind.[73] While the analysis of the Corps Raider Brigade concept in terms of utility, feasibility, and affordability will necessarily only be a qualitative one, it must take into account the realities of today's security environment.

The criteria of utility, feasibility, and affordability are used to test the diffuse battlefield operations concept as embodied by the Corps Raider Brigade. These may appear to be somewhat arbitrary in meaning due to the qualitative, rather than quantitative, nature of this assessment. More definitive criteria, however, are beyond the scope of this paper and the means of analysis at hand.

Utility is a measure of the adequacy of the concept to fulfill actual Army warfighting needs. Today the Army is required to conduct ground operations across the operational continuum, with increased emphasis on power projection and contingency operations, in any theater and against any possible adversary.[74]

In the previous section the Corps Raider Brigade was generally shown to have significant utility as a deep operations force and a security force in the framework of both AirLand Battle doctrine and the AirLand Operations concept. The CRB appears to have particular applicability in the AirLand Operations concept; beyond the tactical level, an operational or theater-level raider force could operate throughout the shaping area. Despite the general tactical utility of the CRB, the adequacy of the CRB to support particular scenarios or operations was not explored in detail.

A key requirement for the usefulness of the CRB is the ability to emplace, reorient, and recover the force to support corps operations. These are most readily done when the area of operations is not occupied by the enemy and the corps is undertaking defensive or retrograde operations.

Movement of the force would be much more difficult if the enemy were already in the CRB area of operations, requiring a sizable infiltration effort across a broad front and under pressure.[78] Normally a strength of the CRB is its flexibility, but the difficulty in reorienting the force after the initial laydown is a major concern in the continued utility of the force for follow-on operations. In offensive operations or during significant displacements of the corps, the maneuver elements could outdistance the initial CRB grid, despite its great depth. In these cases, the CRB might best serve to screen the corps flanks and rear; the speed and shock of a corps pursuit or exploitation could provide ample force protection to the front. The time available for movement of the CRB also helps to determine its effective depth. Like any operation, preparation time is a significant factor in CRB employment. In some situations, instead of reorienting a corps' CRB, the CRB could stay in place and switch its support to the new corps gaining responsibility for its area.

The CRB shows promise as a unique force in contingency and power projection operations. As a light force requiring fewer transport assets and less sustainment, it could be emplaced early on in a theater of operations. Its organic satellite communication links would support inter-theater communications with the parent corps' main body still awaiting deployment. The burden would be in moving the stand-off weapons systems, unless sea-based platforms were modified to provide the necessary fire support. These forces are also less obstrusive than other forces. They call less attention to themselves, which could be a political bonus. During operations along national borders, however, political considerations could limit the deployment of the CRB across the borders of adversaries before hostilities broke out.

Contingency operations requiring ground combat have historically involved compressed ground operations, which normally take place at the end of the operation. Modern battlefield lethality and rapid political resolution tend to shorten these conflicts substantially in space and time. This suggests that many potential contingency operations will not require a reorientation of the CRB, averting a significant concern.

Diffuse battlefield operations are predicated on the conditions of the modern conventional battlefield. While the CRB may have utility in

unconventional wars, it would require at least a significant alteration in force doctrine.

The CRB was tailored to create and exploit an asymmetry in capabilities between US forces and forces of possible adversaries, based on the idea that the offense will dominate the diffuse battlefield beyond the frontline. The utility of the CRB over time depends on how long this window of opportunity will remain open. The contention has been that despite attempts at countermeasures and other defenses, this asymmetry in favor of the offense will continue for quite some time.

No organization has universal utility, and the CRB as developed in this paper is certainly no exception. The benefit versus the investment will change with each unique situation. Nonetheless, there are major questions as to the utility of the CRB in corps offensive operations that require maneuver to extensive depths, in prolonged operations requiring displacement of the CRB, and in uncoventional warfare. Optimum employment requires certain environmental and situational conditions.

The feasibility of the CRB concept depends on whether its fielding is realistic and attainable in the near-term. As a force supporting near-term diffuse battlefield operations, the CRB should be fielded in the next ten years. This force, however, will require substantial developments in doctrine, organization, training, leadership, and materiel. A major investment is necessary to accelerate the focused technologies required to make this force a reality. Just as important, the Army must accept a new philosophy in the conduct of operations on the emerging diffuse battlefield. These are significant challenges at a time when the Army is already preoccupied with reorienting the focus of ground operations, necessary in light of the new security environment and reduced resources. The diffuse battlefield concept would be an evolutionary step attempted while the Army is already in mid-stride doctrinally with the development of AirLand Operations.

Several major issues affecting the utility and feasibility of the CRB concept were raised in the previous section. The most pressing of these demand technological solutions or new hardware which may not be available within the ten-year fielding timeframe. These issues include long-range communications, high-capacity data processing, force mobility in support of

hundreds or thousands of individual teams, fratricide avoidance, miniaturized equipment, new stand-off attack systems, and diffuse sustainment.

Even in a budgetary environment less constrained than today's, the feasibility of implementing the full range of these measures is questionable. The utility of a less capable CRB force, however, is doubtful.

The affordability of the CRB concept is an issue beyond just the feasibility of fielding the force. It remains the final arbiter in assessing the concept. Making the CRB a reality requires a substantial investment in focused technologies, equipping the force and its supporting infrastructure (most of which will be unique), and providing the necessary manpower for a large organization. Unfortunately, these are times of dwindling military budgets and force structure, and this trend will continue for the foreseeable future. The diffuse battlefield operations concept will likely be a controversial one at a time when the Army must pursue competitive strategies to get the greatest return for every dollar invested.

Freeing the manpower for the CRBs could be more difficult than funding the research and materiel production. One possible source could be a light infantry division. The CRB would be a more capable deep operations force, but this might not justify the loss of one division which could support conventional operations on the appropriate terrain or conduct unconventional warfare operations.

Even if further analysis of the CRB concept satisfactorily resolves questions on the utility and feasibility of this force, the Army will undoubtedly be unprepared to make the monetary and manpower investments necessary in the 1990s to field the force.

VI. CONCLUSIONS

This paper sought to determine whether the Army should consider incorporating diffuse battlefield operations into its warfighting doctrine and fielding the appropriate forces to execute them. In the context of this paper, "diffuse battlefield operations" were defined as near-term, offensively oriented, tactical operations beyond the frontline which take advantage of emerging components of the diffuse battlefield.

