

1

DTIC FILE COPY

AD-A202 888

Airland Battle Doctrine

by

Douglas W. Skinner

S DTIC
ELECTE
DEC 28 1988
D & **D**

A Division of

CNA

Hudson Institute

CENTER FOR NAVAL ANALYSES

4401 Ford Avenue • Post Office Box 16268 • Alexandria, Virginia 22302-0268

DISTRIBUTION STATEMENT A

Approved for public release
Distribution Unlimited

88 12 28 012

Airland Battle Doctrine

by

Douglas W. Skinner

Strike and Amphibious Warfare Research Department

A Division of



Hudson Institute

CENTER FOR NAVAL ANALYSES

4401 Ford Avenue • Post Office Box 16268 • Alexandria, Virginia 22302-0268

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Army Field Manuals	2
Confusion Between AirLand Battle and AirLand Battle 2000	2
Evolution of AirLand Battle	3
The Post-Vietnam Era	3
The Starry Reforms	5
Soviet Weaknesses	6
Tactical Rigidity	6
Predictable Echelonment	7
Technological Inferiority	8
Principal Features of the AirLand Concept	9
Corps Perspective	11
The Operational Level	13
Decentralized Execution of Mission-Type Orders	15
Integrated Battle	16
Extended Battlefield	18
New Technology	21
Summary	26
Conclusions:	29
What is AirLand Battle?	29
FM 100-5, 1982 or 1986?	29
Relation to the Maritime Strategy	32
Battlefield Simulations	34
Notes	35
References	43



Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution	
Availability Codes	
Dist	Avail and/or Special
A-1	

INTRODUCTION

The purpose of this report is to provide an account of the historical development of the United States Army's AirLand Battle Warfighting doctrine. It is hoped that this account will provide a point of reference from which to view the Navy's maritime strategy and Marine Corps MAGTF doctrine.

In 1982, the United States Army promulgated a new warfighting doctrine. Dubbed AirLand Battle because of its purported emphasis on the full three-dimensional nature of modern battle (two land dimensions plus air warfare), it quickly became the center of a lively controversy that persists to the present. The controversy centers around the features that separate AirLand Battle from its predecessors. Both the detractors and supporters of AirLand Battle in the United States Armed Forces note its important shift from the traditional emphasis on tactics (as the key to the successful prosecution of battles) to a more operational focus involving the rapid movement of men and materials and the avoidance of decisive confrontations with the enemy [1].¹ AirLand Battle also emphasizes the future role of sophisticated technology as a key element in the modern approach to battle. This aspect has received the attention of members of Congress and the defense community, and has provided fuel for much debate among the members of these bodies. AirLand Battle's influence has also been propagated across the Atlantic to provoke a strong response from our NATO allies. They contend that it threatens to change the traditional defensive posture of NATO vis-a-vis the Warsaw Pact.

From the United States Army's own point of view, the general aim of its AirLand Battle doctrine in the European theater is multifold. It attempts to address the problem of flexible response to "... Soviet/Warsaw Pact numerical advantages in tanks, artillery, aircraft, armored personnel carriers and soldiers" [2]. Also, given the details of Soviet doctrine and strategy, AirLand Battle is believed to be a more realistic and effective concept--one that regards a future war with the Warsaw Pact as winnable. But more generally, this concept addresses the fact that future wars will probably be fought under diverse situations of varying levels of sophistication [3], ranging from the modern mechanized battlefield employing nuclear and increasingly lethal conventional weapons, to guerrilla warfare. Fundamentally, the doctrine is based on the putative notion that the common denominator for all future warfare, even in the Third World, will be an unprecedented potential for destruction and an increased tempo of events.

Logistical demands and consumptive requirements of future battles will be unprecedented. It is estimated that an "... armored division of M-1 Abrams tanks, will consume 450,000 gallons of fuel during each day of sustained combat in a typical NATO battle scenario" [4]. This is to be compared with the daily consumption of 350,000 gallons of fuel for Gen. Patton's 3rd Army, consisting of 13 divisions, 5 of which were

armored [4]. It is further estimated that modern divisional requirements for ammunition alone will reach some 3,000 tons per day of combat [4, 5, 6].² This is the tip of the iceberg forming only part of the requirement for the ground component alone. By these modern standards, World War II consumptive levels seem frugal indeed. Therefore, the efficient and economic deployment of these resources is another issue of central importance.

Army Field Manuals

The official statement of the AirLand Battle doctrine is contained in the Army Field Manual, FM 100-5, *Operations* (1982) [3]. A revised version of the manual released in 1986 contains a restatement of the doctrine [7]. These manuals are fully comprehensive, covering all aspects of army operations, ranging from a description of the Army and how it fights, through defensive and offensive operations, to combined operations with NATO and the indigenous forces of other areas. The manuals also contain appendices on the general principles of war. Many of their illustrations take into account the situation in Central Europe, but as a whole, both versions represent a general guideline for carrying out Army operations anywhere. Many of the same principles would be expected to apply in, say, Asia or the Middle East. The manuals use the lessons of history and past campaigns to illustrate tactical and operational principles (see [8]). In the 1982 version [3], for instance, part two (Offensive Operations) starts out with a description of the battle of Vicksburg. This no doubt reflects Lieutenant Colonel Huba Wass de Czege's (the manual's principal author) preference for historical illustration, plus his conviction that successful armies are those that can achieve a harmonious balance of the "fundamental triad" of soldiers, weapons, and doctrine, the underlying principles of the latter to be drawn from historical examples.⁴

Confusion Between AirLand Battle and AirLand Battle 2000

A review of the literature on AirLand Battle reveals some confusing terminology. For example, there is confusion between the concepts of AirLand Battle 2000 and AirLand Battle. The differences between the two should be made clear at the outset.

AirLand Battle is outlined in [3] and concerns the development of doctrine to meet the conditions of the modern battlefield. AirLand Battle 2000 is the application of AirLand Battle doctrinal principles to take full advantage of future technology that is expected to come "on line" between now and the year 2000.⁵ Much of the criticism leveled at the AirLand concept that centers around the deficiency or nonexistence

of the necessary weapons and intelligence-gathering systems appears to be a result of misunderstanding this difference. AirLand Battle is the current Army doctrine that relies on capabilities as they now stand:

At the tactical level, the US Army's current AirLand Battle doctrine would be extended a stage further by AirLand Battle 2000 in which the full potential of acquisition, targeting, and weapons systems is realized to attack the enemy deep in his rear ... [9].

EVOLUTION OF AIRLAND BATTLE

The Post-Vietnam Era

AirLand Battle does not reflect a mere change in fashionable thought. Rather it is a reflection of the profound changes that have occurred in the U.S. Army during the post-Vietnam era. In spite of the many criticisms that have been leveled at the course these changes have taken, the U.S. Army over this period found itself tasked with the monumental job of resurrecting an effective fighting force from the ashes of physical depletion and psychological defeat at a time when the Soviets had made huge gains in their conventional and nuclear forces. When the Army finally did begin to lift its head from the smoky confusion of Vietnam and turn its attention to Central Europe, it found the situation there daunting--to say the least.

The writers of doctrine at the time were correspondingly affected, for the Vietnam era, in addition to depleting its numbers and physical resources, left the Army in a doctrinal vacuum. The Army (not to mention the other branches of the Armed Forces) had become so obsessed with a war that it had fought so long in Vietnam that it forgot the challenges it still faced in Central Europe and elsewhere in the world. Officer training and military and doctrinal theory were, over the years, distorted by the exigencies of the war. The post-Vietnam era also bore ill omens for the future in the form of steadily declining defense budgets, and it looked as though the anticipated force improvements would not be soon coming. Indeed, the air of pessimism that this state of affairs engendered was great. The low point may have been reached when murmurs surfaced that seriously proposed that "... the Army in Europe posture primarily to facilitate its evacuation in the event of war" [10].

As a result of all this, the Army found itself saddled with a doctrine of "active defense" promulgated in the 1976 version of the Army Field Manual [7]. This doctrine proffered the bleak notion of fighting to win a draw. Just as the French had found themselves at the turn of the century trying to shed themselves of a demoralizing and confining defensive doctrine (which resulted from the pessimism engendered by their defeats in the Franco-Prussian Wars), so too the U.S. Army found its active defense doctrine unpalatable. Within five years, efforts at

revision were underway, which culminated in the 1982 edition of the Manual [3]. It was also a propitious time for defense budgets, starting with the increases under the Carter administration and their cresting during the early 1980s under the first term of the Reagan administration.

It is not surprising that during the post-Vietnam era the U.S. Army believed it was facing a serious challenge. In the wake of its renewed awareness of the Soviet threat and its portents for the future, there began to surface the question of whether the Army should consider overhauling its doctrine and strategy for a European battle. NATO had since the late 1960s acknowledged the need for force modernization and some kind of "flexible response" strategy.

During the Vietnam period, as has been pointed out, a large fraction of defense resources had been diverted to the war effort and force modernization had been put on "the back burner." Any attempts to address the situation in Central Europe would have to be accompanied by a comprehensive modernization program. Initially, this was not forthcoming. The Nixon administration, and later the Ford administration, was reluctant to push Congress for increases in defense spending at the same time as things were winding down in Vietnam. By 1973, however, Dr. James Schlesinger, as Secretary of Defense, acting somewhat independently of his administration, began to spearhead the push for "coherent force improvements" [11].⁶ Within the Army, the accession (in 1973) of Gen. William E. DePuy to the head of (TRADOC), generated a flow of new ideas on doctrinal issues, which culminated in the 1976 version of the Army Field Manual [7a]. This manual hailed the commencement of a significant departure from the traditional Army concept of battle. It recognized that modern battles were likely to be more destructive and faster-paced than previous wars. Thus, on page 6 of Romjue [1], emphasis was placed on "better training, suppressive tactics, terrain use, and combined arms coordination to counter increased lethality of weapons of the 1970's." The manual also initiated the study of possible organizational changes within the army, and such studies are being carried out at the present time.⁷

The 1976 manual had a primarily defensive emphasis, focusing on thwarting the "Soviet operational breakthrough maneuver" (p. 7 of [1]). To achieve this, the manual advocated placing as much firepower as possible against the assaulting forces along the forward edge of the battle area (FEBA) and the abandonment of tactical reserves (i.e., the "pile on" of forces at the breakthrough points). This emphasis was especially critical at the divisional level, where it was thought that holding a brigade in reserve would thin out forces repelling such a breakthrough and lead to defeat. The manual stressed the idea of the "Soviet breakthrough operational maneuver" [1] and the "pile on" of forces at these points. While acknowledging the need for an integrated approach to the use of firepower, the manual fell back on the traditional concepts of attrition and terrain-oriented warfare [1]. The

manual also took note of the political ramifications peculiar to the European scene, which accounts for the defensive tone. The unacceptability, to the Germans, for instance, of a trade off of space for time was just one of the encumbrances the manual strove to accommodate. That served, perhaps, to create a framework wherein the existence of such well-defined battlelines was taken for granted.⁸

These features were to serve as targets for much of the criticism leveled at the manual--some feeling it was too "pessimistic" in its outlook [12]. Of particular concern was the previously mentioned doctrinal advocacy of the abandonment of tactical reserves. As pointed out by its critics, the reliance by the Soviets on the principles of mass and maneuver [13] (for example the OMG concept⁹), the "checkerboard" character of the battlefield, the long logistical lines, and the importance of rear areas make the holding of forces in reserve even more critical than in earlier times.¹¹ Certainly the Germans, during World War II, demonstrated the importance of tactical reserves, maintaining them even in the face of reverses in the latter part of the war. This policy enabled them to carry on for perhaps a year or more than otherwise might have been the case. The Russians themselves were able to defeat the Germans in large part due to successive waves of reserve formations fed into the battle area.

Another point of contention was the doctrinal acceptance of a defense that would involve a lateral shifting of forces. This tactic was perceived as especially dangerous in the presence of a highly mobile threat that could easily exploit the voids left behind. Finally, the doctrine was perceived as being too narrow in its focus on war in Central Europe. The existence of "hot spots" in various parts of the world, terrorism, and guerrilla warfare, meant that battle might be carried out on a diverse range of terrain and against a panoply of enemy characteristics.

