UNLEASHING THE BEAST: USING THE USAF'S STRATEGIC BOMBER FORCE TO SHAPE THE FIGHT ON THE EXPANDING BATTLEFIELD

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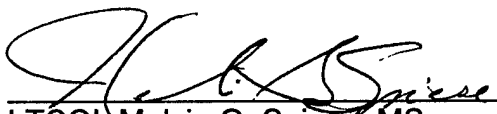

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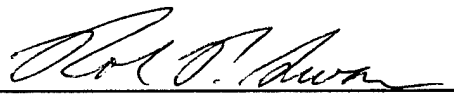

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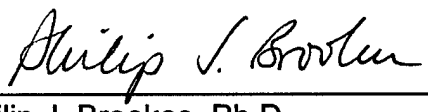

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ABSTRACT

UNLEASHING THE BEAST: USING THE USAF'S STRATEGIC BOMBER FORCE TO SHAPE THE FIGHT ON THE EXPANDING BATTLEFIELD by Major Joel S. Westa, USAF, 53 pages.

Since the birth of the airplane, airpower has been used in an attempt to influence the outcome of ground battle. The effectiveness of the early aircraft in this role was limited by early aircraft design and the lack of standardized methods of applying this new technology. History has seen phenomenal changes in the aircraft and associated weapon technology, as well as changes on the battlefield. Ranges and lethality of battlefield weapons have increased, as well as the speed and ranges at which forces maneuver and can engage, serving to enlarge and empty the battlefield. What was once a corps commander's battlespace is now a brigade commander's battlespace, based solely on the ability to range more distant targets and command and control those weapons. This has allowed for more of a buffer between friendly and enemy troops, which has in turn, blurred the meaning of the term "proximity". This is a key term when discussing operations in the vicinity of the FSCL.

Just as technological advances have spawned changes in weaponry and the battlefield, it also had a tremendous effect on the formation and modification to air support doctrine. The issue of proximity, and the argument over who controls the targeting and attack of the enemy in the different regions of this battlefield is at the heart of this problem and has caused changes to both procedures and doctrine.

Air power is the most responsive, flexible, and versatile arm of destruction available to the ground commander in the vicinity of the FSCL. The expanding battlefield allows the Air Forces Strategic Bombers to perform the missions of CAS and XINT in the vicinity of the FSCL. This provides the ground forces commander with responsive, versatile, and persistent airpower in support of his ground campaign.

This study answers the question of whether or not the Air Force's Strategic Bomber force can provide responsive, flexible, and persistent airpower to the ground forces commander in the vicinity of the FSCL.

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CHAPTER ONE: INTRODUCTION

> "...the most effective weapon we have been able to muster....it forces the enemy break up his ground elements into small units and makes it difficult to mass forces for an attack.."
>
> US Army Brigadier General John McGiffert, speaking about the B-52 during the Hue offensive in 1972 [1]

Since the birth of the airplane, airpower has been used in an attempt to influence the outcome of ground battle. Early aircraft design and the lack of standardized methods of applying this new technology limited the effectiveness of the early aircraft in this role. While a novelty in its early stages, air support of U.S. ground troops has evolved over the years into a primary mission for airpower, whether it be Air Force, Marine, Navy, or Army aircraft supplying the support. History has seen phenomenal changes in aircraft and associated weapon technology, as well as changes on the battlefield. Ranges and lethality of battlefield weapons have increased, as well as the speed and ranges at which forces maneuver and can engage, serving to enlarge and empty the battlefield. What was once a corps commander's battlespace is now a brigade commander's battlespace, based on the ability to accurately attack distant targets and command and control those weapons.

Just as technological advances have spawned changes in weaponry and the battlefield, they also had a tremendous effect on the formation and modification to air support doctrine. This expanding battlespace causes a conceptual problem for air support. Arguments over who controls the targeting and attack of the enemy in the different

regions of this battlefield is at the heart of this problem and has caused changes to both procedures and doctrine.

The several categories of support on this expanding battlefield are dependent upon target location. According to U.S. Army doctrine, the battlefield is currently divided into three sectors; deep, close, and rear. Air support addressed in this paper is employed in the sectors of the close and deep battle, in the vicinity of the Fire Support Coordination Line (FSCL). The FSCL is defined as "A fire support coordination measure that is established and adjusted by the appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders." [2] If the target is in proximity to friendly troops and requires detailed integration, it is considered Close Air Support (CAS). Targets beyond the FSCL, where detailed coordination or integration is not required, are considered Air Interdiction (AI). The former Air Force mission of Battlefield Air Interdiction (BAI) covered the area on both sides of the FSCL, but where enemy troops were not in close enough proximity to friendly ground forces to warrant detailed coordination or integration. BAI covered the area in the vicinity of the FSCL.