The diffuse battlefield is an evolutionary phenomenon which exists when the characteristics of the dispersed or empty battlefield currently observed at the frontline are extended to greater depths beyond the frontline. The driving force behind the emergence of the diffuse battlefield is the dynamic between the growing lethality of weapons targeted against the support base behind the frontline, and the need for dispersion and self-protection to survive. Because of the requirement to concentrate assets in the rear to properly perform support operations, as well as the difficulty in hardening these assets, modern armies continue to remain vulnerable behind the frontline. The asymmetry between offensive capabilities and defensive responses will remain for the foreseeable future, supporting the dominance of the offense beyond the frontline noted by observers of the Gulf War. There is now a distinct window of opportunity which the Army can fully exploit.

As I developed this theoretical perspective on the diffuse battlefield, I concluded that tailored light forces properly deployed beyond the frontline, operating on modified irregular force principles and supported by dedicated stand-off weapons, are key to fully exploiting the offensive asymmetry of the diffuse battlefield. I developed the criteria and operating principles necessary to conduct diffuse battlefield operations using these forces.

The primary requirements for the survival and optimum capability of these irregular forces are to operate as small teams across a highly distributed deployment grid, to avoid direct contact with the enemy at all times by relying on supporting stand-off fires, and to minimize movement on the battlefield. These forces are unique in that they neither maneuver nor mass to carry out the dual functions of intelligence collection and attack operations.

Based on the diffuse battlefield operations criteria and principles, I developed an operating concept using the Corps Raider Brigade as the illustrative organization. This force is tailored to perform the battlefield functions of intelligence/target acquisition, attack/raid, C3, integration, mobility, and sustainment. Major issues affecting the capabilities and operations of this force were presented. The Corps Raider Brigade has a significant role to play in current AirLand Battle doctrine and the emerging AirLand Operations concept.

A qualitative analysis of this operating concept was conducted using the criteria of utility, feasibility, and affordability. The Corps Raider Brigade concept has sufficient utility in supporting those Army ground operations required in today's strategic environment, but several concerns remain. The feasibility of fielding this force in the near-term is questionable. However, the greatest hurdle in fielding the CRB lies in its affordability. The requirement to develop new doctrine, force structure, and materiel would place a severe burden on the limited fiscal and manpower pool the Army can expect for the remainder of the decade.

Based on this first-order assessment, I cannot recommend that the Army incorporate diffuse battlefield operations and forces in the near term. Nonetheless, the diffuse battlefield phenomenon will become more prevalent in the years ahead as advanced weapons and sensors improve in capability and continue to proliferate among a growing number of nations. The Army cannot afford to ignore the impact of the diffuse battlefield on conventional operations in the future. The Army must study ways to fully exploit this phenomenon, and it must be prepared for possible adversaries who may develop their own diffuse battlefield capabilities. A more detailed analysis of the concept and quantitative cost-benefit trade-off studies are necessary to determine the proper role of diffuse battlefield operations in the Army of the future.

Appendix 1: Assessment of Current Light Forces

Current light forces used to conduct deep operations include Army special operations forces (Rangers and Special Forces), long-range surveillance units, elements of light infantry divisions and separate brigades, and airborne and air assault forces. Through organizational design, equipment, sustainment, and focus, each of these units is tailored to carry out a particular set of missions on today's battlefield beyond the frontline. The table below summarizes pertinent characteristics of these forces.[7e]

Table I
CHARACTERISTICS OF CURRENT LIGHT FORCES

Characteristics	Rangers	Special Forces	LRSU	Lt Inf Units	Airborne / Air Assault
1. Level of War Focus	S/O	S/O/(T)	T	(O)/T	(O)/T
2. Mission Focus	Raid	Raid/Intel	Intel	Raid	Attack
3. Penetration Method	Insert in Mass	Insert by Team	Insert by Team	Insert/Stay Behind/Infil	Insert in Mass
4. Mass or Disperse?	Mass	Disperse	Disperse	Either	Mass
5. Number of Subunits	Few	Several	Few	Few - Several	Few
6. Size of Subunits	Plt - Regt	Teams	Teams	Plt - Bn	Co - Bde
7. Dedicated Fire Support?	Sometimes	Sometimes	No	Usually	Usually
8. Resupply?	None	Limited	Limited	None	Limited

NOTE:
S - Strategic
O - Operational
T - Tactical

Appendix 1: Assessment of Current Light Forces

Based as these characteristics, the ability of current deep-operating light forces to conduct diffuse battlefield operations is assessed in terms of the principles developed on pages 18 to 22. This assessment is shown in the next table. It indicates that current light forces will require significant modifications in force structure, materiel, and mission focus in order to carry out diffuse battlefield operations. This reorientation would necessarily render these units unusable for their original purpose.

Table 2
ASSESSMENT OF LIGHT FORCES USING DIFFUSE BATTLEFIELD PRINCIPLES

Principles	Rangers	Special Forces	LRSU	Lt Inf Units	Airborne / Air Assault
1. Avoid Contact	N	--	--	N	N
Dual Intel/Raid	--	--	N	--	--
2. Avoid Massing Forces	N	--	Y	N	N
3. Smallest Possible Teams	N	--	Y	N	N
4. Homogeneous Dispersion	N	N	N	N	N
5. Preplanned and Opportunity Tgts	N	N	N	N	N
6. Economy of Force	Y	Y	Y	--	N
7. Integrated with Tactical Conv Forces	N	--	Y	Y	Y
8. Full Access to EM Spectrum	--	--	--	N	N
9. Extended Presence (Time and Space)	N	--	--	N	N
10. Diffuse Sustainment	N	--	--	N	N

NOTE:
Y - Satisfies Principle
N - Does Not Satisfy Principle
-- - Neutral

Appendix 2: Current Corps and Division Deep Operations Assets[77]