The Starry Reforms

In spite of its perceived defects, the new manual set in motion a lively debate and provided the backdrop for further change. The year 1977 ushered in the next set of changes, when Gen. Donn A. Starry assumed command of TRADOC. In response to the Soviet emphasis on mobility and firepower, he revised Army doctrine and introduced a new orientation based on maneuver and firepower. The failure to address the echelonment of Soviet forces into so-called "second echelons" was considered by Gen. Starry to be a major shortcoming in the 1976 version. He set about to remedy this defect by bringing an additional doctrinal emphasis on the early interdiction of follow-on forces. Electronic warfare (EW), electronic countermeasures (ECM), intelligence collection, enemy detection, and deception were brought to the fore as major elements of modern doctrine. Mindful, too, of the Warsaw Pact's purported willingness to use chemical and nuclear weapons, which the earlier version had sidestepped, he considered the tactical use of these

weapons a significant doctrinal issue that would have to be addressed in revising the older document. Of course, such warfare had only recently been a politically sensitive and socially unacceptable topic for consideration. By the late 1970s, however, it was thought that the mood of the American public and politicians had changed and that it was again time to take up the issue for public debate as had been done in the 1950s. Thus, the types of possible threats (especially in the Third World, which was carrying out its own arms buildup of increasingly more sophisticated weapons) meant that the revised doctrine had to be more general than its predecessor. This belief has led to a tangible result in the now on-going development of the controversial Army "light" divisions and a high-technology division (the nucleus of which will be the 9th infantry division). Finally, whereas the earlier version had eschewed theory in favor of concrete ideas centered around the land battle in Central Europe, it was thought by Starry and others that important lessons could be learned from historical examples and the study of the doctrinal precepts of other countries, most notably the Germans in World War I and World War II, and, of course, the Soviets.

Soviet Weaknesses

By 1981, the "pessimistic" color of the earlier manual had been changed to a more positive stance that sought to analyze and exploit Soviet/Warsaw Pact weaknesses. Some of these weaknesses were perceived to be the following:¹²

- Tactical rigidity
- Predictable echelonment
- Technological inferiority.

Tactical Rigidity

At the division level and below, detailed battle plans are expected to be followed closely, with no opportunity for revision or elaboration. Thus, it is believed that once set in motion, Soviet forces will follow more-or-less predictable lines of action [15]. Tactical rigidity results partly from a rigid overly centralized system of command and control, and partly from an endemic obsession with organization and planning in all governmental activities (see pages 60-61 of [19]).¹³ Characteristic of their command and control system is that it attempts to retain direct control over the smallest details of military operations. This was evident in the plodding meticulousness of Soviet operations during World War II, and there are signs that their tendency to "micromanage" has persisted in their recent invasion of Afghanistan. In addition, the Communist party has direct inputs¹⁴ to the military command and control system, reinforcing this tendency, as well as adding strong ideological flavor to strategic and tactical decision-making.

This plodding is in stark contrast to their doctrine and plans that emphasize seizing the initiative and executing complex, highly mobile operations that continuously exploit changing circumstances and enemy weaknesses. Such planning evidently demands highly motivated, able subordinates who can act somewhat independently of their commanders and who are allowed to execute mission-type orders without constantly seeking approval from above. But there is little in the Soviet military system that encourages such independence, while there is much that promotes submissiveness to authority and the elimination of risk taking. Soviet military leaders have long been aware of this contradiction, but there is little evidence they have been able to effect a resolution.

A final factor that reinforces rigidity is the realization by the Soviets that any battle with the West must be brought to a quick and decisive (and they would hope favorable) conclusion. Time is on the side of NATO, as they are well aware, and the Soviets will seek to deny it the opportunity to use nuclear forces in retaliation, or to build up supply lines with the United States. From the Soviets' point of view, there will be no room for half-measures or partial victories, and commanders will be under pressure to produce victories. Thus, even with bold and adventurous plans, their commanders may be ill prepared to take the necessary risks and thereby face the possibility of defeat. Given significant reverses, Soviet commanders will be strongly motivated to fall back on strongly defended positions and sacrifice previously acquired advantages [20].

Predictable Echelonment

The concept of Soviet second-echelon forces is somewhat different from the concept of a reserve force, as generally understood in the West. Unlike the American concept of tactical reserves, for example, second-echelon forces will be given a preassigned mission and will be structured accordingly. The U.S. concept of reserves, on the other hand, is one in which forces have their missions determined on a contingency basis. Furthermore, the echelonment of Soviet forces extends down through all levels of command. Thus, there will be second-echelon (and sometimes third-echelon) armies, divisions, brigades, and battalions. Typically, a commander will employ anywhere from one-half to a third of his total force as a second-echelon force (see p. 21 of [21]). Echelonment of forces will also be determined by considerations of terrain and the NATO nuclear threat (p. 29 of [22]). In the Central European area, with its terrain of mountains and valleys, the corridor for an offensive push may be only a few kilometers wide, limiting Soviet options and thus the form of any forward advance. Finally the threat of nuclear war has caused the Soviets to focus on highly mobile, detachable fighting units that can be dispersed to minimize loss in the case of a nuclear exchange.

Technological Inferiority

Although the Soviets have made significant advances in the sophistication of their weapons, they still lag behind the West. As Jeffrey Record puts it (pp. 87-90 of [18]):

Much has been made in recent years of the success the Soviet Union has enjoyed in eliminating, and in some cases surpassing, long-standing Western qualitative advantages in conventional weaponry, especially in those technologies associated with the land battle--armored fighting vehicles, antitank weapons, artillery, armed helicopters, and battlefield air defenses. There is no doubt that the once-marked margin of technological superiority upon which the West for so long relied as a means of partially offsetting the Soviet Union's advantage in numbers has been significantly narrowed during the past decade and a half.

On Balance, however, the Warsaw Pact remains technologically inferior to NATO, despite a rather casual and often inadvertent transfer to the Soviet Union of Western technologies suitable for military application. This inferiority is particularly notable in technologies associated with warfare at sea and in the air, and with advanced conventional munitions and their delivery.

Many of the participants in the debate over to what extent the Soviet Union lags behind the West, and how decisive it is as a factor in determining the strategic balance, seem to have ulterior goals that are unrelated to either of these questions. In the U.S. there exists a strong pro-defense lobby composed of individuals in the defense industry who have a vested monetary interest in funding high-cost items of new technology. This is not to say that such motives cannot be combined with a genuine desire to protect the U.S. from its enemies. Nor is it being suggested that there are not individuals for whom this latter desire is the only consideration. But, clearly, a considerable momentum is generated by the large appropriations involved and such considerations only serve to cloud an already complex issue. In addition, within the defense community, there are those who believe that the U.S. should "return to basics," that more and bigger is not necessarily better. In addition, there is a vocal community of those, who for ideological reasons, are strongly opposed to any defense expenditure or procurement beyond what is "absolutely necessary."

To prove their respective points, both sides often rely on a qualitative comparison between the various classes of weapons and weapons systems, but the sheer diversity of U.S. and Soviet forces and weapons makes such assessments difficult. A comparison of the characteristics of, for instance, Soviet fighters with American fighters does

not necessarily lead to the unambiguous conclusion that one is superior to the other. Both the U.S. and the USSR perceive their defensive and offensive needs differently, which is bound to have an effect on design and use. Further, while one plane may be faster, the other may be more maneuverable, or have a greater range. It is difficult to add up the mix of different characteristics and uses and weigh them as a lump. Again, the sheer diversity of weapons to be compared further compounds this difficulty--little wonder the debate goes back and forth on this subject. Also, much of the technology that has been developed is untested under actual wartime conditions.

There are some general indications, however, that suggest the West still possesses a technological advantage. The basic physical infrastructure of the Soviet Union is plagued by poor communications, the lack of a good network of roads (especially those connecting east to west), limited rail transportation (again severely limited along east-west routes), and the overall shoddiness of produced goods (although an exception occurs in military items, which seem to be of significantly higher quality). None of these deficiencies signify the high level of technology enjoyed in the West. Further, it cannot be doubted that the transfer of technology is from the West to the East and not the other way around. Also, many Soviet weapons are little more than close replicas of those in the West. An example of this is afforded by the Soviet Su-24 Fencer A, which is basically a copy of the U.S. F-111. The Soviet advantage still seems to lie in the quantity and diversity of their forces and their willingness to allocate increasingly larger portions of their gross domestic product to defense purposes.

In retrospect, it is evident that the technological gap between the USSR and the West has been significantly narrowed over the past 25 years. And it is not clear that the gap that remains will be decisive in the event of war. Nor is it obvious that the West's technological lead will be widened and the Soviet advantage offset by increasing Western reliance on more sophisticated and more costly weapons systems. As stated in the introduction of this paper, however, the difference between current doctrine and AirLand Battle 2000 is primarily one of the technology of the future versus that of the present. The technological inferiority of the Soviet Union is a perceived weakness and the groundwork is being laid to exploit it.

PRINCIPAL FEATURES OF THE AIRLAND CONCEPT

Unlike its predecessor, Active Defense, AirLand Battle is not the result of a doctrinal vacuum. AirLand Battle represents an attempt to achieve a balance between the factors of maneuver and firepower, the mix of nuclear and conventional tactical weapons, high technology and modern concepts of logistics, and finally, though perhaps implicitly, the divisive tendencies naturally present between member states in any coalition. Some argue that, in its essence, the doctrine is merely a

return to the fundamental principles of war [10]. Certainly, as mentioned previously, its authors intended to learn the lessons of history and made considerable use of historical illustration. Briefly, the principles of war as listed in [3] are:

- Objective
- Offensive
- Mass
- Economy of force
- Maneuver
- Unity of command
- Security
- Surprise
- Simplicity.

The lineaments of AirLand doctrine derive not only from the lessons of past campaigns and battles, but also from an examination of today's world situation. Particular emphasis has been given to countering the sweeping changes that have taken place over the last two decades in the Soviet military machine. The Soviets since World War II have concentrated their thinking on mobile operations, and this is reflected in the current structure of their armed forces.

The Soviets believe they must act quickly and decisively to bring the war with the West to a rapid conclusion. This is to be achieved in large part by the introduction of highly mobile forces and sophisticated command and control. In part, the AirLand concept attempts to solve the problem of Soviet mobility by developing operational guidelines that allow for a correspondingly greater U.S. Army (and, it is hoped, NATO) mobility. The concept recognizes that, in the face of highly mobile forces of increasing lethality, the traditional linear battleline will be superseded by mutually interpenetrating forces in what has come to be called the *nonlinear* battlefield. The concept also places a great deal of emphasis on air assault. As it currently stands, the deep-attack concept is largely dependent on airpower. This dependence is primarily because many of the requisite weapons systems and electronic sensing devices are currently under development (or not widely available). Also, dependence on air power seems to be due to a seemingly intrinsic inability of the military to generate enthusiasm for conventional, ground-based weapons. The AirLand concept, however, looks forward

beyond current levels of technology and the lack of availability of the necessary equipment. It seeks to be "self-modifying" as new systems come on-line. AirLand Battle has the following principal characteristics:

- Corps perspective
- Operational art and maneuver warfare
- Decentralized execution of mission orders
- Integrated battle
- Extended battlefield (both in space and time)
- Reliance on new technology.

These characteristics express, in turn, the following four basic principles, as found on p. 7-2 of [3]:

initiative, the ability to set the terms of battle by action ... *depth*, refers to time, space, and resources ... *agility* means acting faster than the enemy to exploit his weaknesses and disrupt his plans ... *synchronization* combines economy of force and unity of effort so that no effort is wasted

Corps Perspective

The history of the Army Corps over the last 40 years or more has been one of continual changes. The status of the corps unit has varied from being one of central importance, as was the case in World War II, to the elimination of many of its functions in favor of a divisional emphasis. In fact, as a consequence of the Mobile Modern Army Study (MOMAR) conducted during the latter part of the 1960s, it was proposed that the corps echelon be eliminated altogether. Many of the changes took place in response to the new conditions that were expected to prevail on the nuclear battlefield. Under such circumstances, it was thought desirable to have an Army based on smaller, dispersible, self-contained forces with a high degree of mobility and independence. This latter period culminated with the formal disestablishment of the corps artillery headquarters and headquarters battery in 1977. Other functions, such as support, have at various times been handed over to divisions. Thus the Corps Support Command (COSCOM) was disbanded in favor of divisional support command (DISCOM), making the corps little more than a tactical command and control headquarters [23].

