(2)

Intelligence Preparation of the Battlefield: Is It Worth The Effort?

A Monograph
by
Major Guillermo A. Rodriguez
Military Intelligence

School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

First Term AY 90-91

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	27/12/90	MONOGRAPH

4. TITLE AND SUBTITLE
Intelligence Preparation of the Battlefield;
Is it worth the Effort? (U)

5. FUNDING NUMBERS

6. AUTHOR(S)
Major Guillermo A. Rodriguez, USA

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
SCHOOL OF ADVANCED MILITARY STUDIES
ATTN: ATZL-SWV
FT. LEAVENWORTH, KANSAS 66027-6900
COM (913) 684-3437 AUTOVON 552-3437

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)
SEE ATTACHED.

14. SUBJECT TERMS
INTELLIGENCE PREPARATION OF THE BATTLEFIELD (IPB)
DECISION MAKING MILITARY PLANNING
ESTIMATES INTELLIGENCE

15. NUMBER OF PAGES
41

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNLIMITED

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major Guillermo A. Rodriguez

Title of Monograph: Intelligence Preparation of the Battlefield; Is it Worth the Effort?

Approved by:

William J. Rice
Lieutenant Colonel William J. Rice, MS, MBA — Monograph Director

Gordon F. Atcheson
Colonel Gordon F. Atcheson, MA. — Director, School of Advanced Military

Philip J. Brookes
Philip J. Brookes, Ph.D. — Director, Graduate Degree Program

Accepted this 30th day of January 1991

ABSTRACT

INTELLIGENCE PREPARATION OF THE BATTLEFIELD; IS IT WORTH THE EFFORT? by MAJ Guillermo A. Rodriguez, USA, 41 pages.

The purpose of this study to determine the viability of the IPB process as a decision making tool. In order for IPB to be of practical use in decision making it must reduce uncertainty in a timely manner. Today's fluid battlefield belongs to the commander who can make and effect sound decisions faster than his opponent. Additionally, IPB must focus on the commander's needs and his plans.

The study consists of four sections. The first establishes the role of intelligence from a theoretical and historical perspective. It seeks to establish the basic categories of information needs and to determine whether those needs are addressed by IPB doctrine. Section two examines the application of IPB doctrine to the military decision making process. Section three is an examination and analysis of the findings of Combat Maneuver Training Center and field training exercises regarding recent use of IPB in tactical planning. Section four completes the study with conclusions, recommendations, and implications for AirLand Battle-Future.

The study concludes that poor staff procedures prevent the IPB process from being a viable decision making tool. Poor staff procedures are in evidence in Center for Army Lessons Learned (CALL) records at every level from battalion to division, and occur with sufficient frequency to warrant concern.

Table of Contents

INTRODUCTION

War is the realm of uncertainty; three quarters of the factors on which action in war is based are wrapped in a fog of greater or lesser uncertainty. A sensitive and discriminating judgment is called for; a skilled intelligence to scent out the truth.1

The common sense IPB process is the bigges doctrinal improvement in my 24 years of service.2

In planning all military operations, intelligence categorically comes first. Commands are organized, task forces are formed, troops are trained, uniforms and equipment are prescribed, transportation requirements are computed, naval and air support are arranged-all on the basis of intelligence.3

Commanders seek intelligence to reduce uncertainty. Uncertainty, according to Clausewitz, is a basic characteristic of warfare.4 To reduce uncertainty, commanders need knowledge of the enemy, terrain, and weather conditions of the battlefield.

Throughout history, commanders have sought to reduce battlefield uncertainty to develop sound tactical and operational plans. Decision making depended on obtaining timely and accurate intelligence on the terrain, weather, and enemy. The commander who sought and best used intelligence many times was the victor. Those who did not, failed or at best won costly victories.

Before Napoleon, commanders were their own intelli-

gence officers. Small armies and minimal dispersion and mobility enabled a commander to assess the terrain and weather, and with minimum effort seek information on an enemy generally nearby. As armies grew, technology gave them greater and more rapid means of mobility, firepower, protection, and detection. These factors combined with skillful use of weather and terrain made it increasingly difficult and more risky for commanders to make decisions without intelligence. It became more important to reduce the increasing uncertainty of the battlefield.

To a large extent, the type of information a commander has at his disposal, and his ability to use it determine the effectiveness of his decisions. Commanders can ill-afford to plan operations without some knowledge of the enemy, weather, and terrain.

A commander and his staff have a variety of tools to obtain this knowledge and help them in decision making. One such tool is the Intelligence Preparation of the Battlefield process (IPB). The purpose of the IPB process is to reduce the battlefield uncertainties of enemy, weather, and terrain.5 These three elements make up the basic types of intelligence modern commanders seek for tactical planning. IPB integrates their effects to "paint a picture" of the battlefield so commanders can make more informed decisions.

The purpose of this study is to determine the viability of the IPB process as a decision making tool. In order for IPB to be of practical use in decision making it must

reduce uncertainty in a timely manner. Today's fluid battlefield belongs to the commander who can make and effect sound decisions faster than his opponent. Additionally, IPB must focus on the commander's needs and his plans.

The study will consist of four sections. The first establishes the role of intelligence from a theoretical and historical perspective. It seeks to establish the basic categories of information needs and to determine whether those needs are addressed by IPB doctrine. Section two examines the application of IPB doctrine to military decision making. My intent is to describe how the IPB process is used during the military planning process. Section three is an examination and analysis of the findings of Combat Maneuver Training Center and field training exercises regarding recent use of IPB in tactical planning. The analysis draws from over 150 observations covering the period 1984 to the present. Section four completes the study with conclusions, recommendations, and implications for Airland Battle-Future. For clarity and simplicity, the terms intelligence and information are interchangeable and encompass enemy, weather, and terrain.

THE ROLE OF INTELLIGENCE

> "The decisive factor in warfare has often been combat intelligence. It has been of major influence in every battle, campaign, and war in history, affecting the outcome of struggles between squads and armies. Yet, no other single factor has been so consistently ignored and neglected by unsuccessful commanders. Nothing else has been so universally used and emphasized by successful commanders."6

Military commanders have relied on intelligence for decision-making from the beginning of man. Possibly one of the earliest accounts of seeking information about the enemy is in the Bible. From the 13th Chapter of Numbers, Jehovah directed Moses to send men to spy in the land of Canaan and to bring back information about the country and its people.7 2000 years ago Sun Tzu, expressed his thoughts on the importance of information in decision making with these well know words: "Know the enemy, know yourself; your victory will never be endangered. Know the ground, know the weather; your victory will then be total."8

A commander can not carry out any military operation without having first obtained intelligence that will aid in determining the most suitable course of action. A commander must not only see that he gets information, but also that what he gets is the best and most reliable. The greatest talent for conducting the art of war is of little use to a commander if he cannot devise means for acquiring knowledge of his adversary's strength, position, and movements. All great captains attached considerable importance to this matter. Frederick the Great remarks in

his general principles, "If one could always be acquainted beforehand with the enemy's designs, one would always beat him with an inferior force."9 Wellington said that he had spent most of his life trying to guess what he might meet with on the other side of the hill or around the next corner.10 General Erwin Rommel stated,

> It is of the utmost importance to the commander to have a good knowledge of the battlefield and of his own and his enemy's positions on the ground. It is often not a question of which of the opposing commanders is the higher qualified mentally, or which has the greater experience, but which of them has the greater grasp of the battlefield.11

The evolution of warfare made the aquisition of intelligence increasingly more difficult. Historically, as commands increased in size and the methods of waging war became more complicated, the amount of information commanders needed grew.12

Before Napoleon, commanders' needs for tactical intelligence were relatively few and simple to collect. This in no way suggests that intelligence was less important. Alexander, Hannibal, and Frederick all considered foreknowledge of the enemy, weather, and terrain significant to their planning.