CORPS ACQUISITION ASSETS

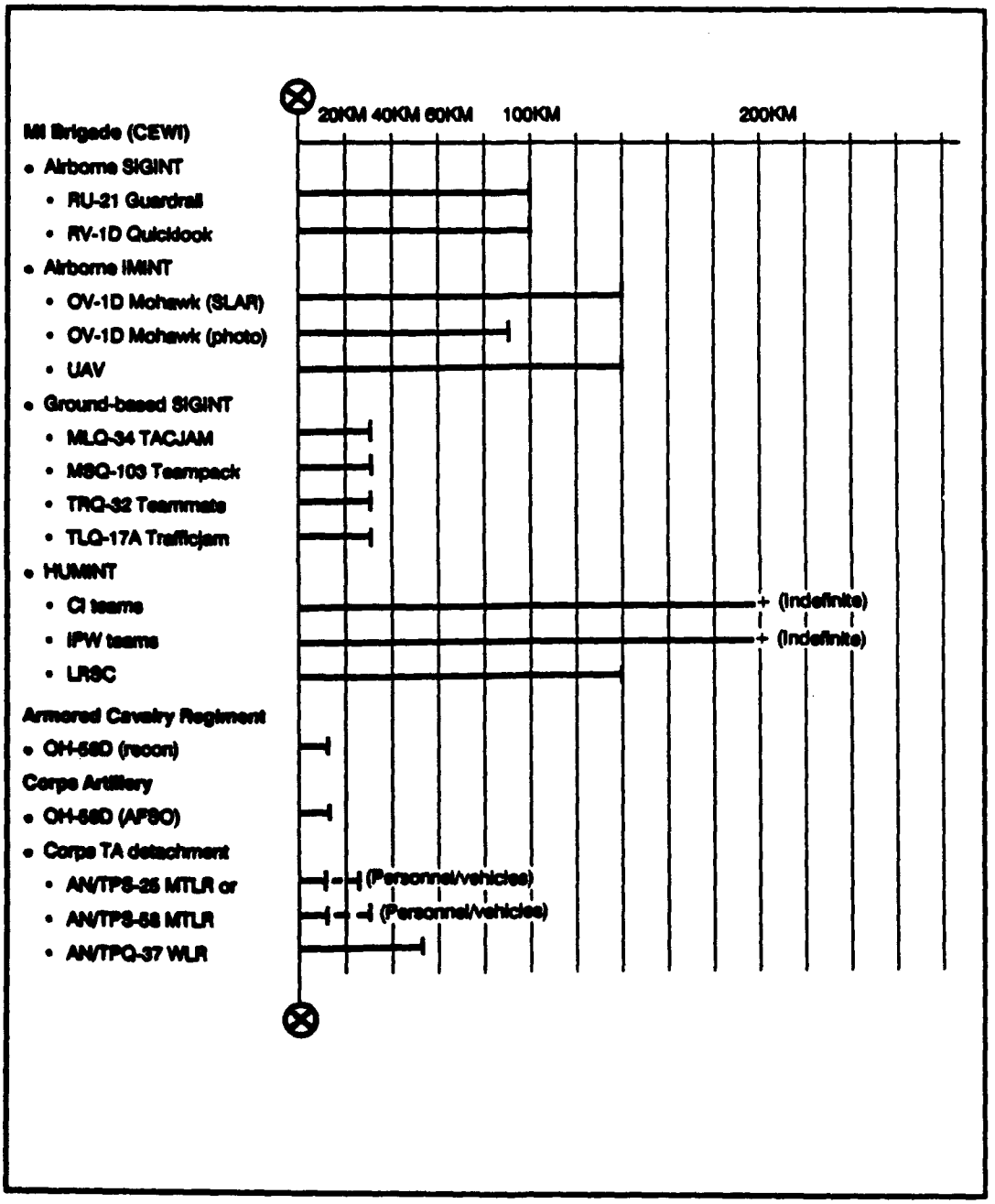
SOURCE	ASSET	CAPABILITY
MI Brigade	Airborne SIGINT:	
	RU-21 Guardrail	VHF intercept and direction finding
	RV-1D Quicklook	Noncommunications intercept and direction finding
	RC-12 D/G Improved Guardrail V	Communications intercept and DF (replaces RU-21 in some units)
	RC-12K Guardrail common sensor	Communications intercept and DF (to replace RU-21 or RV-1D in selected units)
	Airborne IMINT:	
	OV-1D Mohawk (SLAR)	Moving-target indications
	OV-1D Mohawk	Photoimagery
	UAV	(To be fielded)
	Ground-based SIGINT/EW:	
	MLQ-34 TACJAM	VHF electronic countermeasures (except airborne corps)
	MSQ-103 Teampack	Noncommunications intercept and direction finding
	TRQ-32 Teammate	VHF intercept and direction finding
	TLQ-17A Trafficjam	VHF electronic countermeasures (airborne corps only)
	MRDFS	VHF intercept or DF (airborne corps only)
	HUMINT:	
	CI teams	Low-level sources and local liaison
	IPW teams	Interrogation of prisoners
	LRSC	Deep surveillance
Armored Cavalry Regiment	OH-58D	Reconnaissance and target acquisition
TA Recon Co of Corps Avn Bde	OH-58D	Reconnaissance and target acquisition
Corps TA Det	AN/TPQ-37 radar	Weapons location
	AN/TPS-25 radar	Moving target location

LEGEND:

avn = aviation
bde = brigade
CI = counterintelligence
det = detachment
IPW = interrogation of prisoners of war
LRSC = long-range surveillance company
MRDFS = manportable radio direction finding system
VHF = very high frequency

Appendix 2: Current Corps and Division Deep Operations Assets

PLANNING RANGES FOR CORPS ACQUISITION ASSETS



Appendix 2: Current Corps and Division Deep Operations Assets

DIVISION ACQUISITION ASSETS

SOURCE	ASSET	AVAILABILITY		
		HEAVY DIV	LIGHT DIV	AIRBORNE OR AIR ASSAULT DIV
MI Battalion (CEWI)	MLQ-34 TACJAM	X		
	TLQ-17A Trafficjam	X		X
	MSQ-103 Teampack	X		X
	TSQ-138 Trailblazer	X		
	TRQ-32 Teammate	X	X	X
	GSR AN/PPS-5 and 15[1]	X	X	X
	ALQ-151 Quickfix[2]	X	X	X
	REMBASS		X	X
	MRDFS	X	X	X
Maneuver Brigade	COLT[3]	X	X	X
Maneuver Battalion	Scouts	X	X	X
	Patrols	X	X	X
	GSR AN/PPS-5 and 15[1]	X	X	X
	FIST[4]	X	X	X
Div Arty				
TA Battery	AN/TPQ-36 WLR	X		
	AN/TPQ-37 WLR	X		
	AN/TPS-25 and 58 MTLR	X		
DS FA Bn	AN/TPQ-36 WLR		X	X
Command Avn Co of the Avn Bde	OH-58D (AFSO)	X		
Cavalry/Recon Sqdn	Reconnaissance assets	X		
Aviation Bde	EH-1/EH-60A Quickfix[2]	X	X	X

[1]GSRs are OPCON to the maneuver units on deployment.

[2]Quickfix is OPCON to the MI battalion on deployment and provides VHF intercept, DF, and jamming.