The architects of AirLand Battle doctrine revived the corps as the principal echelon for fighting campaigns at the operational level. Such a vantage point combined the need to prevent or delay a Soviet breakthrough by providing a counterforce (i.e., the corps in its ability to "pile on" divisions as envisioned in the Active Defense doctrine) of sufficient size to counter the Warsaw Pact's initial assault echelons, with a fighting unit possessing the full complement of organic assets and yet small enough to be consistent with the goals of maneuver warfare. The corps level is the smallest organizational unit that has organic intelligence demanded by maneuver warfare. The corps is also the smallest unit directly controlling warfare at the division level--the basic maneuver units of AirLand Battle. Traditionally, the battalion has been the fundamental tactical unit, and it still figures prominently in this regard. Battalions are the principal ground-occupying unit--but they have no organic firepower. Because AirLand Battle seeks to achieve a balance between firepower and maneuver, the natural echelon that can combine centralized command of artillery fire important for the former and the intelligence organization necessary for the latter is the corps. In particular, the control of artillery needs to be such that its command and control can be centralized in the defense and decentralized in the offense. Having corps artillery (in addition to divisional artillery battalions) makes this possible.

The corps also serves as a natural focal point for the distribution of air power. As things currently stand, air power will still be under centralized control by the Air Force. The distribution of air power to the corps commander is an attempt to allocate a portion of this asset in support of land operations, which require a greater dispersal among a variety of targets. Strategic targets will still be under the sole jurisdiction of the Air Force.

The corps is central to logistics. Support will be delivered directly to the corps from the Theater Army Headquarters (TAHQ). The corps logistical unit is the Corps Support Command (COSCOM), which is in turn composed of a Material Management Center (MMC) and a Movements Control Center (MCC). COSCOM will address itself to the specific mission of the corps and orient support to its tactical situation and geographic area (see pp. 7-14 of [24]).

The corps is more than a distribution point for resources. Corps commanders will wage campaigns at an operational and tactical level, including the control of reserve forces and nuclear weapons that could affect the outcome of the campaign. Divisions, on the other hand, will fight battles at the tactical level, receiving interdivisional and general support through corps headquarters. The corps commander is the chief architect of these campaigns, and he defines areas of interest and influence (which are further subdivided at the division level and below). In Central Europe, it is possible that several concurrent battles will have to be fought in varied terrain and under different circumstances. Thus, engagements will occur with enemy first echelons

as well as echelons designed to interdict follow-on forces. An overall perspective of the battlefield is needed wherein a good vantage point can be found. Further, NATO national forces are arrayed in corps units, so that the operations of forces other than those of the U.S. will be carried out at this level as well.

The Operational Level

The focus on warfighting as an operational endeavor has been said to be new for the U.S. Army, although its significance has long been recognized [25].¹⁵ It is to be contrasted with more popular notions of the levels of military planning involving tactics and strategy alone. AirLand doctrine considers operational planning as a third level of war, included between the strategic and tactical levels. Briefly, operational planning deals with how position, tactics, and logistics are to be combined in large unit operations to implement strategic goals. As a result, it (as with the strategic level) is generally carried out at the higher levels (corps and army) of command--tactical decisions will generally be made at all levels. Operational plans are usually set relatively far in advance of the times when they are to be executed, while tactical actions tend to take place in within the limits of "real time."

To gain further insight as to what is meant by the operational level, it is helpful to consider the definitions of military strategy and tactics. Military strategy has been defined by the Joint Chiefs of Staff [26] as:

The art and science of employing the armed forces of a nation to secure the objectives of national policy by the application of force or the threat of force.

Thus, military strategy addresses the largest goal of the armed forces: the implementation of national policy. Military strategy in turn is only a part of overall national strategy, which may include political and economic factors as well. Tactics, on the other hand is defined [26] as:

1. The employment of units in combat. 2. The ordered arrangement and maneuver of units in relation to each other and/or to the enemy in order to utilize their full potentialities.

Tactics may include considerations as simple as the placement of single infantrymen on the battlefield and range to the use of entire armies. However, after a decision has been made as to what is to be done, another has to be made on how to do it. This is where the operational level comes in. As a middle level, some of operational planning will closely resemble strategy, while, at the other end, it may also be of a tactical nature. Parts of operations can be planned in advance, while

others will be decided by the situations that arise on the battlefield. Previously, in U.S. Army planning, operational considerations were generally subsumed into strategic and tactical thinking¹⁶--receiving little attention as a separate phase of planning. The Soviets, on the other hand, as a result of their experience with the Germans in World War II, have long recognized the importance of operational considerations. The change, over the last couple of decades, in the military balance in Europe, as well as U.S. experience in Korea and Vietnam, has caused the U.S. Army to rethink doctrine in such a way as to place greater emphasis on operational considerations. One consequence of this is, as the AirLand Battle and AirLand Battle 2000 concepts suggest, that, in the future, weapons systems will be designed with operational tasks in mind. Another consequence, is that organizational changes will have to be "tailor made" to perform these tasks. Again, the Soviets have been aware of this for some time and have already instituted major organizational changes to accommodate their operational and forward maneuver groups [14].¹⁷ As for the U.S. forces, in the past operational planning, by being implicit, was determined by the preexisting organization and weapons available--the weapons themselves being designed from a tactical point of view.

Another aspect of military operations is logistics, including supply, maintenance, transportation, and field services. AirLand Battle addresses logistical issues in general terms. Because AirLand Battle is concerned with warfighting doctrine and not tactics or strategy, the specific details of how to implement its guidelines are left for further development. Shadley [24] carried out a detailed study on sustaining the AirLand Battle. He concluded that, qualitatively, the problems of sustainment are not significantly different from previous wars. The difference lies in the quantity of materiel that will have to be supplied.

The importance of maneuver within AirLand Battle is one example of the greater challenge posed to logistical planning and will place greater demands on all resources. This is especially true given the "nonlinear" battlefield on which operations will be performed.¹⁸ Enemy forces are likely to be interspersed with those of friendly forces.¹⁹

Under the AirLand concept, logistical doctrine must embody the general principles of initiative, depth, agility, and synchronization. This last principle (synchronization) is in large part the responsibility of the corps and division commanders, through COSCOM and DISCOM, respectively. Synchronization is the reintroduction of corps-level support and corps objectives to determine the kind and direction of logistical support that is characteristic of AirLand Battle. Under previous doctrine, with its divisional perspective, the functions of the corps-level support command were subsumed by the division element (DISCOM). The Army now maintains seven types of division, however--armored, mechanized, motorized, infantry, light infantry, airborne, and air assault--and modern battles will be fought with one or more of

these. The corps commander, therefore, with his operational perspective will ensure close cooperation between the diverse and competing demands of his divisions.

Much logistical thinking will concern supporting units involved in deep attack. The primary difference here is that the traditional logistical doctrine in which materiel is delivered from static supply points behind a protected and slowly changing front will need to be modified. AirLand doctrine brings to the foreground the idea of *forward support maintenance*. With ground units deployed far behind enemy lines, support and maintenance must accompany them. This is embodied in the concept of *direct support*, which requires support to be extended to all areas of the nonlinear battlefield, including the deep battle area. Logistics items will have to be "sold" (i.e., logisticians cannot wait in centralized areas for commanders to come to them; instead, they must keep the commanders informed as to what is available and ensure delivery in a timely fashion).

Maintenance support may well involve a variety of ad hoc measures that can be directly performed where operations are taking place--such as on-site repair involving the removal of serviceable parts from unserviceable equipment (*controlled exchange*), cannibalization, and scavenging from enemy equipment. This support is in addition to traditional support that originates from the main points and that can be carried out with less urgency.

Some specifics cited by Shadley that will improve the logistics on the AirLand Battlefield are the following:

- Host nation support and logistics civilian augmentation program (LOGCAP)
- Emphasis on antiair defenses to protect logistics elements and installations (one of the reasons for developing the now-defunct Sergeant York air defense system)
- Increased emphasis on night operations, including increased use of night-vision devices
- Overseas deployment of civilians from CONUS-based depots.

Decentralized Execution of Mission-Type Orders

Decentralized execution of mission-type orders is another feature that figures prominently in the AirLand Battle concept. It would not be accurate to interpret this to mean that the chain of command has been broken down. Rather, each commander is expected to continuously monitor his sector of the battle area for possibilities that can be exploited [8, 13, 28].²⁰ It is recognized that in a chaotic situation such as war, orders from above may not always be available. Therefore, each

commander is expected to act somewhat independently of the higher levels of command. In comparison with past wars, De Czege [8] writes on page 41:

Functions performed at comparable levels in a modern army differ vastly from those of Alexander or even of Napoleon and also to a significant degree from those armies which fought World War II. Decisions about maneuver that leaders such as Alexander or Napoleon reserved for themselves are now made by battalion, brigade, and division level commanders. The dynamic nature of modern battle and the sweep of terrain encompassing the operations of modern formations, resulting from the modern machines of war, require today's junior officers to acquire the perspectives of generals of earlier days.

Thus a major or a captain (and perhaps even officers of lower rank) might be required to function in a way reserved for a general in times past. Of course, he must be continuously supplied with intelligence and must thoroughly understand the objectives that are being sought, not only at his level but at higher levels as well. This naturally puts a greater obligation on a leader to be as clear and as frank with his subordinates as possible. There is a very fine line here that separates initiative from chaos.²¹ In the former, commanders at all levels are expected to be innovative, aggressive, and cooperative in their efforts to seize and maintain the initiative--to deprive the enemy commander of choices. It is easy to see how, in the absence of such cooperation, things could degenerate and the latter would arise. Given the extreme circumstances of war, the different levels of command and fighting elements would begin to work at cross purposes. The answer provided to avoid this pitfall is to assert the importance of training, through which ultimate goals are inculcated. Soldiers must be extensively trained and trained as "cohesive units".²²

It is thus thought that the complexity of modern war raises the performance requirements of soldiers as well as weapons. Training is costly, however, and funding will have to be provided at the expense of other areas. Nonetheless, in consideration of the fundamental triad (not to be confused with the strategic triad), it is thought that money spent on training soldiers to implement the AirLand doctrine will be no less a worthwhile investment than money spent on weapons.

Integrated Battle

Integrated battle is a term that emerged in the early discussions of AirLand Battle doctrine, before the formal release of FM 100-5 [3] in 1982. Its use suggested a unified approach to battle that involved several concepts, including joint operations, combined arms, unity of effort, and the possible use of tactical nuclear, chemical, and biological weapons. In the integrated battle, every asset at the

commander's disposal is employed to achieve defeat of the enemy. The term has been subject to misinterpretation over the last few years, some believing it to be synonymous with the casual use of tactical nuclear weapons [10]. And indeed, FM 100-5 is not specific on where the nuclear threshold lies. However, the term "integrated battle" is a useful term to denote the concept of a unified war with unified goals and will be used in this report. It is a term that encompasses a number of principles that are not important enough to itemize separately in this report but that constitute a group of ideas that commanders should keep in mind.

Integrated battle is not mentioned explicitly in FM 100-5. The term embodies the notion that only one battle is being fought and that battles will have to be fought in a coordinated fashion along the lines of "a clearly designated main effort" [3]. In this sense, integrated battle is just the principle of synchronization--"the concentration of actions in time."¹⁰ But the scope is quite large, extending over the complete range of activities associated with the war effort. Thus, integrated battle affects logistical thinking and means that priorities will have to be set for the limited resources. It also means that the allocation of various force assets available to the commander, such as air power and artillery, will also have to be ranked according to the nature of the target.²³ At all levels, resources will be scarce.

Integrated battle is distinguished from synchronization because the integrated battle will be fought, if necessary, with all available assets, including nuclear, chemical, and biological weapons. The direct manner in which the tactical (as opposed to strategic) use of these weapons is mentioned in FM 100-5 represents a radical departure from previous doctrine, which, as has been mentioned, sidesteps the issue. From the NATO point of view, this was one of the most controversial features of AirLand Battle when it first appeared in 1982. It is important to note, however, that tactical use of nuclear weapons is generally associated with the deep battle far away from friendly territory.

The integrated battle, in the sense of economy of effort, is applied through all levels of battle. It is the corps commander, however, who determines the operational plan of action, striking a balance between providing directives detailed enough to ensure the objectives of the plan are pursued and yet allowing division commanders enough flexibility to seize the initiative in their separate battles. In the integrated battle the corps also serves as the focal point for the upward flow of intelligence from the battlefield. It is also at this level where tactical intelligence meets national intelligence. The two are analyzed together, and the corps commander makes decisions supporting the efforts of his divisions. In this sense, information is also "integrated"--at the corps level.

Implicit in the integrated battle is the concept that winning separate subengagements, even though they may involve the defeat of large combat units (such as an army), will not guarantee the ultimate victory that is being sought. AirLand Battle adopts the Clausewitzian notion of war being simply another means by which governments achieve political aims, by recognizing that the final outcome of a conflict may involve factors (such as political or economic) that are remote from military engagement. On the military level, this means that efforts should be directed only to those areas that provide the shortest route to the attainment of the goal. Thus, a particular combat element may have to sacrifice or postpone some of its objectives to provide assistance in achieving a high-priority objective. For the Air Force, this means functioning in more of a support role for land operations. For the Army, it will require the maintenance of corps-level reserves, artillery, and tactical nuclear weapons and the sacrifice of a certain amount of divisional autonomy.