In 326 B.C., Alexander the Great's last major battle required him to cross the Jhelum River in India in order to engage Porus'army. There the effects of enemy, weather, and terrain combined to cause him great difficulty, though he was victorious. Heavy rains had swollen the river. On the other side stood Porus' Army which outnum-

bered Alexander's by 15,000. Using feints along the river to deceive and distract Porus, Alexander found a crossing site 16 miles upstream. With 10,000 men, he crossed under the cover of a dark, stormy night and subsequently defeated Porus.13

Almost 100 years later, on June 217 B.C., Hannibal fought the Battle of Trasimeno. This battle was an excellent example of integrating information on the enemy with terrain and weather considerations. Hoping to trap Hannibal, Flaminius, the Roman commander, rapidly marched his army through a narrow trail flanked on his left by Lake Trasimeno and hills to his right. Hannibal placed his force in the hills taking advantage of the lake's morning fog to reduce the Romans' visibility. When the Romans were well within the pass, Hannibal struck the "blind force," leaving only its advance guard to survive.14 600 Years later, Vegetius possibly had Trasimeno in mind when he wrote in his military treatise De Re Militari, "reconnoiter places through which one is to march (to include the flanks), lest one fall into ambuscades."15

Although not a soldier by trade, Vegetius saw the value of intelligence in an IPB context. He dedicated several pages to this matter, particularly in Book Three, of the De Re Militari. He advised commanders to consider the field of battle and to judge whether the ground is of advantage to him or the enemy.16 For Vegetius, the nature of the ground carried greater consequences for success than courage.17 On the enemy he said, "it is essential to

know his character and next compare the state of ones force against his."18 As for weather, he considered the sun, dust, and wind as key factors to analyze for positioning forces.19 The De Re Militari became the most influencial treatise in the western world from the Roman times up to the 19th Century. It would be for Napoleon as interpreted by Carl von Clausewitz and Henri Jomini to create the next major impact on the Western world.20

Napoleonic warfare, fought on a grander scale, further emphasized the requirement for intelligence as basic to decision making. At Waterloo, weather and terrain played a key role in the outcome. A rainstorm hampered the French advance guard as it attempted a reconnaissance in force against British positions.

Napoleon postponed his attack until the following morning. In the morning he delayed further for several hours to permit the ground to dry. The delay was fatal, for Grouchy did not make contact with Blucher who was moving west toward Wellington, less than 9 miles away.21 The failure of Ney's cavalry charge against British positions was in part due to an error of topographic perception. Napoleon's maps and local guides did not discern a sunken road cutting what appeared to be an open plain.22 This caused the French cavalry to attack uphill against prepared British positions.

Western style warfare was heavily influenced by Napoleonic Warfare. This is in great measure due to the

writings of Clausewitz and Jomini. Clausewitz's writings on intelligence indicate that (at least on the surface) he placed little value or trust in intelligence. He stated that in war, "Many intelligence reports are contradictory; even more are false, and most are uncertain. In short, most intelligence is false and the effect of fear is to multiply lies and inaccuracies."23

Clausewitz did not discount the need for intelligence. His suspicion of intelligence lay in the role and impact of chance. This concept permeates his philosophy of war. Chance reduces the accuracy and predictive value of information.24 The result is unreliable intelligence. Clausewitz's concern was that commanders would place too much reliance on intelligence in their decision making. The commander is left with the problem of recognizing the truth among the many reports he receives.

This difficulty of accurate recognition is one of the most serious sources of friction in war. Friction causes situations to change from what one had expected.25 Chance is directly related to friction for two reasons: first, it governs the type and timing of the "countless minor incidents," second, it goes beyond friction to multiply the severity which any particular event may affect the war. In friction, uncertainty and chance are knotted together, each overlapping and reinforcing the other.26 Their effect makes intelligence a risk should commanders place too much reliance on it.

Clausewitz's concern over intelligence derived from

the difficulty of collection, imperfect analysis, and the impact of preconception.27 To him, analysis is at best intuitive and more likely guesswork.28 If the information is available, then the decision maker's preconception may cause him to ignore it. He believed commanders lack sufficient means to obtain accurate intelligence in order to "see the battlefield." Even if identified, the information would be accurate only until the enemy displaced. For Clausewitz battle was the ultimate reconnaissance.29

With all his concern over intelligence, Clausewitz indirectly acknowledged its necessity. This extends beyond the enemy to include the effects of weather and terrain. He asserted that mathematical factors never find a firm basis in military calculations.30 Thus, he admitted to the use of estimates which, based on the enemy's characteristics, his general situation, and the laws of probability, form the basis for determining the enemy's course of action and friendly plans.31

Unlike Clausewitz, Jomini clearly acknowledged the importance of intelligence. Jomini stated,

> One of the surest ways of forming good combinations in war would be to order movements only after obtaining perfect information of the enemy's proceedings. In fact, how can any man say what he should do himself, if he is ignorant of what his adversary is about? As it is unquestionably of the highest importance to gain this information, so it is a thing of the utmost difficulty, not to say impossibility; and this is one of the chief causes of the great difference between the theory and the practice of war.32

Jomini stressed the need to collect information on the

enemy in his articles on logistics and reconnaissance. In them, he urged generals to seek information on the enemy by all means. The advance guard was of particular value and he recommended including a topographical officer to gather terrain intelligence.33

Jomini's key principle of war, that a commander should concentrate his force at the decisive point, implies a need for enemy, weather, and terrain intelligence to properly identify the decisive point. Chapter Three of his Art of War describes decisive points, lines and fronts of operations.34 Foreknowledge of the effects of terrain and enemy disposition is clearly implied throughout the chapter.

Thus, Clausewitz and Jomini, through their interpretations of Napoleonic warfare, influenced future armies of the Western world. Clausewitz influenced the Prussian army and later armies participating in the world wars. Jomini's Art of War was influential during the Civil war. Jomini's Art of War served many Civil War officers as a field manual.

His concept of a "decisive point" generated additional intelligence needs. Technological advancements also served to increase the need and importance of intelligence to decision making. Thus, the need for information in decision making evolved from a desire, which a commander could operate without, to a requirement for command decision making.

The American experience during the Civil War demon-

strated the link between information and success on the battlefield. Battles and engagements took place over large geographic areas. At all echelons intelligence on the enemy, weather, and terrain took on a greater significance than in prior wars. The telegraph, balloon, cavalry, scouts, spies and Pinkerton's agency increased commanders's access to greater amounts and varieties of combat intelligence.35

Stonewall Jackson regarded intelligence as vital to planning operations. With his cavalry he maintained constant contact with the enemy. He never went into battle without sufficient information. He was a student of Napoleon, carrying a copy of the emperor's maxims in his haversack.36 Similar to Napoleon, he was a constant student of maps. His topographical engineer was an important member of his staff.37

Also during the Civil War, the lack of topographical data caused General George McClellan difficulty at Yorktown, in 1862, as he sought a way to get around its defenses. Weather, too contributed to his so-called over cautiousness when rain turned poor roads into muddy mires. His communications and intelligence were inadequate and he complained of a lack of cavalry for reconnaissance.38

While the Civil war increased the need for intelligence, little was done in the years after the war to develop a professional intelligence organization. Experiences of the American Expeditionary Forces in WWI high-

light the axiom that military operations can be carried out successfully and without unnecessary losses only in light of the most complete and reliable intelligence. Tactically, the need for combat intelligence existed, yet organizational weaknesses caused the Americans to depend on Allied intelligence sources.39 The introduction of the airplane and tank, while not fully exploited during WWI, was to have an enormous impact on the future conduct of warfare during WWII.