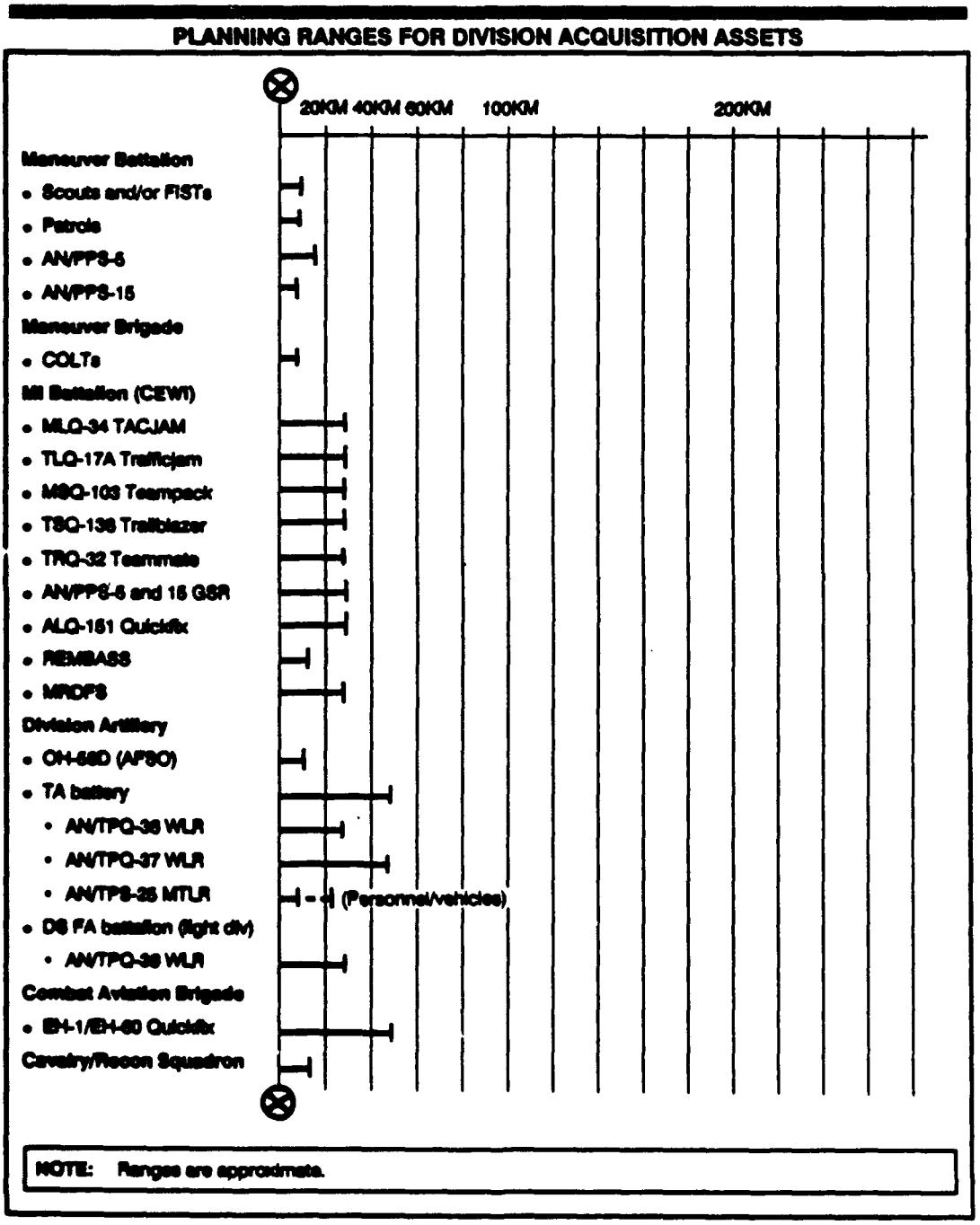
[3]COLTs may be allocated to maneuver brigades by either the heavy direct support FA battalions or the light div artys to which they are organic.

[4]FISTs will be allocated to maneuver battalions by the direct support FA battalions to which they are organic, except for ACRs, in which the FISTs are organic to the howitzer batteries belonging to the ACR.

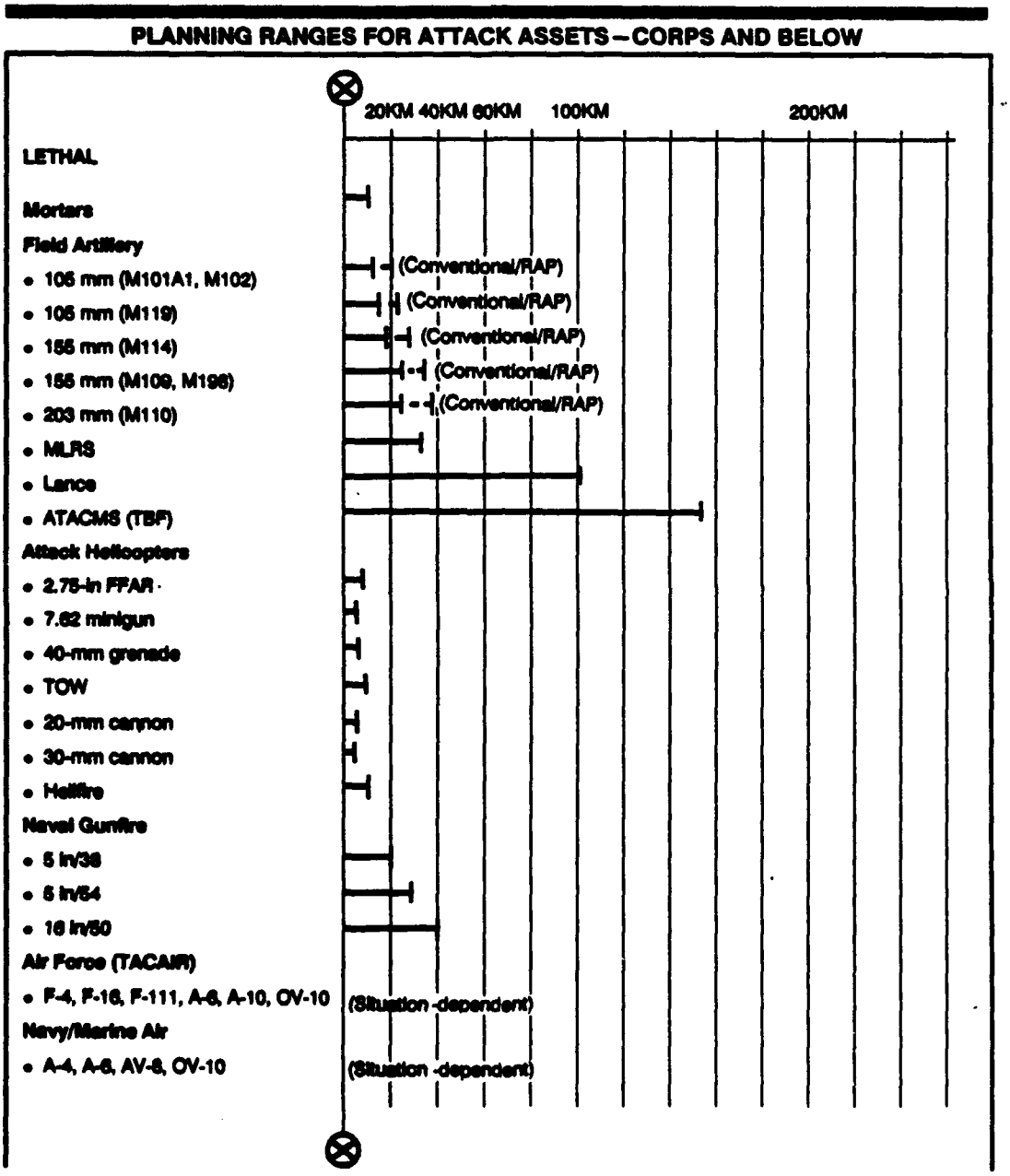
LEGEND:

ACR = armored cavalry regiment
CEWI = combat electronic warfare and intelligence
GSR = ground surveillance radar
OPCON = operational control
REMBASS = remotely monitored battlefield sensor system
sqdn = squadron

Appendix 2: Current Corps and Division Deep Operations Assets

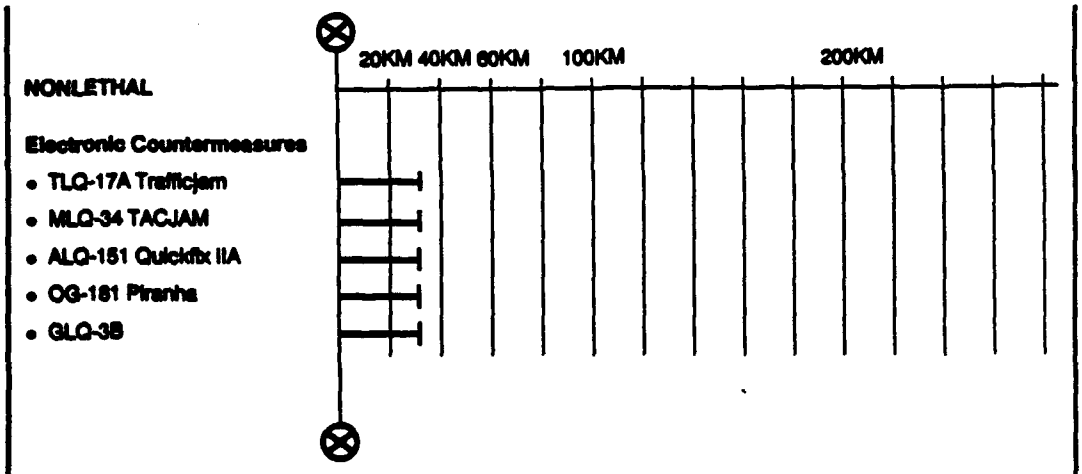


Appendix 2: Current Corps and Division Deep Operations Assets



Appendix 2: Current Corps and Division Deep Operations Assets

PLANNING RANGES FOR ATTACK ASSETS – CORPS AND BELOW (CONTINUED)



NOTE: Planning ranges are from the position of the attack system.

LEGEND:

ATACMS	= Army tactical missile system	RAP	= rocket-assisted projectile
FFAR	= folding-fin aerial rocket	TBF	= to be fielded
MLRS	= multiple launch rocket system	TOW	= tube-launched, optically-tracked, wire-guided missile

END NOTES

I. Introduction.

1. There are wide-ranging opinions as to the extent technology effects the nature of war. For a survey of recent thought on the influence of technology on the evolution of war, see: (a) Richard E. Simpkin, Race to the Swift: Thoughts on Twenty-First Century Warfare (London: Brassey's Defence Publishers, 1985), pp 3-8, 145-51, 165-66, 145-51; (b) Christopher Bellamy, The Evolution of Modern Land Warfare: Theory and Practice (London: Routledge, 1990), pp 30-52; and (c) Martin van Creveld, Technology and War: From 2000 B.C. to the Present (New York: The Free Press, 1989), pp 1-6, 311-35. Bellamy states that technological advances are meaningless unless the proper techniques are developed to exploit them; this argument is the foundation of this paper.

2. (a) Bellamy, pp 53-69; (b) James J. Schneider, "Vulcan's Anvil: The American Civil War and the Emergence of Operational Art," School of Advanced Military Studies Theoretical Paper No. 4 (16 June 1991), pp 30-38.

3. (a) Schneider, pp 6-18; (b) Bellamy, pp 45-52; (c) Jean de Bloch, The Future of War in Its Technical, Economic, and Political Relations, trans. by R.C. Long (Boston: The Athenaeum Press, 1914), pp 3-62; (d) S.L.A. Marshall, Men Against Fire: The Problem of Battle Command in Future War (Gloucester, MA: Peter Smith, 1978), pp 44-49. Marshall narrates a very vivid scene from the eyes of the individual soldier to describe the psychological impact of the empty battlefield.

4. Headquarters, Department of the Army, Field Manual (FM) 100-5, Operations (Washington, DC: US Government Printing Office, 5 May 1986).

5. Headquarters, US Army Training and Doctrine Command and US Air Force Tactical Air Command, Training and Doctrine Command Pamphlet (TRADOC Pam) 525-5, AirLand Operations: A Concept for the Evolution of AirLand Battle for the Strategic Army of the 1990s and Beyond, (Fort Monroe, VA: Headquarters, US Army Training and Doctrine Command, 1 August 1991).

6. For example, see (a) Headquarters, Department of the Air Force White Paper, "Air Force Performance in DESERT STORM" (April 1991), pp 1-2, 6-7; (b) Price T. Bingham, "Air Power in Desert Storm and the Need for Doctrinal Change," (manuscript pending publication), pp 1-2; (c) Headquarters, US Air Force and Headquarters, US Marine Corps briefing to the Secretary of Defense, "Air Support of the Ground War," 24 July 1991. The Air Force sees the Gulf War as validating its evolution of the primary characteristics of airpower with the introduction of advanced weapons. The three original characteristics of airpower described in earlier doctrine were speed, range, and flexibility. Two additional characteristics have now been added: precision and lethality (see Headquarters, Department of the Air Force, "Global Reach -- Global Power: The Composite Air Wing, A Primer," an extract from Global

Reach -- Global Power, Appendix 1, Report to Congress, [Washington, DC: US Government Printing Office, 1991], p 14).

7. TRADOC Pam 525-5; note the concept for warfighting (p 9), theater design (pp 10-11), and the extended battlefield and the operational cycle (pp 15-17).