Finally, the concept of integrated battle in AirLand Battle, as opposed to synchronization alone, implies balance. It recognizes that reliance solely on maneuver, on synchronization, or on firepower may not take into account the hard realities such as the quantity of opposing forces and their firepower, the terrain, and the difficulties in command and control associated with large fighting forces using sophisticated technology. In AirLand Battle, maneuver, synchronization, and firepower must all be integrated.

Extended Battlefield

The nexus of the AirLand "warfighting paradigm" [8] is the *extended battlefield*. This is also the most controversial of its features, as it includes the notion of deep attack. The concept of "extended battlefield" has been greeted with considerable skepticism from NATO commanders and European defense ministers. They believe it changes the character of the NATO stance with respect to the Warsaw Pact from a defensive character to one overtly offensive. It has been noted by many critics [29] that NATO strategy already embodies the essential features of the extended battlefield in its follow-on forces attack (FOFA) doctrine. These critics believe that NATO, with the FOFA concept, already has the flexibility to carry the battle to whatever point is necessary to achieve victory. Advocates of the NATO doctrine argue that the U.S. Army/Air Force adoption of AirLand Battle is confusing and redundant and that it would cause the U.S. to pursue a course independent of the rest of NATO. FOFA is thought by many to address the problem of developing second-echelon forces, while at the same time maintaining a nonantagonistic posture. Given that the Warsaw Pact forces are rather precariously poised on the borders of several NATO countries, this is an understandable sentiment. Nonetheless, the concept has been adopted by the Federal Republic of Germany and the Allied Command Europe [11].

The extended battlefield embraces the "deep battle" concept and introduces the extra dimension of time. That is, not only is the battlefield to be extended far beyond the forward line of troops (FLOT), but extended in time as well. Thus, commanders must anticipate the massing and deployment of enemy forces up to 96 hours in advance for corps and for echelons above corps [3].²⁴ Spearheading the attack would be massive air and long-range artillery assaults on targets designated by the ground commander and in support of ground forces. AirLand doctrine envisions the battlefield to be principally divided into four areas:

- Rear battle area
- Close battle area
- Deep battle area
- Strategic area.

The first three areas would comprise the area of joint Army/USAF operations. The strategic area would be allocated to the Air Force alone [30]. Extending some 20 kilometers beyond the FLOT would be the close battle area, an area in which friendly and enemy forces are closely engaged and in which integrated operations involving air and ground elements in support of the objectives of the ground commander would be carried out. Outside this zone would be the deep battle area, an area extending 500 to 1,000 kilometers beyond the FLOT. Combat in this area is still undertaken in support of the ground scheme of maneuver and support, but farther out becomes the sole responsibility of the Air Force. Air support in this area can be broken down into two types: close air support (CAS) and battlefield air interdiction (BAI).

Deep battle would employ a range of combat units and fire-support systems. Long-range sensors would be used to pinpoint targets and guide ground forces. Long-range artillery can back up air and provide cover for ground operations and protect their flanks. Guerrilla and raiding forces would be used to disrupt enemy supply lines, provide intelligence and guide artillery fire and air strikes. Attack helicopter units, having the capacity to carry out fast attacks on enemy reserves, would assume a central role in the deep attack [31].

Deep battle is envisioned as applicable to the defense as well, in which case the emphasis shifts to delaying and disrupting enemy operations. In principle, there will be a number of exploitable areas of weakness, such as terrain chokepoints, that can be seized to forestall the combination of followup forces with those already engaged. In the event of an enemy breakthrough, deep attack can be used after the fact to dissipate the concentration of enemy forces and isolate the forces involved.

However, the most effective characteristics of deep attack accrue to the offensive operation. According to p. 7-14 of [3], perfectly executed deep attack,

... initially isolates, immobilizes and weakens defenses in depth. As the attack continues, it sustains momentum by preventing the reorganization of coherent defenses, by blocking the movement of enemy reserves and by preventing the escape of enemy units.

Battlefield air interdiction (BAI) is defined to be "... air operations against enemy forces and resources which are in a position to directly affect land operations but are not yet engaged" (p. 45 of [21]). BAI differs from CAS in the location of targets (BAI interdicts targets farther out, beyond the range of artillery) and is under Air Force direction. Both, however, are jointly planned, and targets are nominated by the ground commander. Finally, CAS and BAI are managed differently, with CAS being distributed down to the corps level, whereas BAI is planned at the Corps/Air Support Operations Centers (p. 47 of [21]). BAI serves to fill the gap between air interdiction (AI) and CAS, taking place on both sides of the fire-support coordination line (FSCL). BAI is seen as extending the influence of the ground commander well into the deep battle zone. According to [3], BAI would be

... the primary means of fighting the deep battle at extended ranges. BAI isolates enemy forces by preventing their reinforcement and resupply and by restricting their maneuver. It also destroys, delays, or disrupts follow-on enemy units before they can enter the close battle.

The successful prosecution of BAI would allow for the possibility of deploying combat units deep within enemy territory.²⁵

BAI is believed to bring about periods wherein the relative superiority of enemy forces already engaged in the close battle is diminished, owing to the destruction of follow-on reinforcements. During these periods, opportunities will arise to reverse the tide of events, possibly changing a defensive situation into an offensive one. In fact, Gen. Starry (on p. 44 of [13]) has neatly illustrated the effects of BAI in terms of curves that plot the relative excess of enemy forces (in a war with the Warsaw Pact, numerical superiority is assumed) as a function of time. Presumably, these figures were obtained from simulations (a source is not given), and their validity is dependent on the assumptions that were incorporated into the model used. The visual impact is clear, however, as the curves, in the absence of BAI, remain at high levels and remain flat for long periods of time. With BAI, a series of pronounced minima is produced. In the parlance of AirLand doctrine, these minima are called *windows of action*. Commanders are to keep an eye open for these minima and be ready to exploit them.

Finally, on the extended battlefield effective communications and intelligence is assumed. The intelligence preparation of the battlefield (IPB) is supposed to have taken place well in advance of the commencement of operations. To facilitate this, the commander must have a clearly defined *area of interest* in which to direct his actions. This area is defined initially by the corps commander and his objectives. Below corps, such areas are determined by the disposition of forces engaged against the commander and by the specifics of his assigned mission within the overall battle. He should also have in mind an *area of influence* adjacent to his area of interest. The area of influence is determined by the future actions of the enemy that are likely to impinge on his forces. The extension of these areas on the battlefield and relevant time-scales will be determined by the size of the force under his leadership (i.e., division, brigade, etc.). Ideally, friendly forces will be placed so that there is overlap between their respective areas of interest and influence. An enemy force would then be confronted by an array of forces that could quickly and somewhat independently engage him. This action would pose a difficult dilemma that the enemy commander, with his enforced adherence to detailed orders, would presumably be unable to resolve.

In summary, the principal means employed on the extended battlefield are the following:

- BAI
- Long-range artillery
- Electronic countermeasure systems (including deception and detection)
- Special forces
- Airborne/airmobile units.

The principal objectives of a deep attack are the following:

- Delay of follow-on forces
- Disruption deep behind enemy lines
- Protection of friendly forces from counterattack.

New Technology

As mentioned at the outset of this report, AirLand Battle will evolve to achieve the goals of AirLand Battle 2000 as new weapons and C-I systems come on line. One of the objectives of AirLand Battle is to widen the technological gap and exploit Soviet weakness in this area and to provide a flexible fighting force capable of carrying out combined air and land operations under varied circumstances.

In the last ten years, there has been an explosion in defense procurement and development. This increase is, in part, compensation for previous years of neglect, as well as the increased awareness of the magnitude of the Soviet forces. AirLand Battle is also, in part, a consequence of these factors.

Whether the nature and direction that this explosion has taken reflects doctrinal principles, or whether it reflects general changes in military thinking (which produced AirLand Battle in an *posteriori* way to justify these changes) is difficult to say (and perhaps not important). What is clear is the upsurge itself, especially in comparison to the years immediately following the Vietnam era. A casual inspection quickly reveals that even as the decade of the 1970s came to an end, many of the programs mentioned in the DOD Annual Report to Congress (FY 1986) are not mentioned in the report for FY 1979, and both reports represent a quantum leap over, say, FY 1974.

Given the recent history of defense budgets and R&D, it is helpful to recall some specific features of AirLand Battle and what will be needed, as general technological requirements, to implement them.

Most prominently, AirLand Battle incorporates the characteristics of modern maneuver warfare. It emphasizes the interpenetration of opposing forces, the so-called *nonlinear battlefield*. AirLand Battle lays stress on quick decisive actions that disrupt enemy timetables and that strike deep behind his lines. It provides for commanders to act autonomously, embodying the German doctrinal tenant of *Auftragstaktik*,²⁶ so as to be able to seize the initiative and strike at the enemy's weak points. At the same time, AirLand Battle stresses the need for fighting the "integrated" battle, in which a diverse array of assets, including tactical nuclear and chemical weapons, are brought against the enemy. It seeks overall balance by emphasizing the importance of synchronized operations.

These requirements create the need for increasingly more sophisticated C³I systems, which will give the ground commander the necessary intelligence and reconnaissance so as to be able to assess the disposition of his forces and those of the enemy. The battlefield will be complex and rapidly changing. High-speed computers that can process, analyze, and sometimes make decisions on the masses of information produced will be a central feature of such battles.

Areas of influence/interest require the ability to "see" beyond the limited horizon defined by the traditional front, further increasing the need for timely and accurate intelligence over a large area. Thus, there is a need for sophisticated sensor technology, and, again, computers to process the information thus gained.

The interpenetration of enemy and friendly forces, scattered throughout the battlefield, imply a need for secure, jam-resistant communications for the transmission of voice and data. Electronic countermeasures and deception on such a battlefield will be important, especially as the enemy will also possess sophisticated technology in this area.

BAI and CAS necessitate advanced fighters and bombers. These aircraft must be equipped with the means to penetrate formidable enemy anti-air defenses. Two basic stratagems present themselves to achieve this: (1) "standoff" capability (the capability to acquire and strike targets from the air and from a distance, eliminating the need to fly into the target area) and (2) the ability to fly low under enemy defenses under nighttime or adverse weather conditions.

The interdiction of second-echelon forces will require that the ground commander also has the means to acquire and strike targets deep behind enemy lines. Extending the ground commander's influence beyond the range of traditional artillery is important in BAI. Thus, there is the necessity for long-range artillery, surface-to-air missiles, launchers that can strike deep targets, and attack helicopters. The effectiveness of these latter systems will be enhanced by the continued development of precision-guided submunitions.

As for the development of systems indigenous to AirLand Battle, the most significant to date has been the *Assault Breaker* demonstration program, initiated in 1982.²⁷ Under the oversight of the Defense Advanced Research Projects Agency (DARPA), the purpose of *Assault Breaker* was to demonstrate the feasibility of advanced technology related to the interdiction of second-echelon forces, specifically the areas of targeting, tactical fire control, delivery systems, and (missile) dispensers of submunitions. The program was considered a success²⁸ and has led to several programs, some of which are mentioned in the paragraphs that follow.

A quick review of the Department of Defense's *Annual Report to Congress* for fiscal year 1986 reveals, for the Army, some 28 programs related to ground/air and missile weapons systems at various stages of development and deployment. There were also 15 programs underway related to C³I and target acquisition. For the U.S. Air Force, there were 19 and 12 programs, respectively.