WWII saw intelligence gain increased importance in the planning and conduct of military operations. This was due primarily to technological advancements in communications. Developments in the radio and radar permited information to be reviewed and transmited almost instantaneously (near real-time).40 In George Patton's commands, intelligence was always viewed as big business and treated accordingly. The G2 was never a forgotten man. On many occasions the commander's group included only two others, and one of them the G2.41 For example, in preparation for Operation Husky, code name for the invasion of Sicily, the G2 staff was the first to detail personnel full time to the effort. This was to lay the intelligence foundation upon which all other planning would be built.42

The G2's principles for determining enemy capabilities were summed up by: know your enemy, the terrain he controls, and the weather. These factor go hand-in-hand, always together. They were the basic factors which Colonel Oscar Koch (Patton's G2) considered when providing intel-

ligence support.43

Colonel Koch reaffirmed the role timeless factors such as weather and terrain play in decision making. Koch was not too dissimilar to Sun Tzu who stated,

> Therefore to estimate the enemy situation and to calculate distances and the degree of difficulty of the terrain so as to control victory are virtues of the superior general. He who fights with full knowledge of these factors is certain to win; he who does not will surely be defeated.44

Koch said that without intelligence the commander is blind. Only through the reasoned application of information supplied by intelligence is he able to make sound tactical decisions.45 The smaller the size of the tactical unit which he commands, the greater his necessity for detailed information. At all echelons, the commander must know the enemy he faces-or is about to face-his characteristics, his strengths and weaknesses, the detailed location of his forces, the various types of armament he possesses, his tactics, and his military capabilities and limitations. He must know the terrain the enemy controls and he must know the weather.46

Throughout this section, I have tried to establish the role intelligence plays in command decision making. There can be no doubt that intelligence on the enemy, weather, and terrain has always been important to commanders. Military theorists consistently advised commanders of the need of foreknowledge. At this point the reader might say to himself that this is obvious and ask, "so what?" It is

precisely because the need for information is so obvious that we must study it. Typically, it is the obvious which is many times ignored or overlooked. In war this can only result in unnecessary loss of life. As we enter the twenty-first century, intelligence is the first requirement to sound decision making.

Years ago, before the appearance of long range artillery and smokeless powder, the commander could absorb the whole battlefield at a glance. He could see the dispositions and movements of his enemy. At worst he had only to worry of what lay on the other side of a hill. War was more or less a game of chess. The commander could watch his enemy, assess the situation, and make his decision with little or no help from a staff.47

As warfare evolved, its character changed. Technology facilitated mobile warfare. Commanders could no longer assess the battlefield by themselves and would seek information by means of a staff.

Martin van Creveld characterized today's battlefield as empty, but crowded.48 Dispersion and mobility coupled with superior acquisition means make the planning and conduct of military operations more complicated. Operations will depend on timely, accurate intelligence. Commanders cannot ignore the effects of weather and terrain without risk. Without sound staff planning, good troops will die needlessly.

Command decision making must be conducted by an integrated staff. The staff should draw from an intelligence

foundation based on sound, analytical methods. IPB is such a analytical methodology.

Thus from the view point of theory and history, intelligence is basic to decision making. The requirement for intelligence is the justification of all intelligence activities. Commanders use intelligence to arrive at decisions. It is most useful for improving the quality of a decision. Good intelligence allows a commander to accomplish more than would otherwise be possible, and to carry out his mission more efficiently. Still, the modern commander, seeking to use maneuver to destroy an enemy, remains faced with the same requirement that faced Stonewall Jackson as he sat in his last council of war with Lee on a spring evening in 1863. Before the weakest link in the enemy chain can be smashed, it must first be identified and located.49

Herein lies the link between intelligence and decision making. Planning an operation which seeks decisive results presupposes knowing when to strike the enemy, where, and how best to get there. Critical facets of maneuver warfare, based upon the terrain, weather, and enemy, involve without exception, combat intelligence. Lacking combat intelligence in these vital areas, the commander's decision making may result in haphazard guesswork, and maneuver becomes a minuet of the blind.50

IPB AND MILITARY DECISION MAKING

> Now if the estimates made in the temple before hostilities indicate victory it is because calculations show ones strength to be superior to that of his enemy; if they indicate defeat, it is because calculations show that one is inferior. With many calculations, one can win; with few one cannot. How much less chance of victory has one who makes none at all![51]

Sun Tzu's caution to commanders to develop an estimate of the situation holds true for modern warfare. Today's environment however, is different from Sun Tzu's. High speed, high intensity tactical operations reduce time available to the commander's decision making process. In addition to time, uncertainty hampers decision making. The need for information competes with time available in the planning and executing operations. The challenge to commanders is to weigh the risks to his mission. His options are to act rapidly with less information or slower with more knowledge. This is the essence of decision making.

Just what is military decision making? FM 101-5, Staff Organization and Operations, states, that it is the process used to arrive at and exe-cute tactical decisions. Marine Corps Major A.C. Bevilacqua defined it and its relationship to intelligence as, "... a process of analyzing and evaluating risk. In this process, the objective of intelligence is to eliminate or reduce the commander's unknown risks."[52]

In theory the problem of every commander consists of three elements: his mission; the enemy's strength, plans

and intentions; and the strength, plans, and intentions of his own forces. A commander must be capable of making a correct estimate of each in relation to the other two.53 The commander analyzes his mission, the G2, the enemy, and the G3 the friendly force. How are the three elements brought together in decision making?

Doctrinally, the IPB process seeks to bring together all of the above elements in the context of their environment.52 The IPB process reduces uncertainty regarding the effects of enemy, weather, and terrain on the friendly force within the context of a mission. IPB helps a commander visualize the battlefield within the constr ints of time. A simple five step process guides the analysis.53 First, a general examination of the area of operation is conducted. Next, the terrain, weather, and enemy are analyzed. The final step integrates their combined effects in the form of a decision support template (DST).54 The end result is a reduction of uncertainty within the limits of time and analytical ability.

One cannot expect any analytical process, whether it is IPB or another methodology, to achieve 100% certainty. For example, as analysis approaches issues in the moral domain, the conclusions as to their effects are more difficult to gauge. Simply stated, intelligence of an area usually provides a firm basis for decisions and plans. Intelligence of the enemy, uncertain to varying degrees, assists in selecting a course of action.55

I shall now describe how the IPB process supports

decision making. I will also describe how it forms part of the military decision making process.

The IPB process begins with the receipt of a mission. At this time the G2 sets the IPB process in motion. Taking all available information, he conducts a brief study of the area of operations. This constitutes step one of the process, Battlefield Area Evaluation. Its purpose is to establish focus for the following IPB effort by comparing known data with the intelligence requirements of the new mission.58

Shortly after receiving a mission, the staff meets with the commander for an initial exchange of information. During this meeting the G2 provides an intelligence update with all available information. This should include IPB from higher headquarters. The G2, as well as the other staff officers, should provide known facts and assumptions required to fill in critical information gaps.