8. This is often characterized as "technological surprise" (see Simpkin, pp 179-80; Bellamy, p 17). Some argue that this rarely achieves decisive results in prolonged warfare. However, recent events such as the 1991 Gulf War suggest that overwhelming technological advantage, when coupled with other factors, will not allow for prolonged conflict. There are also cases where the advantage to the offense or defense garnered by some advance in technology closes very slowly and only over the span of several conflicts (see text on pp 2-3).

9. (a) Edward Hagerman, The American Civil War and the Origins of Modern Warfare (Bloomington, IN: Indiana University Press, 1988), pp xi-xii; (b) Grady McWhiney and Perry D. Jamieson, Attack and Die: Civil War Military Tactics and the Southern Heritage (Tuscaloosa, AL: The University of Alabama Press, 1990), pp 13-14, 56-60; Bellamy, pp 38-45.

10. Defensive measures against strategic nuclear ballistic missiles have been considered both prohibitively expensive and technologically infeasible. Both of these have in part led to the adoption of the mutually assured destruction (MAD) policy and the Anti-Ballistic Missile (ABM) Treaty. The Strategic Defense Initiative continues to receive major criticisms over its possible effectiveness and relative cost. Bernard Brodie's analysis of nuclear strategy still serves as starting point for the offensive and defensive facets of strategic nuclear warfare; see Bernard Brodie, Strategy in the Missile Age, (Princeton, NJ: Princeton University Press, 1971), pp 173-222.

11. (a) "Air Force Performance in DESERT STORM," pp 1-8; (b) "Air Support of the Ground War."

12. Mary FitzGerald, "Soviet Military Doctrine: Implications of the Gulf War" in International Defense Review (Vol 24, August 1991), pp 809-10. The military theorist Carl von Clausewitz is often cited for his assertion that "defensive form of warfare is intrinsically stronger than the offensive" (Carl von Clausewitz, On War, ed. and trans. by Michael Howard and Peter Paret [Princeton, NJ: Princeton University Press, 1984], p 358). However, Causewitz does admit that the offensive might "invent some major new expedient" which would alter this situation (p 362). Many believe that technology today is providing several "new expedients" to change the balance between the offense and defense, not just with airpower but in other areas as well.

13. One simple measure of the growing emphasis on the offense in US Army doctrine is found in the evolution of FM 100-5, Operations, over the last 15 years. The 1 July 1976 version was tilted decidedly to the tactical defense; it devoted 12 pages to the chapter on the offense, 14 pages to the defense, and six pages to retrograde operations. The latest edition

(5 May 1986) spends 37 pages on chapters on the offense, 23 pages to the defense, and eight pages to retrograde operations. The emphasis on a doctrine to attack deep into the enemy's rear is another sign.

II. The Diffuse Battlefield.

14. George Donohue and Theodore Gold, "Extended-Range Smart Conventional Weapon Systems," paper by the Stand-Off Weapons Panel, Offense-Defense Working Group (Washington, DC: US Government Printing Office, October 1988), pp 1-2, 5-23, 39-49.

15. Headquarters, Department of the Army, Field Manual (FM) 6-20-10, Tactics, Techniques, and Procedures for the Targeting Process (Washington, DC: US Government Printing Office, 29 March 1990), pp 1-1 to 1-5.

16. John A. Warden III, The Air Campaign: Planning for Combat (Washington, DC: National Defense University Press, 1988), pp 155-57, 169-72.

17. Headquarters, Department of the Army, Field Manual 100-5, Operations, with Change 1 (Washington, DC: US Government Printing Office, 1 July 1976), p 2-6.

18. M. FitzGerald, pp 809-10.

19. Giulio Douhet, The Command of the Air, trans. by Dino Ferrari (Washington, DC: US Government Printing Office, 1983), pp 97-99, 103-16, 128-29. Also see Brodie, p 98.

20. Michael Howard, "Military Science in an Age of Peace" in RUSI, Journal of the Royal United Services Institute for Defence Studies (March 1974, No 119), p 3-9.

21. TRADOC Pam 525-5, pp 36-37; note the emphasis on maximizing range, lethality, survivability, and long-range intelligence.

22. Otto Heilbrunn, Partisan Warfare (New York: Frederick A. Praeger, Inc., Publishers, 1967), pp 171-86.

23. Ibid., pp 15-39.

24. A.J. Bacevich, The Pentomic Era: The U.S. Army between Korea and Vietnam (Washington, DC: National Defense University Press, 1986), pp 3-6.

25. (a) Robert H. Vokac, "Smart Weapons: Is It Time to Fold the Nuclear Umbrella?" (Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 17 December 1991 [tentative date of publication]); (b) Tactical Weapon Guidance and Control Information and Analysis Center, Proceedings of the Precision Guided Weapons Symposium (23-25 May 1988) (Chicago: IIT Research

Institute, under contract to the Tactical Weapon Guidance and Control Information and Analysis Center, January 1989), pp 1-10, 37-100.

26. For a description of the evolution of Soviet military thought on nuclear warfare, see David M. Glantz, "The Soviet Conduct of War" (Fort Leavenworth, KS: Soviet Army Studies Office, US Army Combined Arms Center, 30 March 1987), Executive Summary, p 1; Tab B, pp 1-7, 14-16, 21-23, 29-30, 47-50.

27. Bacevich, pp 129-57.

28. David N. Schwartz, NATO's Nuclear Dilemmas (Washington, DC: The Brookings Institution, 1983), pp 1-12.

29. H.G. Gole, "Bring Back the LRRP" (Carlisle Barracks, PA: Strategic Studies Institute, US Army War College, May 1981), p 1.

30. Defense Intelligence Agency, North Korea: The Foundations for Military Strength (Washington, DC: US Government Printing Office, October 1991), pp 51, 53-55.

31. Burgess, William H. III, ed., Inside Spetsnaz: Soviet Special Operations -- A Critical Analysis (Novato, CA: Presidio Press, 1990), pp 1-10, 221-33, 257-59.

32. (a) See BG Robert L. Stewart's comments in United States Space Foundation, "A Report on the Fifth National Space Symposium," (4-7 April 1989) (Colorado Springs, CO: United States Space Foundation, 1989), p 138. As the Army's first astronaut, BG Stewart has firsthand knowledge of the utility of humans over machines for certain sensing, integration, and analysis tasks. Also see (b) Bellamy, p 37; (c) Hans Moravec, "The Universal Robot" in Analog Science Fiction & Fact (January 1992, Vol CXII, No. 1 & 2), pp 93-95 (Moravec describes the difficulties in duplicating many of the capabilities of human eyesight and intelligence in machines; (d) Cesar Bandera and Peter Scott, "Machine Vision for Active Pursuit: The Foveal Alternative" in Journal of Electronic Defense (October 1991), pp 58, 66 (the authors note that nature produces sophisticated systems of its own) .