The FY 1986 report does not mention AirLand doctrine explicitly, which is understandable since it was not written solely with the Army and Air Force in mind. Further, the programs that do appear often represent compromises between the competing demands of the different branches of the Armed Forces. Given the general requirements just described however, it will be seen that a number of the programs to be discussed have as their goals improvements that represent steps toward satisfying these requirements. A number of these programs involve

target acquisition, C³I, electronic warfare, standoff capability, night/under-the-weather penetration of enemy defenses, artillery fire, and deep interdiction. Some programs that are in a procurement/development cycle that will continue into the mid-1990s are the following:

- **High-technology motorized division.** This division, formed from the Army 9th division, is experimenting with high-technology combat systems and techniques for use in the Army light divisions.
- **Command, control, and communication.** Under development by the Army is the Short-Range Air Defense Command and Control (SHORAD) C² system for use at the corps and division levels to set priorities for multiple targets and to transmit instructions for engagement to forward-deployed air defense system operators. The Advanced Field Artillery Tactical Data System (AFATDS) will be used for automated fire control and targeting of Army artillery. Secure, jam-resistant communications systems for transmission of digital data and/or voice will be provided by the Joint Tactical Information Distribution System (JTIDS), the Army Data Distribution System (ADDS), and the Ground Mobile Forces (GMF) Satellite Communications System (under procurement).
- **The Joint Tactical Fusion Program (JTFP).** The JTFP, currently under development by the Army and Air Force, will process and analyze intelligence from diverse sources. It will allow the battlefield commander to assess the status and position of his forces and those of the enemy.
- **Target acquisition and guidance.** Laser designators will be used to designate targets and provide guidance for artillery munitions and (Hellfire) missiles. By FY 1986 the Army was to have procured \$408 million in ground laser locator designators (GLLDs) with another \$180 million proposed for FY 1986. LANTIRN, currently under development, will give aircraft the ability to make low-altitude penetrations of enemy air defenses at night and under the weather. The precision-location strike system (PLSS) will provide standoff capability and real-time location of enemy defense emitters.
- **Remotely piloted vehicles.** RPVs will be under procurement in the next couple of years. Research and development will continue in this area well into the 1990s. RPVs have significant potential for making deep attacks on the extended battlefield.

- **Submunitions.** Precision-guided submunitions for use in the multiple-launch rocket system (MLRS) (under procurement) will strike enemy air-defense and artillery and extend the ground commander's range of interdiction beyond cannons. Also to be used is the *standoff tactical missile* to dispense terminally guided submunitions deep behind enemy lines (*Assault Breaker* outgrowth).
- **Standoff technology.** Both the Army and the Air Force are developing standoff technology. The Air Force is developing the EF-111 to have standoff jamming and reconnaissance. Also under development is the *Laser Maverick*, an air-to-surface missile to be used against armor and heavy fortifications and suited for use in CAS roles. The F-15 *Eagle* will have standoff capability, employing beyond-visual-range radar missiles. The Army is developing its standoff tactical missile that will be used for deep interdiction. Also under development is PLSS, already mentioned.
- **Advanced aircraft.** The F-16, capable of extremely accurate bombing, will have CAS as part of its mission. Another aircraft, the EF-111, will be used from standoff locations to suppress enemy long-range detection and acquisition. The A-10 *Thunderbolt II* has been designed exclusively for CAS. The F-111 has low-level capabilities that make it suitable for BAI. The Army is also developing a class of light rotorcraft (LHX) of which there will be two classes for utility and attack missions. They are also expecting to take delivery on the tilt-rotor JVX sometime in the middle 1990s.
- **The Joint Surveillance and Target Acquisition System (JSTARS).** The JSTARS is to be used for targeting and guidance of missiles to ground targets.²⁷ Initial deployment will be on the Army's OV-1 *Bronco* and the Air Force's TR-1 and C-18. This is another outgrowth of the *Assault Breaker* program.

Advanced computer technology, both in software and hardware figures centrally in the AirLand Battle. The development of very-high speed integrated circuits (VHSIC) is well underway, allowing high-speed processing of large amounts of command and control information. VHSIC provide for the processing and analysis of intelligence data, make possible "natural language" recognition, give "vision" ability to target acquisition and guidance, and perform tasks requiring artificial intelligence capabilities.²⁹ Much of the technological development in this area is concentrated on small, highly reliable, high-speed computers for use at the tactical level.

Further down the line will be electromagnetic rail-guns, particle-beam weapons, and robot weapons. Work is also underway to develop liquid-propelled artillery, fire-and-forget antitank weapons, caseless cartridges, high-energy lasers, nonnuclear electromagnetic pulse (EMP) generators, and other devices employing the electromagnetic spectrum. Stealth technology is scheduled for deployment in the 1990s.

SUMMARY

The preceding discussion has attempted to show the factors that led to the development of AirLand Battle doctrine. The most important of these factors were: rapid developments in technology over the decades since World War II; the necessity to maintain deterrence in Central Europe; the balance of forces between NATO allies and the Warsaw Pact nations; Soviet operational art; and the desire to offset Warsaw Pact quantitative advantages by exploiting prominent weaknesses, including a perceived technological inferiority.

The formulators of AirLand Battle have striven for a balance of all these things. This has proven to be difficult and has led, since its promulgation in 1982, to much confusion and misinterpretation. Thus, while the doctrine relies heavily on maneuver and operational principles, firepower and "set-piece" warfare (which relies on frontal advance and concentrates on tactical issues) are nonetheless maintained as important doctrinal precepts. Commanders must still keep these precepts as part of the warfighting repertoire.

As mentioned earlier, it has been maintained by some of its defenders that AirLand Battle doctrine, rather than being radical or revolutionary, is, in its essence, nothing more than a return to the fundamental and proven principles of war. These defenders therefore (and not surprisingly) maintain that much of the controversy surrounding its nature is simply a "tempest in a teapot." They cite as a premier weakness in U.S. military thinking and pedagogy the general lack of attention paid to such principles.

The doctrinal stress on deep battle, for example, should be no particular cause for concern, as NATO (in its follow-on-forces-attack doctrine, as well as the separate doctrines of its member states) recognizes the need for some kind of defense in depth [33]. The defenders of AirLand Battle interpret deep battle (deep attack) as being a modernized restatement of the principles of maneuver, mass, and surprise. Central to deep battle is disruption of enemy timetables, which is achieved by presenting the enemy with a rapidly changing situation that continually catches him off balance. This is the principle of surprise. Clearly, deep battle also relies heavily on the maneuver capabilities of modern mobile warfare. It also relies on the application of combat power at critical points to interdict and disrupt the enemy behind his lines and to disrupt follow-on echelons. This last

objective of deep battle is based on the principle of security in that the numerical advantage given by these echelons will be neutralized. The extended battlefield concept serves as a schematic device that allows accurate interpretation and implementation of deep battle.

Integrated battle, too, is based on well-founded principles of war. Essential to fighting battles in an integrated fashion is having a clearly stated objective and unity of command. Once this has been achieved, commanders then apply all available assets to weak points or at critical times to achieve defeat of the enemy (mass).

Mission-type orders again stress the objective. Just as important, these orders require simplicity. Orders and commands must be stated as simply and clearly as possible. A clear statement of objective allows subordinate commanders the necessary flexibility to seize the initiative and exploit enemy weaknesses; while simplicity allows them to act, when necessary, independently of higher levels of command. AirLand Battle stresses the need for commanders, when possible, to transmit their orders face-to-face to their subordinates. Simplicity allays the effects of the ever-present principle of friction, which inevitably attends the chaotic environment of war. This principle states that, in a chaotic situation, even the simplest plans and most elementary tasks can become monumentally difficult.

Another tenet of AirLand Battle is the notion that numerical advantage alone does not suffice to determine the outcome of war. The U.S. and its allies should not be daunted by this overwhelming advantage of the Warsaw Pact. AirLand Battle places great weight on the fact that weapons and number are only as good as the commanders who can direct their use, the validity of their advance planning, the quality of their staff work, and the willingness of soldiers, who constitute their quantity, to carry them out. Any system, array of forces, or sets of plans have inherent weaknesses. AirLand Battle exhorts commanders to study potential enemies, to discern these weak points, and anticipate their plans of action. Reliance on tactics alone, so its proponents argue, will not be sufficient to guarantee success in the next war.

Operational art is another of the items listed above that forms the keystone of the AirLand concept. Tactics are important, but it is with planning and maneuver in terms of large units that the formulators of the doctrine are principally concerned. Many writers cite the conspicuous absence of any systematic utilization of operational principles as being characteristic of American and British military planning. Luttwak [25] accounts for this fact as a semantic lapse peculiar to the Anglo-Saxon military language. Although not completely absent, the occasional Anglo-Saxon use of operational art represents isolated events, being a reflection of the personalities of the commanders who practices them (Patton in World War II and MacArthur at Inchon). Luttwak goes on to point out that while Americans, in particular, have

made great advances in weapons, improved mobility, and logistics systems and have paid increasing attention to resource management, the organization of battle still continues to function only at the highest and lowest levels.

Without a doubt, the Soviets have studied the operational principles of past campaigns and stress the development of new ones. They plan for mobility and have designed their organizational network accordingly. For the U.S. to effectively counter this, so say the proponents of the Army doctrine, it must develop its own operational art. AirLand Battle has been proffered as a step in that direction.

There is a need, according to the formulators of AirLand Battle, for expanding the commander's scope of view to include operational thinking. This can only be achieved, they maintain, by studying the basic principles common to all warfighting and learning the lessons of history. An interesting quote from general literature involves a discussion in Norman Mailer's "The Naked and the Dead" between the young General Cummings and one of his professors at West Point on the relative merits of tactics versus logistics/maneuver:

Sir (he gets permission to speak), is it fair to say that Lee was a better general than Grant? I know that their tactics don't compare, but Grant had a knowledge of strategy. What good are tactics, sir, if the ... larger mechanics of man and supplies are not developed properly, because the tactics are just the part of the whole? In this conception wasn't Grant the greater man because he tried to take into account the intangibles. He wasn't much good at the back-end-wing but he could think up the rest of the show. (The classroom roars.)

His professor takes exception to this and replies:

You happen to be wrong. You men [speaking to the class] will find out that experience is worth a great deal more than theory. It is impossible to account for all your strategy, those things have a way of balancing out as happened at Richmond, as is now happening in the trench warfare in Europe. Tactics is always the determinant. (He writes it on the blackboard.)

In this quote the use of the work strategy in terms of the "mechanics of men" and supplies suggests what is now known as operational art. The salient feature of the quote is that it provides an example of the widespread acceptance of the tactical approach to the detriment of the operational/maneuver approach. The fact that this assessment, issuing from the mouth of a purely fictional character (the professor) in a novel written by a non-specialist in military science,

is particularly revealing. It suggests the necessity of a change in outlook towards an operations focus that Gen. Starry and Col. Wass de Czege were striving to develop in AirLand Battle.

CONCLUSIONS

What Is AirLand Battle?

The preceding sections have attempted to outline the characteristics of AirLand Battle. Such characteristics may have been presented as though they were agreed on by the defense community and members of the military. In fact, there is considerable confusion in the literature on what constitutes AirLand Battle and its implication vis-a-vis the U.S. and NATO, so in spite of the preceding discussion there remains the question: What is AirLand Battle? The only certainty about AirLand Battle is that it is controversial. Its possible beneficial side effects are that it is promoting a general reconsideration of warfighting doctrine.

It is difficult to determine the ultimate impact of AirLand Battle on doctrine, force structure, and on procurement, however, since there seems to be little agreement on the true nature of the Army's doctrine. It seems to be all things to all people. Some individuals maintain that AirLand Battle is doctrine for fighting war at the operational level. (Luttwak [25] is an example of this point of view.) Others hold that AirLand Battle is simply maneuver warfare doctrine. To some of these, it is, therefore, anathema. Still others maintain that AirLand Battle is synonymous with advanced C³--a belief that is given some substance by the amount of effort devoted by the Army to C³ and its relation to their doctrine. Also there is high technology and the belief by yet others that AirLand Battle is a doctrine for fighting on the modern high-technology battlefield. In fact, FM 100-5 [3] is mute on the specific kinds of technology required and its role on the modern battlefield. Finally, as has been occasionally claimed, even by some of its formulators, AirLand Battle is little more than a reaffirmation, in modern terms, of the basic principles of war listed earlier on in this report.

FM 100-5, 1982 or 1986?

The confusion around AirLand Battle certainly has not been cleared by the recent release of the 1986 version of FM 100-5. It appears that the flavor of the 1982 and the 1986 documents is quite different. In fact, recent interviews conducted by the author with individuals in the Army indicate that it is likely that, in the future, AirLand Battle may be washed aside by the continual waves of changes that have marked all facets of the Army since World War II.

Some of the differences between the 1982 and the 1986 documents will be illustrated by selections of text drawn from each. Consider the statement on nuclear and chemical warfare made at the outset of the 1982 version of FM 100-5:

A growing number of nations can employ chemical and nuclear weapons and are apparently willing to use them. U.S. forces must plan to fight in an environment where nuclear and chemical weapons pose a clear and present danger. Accordingly, they must be organized, equipped, and trained to meet the unique challenges to be faced on the *integrated battlefield*. Tactical nuclear weapons will drastically change the traditional balance between fire and maneuver. On the modern battlefield, nuclear fires may become the *predominant* expression of combat power, and small tactical forces will exploit their effects [*italics added*].