After the exchange of information the commander completes his mission analysis. He restates the mission and provides his intent. He also issues initial planning guidance along with his initial priority intelligence requirements (PIR). PIR are those pieces of information a commander identifies as critical to accomplish his mission. Selection of PIR is an important task because this sets the intelligence collection system in motion. Failure to answer a PIR, while not a war-stopper, may impact adversely on a commander's ability to accomplish his

mission. This is why PIRs are a commander's responsibility.59 Clearly, the G2 and G3 should assist him in their selection, but the commander must actively participate in the decision. He understands best his intent and concept of operation. Other information requirements from the staff are given to the G2/S2 at this time.

After receiving planning guidance, the staff begins individual estimates. The purpose of the estimate is to collect and analyze relevant information for developing, within time constraints, the most effective solution to a problem.60 It is important to understand that the G2's objective is to prepare an intelligence estimate not to "do an IPB" as one frequently hears in the field. The IPB process is but a means to an end. That end is an analysis of the area of operation and the enemy situation. The analysis is derived through the integration of the IPB analysis of the terrain, weather, and enemy. The integration of occurs during step 5, threat integration, of the IPB process. equates to steps 3-5 of the IPB process.

Because of limited time, the G2/S2 should seek as much intelligence analysis as possible from higher headquarters. This is critical to IPB, as it is labor intensive. Continuous staff interaction is essential to make the best use of time. Also, staff interaction ensures a team effort.

The G2 is the IPB coordinator during the estimate process. He is responsible for terrain, weather, and threat evaluation. As he develops the appropriate graphic

products, the dynamics of the process begin to take shape. Throughout the estimate process there is a constant interchange of information, insights, and coordination which revolves around the IPB analysis. As a result, the staff is able to plan more effectively despite uncertainty. As the G2/S2 progresses in the IPB analysis, the staff interaction should likewise increase. The dynamic culminates with the total staff meeting to wargame the courses of action and develop a decision support template (DST).61 I will now describe specific contributions IPB makes to decision making within each of its steps.

During step two, terrain analysis, the G2/S2 analyzes the effects of terrain on both friendly and enemy forces. He uses the military factors of terrain (OCOKA) as a guide. The kind of terrain intelligence called for is a function of the scope of a military decision in time and space.62 This means proper focus must be maintained at each echelon if the analysis is to be of value. Factors such as objective, logistics, scheme of maneuver should guide terrain analysis.

The principal product of terrain analysis is the modified combined obstacle overlay (MCOO). The MCOO is nothing more than a series of terrain factors overlays combined as one. It permits the commander to visualize the terrain's combined effect. This is an important product which the entire staff should use in preparation of staff estimates. The MCOO provides a picture of how forces can

move or maneuver through the area of operations and where they may be slowed or encounter significant obstacles. The G3/S3 uses the MCOO to refine his courses of action. The fire support officer uses it to plan more effective fires. It enables the G4/S4 to chose logistics sites and routes more effectively. The engineer officer uses the MCOO to develop more effective obstacles. In short, the MCOO enables all staff officers to make better use of the terrain.

Military operations are heavily influenced by geography. The terrain and its influence upon the situation must receive due consideration. Failure to do so may mean the difference between success and failure.63 Sun Tzu advised,

> Generally, the commander must thoroughly acquaint himself beforehand with the maps so he knows dangerous places for chariots and carts, were the water is too deep for wagons... All these facts the general must store in his mind; only then will he not lose the advantage of the ground.64

Step three of the IPB process is weather evaluation. This step is normally done simultaneously with terrain evaluation. This is because the predictions of weather necessary for combat are basically geographical.65 Weather has played a significant role in warfare, often changing the conditions of an area of operations various times within a 24 hour period. The S2 obtains detailed weather data from higher headquarters and then analyzes its impact on both friendly and enemy forces.66

Step four is threat evaluation. The primary purpose

of this step is to establish or update a threat data base and develop doctrinal templates. This is an ongoing task during peacetime for a unit's contingency areas. The G2 uses threat evaluation to analyze the enemy situation and identify information gaps. The results of his analysis form the basis for paragraph three, enemy situation, of the intelligence estimate.67

Step 5, threat integration, combines the analysis of the enemy's doctrine with the weather and terrain analysis to determine how the enemy might fight in our area of operation.68 Three key products developed during this phase of analysis are the situation, event, and decision support templates. Each builds on the previous to focus further analysis and refine friendly courses of action.

The situation template is a doctrinal template adjusted to include terrain and weather constraints. It aids staff planning by depicting how the enemy might appear during critical battlefield events. The G2/S2, constrained by time, develops situation templates for each course of action or for critical battlefield events.

Once the staff integrates the situation templates into their course of action analysis, the staff estimate process is nearly complete. Once completed, the staff exchanges estimates or any remaining information not already provided. After exchanging staff estimates, what remains is to wargame courses of action to arrive at the best one. Within the IPB process, this is the point where the event template is prepared.69

The event template depicts enemy use of a particular avenue of approach in terms of time and space. It is developed by wargaming. The event template depicts named areas of interest (NAI) developed through the analysis of how the enemy could affect a course of action. NAI are simply observation points or areas where the G2/S2 estimates threat forces will appear. Careful selection of NAIs help confirm or deny the G2/S2's estimate of what the enemy might do. This is why the event template is the basis for the collection or reconnaissance plan.70 Also, while not doctrine, I believe the event template can help identify threat culminating points.

Using the event analysis matrix, time-distance factors could be determined based on equipment capability. Then, it is a matter of integrating the effects of weather and terrain with potential threat objectives to arrive at potential culminating points. Knowledge of pontential threat culminating points can aid planners in formulating plans which take advantage of this vulnerability. NAI and target areas of interest (TAI) can be determined to track and attack a threat force as it reaches its culminating point. This is one of the critical events which could be wargamed during the preparation of the decision support template (DST).

The decision support template is the final product developed in the IPB process. The DST is best described as a combined intelligence and operations estimate in

graphic form. The DST takes the details of the event template and relates them to decision points (DP). The DST does not dictate nor commit the commander to decision points. It simply indicates points on the ground where a critical decision may be required. As such, the DST provides a structured basis for using judgment and experience to reduce uncertainty and to make more effective decisions.71

Development of the DST is coordinated by the G2/S2. Also participating are the G3/S3 (who by doctrine briefs the DST), FSCOORD, ALO, G4/S4, engineer, and other staff officers as the situation dictates.72 The entire staff analyzes each course of action through wargaming.

The initial step in developing a DST is to determine where along avenues of approach or mobility corridors the commander can influence the battle by fire, maneuver, or jamming. These areas are target areas of interest. A TAI is an engagement point or area where the interdiction of threat high value targets (HVT) reduces or deprives the threat of a significant capability. Target areas of interest are force or terrain oriented. They form the basis for the synchronization of combat power.

After selecting TAIs, decision points are identified. The selection of DPs is primarily a commander or G3/S3 responsibility. NAIs are placed to serve as a cue that a HVT is approaching a TAI. DPs are positioned based on weapons system response time. Thus, decision points are the no-later-than point in time where the commander must

decide to respond if he is to affect a particular TAI as planned. Effective synchronization depends on the total staff wargaming of courses of action.