33. FM 6-20-10, p 1-2.

34. Headquarters, Department of the Army, Field Manual 34-130, Intelligence Preparation of the Battlefield (Washington, DC: US Government Printing Office, 23 May 1989), pp 1-1 to 2-3.

III. The Role of Irregular Forces in Diffuse Battlefield Operations.

35. David Evans, "Murphy's Laws of Combat" in Amphibious Warfare Review (Spring 1989), p 52.

36. The more extreme example is preplanned missions for fixed-wing strike packages. Requests from a corps headquarters normally must be

sent 24 to 36 hours prior to the air tasking day. Note that a corps relies heavily on US Air Force assets for the majority of those deep operations conducted well beyond the forward line of own troops. For example, see Tom Gorman, "Top Down Planning, the ATO and Close Air Support" in Air Land Bulletin (30 September 1991, No 91-2/3), pp 11-14.

37. Headquarters, Department of the Army, US Army Intelligence, Electronic Warfare, Target Acquisition Modernization and Master Plan (AIMP) (1989-2006), Vol I, Executive Summary (U) (Washington, DC: Deputy Chiefs of Staff for Intelligence and for Operations and Plans, 8 December 1988) (SECRET/NOFORN).

38. The Joint Chiefs of Staff, Joint Chiefs of Staff Publication (JCS Pub) 1-02, Department of Defense Dictionary of Military and Associated Terms (Washington, DC: US Government Printing Office, 1 December 1989). A comparison of the terms "conventional forces," "guerrilla warfare," "irregular forces," "resistance movement," "Special Forces," and "unconventionalal forces" found in this publication reveals their ambiguity and interchangeability. Note that Army publications use these same definitions; see Headquarters, Department of the Army, Field Manual 101-5-1, Operational Terms and Symbols (Washington, DC: US Government Printing Office, 21 October 1985) and Field Manual 100-20/Air Force Pamphlet 3-20, Military Operations in Low Intensity Conflict (Washington, DC: US Government Printing Office, 5 December 1990).

39. T. Miller Maguire, Guerrilla or Partisan Warfare (London: Hugh Rees, Ltd., 1904), pp 2-6. Some argue that modern guerrilla warfare actually saw its start during the American Revolutionary War; see Edward E. Hoffer, "Operational Art and Insurgency Warfare: Nathanael Greene's Campaign in the Carolinas" (Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 4 April 1988), pp 1-4.

40. Otto Heilbrunn, Warfare in the Enemy's Rear (New York: Frederick A. Praeger, Publisher, 1963), pp 171-72; T.E. Lawrence, "The Evolution of a Revolt" in Army Quarterly and Defence Journal (October 1920), pp 7-8.

41. Primary sources for this analysis were: (a) for the Middle East theater in World War I, T.E. Lawrence, Seven Pillars of Wisdom (New York: Penguin Books, 1986) and "The Evolution of a Revolt"; (b) for the Chinese Civil War, including the Japanese invasion, Mao Tse-Tung, Selected Military Writings of Mao Tse-Tung, trans. unknown (Fort Leavenworth, KS: Combat Studies Institute, 1990); and (c) for World War II, Heilbrunn, Partisan Warfare and Warfare in the Enemy's Rear.

42. Heilbrunn, Partisan Warfare, p 13. Heilbrunn states that in World War II, "guerrillas were never decisively beaten by regular armies. On the contrary, guerrillas usually managed to inflict considerable losses upon the opposing forces." Since then, the defeat of irregular forces has usually been very difficult, if at all possible, requiring the application of more than just military force.

43. Franklin Mark Osanka, ed., Modern Guerrilla Warfare: Fighting Communist Guerrilla Movements, 1941-1961 (New York: The Free Press, 1967), pp xvi-xix; Mao Tse-tung, pp 165-66.

44. Heilbrunn, Partisan Warfare, p 180. Mao envisioned irregular operations as a means to set the conditions for decisive action by conventional forces. Mao did not expect irregular operations to be decisive in themselves; instead, they were an economy of force measure to disrupt and attrit enemy forces. This is illustrated by Mao's three stages of revolutionary war. In today's Army doctrinal terms, these include the latent and incipient phase to build up an organization, the guerrilla warfare phase to set conditions for decisive action, and then the war of movement phase where conventional warfare predominates; see FM 100-20, p D-1. Also see Bellamy, pp 201-04.

45. Mao Tse-Tung, p 162.

46. T.E. Lawrence, Seven Pillars of Wisdom and "The Evolution of a Revolt," pp 3-4, 7, 13-22. (See also J.W. Hackett's introduction in Heilbrunn, Warfare in the Enemy's Rear, p 7.)

47. There are a number of brief theoretical treatments of irregular forces when used against enemy conventional forces and in support of friendly conventional operations. See (a) Heilbrunn, Warfare in the Enemy's Rear, pp 19-30, 95-111; (b) van Creveld, pp 300-01; (c) Bellamy, pp 201-04, 228-37; (d) Rod Paschall, LIC 2010: Special Operations & Unconventional Warfare in the Next Century (Washington, DC: Brassey's (US), Inc., 1990), pp 150-52.

48. This approach is certainly not a new one, but its feasibility has been questioned. In particular, see Simpkin, p 300-04. Simpkin takes the concept of light infantry teams deployed in a net through four increasingly extreme stages of development. In the early stages, these teams are still deployed to conduct direct-contact raids and sniper actions. As the net grows larger and the teams rely more on indirect fire support, he envisions this force as an "anvil of fire." In the most radical stage, a "universal net" is deployed over the entire area of operations, depending heavily on a local militia for manning. Simpkin does not discuss problems of fire control, unity of effort, or fratricide. Simpkin does believe that the less extreme versions of this "net" force concept is growing in acceptance.

49. Note that I am taking Mao's concept of a "net" beyond his original intent. Mao saw flexibility as the greatest requirement of irregular forces, and flexibility for these forces meant the ability to move at will. To Mao, the ability to disperse in order to increase coverage and protection had to allow the subsequent concentration of forces to quickly overwhelm smaller elements of the enemy's conventional force. Initiative sprang from this flexibility; see Mao Tse-tung, pp 157-67. Mao himself did not support my concept of homogeniety (see p 162).

50. TRADOC Pam 525-5, pp 15-17. the AirLand Operations concept recognizes that even on the operational-level nonlinear battlefield,

"linear operations will still be necessary; especially at the tactical echelon for particular periods of time or purposes, and at particular locations" [my emphasis]. The illustration of the extended battlefield on p 15 also shows an operational-level defensive orientation, with enemy units closing in on friendly dispositions to conduct decisive engagements.