It quickly becomes apparent upon further reading that tactical nuclear and chemical weapons are to be considered part of the modern repertoire of the commander on the integrated battlefield. The last sentence makes reference to the use of nuclear weapons by small, tactical units. What does this imply about the NATO decision-making process regarding nuclear weapons? The 1982 version is a bit vague on this point and generated considerable controversy, especially among NATO nations, as a result.

The 1986 version is much more cautious. A portion of the corresponding statement is as follows:

Even though the *primary* purpose of nuclear weapons is to *deter* their use by others, the threat of nuclear escalation pervades any military operation involving the armies of nuclear powers, imposing limitations on the scope and objectives *even of conventional* operations. U.S. nuclear operations may of course only be used following specific directives by the National Command Authorities (NCAs) *after* appropriate consultation with allies. Even were such authority granted, however, the employment of nuclear weapons would be guided more by political and strategic objectives than by the *tactical* effect a particular *authorized* employment might produce [*italics added*].

Here is a fairly cautious reference to the actual command and control of nuclear weapons. Focus is placed on deterrence and the use of nuclear weapons only after consultation with the allies. The term integrated battlefield, which was a hot issue in the 1982 version, is omitted. Note also that, while the 1982 statement entirely leaves out

references to the strategic and political aspects of nuclear use, in the 1986 version these are given priority. It would appear that this change is in response to criticism from allies and those concerned about nuclear escalation.

Another difference regards deep battle. The term deep battle was used in the 1982 version to denote operations in depth. In the 1982 version, each commander had both an area of influence and an area of interest. A timetable was established for surveillance of areas of interest and maintaining areas of influence extending from the corps level down to the battalion level. Thus, it will be recalled that the corps commander "... will strive to maintain surveillance of an area of interest large enough to give 96 hours' notice of the approach of enemy divisions and armies." His area of influence will be 72 hours. For the divisional commander, this was 72 hours and 24 hours, respectively, while battalions had to maintain surveillance of an area large enough for 3 hours' notice. This was the extended battlefield concept described earlier.

The 1982 version also stated that nuclear weapons "... are particularly effective in engaging follow-on formations or forces in depth because of their inherent power" Furthermore, the corps level was identified as the "... focal point for intelligence collection in the deep battle." In the literature, this was often interpreted as meaning that, from the very outset, U.S. forces would penetrate deep behind enemy lines, most likely on Warsaw Pact territory, in an all-out effort to interdict Soviet second echelons.

The 1986 version of FM 100-5 states that "... divisional brigades and smaller tactical units will not normally conduct separate deep operations." This is probably an attempt to discourage the notion that deep operations will be an all-out jumble of divisions interdicting enemy follow-on divisions--brigades doing the same for enemy follow-on brigades--and so on. Conspicuously absent is the term deep battle. To those critical of AirLand Battle, this was a provocative term challenging the defensive nature of the NATO alliance. The term was replaced by the more neutral term *deep operations*. Expunged from the description of deep operations were references to the utility of nuclear weapons. While areas of influence and interest are defined, specific timetables are no longer included. Thus, the extended battlefield concept, on which so much emphasis was laid by Gen. Starry and others, seems to have been sidestepped because of its controversial nature. Also, there is no mention of the corps as a focal point. The significance of this last change will become apparent shortly.

A surprising change is the shift away from the Corps level as the focus for conducting the operational war. As was pointed out earlier, in the 1982 version, logistics, intelligence, and coordination with the air were all to come from the corps level. The corps was to conduct campaigns and war at the operational level. Examples illustrating

various points such as areas of interest and supply were typically described as originating at the corps level. In the most recent version, there appears to be a shift to higher levels of command, particularly the field army level as the level where the operational war and campaigns will be fought. Corps are considered as the largest tactical units and will fight as part of field armies or army groups. Occasionally the corps will fight independently.

While it was no doubt assumed, even in 1982, that the corps level would not be the highest-level U.S. command, a reading of the background literature on AirLand Battle gives the impression that these higher levels were mainly headquarters elements that set priorities for operations and set the main effort. In the earlier version of FM 100-5, field armies are not mentioned. By 1986, this level is explicitly referred to throughout the text and its major roles included in an appendix. Some of the major roles of the field army are as follows:

Field armies exercise major operational responsibilities. When subordinated to an army group, field armies become the primary units of operational maneuver, conducting decisive operations of the land campaign.

The text goes on to say the field army is primarily an operational headquarters, establishing CSS for subordinate forces, with CSS normally provided at the theater army level. This is an interesting change given the detailed description of COSCOM provided in FM 100-5 and the number of articles in the literature establishing logistics from this point. In fact, it is not clear how the concept of forward supply and maintenance can be supported at the theater level.

Other differences exist, however. There are also areas in which the new version tries to be more explicit than its predecessor. An example is greater elaboration on the concept of the operational level. To be sure, there are broad areas of overlap between the two documents, such as the emphasis by both on mission type orders. But there clearly seems to have been a change in tone between the 1982 version and 1986 version that perhaps presages more to come.

In summary, it appears that many of the changes that have occurred since 1982 reflect a desire to allay criticism and make AirLand Battle more palatable to U.S. allies.

Relation to the Maritime Strategy

The question has been asked and several papers have been written about the relationship between AirLand Battle and the U.S. Navy's Maritime Strategy. Are the two compatible? Are they counterparts? Do they represent a major change in U.S. thinking on the strategic situation in Europe?

Questions such as these seem to arise frequently in the literature on the subject. However, it should be made clear that, in part, the relation between AirLand Battle and the maritime strategy is the relationship between doctrine, on one hand, and strategy on the other. On this level, the two are quite different. The Army's AirLand Battle, for instance, because it is doctrine, contains very little in the way of specifics on how the Army plans to fight its wars. This is because doctrine is a level of abstraction and generality higher than strategy. Doctrine is a guide to thought on how to employ strategy and tactics. Commanders formulate their strategy, employ tactics, then appeal to doctrine for how to combine these elements effectively in battle.

The maritime strategy makes more concrete proposals. For example, in war, it makes definite (although controversial) proposals on how to deal with Soviet attack and nuclear submarines. It proposes to use carrier battle groups to influence the land war in several parts of Europe (for example Norway), and to offset Soviet naval presence in the Western Pacific. The maritime strategy's peacetime objective is to enhance deterrence by peacetime presence and affecting the strategic balance between the U.S. and the Soviet Union.

In spite of these differences, there are similarities between the maritime strategy and AirLand Battle. Both AirLand Battle (as formulated in the 1982 version) and the maritime strategy emphasize the importance of *seizing the initiative* and anticipating the enemy's actions. They both emphasize the notion of forward defense, of carrying the fight to the enemy. Both, in contradistinction to traditional NATO strategy, stress the importance of defeating the enemy and threatening him with serious losses. They have thus been subject to the same types of criticism that assert that they threaten deterrence by disrupting the purely defensive posture of NATO. They both have been criticized as promoting escalation should a conflict break out. Thus, the maritime strategy's proposal to send U.S. attack submarines to the Barents Sea to destroy Soviet nuclear submarines has been criticized as forcing the Soviets to launch their SLBMs before they are lost, escalating the conflict. Similarly, AirLand Battle's seeming classification of tactical nuclear, chemical, and biological weapons as simply inventory items, which should be used when deemed appropriate, has evoked sharp criticism for encouraging quick escalation. (In fact, the 1986 version of FM 100-5 has sidestepped the use of these weapons entirely.) Also, proponents of AirLand Battle have pointed out that Soviet offensives should be countered with corresponding U.S. offensives into Warsaw Pact territory.

Both the Army's doctrine and the Navy's strategy have been used to justify increased expenditures on R&D and procurement. Thus, the Navy has used the maritime strategy to set requirements that will allow the completion of the 600-ship navy. Individuals within the Army have appealed to AirLand Battle to gain funding to develop and produce advance C³ systems, stand-off abilities, advanced targeting capability, and systems with a high-fire rate such as MLRS.

Finally, AirLand Battle and the maritime strategy have been criticized, especially on the other side of the Atlantic, for decoupling the U.S. from NATO. That is, there is the perception that, should war breakout in Central Europe, U.S. forces will be "marching to a different drummer" and possibly making unilateral offensives against the Soviets.

Battlefield Simulations

The Army is currently busy trying to incorporate AirLand Battle into its combat models.³⁰ However, there is a serious impediment to this development--it is the problem of defining AirLand Battle precisely enough so that its features can be incorporated into the models. This problem has two branches: the first being the tenuous connection (due to the level of abstraction the doctrine represents) between doctrine and specific modeling assumptions. This difficulty is compounded by the fact that, to date, there are no major structural changes that have taken place in the Army to reflect its doctrine. The second is a consequence of a lack of unanimity among those who will utilize the doctrine as to which features give substance to the doctrine. AirLand Battle is a changing concept, as evidenced by the differences between the 1982 version of FM 100-5 and the 1986 version, and such differences can be considered as part of the continuing flux in the Army's doctrine that has characterized the post-Vietnam period.

NOTES

1. On page 12 of [1], Romjue talks about the ideas of "fast forward resupply," "forward maintenance," and conservation of resources.
2. In chapter 7 of [5], Van Crevald states that the [total] consumption of Gen. Hodge's First Army (nine divisions) was about 5,850 tons of ammunition per day, but the army was actually able to obtain only 3,500 tons per day.
3. In chapter 23 of [6], Dunnigan places daily U.S. divisional requirements for ammunition at 1,125 tons (armored) and 1,290 tons (infantry). Fuel requirements will be 618 tons and 660 tons, respectively, for an offensive operation. For defensive operations, requirements will be somewhat higher. Further, his list of armored vehicles does not include the M-1 Abrams or the Bradley fighting vehicle, which is probably why (in part) his figures are lower.
4. On page 34 of [8], Colonel de Czege states, "The Army is presently undergoing more substantive change than it has at any time since the period from 1938 to 1941. New ways to train and organize soldiers, the introduction of over 40 major hardware items, and a revised doctrine are at the heart of this change."
5. On page 48 of [8], de Czege writes, "The Army's AirLand Battle 2000 concept is the model of how the Army thinks it will fight in the year 2000. The concept is a forward projection of the current AirLand Battle doctrine."
6. Meyers [11] reports that in 1975, in spite of Schlesinger's vigorous pleas, Congress reduced the Ford administration's \$97.9 billion defense appropriations request by a record \$7.4 billion. Schlesinger was eventually sacked by Ford for fighting his own budget reduction efforts.
7. The Division Restructuring Study is an example. Under General Donn A. Starry, many of the conclusions of this study were questioned. It was replaced in 1978 with the Division 86 project. This was later incorporated at the behest of Gen. Edwin C. Meyer into the larger Army 86 project. Wass De Czege [8, p. 45] also talks about changes. Among these changes are: the implementation of a regimental system, new armored or mechanized divisions, new infantry divisions (Infantry Division 86), redesign of C³I, and logistic support elements. But with the exception of the new light divisions and the development of a high-technology division, no significant reorganization appears to have occurred.

8. German Defense Minister Dr. Manfred Worner, on the subject of the German Forward Defense policy, has stated: "Whoever considers abandoning this principle should bear in mind that 30 percent of the FRG's population and 25 percent of its industry are concentrated in a 100km-wide strip running the length of the border with East Germany." On the subject of trading space for time, he states that such an idea "... only be conceived by persons failing to recognize these [previous] facts. This cannot be accepted by a German defense minister" [9].

9. An Operational Maneuver Group (OMG) is a formation at the divisional level and perhaps at the corps level whose mission is to rapidly insert itself into the body of NATO forces. It is highly mechanized and makes use of high-tech items such as electronic warfare (EW), long-range artillery, helicopter and airborne assault. In the initial phases of the battle, Soviet first-echelon troops would be hammering at NATO defenses and the OMG would be held in reserve some 30 to 50 kilometers from FEBA. Should the Soviets succeed in a penetration, an OMG would move in through the break. The movement of the OMG would be through the first-echelon forces themselves, probably using multiple routes and deception (employing secondary attacks, camouflage, jamming of radar, and collocation of its command post with the command post of the first echelon through which it is moving). The OMG would be able to call on artillery and air support to maintain its advance. In fact, it has been suggested that in the case in which direct penetration of NATO front lines proves difficult or impossible, the OMG forces will be able to "leap frog" over them using large scale helicopter and air transport [14]--which the Soviets have been building up to a considerable degree. To be effective, a certain amount of surprise is necessary as well as the ability to achieve a high rate of advance. Insertion must occur in the very early stages of conflict (within one or two days of commencement). However, this is offset by the fact that, once achieved, NATO will face several difficult choices. In fact, it may be too late for any significant response as the OMG will be (on account of its mobility) a difficult target for the use of tactical nuclear weapons; the decision to use nuclear weapons will in all likelihood take NATO several days. Other options such as counterattacks using conventional weapons or reforming the FEBA might prove too expensive or politically unacceptable. Given the successful intervention of an OMG, the formation of a second echelon may become unnecessary. In fact, much of the debate surrounding AirLand Battle is over whether we might be preparing to counter something that may not exist, (i.e., the second echelon [1 and 15]).¹⁰ At any rate the functions of an OMG would be distinct from those of the second echelon, which would put pressure on the main axis and widen corridors created by the first echelon.