Wargaming is fundamental to threat integration. It is essentially a brainstorming session. Borrowing from Sun Tzu, the essence of wargaming is as follows, "If I wish to take advantage of the enemy I must perceive not just the advantage in doing so but must first consider the ways he can harm me if I do."73 The amount of time devoted to wargaming is situation dependent. It is important to set aside some time, no matter how little, for this critical task. The idea is that the combined effort of the total staff should lead to a more complete plan, with few changes later on.

Ideally, the staff prepares a DST for each course of action. Once complete, it is essentially a synchronization matrix similar to those recommended in CGSC ST 100-9, The Command Estimate and FM 34-130, Intelligence Preparation of the Battlefield. With the completion of the DST, the staff provides its recommended course of action to the commander for his decision. Once a course of action is selected, an operations order is published and disseminated. In a sense, this marks the completion of a cycle of IPB. The IPB process however, is continuous. During the execution phase, it is updated or modified to continue its support to decision-making.

As you can see the IPB process when followed has much

to contribute to decision-making. It forms an integral part of the military decision-making process by serving as an information and analysis base for the staff. It is a process that promotes staff fusion facilitating synchronization.74 It supports the evaluation of risk, which is the essence of decision making.

FINDINGS and ANALYSIS

Section one established the need for intelligence in an IPB context. Section two described the IPB process as it functions within the decision making process. Several questions are at issue in section three. Do commanders and staffs in the field use the IPB process? Does it contribute to decision making by providing the commander an analysis of the enemy, weather, and terrain in a timely manner? Is it focused to the commander's mission and information needs? Analysis in this section seeks to answer these questions in order to determine the viability of the IPB process as a decision making tool.

My analysis draws on data maintained at the Center for Army Lessons Learned (CALL). CALL maintains observations and after action reports (aar) of National Training Center (NTC), Joint Readiness Training Center, and major Division and Corps field training exercises. From them, I drew over 150 observations related to IPB and mission planning.

My research focused on three major areas:

1. Timeliness of the IPB process;
2. Usefulness of the IPB process;
3. Focus of the IPB process.

Timeliness of The IPB Process

Time is the enemy of every commander and staff officer. There is never enough of it. In decision making, time constraints are a function of the need to plan and execute an operation inside the threat's decision making and response process. If gauged properly, a commander can throw the threat off-balance and into a reactive mode.

Three problems related to time surfaced during the research. Tne first was the inability of staffs to manage information. Incomplete IPB was cited as the second major problem affected by time. The third problem focused on improper staff proceedures. The findings of each of these three problems will now be discussed.

A CALL focused rotation after action report highlighted time to manage information as the single most critical commodity not routinely available.73 The inability to process and transmit information in a timely manner hampers a commander's flexibility and responsiveness. One division required the division command post to maintain approximately 404 separate charts or information elements. By SOP, this division generated some 5,761 reports each day.76 One report cited the division G2 as being an "information choke point."77 Clearly, one can begin to

see the difficulty a commander has in visualizing the battlefield without timely intelligence. Information gaps become hard to fill or, because of "information choke points", risk being overcome by events.

Many reports stated that incomplete IPB was a problem. Lack of time or its mismanagement was one cause. The other cause was inexperience, which I will address later. IPB is a labor intensive process which can take hours to develop. This is particularly true at brigade and battalion level where S2 sections are small and have the least analytical experience. The paradox is that brigades and battalions have the least amount of time for mission planning. Observer/controller (O/C) reports for two rotations mentioned that the brigade S2 did not pass down IPB products to the battalion S2s.78 This could have saved the battalion S2 time to conduct more detailed analysis.

Closely related to the issue of incomplete IPB is improper staff procedures. Several reports cited that units did not adhere to the 1/3-2/3 rule. This cut into planning time at subordinate headquarters. It forced S2s to conduct rapid, superficial analysis and led to incomplete IPB products.

Improper staff procedures affect not only time but impact on the usefulness of the IPB for decision making. The usefulness of IPB was the second research category.

Usefulness of the IPB Process

If the IPB process is to be a viable decision making tool, it must be useful to the commander and his staff. Assuming time is not a factor, was the IPB process used during mission planning? The research showed that IPB's use varied with unit rotations. There were three reasons for its inconsistent use:

a. Incomplete IPB

b. Lack of command involvement

c. Poor staff procedures

Incomplete IPB was frequently cited at all echelons as a deficiency. The two primary causes were lack of time and G2/S2 inexperience. Having already addressed the time issue, I will focus on the experience factor.

Many see IPB as the G2/S2's preparation of graphic products for use in briefing the intelligence estimate. However, IPB's primary contribution to decision making lies in the analytical effort. The graphic products are only tools the analyst uses to reach logical conclusions affecting an operation.79 Experience allows a G2/S2 to conduct the process faster with enough analysis to contribute to mission planning. At battalion level time constraints and stress combine such that primary staff officers must have experience to be successful. Battalion S3s are captains or majors with considerable experience. The S2 on the other hand is generally an inexperienced lieutenant. Training, both individual and collective (integrated staff), is the best remedy for inexperience.

Lack of command involement isolated and weakened the IPB process. Commanders set the tone and atmosphere of all that occurs within their unit. They determine what is or is not important. For the IPB process to be useful, commanders must understand and believe in it. Colonel William Janes, Director of the School for Advanced Military Studies (SAMS), as an NTC observer/controller (O/C) in 1987 stated, "IPB is our starting block, which must include input and active participation from all the staff not just the S2. The IPB process is a tremendous innovation that unfortunately is misunderstood/used by a very few leaders."80 I found examples of this problem at every echelon of command.

During one division exercise, the commanding general mentally determined what the enemy would do and developed the friendly concept. Enemy capabilities were seldom considered against friendly courses of action, (ie. no wargaming took place).81 At the task force (TF) level, some battalion commanders commit similar acts.82 During one rotation the O/C commented that the TF commander and the S3 made their plans without staff involvement.83 More typically, I found that some S3s did not coordinate with the S2 or use the IPB process to develop their plans.84 This suggests that commanders accept this state of affairs or are not aware of what is going on within their staffs. What is more alarming is that some battalion commanders and S3s will become commanders at higher echelons bringing

with them the same procedural habits. Unless corrected through training and education, the same problems will continue to occur.

Numerous reports cited weak staff proceedures as a major problem area. The success of any operation lies in the action taken to prepare for it. A coordinated plan is essential. This is because modern warfare is more complex than in Napoleon's days. Today's commander can ill-afford to be his own G1-G4 as did Napoleon. The purpose of a staff is to help the commander in his decision making. Staffs collect, analyze, and develop options for commanders. I discussed how poor staff procedures led to time mismanagement. After time, weak staff procedures were the most frequently discussed. I broke down my findings on this issue into the following:

1. Staff interaction.
2. Wargaming and development of a Decision Support Template.

In preparing the staff estimate, staff officers focus their analysis on their field of interest. FM 101-5 adds, "the staff officer consults with other staff officers and appropriate agencies to ensure he considers all the factors."85 The failure of a staff to interact during planning led uncoordinated or ineffective plans. I already addressed observations concerning the lack of interface between the S3 and the S2. Other observations addressed the rest of the staff. For example, several reports specifically pointed to the fire support officer not using

the IPB available or not interfacing with the S2.86 Another report highlighted the positive impact of staff training at homestation. It attributed a unit's success in targeting to close working relations within the staff.86 Other separate observations pointed out the lack of S2 and engineer officer interface. In the logistics realm, IPB was used with positive results by one unit to position combat service support assets.88

The failure to wargame friendly courses of action and prepare a decision support template was a frequently cited deficiency in staff planning. The preparation of a decision support template brings to bear the staff's analysis of its options (COAs). Options are compared to risk (threat COAs) to determine the most appropriate course of action. Additionally, through wargaming, all the battlefield functions come together to increase a unit's total capability. Thus, synchronization occurs through staff fusion.