51. At some time on a nonlinear battlefield, maneuver forces close with the enemy. This creates conditions at some level for linear formations which exhibit, at least temporarily, a frontline, flanks, and a rear. With this orientation, there is also a "deep" portion of the battlefield relative to this formation.

52. For a discussion of the concept of the commander's "directed telescope," see Gary B. Griffin, "The Directed Telescope: A Traditional Element of Effective Command (Fort Leavenworth, KS: Combat Studies Institute, July 1991), pp 1-2.

53. FM 100-5 (5 May 1986), pp 15-18 (AirLand Battle tenets), 173-77 (principles of war).

54. Simpkin, pp 94-106.

55. Liddell Hart's strategy of the indirect approach is described in detail in B.H. Liddell Hart, Strategy, 2d ed. (New York: Meridian, 1991), pp 319-60. Also see his foreword to Sun Tzu, The Art of War, trans. by Samuel B. Griffith (London: Oxford University Press, 1963), p vii.

IV. The Corps Raider Brigade Concept.

56. FM 101-50-1, p 1-59.

57. Headquarters, Department of the Army, Field Manual 100-15, Corps Operations (Washington, DC: US Government Printing Office, 13 September 1989), pp 3-0 to 3-2.

58. TRADOC Pam 525-5, pp 7, 33.

59. Crosbie E. Saint and Walter H. Yates, Jr., "Attack Helicopters in the AirLand Battle: Deep Operations" in Military Review (July 1988), pp 2-9. (At least one Army doctrinal publication deviates from the commonly accepted depth of 150 kilometers beyond the FEBA for corps deep operations. Headquarters, Department of the Army Field Manual, Long-Range Surveillance Unit Operations (Washington, DC: US Government Printing Office, 9 June 1987), p 1-2, states the corps long-range surveillance teams can operate up to 150 kilometers beyond the FLOT, rather than the FEBA.) Note that corps operations are often measured in terms of time, rather than space. A corps normally plans at least 72 hours into the future (FM 100-15, p 1-1).

60. The emerging concept of the ground maneuver brigade's extended close combat area is described in US Army Infantry School, "Infantry White Paper" (2d draft) (Fort Benning, GA: Concepts Branch, Combat Developments Directorate, 23 August 1991), pp 24.

61. The effects of physical and moral isolation are a major concern; see S.L.A. Marshall, pp 44-49. Also see Mitchell M. Zais, "Ardant du Picq: Unsung Giant of Military Theory" in Army (April 1985), pp 56-64.

62. CRB teams could provide real-time video links directly to commanders behind the frontline. This would let them to view every part of the battlefield beyond the FLOT in some detail.

63. One of the (publicized) great successes of special operations forces in the 1991 Gulf War was the seemingly innocuous task of Special Forces teams deployed far forward to determine the trafficability and soil composition of the ground over which VII Corps would travel.

64. Knowing "where the enemy is not" is particularly critical on the nonlinear battlefield and during high-tempo operations, when reaction in an unexpected direction may be impossible. It also reduces the success of enemy deception measures. See TRADOC Pam 525-5, p 16.

65. There are also a number of nontraditional stand-off weapons concepts which are emerging, including reentry strike munitions and boost-glide vehicles. Both have exceptionally long ranges (hundreds to thousands of miles), and the boost-glide vehicle could be designed to return after expending its munitions.

66. To improve command and control and to reduce the risks of fratricide, current deep operations control measures may have to be redefined, supplemented, or replaced. The FLOT may remain a delineating line between conventional forces and irregular forces. The CRB commander may be given an area of responsibility in which he controls the fight; this area may be bracketed by the FLOT and another modified control measure based on the fire support coordination line (FSCL), the reconnaissance and interdiction planning line (RIPL), or the deep battle synchronization line (DBSL). Note that not all of these control measures are commonly accepted at this time. Routes and passage points to and from coventional force lines would be another major challenge.

67. See, for example, (authors unknown), "Supply of Partisan Units during the War, 1941/45," trans. by A. Rosenwald, Manuscript # P-125 (Historical Division, Headquarters US Army Europe and reprinted by the Office of the Chief of Military History, Department of the Army), date unknown.

68. A truly unique idea is to use cruise missiles to deliver supplies (and even individuals) deep behind enemy lines with exceptional accuracy. This concept might be useful for limited resupply of a few critical teams or individuals, but currently it would be cost-prohibitive for sustainment of CRB. Substantial savings could be made if these cruise missiles

were designed to return at the end of their mission. See Paschall, pp 48-49.

69. FM 100-5 (5 May 1986), p 106 (offensive framework) and p 137 (defensive framework).

70. TRADOC Pam 525-5, p 11.

71. Ibid., p 15.

72. Ibid., p 15-25. Note the emphasis on a reconnaissance/surveillance combined arms force deployed by the operational commander in the shaping area; this force can be a truly mixed bag of multidisciplined and multi-echeloned units supported by indirect fires and air defenses (p 18). No mention is made of how to control and coordinate such a force over the extended ranges of the shaping area. A single theater-based raider unit (an operational-level version of the CRB) could carry out the same mission (p 19) and greatly reduce the problems of C3.

V. Analysis of the Corps Raider Brigade Concept.

73. Ibid., pp 1, 5, 8.

74. Ibid., p pp 5-6.

75. Infiltration is considered most feasible with forces of limited size and strength, "crossing in rough terrain and poor visibility, or in areas lightly covered by observation and fire." Movement, even of small teams, invites detection and engagement, an important theme of this paper. See FM 100-5, pp 103-04.

Appendix 1: Assessment of Current Light Forces.

76. Information sources for this analysis came from: (a) Headquarters, Department of the Army, Field Manual (FM) 7-8, The Infantry Platoon and Squad (Infantry, Airborne, Air Assault, Ranger) (Washington, DC: US Government Printing Office, 31 December 1980); (b) FM 7-10, The Infantry Rifle Company (14 December 1990); (c) FM 7-20, The Infantry Battalion (Infantry, Airborne, Air Assault) (28 December 1984); (d) FM 7-30, Infantry, Airborne, and Air Assault Brigade Operations (24 April 1984); (e) FM 7-70, Light Infantry Platoon/Squad (10 September 1986); (f) FM 7-72, Light Infantry Battalion (16 March 1987); (g) FM 7-85, Ranger Unit Operations (9 June 1987); (h) FM 7-93, Long-Range Surveillance Unit Operations (9 June 1987); (i) FM 31-20, Doctrine for Special Forces Operations (20 April 1990); (j) FM 100-25, Final Draft, Doctrine for Army Special Operations Forces (April 1990). The analysis is my own.

Appendix 2: Current Corps and Division Deep Operations Assets.

77. Tables are taken directly from FM 6-20-10, pp B-2 to B-7.

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