10. Gen. DePuy [15] points out that the concept of synchronization is often (perhaps wrongly) equated with "set-piece" warfare.

11. Page 9-9 of [3] states:

The reserve is the commander's principal means of influencing the action decisively once the operation is under way. The reserve reinforces success in the attack or maintains attack momentum. The reserve prepares for a number of specific contingencies which may arise during the attack. Commanders position the reserve near the area to which it will be most likely to be committed and reposition it as necessary to assure it can react promptly.

12. Gen. DePuy [15] wrote:

It is assumed (hoped?) that the Soviet operational and tactical system is cumbersome and thus a natural victim for such a doctrine [i.e., maneuver doctrine].

Gen. DePuy included the word "hoped?" indicating his skepticism about this assumption. He goes on to say, regarding the need for synchronization:

Recently there have been disturbing claims that the Soviets have set higher standards for synchronization than has the U.S. Army. Suffice it to say that they seek to execute an operation at army level (a big U.S. corps) five to six hours after receipt of orders. Even if it takes them twice as long, say 12 hours, they would not be the slow, sluggish organization we happily describe to ourselves.

The assumption of tactical rigidity is also at variance with the Soviet stress on OMGs. In fact it has been asserted that the OMG concept has "swept" the Soviet military, to the extent that they talk about the notion organizing whole fronts around them [16]. John M. Weinstein [17] on pp. 57-68 cites the following as

... sources of problems: (1) the absence of troop initiative caused by over-supervision, rote learning, and training exercises which rely heavily on simulators at the expense of real time exercises; (2) little attention to map reading and basic land navigation skills that would be required in an unfamiliar and fast-moving battle field environment; (3) the absence since World War II of any combat experience against a sophisticated adversary; and (4) the dearth of combat training (and ammunition) given to Muslim and other nationality groups who are considered unreliable.

Other weaknesses are (1) limited access to the sea; (2) poor east-west communications; and (3) unreliable allies. For an excellent discussion of Soviet weaknesses, see Jeffrey Record [18], chapter 8.

13. Careful planning and close attention to detail do not guarantee victory and may even make its attainment more difficult. Chapter 7 of Van Crevald [5] gives the Normandy invasion as an example of a meticulously planned operation that succeeded in spite of such planning. Hodge's First U.S. Army and Montgomery's 21st Army Group were able to reach the Seine River 11 days before schedule, which planners insisted was impossible. Indeed, the planners had concluded that meeting the schedule was in itself impossible. In this case, it was Patton's Third U.S. Army that made (against all predictions) a rapid breakthrough. This resulted in forcing the Germans to fall back, and allowed Hodges and Montgomery to advance. In this case, it is clear that if the commanding generals had accepted the conclusions of their planning staff, such rapid advances would not have been made.
14. See *The Military Balance 1982-1983*, published by the International Institute for Strategic Studies, London, 1982, pp. 18-25, for organizational charts of Warsaw Pact and NATO.
15. On p. 61 of [25], Luttwak points out that Liddell-Hart discussed the concept that he called *grand tactics*. Also, he states the notion is present in the writings of Clausewitz.
16. Richard Hart Sinnreich [10] points out that Active Defense was "devoid of operational content." According to him, this proved to be significant criticism of the earlier doctrine. Active Defense was criticized as focusing so much on "fighting the first battle that it forgot about winning the last." See also Ingle [23], pp. 50-53.
17. Petersen and Hines [14], on pp. 721-723, write:

In themselves, operational changes in fire and maneuver that better support conventional offensive operations would lack meaning if the structure of the force did not change to meet the new operational demands.

They (Petersen and Hines) then go on to list some of the structural changes made by the Soviets. These include resurrection of army aviation (centered around helicopters), formation of aviation reserves, and consolidation of Air Defense of the Ground Forces with the National Air Defense.

18. As reported on p. 7-1 of [3]:

AirLand Battle doctrine takes a nonlinear view of battle. It enlarges the battlefield area, stressing unified air and ground operations *throughout* [italics added] the theater.

19. Rear area security is an important problem, given the dispersion of forces. It has been observed that the Soviets stress the importance of disrupting the rear area. The 1982 version of FM 100-5 [3] contains a chapter (Chapter 14) devoted to rear-area protection. It recognizes three levels of rear-area threat--similar to the Marine Corps. The lowest level of threat can be handled by base-support forces. The next level is to be countered by military police, and the highest level will require diversion of combat forces. The most recent version of FM 100-5 (1986?) does not devote as much attention to rear-area protection as the earlier version. In chapter 2, where the most extensive discussion occurs, it concludes that the forces in the rear "... must be equipped and trained to protect themselves against all but the most serious threats" In a study of tactical survivability of combat service support (CSS) units on the AirLand battlefield, it was concluded that divisional CSS units are "... not adequately equipped or tactically trained to survive on the AirLand battlefield...." [27].
20. In [8], De Czege uses history to determine the common denominators of successful armies. Present-day considerations not only involve the political and economic environment, but also the military doctrine of potential enemies and the effects of new technology. Gen. Starry, on p. 36 of [13], talks about the "division of responsibilities." Holly [28] writes: "An environment must be created where mission-type orders prevail and decentralized execution of combat operations is the rule." He goes on to quote Field Manual 100-5 [3], "They (subordinates) must deviate from the expected course of battle without hesitation when opportunities arise to expedite the overall mission of the higher force."
21. The term *initiative* is sprinkled over the entire text of FM 100-5 [3]. Its meaning ranges from seizing upon enemy weaknesses, to semiautonomous actions in the absence of orders from above. There appears to be no area of warfighting where it is not expected to be used--from tactics to intelligence gathering.
22. The Army has developed programs for the extensive training/retraining of officers, noncommissioned officers, and recruits. Training of companies as units (officers, NCOs, and recruits) and having them serve as a unit for the normal tour of duty is one means by which the Army hopes to instill this sense of the mission objective. Training in other areas has been developed. Officer

training includes an intensive 12-week course (CAS³) for all officers between their 7th and 10th years and in addition to the one-year command and General Staff College course (CGSC) attended by the top 40 percent of those officers who have been recently promoted to major. The NCO education system (NCOES) is being beefed up. Basic training of new recruits has been extended. Battlefield simulations have been developed to provide training under more realistic conditions. The Army has set up the National Training Center to allow battalion-level war games under realistic conditions against a Soviet style enemy.

23. Gen. Starry [13] talks about developing targeting cells in brigade up through echelons above corps. The purpose of these cells is to select, throughout the battlefield, high-priority targets.
24. The Field Manual [3] lists the following areas of influence:

AREAS OF INFLUENCE

<u>Level of command</u>	<u>Time beyond FLOT or attack objectives</u>
Battalion	Up to 3 hours
Brigade	Up to 12 hours
Division	Up to 24 hours
Corps	Up to 72 hours
Echelons above corps (EAC)	Up to 96 hours

A similar table is given for *areas of interest*.

25. Deploying combat units deep within enemy territory would most probably be achieved by airlift. One of the effects of successful air interdiction would be to weaken the enemy defense (by disrupting backup forces) and allow for penetration by ground forces either directly or by lateral movements around the front lines and insertion in the enemy flanks. This tactic has served as another point of contention--critics claim that these combat units might find themselves trapped between a "hammer and an anvil" (i.e., between front-line enemy forces and an advancing follow-on force). It is thought, however, that the benefits of such a maneuver outweigh the risks. (See also Hanne [12], p. 1,036.)
26. *Auftragstaktik* in essence is the responsibility of the subordinate to act as circumstances require without having to wait from orders from above. (See [32], p. 116.)
27. Joint Surveillance and Target Acquisition Radar System (JSTARS) developed out of the joint Army/Air Force *Assault Breaker* technology development program. Final go-ahead for this program

was authorized by the Defense Resources Board in 1982 and an initial operating capacity (IOC) for the resultant technology was slated for 1986. The Air Force portion of this program included the *Pave Mover* radar. Installed in specially configured Boeing 707s and KC-135s, this radar would assist in target acquisition and guide long-range missiles launched from B-52s and other aircraft. JSTARS was born from this system. Its purpose is all-weather armor location and destruction. It will guide both surface-to-surface and air-to-surface missiles against second-echelon forces. It was also planned to provide launch and guidance for the joint tactical missile system (JTACMS) which was a "... family of missiles, including a *Lance* replacement for the Army and an air-launched version, to be carried on aircraft ranging from the F-16 to the B-52." Today the family of missiles has been replaced by the Army tactical missile system (Army TACMS) that consists of a ballistic missile with interchangeable warheads carrying different types of submunitions and launched from an MLRS launcher. (See also, Konrad Adler, *Armada International*, Jun 1986, p. 14; Benjamin F. Schemmer, *Armed Forces Journal International*, Sep 1982, p. 106; Lopez [9], p. 1,552; and *ARMY*, Oct 1986, pp. 435-436.)

28. Schemmer, op. cit., p. 106:

However, the Services have not supported Assault Breaker as enthusiastically as senior Defense Department officials would have liked. The Air Force, for instance still has no projected IOC for low-altitude submunition dispensers. Last year, when DoD felt that Assault Breaker was ready to move out of advanced development and into full-scale engineering, the Army declined to fund the program in its Fiscal Year 1983 budget submission ...

29. DARPA currently has a well-established program to explore and develop artificial intelligence.
30. At present, while efforts are being made, it appears that there are no officially released models or simulations that explicitly incorporate AirLand Battle characteristics. In 1981, a report [34] was released that surveyed models/war games that "... might be used as analytic tools for the evaluation of tactical nuclear warfare doctrines." The final report, which appears to be unavailable, was to be entitled *Analysis of Some Alternative Tactical Nuclear Doctrines for the U.S./NATO Corps in the AirLand Battle*. In an effort to locate more material, a bibliography was assembled of all DTIC papers relating to AirLand Battle. However, aside from the early attempt just mentioned to use modeling to assess certain of its aspects. No other published articles on modeling AirLand Battle have been found.

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

*OR are
Blank pgs.
that have
Been Removed*

**BEST
AVAILABLE COPY**

**BEST
AVAILABLE COPY**

REFERENCES

- [1] John L. Romjue, "The Evolution of the AirLand Battle Concept," *The Air University Review*, May-Jun 1984
- [2] Major Jon S. Powell, "AirLand Battle: The Wrong Doctrine for the Wrong Reason," *The Air University Review*, May-Jun 1985, p. 15
- [3] Army Field Manual, FM 100-5, *Operations* (1982)
- [4] Charles D. Odorizzi, "Can Army Support Keep Those Caissons Rolling Along?" *Armed Forces Journal International*, Oct 1986
- [5] Martin Van Crevald. *Supplying War*. Cambridge: Cambridge University Press, paperback edition, 1980
- [6] James F. Dunnigan. *How to Make War*. New York: William Morrow and Co., 1982
- [7] Army Field Manual, FM 71-3, (1977)
- [8] Col. Huba Wass de Czege, "Toward A New American Approach to Warfare," *The Art of War Quarterly*, Vol. II, Sep 1983
- [9] Ramon Lopez, "The AirLand Battle 2000 Controversy--Who Is Being Short-Sighted?" *International Defense Review*, 11, p. 1,551
- [10] Richard Hart Sinnreich. *Military Strategy in Transition, Studies in International Security Affairs and Military Strategy*. Boulder, CO: Westview Press, 1984
- [11] Timothy Alexander Meyers, "NATO: Can the Alliance Be Saved?" *Armed Forces Journal International*, Nov 1983
- [12] William G. Hanne, Col., USA, "AirLand Battle--Doctrine Not Dogma," *International Defense Review*, 8, 1983, p. 1,035
- [13] Donn A Starry, Gen., USA, "Extending the Battlefield," *Military Review*, Mar 1981, p. 32
- [14] Phillip A. Peterson and John G. Hines, "The Conventional Offensive in Soviet Theater Strategy," *Orbis*, Fall 1983
- [15] William E. DePuy, Gen., USA, *ARMY*, Nov 1984
- [16] C. J. Dick, "Soviet Operational Maneuver Groups--A Closer Look," *International Defense Review*, 6, 1983, p. 769