Wargaming is the tool which makes staff fusion possible. The DST is the output or record of the synchronization of a unit's combat power. Synchronization permits the most efficient use of all available combat multipliers at a commander's disposal. A commander cannot will or wish synchronization to occur, nor can he leave it to one or two staff officers. It can only be done through a total staff effort with commander involvement. The paradox is that, of all the IPB process, this most important

step is seldom completed, or done superficially.89

Focus of the IPB Process.

In order for IPB to be a viable decision making tool, it must focus on the commander's mission and information needs. Many of the issues raised thus far relate to focus. IPB reduces uncertainty by progressively narrowing its focus. Problems which hampered focus were:

a. Failure to set or update PIR.

b. Failure to develop or use NAIs to focus collection.

c. Failure to update IPB.

d. Failure to develop a DST.

A common observation regarding PIR is that they are too general.90 Another is that PIRs do not focus on the commander's intent.91 Priority intelligence requirements focus collection on critical information needs. The commander decides what information needs are important to his mission, with help from his G2 and G3. During operations, PIR will change as new questions arise. If PIR are not updated, the collection system will answer the wrong questions and waste valuable collection assets and time.

Some reports state the collection plan does not focus on NAIs.92 Factors such as time and coordination needs led to poor collection. Regardless, it is imperative that our collection assets focus on areas of high payoff. As much as we would like to believe otherwise, our collection system cannot look everywhere, all the time.

The above issues raised concerning PIR and NAI are merely part of a larger issue; that many times IPB is not updated or continued after the planning phase. Most products used during the IPB process are simply hypothetical as are the situation, event, and decision support templates. Others such as terrain factors overlays benefit the operation through updates. IPB is a continuous process. It does not end once the initial products are complete.

As discussed previously, many units never create a decision support template.93 The DST is where all the individual analysis is formally fused together. Through synchronization, combat multipliers focus at critical times and places of an operation. Only through the process of wargaming and DST development can the IPB process focus on a commander's mission and information needs.

Many of the problems I have identified are an offshoot of poor staff planning procedures. Many units simply do not follow the doctrinal decision making process. The findings suggest we may have to relook how we train and educate our officers in staff planning procedures.

CONCLUSIONS AND RECOMMENDATIONS

Theory and history consistently support the need for information on the enemy, weather, and terrain. Successful commanders always tried to reduce uncertainty by analyzing the impact of the enemy, weather, and terrain on their operations. Before IPB, however, they did not have a systematic, continuous process by which to accomplish analysis.94 The usefulness of any doctrine rests with commanders and staffs charged with implementing it. The IPB process demonstrates its utility in units which integrate it into their decision making. However, for a variety of reasons, many units fail to use IPB effectively and certainly derive little benefit from it.

This study concludes that poor staff procedures prevent the IPB process from being a viable decision making tool. Poor staff procedures are in evidence in CALL records at every level from battalion to division, and occur with sufficient frequency to warrant concern. Factors which cause poor staff proceedures are:

1. Commanders do not sufficiently involve themselves in mission planning, particularly the IPB process.
2. Staff planning is not a continuous, integrated effort, but rather independent actions done in isolation
3. Commanders and staffs treat IPB as products the G2/S2 produces, and not as a total integrated staff process.
4. G2/S2s lack sufficient experience to use the IPB process to its full potential.

All these factors are reduceable to command emphasis, education, and training. What can be done? Where do we go from here?

First our leadership must decide whether it accepts the IPB process as a decision making tool. Everything starts and ends with command emphasis and involvement. It is wrong to tell an S2 to, "do an IPB and get back to me." **IPB is a process not a product.** It requires commander and staff involvement. The commander is the key to resolving related issues which prevent IPB's efficient use. The commander is responsible for training. Specifically, he is responsible for training his staff to function as a team. The commander also is responsible for training his staff in time management. In short, the viability of the IPB process to decision making lies squarely on the commander's shoulder. Yet, placing responsibility on the commander is not enough. Our commanders and staffs require education that teaches them to use the IPB process efficiently.

Most combat arms officers receive some training in IPB at every level of education. The Combined Arms and Services Staff School (CAS3) focuses on preparing officers to serve on staffs. It dedicates about 3 1/2 days to the IPB process. Instructors at the Command and General Staff Course review and emphasize IPB throughout the tactics instruction. In both schools, instructors stress IPB as the foundation upon which the staff plans and executes operations. The emphasis however, is on the **products** developed not the **process**. What commonly occurs is that the CGSC student serving as the S2 goes off to his map to

develop the appropriate overlay or templates.95 No where is the process of staff interaction truly reinforced, unless the instructor ensures it. Many times the decision support template is not developed for lack of time. These same habits then continue in the field only to be revealed during an NTC or BCTP rotation. It follows that all military schooling must place greater emphasis on the IPB process and less on its products. Emphasis must be in the context of developing a <u>total staff mentality</u> versus the more common planning-in-a-vacuum approach. Thus, we must emphasize proper staff procedures within our school system and in unit training programs. The Training and Doctrine Command should doctrinally integrate IPB into the military decision making doctrine.

At the individual level the military intelligence officer must also focus on process versus products. G2/S2s must understand that the IPB process is a means to an end. The end sought is the development of the intelligence estimate and a collection plan to verify and update the estimate during mission execution.96

In sum, doctrine is authoritative not directive, yet it deserves a chance. Before we discard the Intelligence Preparation of the Battlefield Process because it is wrong or it takes too long, we owe it to ourselves to find out why it does not work. We may find as I did that the problem lies not with doctrine but elsewhere.

RECOMMENDATIONS

Where IPB is concerned, the training and education of staff officers should focus on the integration and application of IPB products into the staff planning process. The following recommendations should contribute towards that effort:

1. That service schools review IPB instruction and revise as necessary to insure that it:

a. allows officers to understand how to apply the process to their staff planning.

b. emphasizes wargaming and the development of the Decision Support Template within a total staff context.

c. emphasizes commander involvement during planning.

2. That IPB be renamed as Commander's Preparation of the Battlefield. This encourages the total staff role within IPB and facilitates its integration with current decision making doctrine.

3. That IPB doctrine be integrated with Chapter four, Decision Making, FM 101-5 which is currently being revised.

4. That FM 101-5 adopt a standard decision support template as doctrine. CGSC ST 100-9 and FM 34-130, Intelligence Preparation of the Battlefield offer good choices.

5. That inter-staff coordination and communication be the subject of a CALL focus rotation at TF and Division level.

The IPB process is an integral part of decision mak-

ing. Effective staffs understand this. As this study points out, staffs which treated IPB as something outside the decision making process significantly reduced their chances of developing effective plans. IPB is not, however, the only solution. What matters most is that our staffs learn to work together as one, toward a common objective.