REFERENCES (Continued)

- [17] John M. Weinstein in *The Defense of the West*. Eds., Robert Kennedy and John M. Weinstein. Boulder, CO: Westview Press, 1984
- [18] Jeffrey Record. *Revising U.S. Military Strategy*. McLean, VA: Pergamon-Brassey's, 1984
- [19] Richard Ned Lebow, "The Soviet Offensive in Europe--The Schlieffen Plan Revisited?" *International Security*, Vol. 9, No. 4, Spring 1985
- [20] John S. Doerfel, Lt.Col., USA, "The Operational Art of the AirLand Battle," *Military Review*, May 1982
- [21] Defense Technical Information Center, Cameron Station, Alexandria, Va., Report No. AD B067 735, *The "Air" in AirLand Battle*, by James B. Henderson, Jr., Major, USAF
- [22] William A. Walker, Lt.Col., USA (Ret.), "The Deep Battle," *ARMY*, Jul 1986
- [23] Defense Technical Information Center, Cameron Station, Alexandria, Va., Report No. AD-B068 009L, *The Role of Corps Artillery in the AirLand Battle Concept*, by David L. Ingle, Maj., USA, Jun 1982.
- [24] U.S. Army War College, DTIC No. AD-B103 133, *Sustaining the AirLand Battle: Mature Theater Logistics Examined*, by Robert D. Shadley, Lt.Col., OD, 1986
- [25] Edward N. Luttwak, "The Operational Level of War," in *International Security*, Winter 1980/81, Vol. 5, No. 3
- [26] Joint Chiefs of Staff, JCS Pub. 1, *Department of Defense Dictionary of Military and Associated Terms*, Apr 1984
- [27] Defense Technical Information Center, Cameron Station, Alexandria Va., Report No. AD-A167 818, *Tactical Survivability of Divisional Combat Service Support Units on the AirLand Battlefield*, by Brian W. Davenport, Maj., USA, Dec 1985
- [28] John W. Holly, Maj., USA, "The Forgotten Dimension of AirLand Battle," *Military Review*, Aug 1985, p. 19
- [29] Arie van der Vlis, "AirLand Battle in NATO, A European View," *Parameters*, Vol. XIV, No. 2, p. 10

REFERENCES (Continued)

- [30] Defense Technical Information Center, Cameron Station, Alexandria, Va., Report No. AD-B083 342, *The Impact of New Conventional Weapons on Joint Army-Air Force AirLand Combat Operations*, by James W. Holt, Lt.Col., USAF, 1984
- [31] L. D. Holder, Lt.Col., USA, "Maneuver in the Deep Battle," *Military Review*, May 1982
- [32] T. N. Dupuy, Col., USA. *A Genius for War*. Fairfax, VA: Hero Books, 1984
- [33] Defense Technical Information Center, Cameron Station, Alexandria, Va., Report No. AD-A170 411, *Should the U.S. Army's Airland Battle Doctrine be Acceptable to NATO?*, by John A. Van Alstyne, Lt.Col., USA, May 1986, p. 17-21.
- [34] Defense Technical Information Center, Cameron Station, Alexandria, Va., Report No AD-E301 109, *A Review of Selected Models*, by Reed E. Davis and Cheryl L. Seyboth

CNA PROFESSIONAL PAPER INDEX¹

PP 407²

Laird, Robbin F., *The French Strategic Dilemma*, 22 pp., Nov 1984

PP 415

Mizrachi, Maurice M., *Can Authoritative Studies Be Trusted?* 2 pp., Jun 1984

PP 416

Jondrow, James M. and Levy, Robert A., *The Displacement of Local Spending for Pollution Control by Federal Construction Grants*, 6 pp., Jun 1984 (Reprinted from *American Economic Review*, May 1984)

PP 418

Reslock, Patricia A., *The Care and Feeding of Magnetic Tapes*, 7 pp., Jul 1984

PP 420

Weiss, Kenneth G., *The War for the Falklands: A Chronology*, 32 pp., Aug 1982

PP 422

Quester, Aline and Marcus, Alan, *An Evaluation of the Effectiveness of Classroom and On the Job Training*, 35 pp., Dec 1984. (Presented at the Symposium on Training Effectiveness, NATO Defense Research Group, Brussels, 7-9 January 1985)

PP 423

Dismukes, N. Bradford and Weiss, Kenneth G., *MARE MOSSO: The Mediterranean Theater*, 26 pp., Nov 1984. (Presented at the Seapower Conference, Washington, D.C., 26-27 November 1984)

PP 424

Berg, Dr. Robert M., *The CNA Ordnance Programming Model and Methodology*, 27 pp., Oct 1984. (Presented at the ORSA-MAS/MDRS Symposium, Washington, Aug 1984)

PP 425

Horowitz, Stanley A. and Angier, Bruce N., *Costs and Benefits of Training and Experience*, 18 pp., Jan 1984. (Presented at the Symposium on Training Effectiveness, NATO Defense Research Group, Brussels, 7-9 January 1985)

PP 427

Cavalluzzo, Linda C., *OpTempo and Training Effectiveness*, 19 pp., Dec 1984. (Presented at the Symposium on Training Effectiveness, NATO Defense Research Group, Brussels, 7-9 January 1985)

PP 428

Mathes, Greg, Cdr., USN and Evanovich, Peter, *Force Levels, Readiness, and Capability*, 24 pp., Nov 1984. (Presented at the ORSA-TIMS 26-28 November Meeting, Washington, D.C.)

PP 429

Perla, Peter P. and Barret, Raymond T., LCdr., USN, *Wargaming and Its Uses*, 13 pp., Nov 1984. (Published in the *Naval War College Review*, XXXVIII, No. 5 / Sequence 311, September-October 1985)

PP 430

Goldberg, Matthew S., *The Relationship Between Material Failures and Flight Hours: Statistical Considerations*, 18 pp., Jan 1985

PP 431

McConnell, James M., *A Possible Change in Soviet Views on the Prospects for Antisubmarine Warfare*, 19 pp., Jan 1985

PP 432

Marcus, Alan J. and Curran, Lawrence E., Cdr., USN, *The Use of Flight Simulators in Measuring and Improving Training Effectiveness*, 29 pp., Jan 1985. (Presented at the Symposium on Training Effectiveness, NATO Defense Research Group, Brussels, 7-9 January 1985)

PP 433

Quester, Aline O. and Lockman, Robert F., *The All Volunteer Force: Outlook for the Eighties and Nineties*, 20 pp., Mar 1984. (To be published in *Armed Forces and Society*, 1985)

PP 435

Levine, Daniel B. and Jondrow, James M., *Readiness or Resources: Which Comes First?* 12 pp., Mar 1985

1. CNA Professional Papers with an AD number may be obtained from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22151. Other papers are available from the Management Information Office, Center for Naval Analyses, 4401 Ford Avenue, Alexandria, Virginia, 22302-0268. An index of selected publications is also available on request. The index includes a listing of professional papers, with abstracts, issued from 1969 to December 1983.

2. Listings for Professional Papers issued prior to PP 407 can be found in *Index of Selected Publications* (through December 1983), Mar 1984.

CNA PROFESSIONAL PAPER INDEX (Continued)

- PP 436
Goldberg, Matthew S., *Logit Specification Tests Using Grouped Data*, 26 pp., Jan 1985
- PP 438
Fletcher, Jean W., *Supply Problems in the Naval Reserve*, 14 pp., Feb 1986. (Presented at the Third Annual Mobilization Conference, Industrial College of the Armed Forces, National Defense University)
- PP 440
Bell, Jr., Thomas D., *The Center for Naval Analyses Past, Present, and Future*, 12 pp., Aug 1985
- PP 441
Schneider, George R., *Implications of the Strategic Defense Initiative for the ABM Treaty*, 13 pp., Feb 1986. (Published in *Survival*, September/October 1985)
- PP 442
Berg, Robert; Dennis, Richard; and Jondrow, James, *Price Analysis and the Effects of Competition*, 23 pp., Sep 1985. (Presented at the Association for Public Policy Analysis and Management--The Annual Research Conference, Shoreham Hotel, Washington, D.C., 25 October 1985)
- PP 443
FitzGerald, Mary C., *Marshal Ogarkov on Modern War: 1977-1985*, 65 pp., Mar 1986
- PP 445
Kober, Stanley, *Strategic Defense, Deterrence, and Arms Control*, 23 pp., Aug 1986. (Published in *The Washington Quarterly*, Winter 1986)
- PP 446
Mayberry, Paul W. and Maier, Milton H., *Towards Justifying Enlistment Standards: Linking Input Characteristics to Job Performance*, 11 pp., Oct 1986. (Paper to be presented at 1986 American Psychological Association Symposium entitled "Setting Standards in Performance Measurement.")
- PP 448
Cymrot, Donald J., *Military Retirement and Social Security: A Comparative Analysis*, 22 pp., Oct 1986
- PP 449
Richardson, Henry R., *Search Theory*, 13 pp., Apr 1986
- PP 450
Perla, Peter P., *Design, Development, and Play of Navy Wargames*, 32 pp., Mar 1987
- PP 451
FitzGerald, Mary C., *The Soviet Leadership on Nuclear War*, 40 pp., Apr 1987
- PP 452
Mayberry, Paul W., *Issues in the Development of a Competency Scale: Implications for Linking Job Performance and Aptitude*, 22 pp., Apr 1987
- PP 453
Dismukes, N. Bradford, *Strategic ASW and the Conventional Defense of Europe*, 26 pp., Apr 1987
- PP 454
Maier, Milton, *Marine Corps Project to Validate the ASVAB Against Job Performance*, 14 pp., May 1987
- PP 455
Bennett, Allan, *Continuous Dependence on Modeling in the Cauchy Problem for Nonlinear Elliptic Equations*, 49 pp., Apr 1987
- PP 456
Gates, Stephen, *Simulation and Analysis of Flight Deck Operations on an LHA*, 81 pp., Jun 1987
- PP 457
Walne, George N., *AFP 110-31: The Conduct of Armed Conflict and Air Operations and the Linebacker Bombing Campaigns of the Vietnam War*, 36 pp., Nov 1987
- PP 458
Walt, Stephen M., *Analysts in War and Peace: MccGwire, McConnell, and Admiral Gorshkov*, 63 pp., Sep 1987
- PP 459
Hodes, P. W., *Simulating Cable Logging in the Allegheny Region of Pennsylvania: A Case Study*, 84 pp., Jul 1987
- PP 460
FitzGerald, Mary C., *Arms Control and the New Revolution in Soviet Military Affairs*, 20 pp., Aug 1987
- PP 461
FitzGerald, Mary C., *The Soviet Military on SDI*, 39 pp., Aug 1987
- PP 463
Skinner, Douglas W., *Airland Battle Doctrine*, 80 pp., September 1988
- PP 464
Divgi, D. R., *On Tail Probabilities of Test Statistics*, 6 pp., October 1988

AP 11200 888

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for Public Release; Distribution unlimited.		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S) PP 463			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION Center for Naval Analyses		6b. OFFICE SYMBOL (If applicable) CNA	7a. NAME OF MONITORING ORGANIZATION		
6c. ADDRESS (City, State, and ZIP Code) 4401 Ford Avenue Alexandria, Virginia 22302-0268			7b. ADDRESS (City, State, and ZIP Code)		
8a. NAME OF FUNDING ORGANIZATION Office of Naval Research		8b. OFFICE SYMBOL (If applicable) ONR	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER N00014-87-C-0001		
6c. ADDRESS (City, State, and ZIP Code) 800 North Quincy Street Arlington, Virginia 22217			10. SOURCE OF FUNDING NUMBERS		
	PROGRAM ELEMENT NO. 65154N	PROJECT NO. R0148	TASK NO.	WORK UNIT ACCESSION NO.	
11. TITLE (Include Security Classification) Airland Battle Doctrine					
12. PERSONAL AUTHOR(S) Douglas W. Skinner					
13a. TYPE OF REPORT Final		13b. TIME COVERED FROM TO		14. DATE OF REPORT (Year, Month, Day) September 1988	15. PAGE COUNT 48
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	Air warfare, AirLand battle, Army operations, Army planning, Battles, Deterrence, Land warfare, Military doctrine, Military forces (United States), Military forces (USSR), Military requirements, Military technology, NATO, Threats, USSR, War potential, Warsaw pact countries		
15	06				
05	04				
19. ABSTRACT (Continue on reverse if necessary and identify by block number)					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED / UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL			22b. TELEPHONE (Include Area Code)		22c. OFFICE SYMBOL