Implications for Airland Battle Future

Under ALB-F successful operations require "perfect intelligence." This translates into identifying units of battalion-size or larger within detection zones where the main effort lies. Intelligence in general, however, will be no more perfect than it is today. The reason for this is found in our focus on high technology solutions to problems, human in nature. There is more to perfect intelligence than identifying large formations. Commanders want to know what detection data translates to in terms of the overall picture and the threat intent. These and many other questions will arise and can only be answered by a skilled analyst. My concern is that we are putting all our cards on "detection technology" and not on systems which aid our analytical capability. High technology can provide valuable information but this offers only pieces of a complicated puzzle. Only through analysis can we solve the puzzle and reduce uncertainty.

The essence or final goal of the intelligence produc-

tion process at the tactical level is situation and target development.97 Situation development enables commander to see the battlefield in order to employ combat power more effectively. Target development is the process of providing timely and accurate locations of threat target with impact on current or future operations. IPB provides the basis for both situation and target development.98 While some detection data can be imediately acted upon; many pieces of information will require some analysis. Because analysis is time intensive, high technology decision aids could help speed up the analytical process.

The All Source Analysis System (ASAS) is expected to enhance and quicken our analytical capability. ASAS is a computer assisted, tactically deployable, all-source intelligence processing system.99 The system is currently being tested in the field. We must maintain our focus on this and other automated systems which facilitate analysis as well as detection in the IPB process.

Chris Bellamy pointed out that, "It is sensible to use modern technology to expedite the aquisition and processing of information, but organization and training is even more important."101 The study's findings support Bellamy's assertion. It follows that only through a combination of technology and training can we hope to reduce uncertainty on tomorrow's battlefield.

Martin van Creveld stated that, "From Plato to NATO the history of command in war consists essentially of an

endless quest for certainty."101 IPB provides the basis for rational calculation and the reduction of uncertainty. Without such a process integrated into military planning, perfect intelligence will only be a slogan.

ENDNOTES

1. Clausewitz, Carl von, On War. Princeton University, NJ, 1976. Edited and translated by Michael Howard and Peter Paret. p.101

2. Leland, BG E.S., NTC Observations. Ft. Irwin, Calif., Nov. 1985. p.1

3. Koch, BG Oscar W. with Robert Hays, G2: Intelligence for Patton. Whitmore Publishing Co., Phil., 1971. p.9

4. Clausewitz, On War. p.101

5. FM 34-130 Intelligence Preparation of the Battlefield. Washington D.C.: Headquarters, Department of the Army, May 1989. p.1-1

6. Heymount, Irving, Combat Intelligence in Modern Warfare. Harrisgurg, PA, Stackpole Co., 1960. p.1

7. Sweeney, Walter C., Military Intelligence, a New Weapon in War. NY: F.A. Stokes Co., 1924. p.2

8. Sun Tzu, The Art of War. Oxford University Press, NY, 1971. p.129

9. Furse, George A., Information in War: Its Aquisition and Transmission. London: W. Cloves & Sons, 1895. p.?

10. Bellamy, Chris, The Future of Land Warfare. St. Martin's Press, NY, 1987. p.258

11. Hart, Liddel B., ed. The Rommel Papers. Harcourt, Brace & CO., NY, 1953. p.122

12. Sweeny, Military Intelligence, A New Weapon in War. p.2

13. Dupuy, Richard and Trevor Dupuy, The Encyclopedia of Military History. Harper & Row Publishers, NY, 1970. p.51-52

14. Lamb, Harold, Hannibal. Doubleday & CO. Inc., Garden City, NY., 1958. p.115-117

15. Phillips, BG T.R., ed. Roots of Srategy, Book I. Stackpole Books, Harrisburg, PA., 1985. p.134

16. IBID., p.143

17. IBID., p.172

18. IBID., p.146

19. IBID., p.153

20. IBID., p.67

21. Encyclopedia of Military History p. 768

22. O'Sullivan, Patrick and Jesse W. Miller Jr., The Geography of Warfare. St. Martin's Press, New York, 1983. pp.19-20

23. Clausewitz, On War p.117

24. Handel, Michael I., ed. Clausewitz and Modern Strategy. Frank Cass & CO. Limited, Great Britain, 1986. p.118

25. Clausewitz, On War. p.117

26. Handel, Clausewitz and Modern Strategy. p.105

27. IBID., pp.118-119

28. IBID., p.120

29. IBID., p.119-121

30. Clausewitz, On War, p.86

31. IBID., p.80

32. Jomini, Antoine Henri, The Art of War. Greenwood Press Publishers, Westport, Conn., 1892. p.245

33. IBID., p.230-250

34. IBID., pp.65-162

35. Handel, Michael I., ed. Intelligence and Military Operations. Frank Cass and Co., London, England, 1990. pp.96-114

36. Henderson, George F., Stonewall Jackson and the American Civil War. Fawcett Publications, Gloucester, Mass., 1968. p.180

37. IBID., p.268-269

38. Hagerman, Edward, The American Civil War and the Origins of Modern Warfare. Indiana Univ. Press, Indianapolis, Indiana, 1988. p.46-58

39. Military Intelligence, A New Weapon in War. p.13

40. Handel, Intelligence and Military Operations. p.5

41. G2: Intelligence for Patton. p.165

42. IBID., p.24-25

43. IBID., p.43

44. Sun Tzu, The Art of War. p.128

45. Koch, G2: Intelligence for Patton. p.9

46. IBID., p.10

47. Schwein, Edwin E., Combat Intelligence, Its Aquisition and Transmission. Wash. DC: Infantry Journal, 1936. p.44

48. Bellamy, The Future of Land Warfare. p.274

49. Bevilacqua, A.C., "Comabat Intelligence in a Maneuver Environment." Marine Corp Gazette. 69: 60-64 July, 1989. p.61

50. IBID., p.61

51. Sun Tzu, The Art of War p.71

52. Bevilacqua, Combat Intelligence in a Maneuver Environment p.61

53. Sweeny, Military Intelligence, A New Weapon in War p.28

54. FM 34-130, p.4-1

55. IBID., p.4-2

56. IBID., pp.4-66 - 4-78

57. Heymount, Combat Intelligence in Modern Warfare. p.50

58. FM 34-130, pp.4-1 -4-3

59. FM 34-130, p.3-1

60. FM 101-5 Staff Organization and Operations. Washington, D.C.: Headquarters Department of the Army, May 1984. p.5-2

61. FM 34-130, p.3-1

62. O'Sullivan, Patrick and Jesse W. Miller Jr., The Geography of Warfare. St. Martin's Press, New York, 1983. p. 21

63. Fitch, Roger S., Estimating Tactical Situations and Composing Field Orders. CGSC, Special Collections, Ft Leavenworth, Kansas, 1909. p.10

64. Sun Tzu, The Art of War. p.104

65. O'Sullivan and Miller, The Geography of Warfare. p.26

66. FM 34-130, pp.4-32 -4-39

67. Campbell, Major Douglas A., "The Real IPB Doctrine." Military Review, October, 1990. p.85

68. FM 34-130 Intelligence Preparation of the Battlefield. Washington, D.C.: Headquarters, Department of the Army, May 1989. p.4-53

69. IBID., p.3-1
Student Text (ST) 100-9. Command and General Staff College, Ft. Leavenworth, KS. pp.4-1, 7-32 - 7-38

70. IBID., p.4-61 thru 4-63

71. IBID., p.4-66

72. FM 34-130, pp.4-66 - 4-67
ST 100-9, p.7-3

73. Sun Tzu, The Art of War. p.113

74. FM 34-130, pp.1-1 -1-41

75. Burkett, LTC. Maynard L., Command and Control Focused Rotation Report. Center for Army Lessons Learned, nd., 1990. p.253.

76. IBID., p.12

77. 1st Armored Division Warfighter Exercise. Center for Army Lessons Learned.

78. Observation Report #3559. CALL, July 1988
Observation Report #3633. CALL, Nov. 1988

79. FM 34-1 Intelligence and Electronic Warfare Operations. Washington, D.C.: Headquarters Department of the Army, July 1987. pp.3-1 - 3-4
FM 34-130, p.1-1

80. Observation Report #2892. CALL, March 1987

81. Command and Control Focused Rotation Report. p.10

82. Observation Report #3161. CALL, October 1987

83. Observation Report #3834. CALL, October 1988

84. Janes, William H., Division and Corps Exercises. School of Advanced Military Studies, September 1989. p.3

85. FM 101-5, p.5-2

86. Observation Report #2285. CALL, October 1986
Observation Report #4489. CALL, November 1989
Observation Report #4823. CALL, June 1989

87. Observation Report #4823. CALL, March 1989

88. Observation Report #4239. CALL, December 1988

89. Division and Corps Exercises, p.3

90. Janes, Col. William H., BCTP Seminar, 9-11 April 1990. School of Advanced Military Studies, May 1990. p.2

91. Command and Control Focused Rotation Report. p.29

92. Division and Corps Exercises, p.10

93. Observation Report #3653. CALL, August 1988
Observation Report #4871. CALL, March 1989
Observation Report #4876. CALL, March 1989

94. FM 34-130 Intelligence Preparation of the Battlefield. Washington, D.C.: Headquarters, Department of the Army, May 1989. p.6-1

95. Campbell, Major Douglas A., "The Real IPB Doctrine." Military Review, October, 1990. p.85

96. IBID., p.85

97. FM 34-1, p.3-1

98. IBID., p.3-1

99. IBID., p.3-66

100. Bellamy, The Future of Land Warfare. p.271

101. Creveld, Martin Van, Command in War. Harvard University press, Cambridge, Mass., 1985. p.264

BIBLIOGRAPHY

Books

Bellamy, Chris, The Future of Land Warfare. St. Martin's Press, NY, 1987.

Brinkers, Henry, Decision-Making: Creativity, Judgment, and Systems. Columbus, Ohio: Ohio State Univ. Press, 1972.

Clausewitz, Carl von, On War. Princeton University, NJ, 1976. Edited and translated by Michael Howard and Peter Paret.

Chandler, Stedman, and Rodert W. Robb. Front-Line Intelligence Infantry Journal Press, Washington D.C., 1946.

Creveld, Martin Van, Command in War. Harvard University Press, Cambridge, Mass., 1985

Dupuy, Richard and Trevor Dupuy, The Encyclopedia of Military History. Harper and Row Publishers, NY, 1970.

Fitch, Roger S., Estimating Tactical Situations and Composing Field Orders. Ft. Leavenworth, KS., 1909.

Furse, George A., Information in War: Its Acquisition and Transmission. London: W. Cloves and Sons, 1895.

Glass, Robert R., Intelligence is for Commanders. Harrisburg, PA: Military Service Publishing, 1948.

Hagerman, Edward, The American Civil War and the Origins of Modern Warfare. Indiana Univ. Press, Indianapolis, Indiana, 1988.

Handel, Michael I., ed. Clausewitz and Modern Strategy. Frank Cass & CO. Limited, Great Britain, 1986.

Handel, Michael I., ed. Intelligence and Military Operations. Frank Cass and Co. Limited, London, 1990.

Hart, Liddel B., ed. The Rommel Papers. Harcourt, Brace and CO., NY, 1953

Henderson, George F., Stonewall Jackson and the American Civil War. Fawcett Publications, Gloucester, Mass., 1968.

Heymont, Irving, Combat Intelligence in Modern Warfare. Harrisburg, PA, Military Service Division, Stackpole Co, 1960.

Jomini, Antoine H., The Art of War. Greenwood Press Publishers, Westport, Conn, 1862.

Koch, BG Oscar W., with Robert Hays. G2: Intelligence for Patton. Whitmore Publishing Co., Phil., 1971.

Lamb, Harold, Hannibal. Doubleday and CO. Inc., Garden City, NY, 1958.

O'Sullivan, Patrick and Jesse W. Miller Jr., The Geography of Warfare. St. Martins Press, NY, 1983.

Phillips, BG. T.R., ed. Roots of Strategy, Book I. Stackpole Books, Harrisburg, PA., 1985.

Schein, Edwin E., Combat Intelligence, Its Aquisition and Transmission. Washington DC: Infantry Journal, 1936.

Seymowe, William, Your Reasons Why: Decision in Battle. NY: St. Martin's, 1982.

Sun Tzu, The Art of War. Oxford University Press, NY, 1971.

Sweeney, Walter C., Military Intelligence; A New Weapon in War. NY: F.A. Stokes Co., 1924.

Thomas, Shipley, S2 in Action. Harrisburg, PA, Military Service Pub. Co., 1940.

Townsend, Elias C., Risks: The Key to Combat Intelligence. Harrisburg, PA, Military Service Pub. Co., 1955.

Articles

Bevilacqua, Maj A.C., "Combat Intelligence in a Maneuver Environment." Marine Corps Gazette. July 1985,pp. 60-64.

Campbell, Major Douglas A., "The Real IPB Doctrine." Military Review, October, 1990, pp.84-87.

Hamilton, Col Mark R., "IPB or IPC?" Military Intelligence. April-June 1990,pp. 24-27.

Lenze, Col Paul E., "Centurion Shield." Military Review. August 1990,pp. 16-26.

Windham, Maj Michael C., "Intelligence Preparation of the Battlefield." Field Artillery Journal. March-April 1987,pp.17-20.

Manuals

FM 34-1 Intelligence and Electronic Warfare Operations. Washington D.C.: Hqs. Department of the Army, July 1987.

FM 34-130 Intelligence Preparation of the Battlefield. Washington D.C.: Hqs. Department of the Army, May 1989.

FM 101-5 Staff Organization and Operations. Washington D.C.: Hqs. Department of the Army, May 1984.

ST 100-9 The Command Estimate. U.S. Army Command and General Staff College, Ft. Leavenworth, KS., July 1989.

Reports

Over 150 After Action Reports or Observations were used during the reaseach. The data is located in the archives of the Center for Army Lessons Learned (CALL), Ft. Leavenworth, KS. Only those observations referenced in the paper are cited.

Observation Report #2285, CALL, November 1986.

Observation Report #2892, CALL, March 1987.

Observation Report #3161, CALL, November 1987.

Observation Report #3653, CALL, August 1988.

Observation Report #3834, CALL, October 1988.

Observation Report #4239, CALL, December 1988.

Observation Report #4489, CALL, January 1989.

Observation Report #4823, CALL, March 1989.

Observation Report #4871, CALL, March 1989.

Observation Report #4876, CALL, March 1989.

1st Armord Division Warfighter Exercise, nd., CALL.
Burket, LTC. Maynard L., Command and Control Focused rotation Report. CALL, nd. 1990.

Other Reports

Janes, William H., BCTP Seminar, 9-11 April, 1990. School of Advanced Military Studies, Ft. Leavenworth, KS., May 1990.

Janes, William H., Division/Corps Exercises. School of Advanced Military Studies, FT. Leavenworth, KS., Sept. 1989.