The term Battlefield Air Interdiction was removed from Air Force doctrine after the 1991 Persian Gulf War and the mission was brought under the all-encompassing term of Air Interdiction. AI is now normally thought of as strikes into the deep realm of the battlefield. This has left what many in the Army believe is a gap in the battlefield coverage once offered by the Air Force under AirLand battle doctrine. In reality, the Air Force view is to move away from CAS and focus on more successful pre-emptive strikes of enemy forces prior to contact with friendly ground forces. General Mike Loh, former

commander of Air Combat Command stated, "One of our goals is to try to not be involved in close air support, to try and do a better job a little deeper so that you can, with (airborne battlefield surveillance) and with other equipment, avoid direct contact with the forward line of troops and relieve to a great extent the army's direct contact. That's where we can make a tremendous contribution."[3] This "little deeper" region was covered by the BAI mission, whose deletion has caused this perceived gap in the coverage of the battlefield by airpower.

The Army has pursued several means to fill the gap, mainly by the procurement of the Army Tactical Missile System (ATACMs). This new weapon system is designed to allow the ground commander to shape and influence the battlefield with his own assets, rather than relying solely on airpower for support. This raises the doctrinal issues in regards to the Fire Support Coordination Line (FSCL), particularly its location on the expanded battlefield, and who controls the strikes on critical targets located further from friendly ground forces than in the past. The Army uses the extended range of the ATACMs as a reason to push the FSCL out in an effort to provide more maneuver space for response to enemy action. In reality, the limited number of ATACMs does not provide him with the responsive and persistent fires needed in that region. Air power is the most responsive, flexible, and versatile arm of destruction available to the ground commander in the vicinity of the FSCL. The Army expresses the most complaints about the lack of sufficient numbers of ground support sorties at their disposal, as well as the responsiveness of these sorties.[4] Failure to recognize AI sorties as ground support on the battlefield contributes to this misconception about insufficient numbers. The Air Force exacerbated the problem by deleting the BAI mission from doctrine, although deleted in

name only. The Air Force is fully committed to supplying the ground forces commander with air support on the battlefield, as evidenced by doctrine manuals, aircraft specifically designed to perform this mission, and a continued emphasis on interfacing with the Army by the use of Air Liaison Officers (ALO).

Another key issue to consider on the expanded battlefield is the range at which troops are now considered to be in proximity with the enemy target. This range is much greater than in the past, predicated on the ability to identify and engage at greater distances. This allows for a margin of safety when striking these enemy targets, making fratricide less of a possibility, despite being considered "in proximity." The term "proximity" is not defined in doctrine, and has less meaning due to the expanded battlefield. This allows the Air Force to use assets to provide support in the vicinity of the FSCL with platforms not specifically designed for that role. This will provide more sorties specifically designed to shape and prepare the battlefield for the ground forces commander.

Air Force doctrine was changed after the Gulf War reflecting real capabilities and needs. During the Gulf War, Coalition Forces faced an enemy who was well dug in but allowed us the time to build forces in theater. The air campaign during Desert Storm focused on strategic attack and BAI, without ground forces in contact, hence BAI was concentrated on preparing and shaping the battlefield against a static enemy on a non-dynamic battlefield environment. Such was the success of BAI that CAS during the ground campaign was not critical, or needed for success. The *Gulf War Air Power Survey* sums up CAS in the Gulf War by stating, "In terms of the state as well as the

capabilities of Iraqi ground forces after the air campaign, one can agree that close air support was never essential to accomplishment of the ground mission."[5]

Combat scenarios in current theaters of operations may not readily fit that Desert Storm model. The United States is severely out-manned or out-gunned by certain facets of the enemy force in certain theaters of operations. In Korea, the US faces staggering amounts of North Korean gun and rocket artillery and infantry, both of which are presently garrisoned within rapid striking range of the most vital political, economic, and military centers of South Korea. [6] The outcome of the entire war could be threatened unless the Combined U.S./Republic of Korea forces destroy a massive amount of artillery and halt the onslaught of enemy troops heading south as soon as a conflict begins. The air support required in these theaters fits perfectly into the old definition of BAI. These air support missions directly effect the immediate or impending ground action, and serve to shape the battlefield in a way that is evident almost immediately, not days down the road. The ground commander cannot rely solely on his organic fires to halt the oncoming foe on this expanded and highly dynamic battlefield. This is where the responsiveness and flexibility, and persistence of airpower are highlighted.

There is a way to provide the ground commander with responsive and immediate firepower to attack these emerging battlefield targets in a manner that is not particularly constricted by the debate regarding the location of the FSCL. Current USAF doctrine speaks of a "decisive halt" as the solution to the situation of overwhelming enemy forces in the face of insufficient friendly forces.[7] The purpose of this halt is to "..force the enemy beyond their culminating point through the early and sustained overwhelming application of air and space power."[8] The Air Force will accomplish this halt in support of the joint

forces commander and ultimately the ground forces commander, and in this case, most of the strikes will occur in the vicinity of the FSCL. In this environment, where the FSCL may be non-existent or overrun initially, proximity is truly a meaningless term, and therefore, air support missions will resemble the former Air Force mission of BAI more closely than that of CAS or AI. It will also require airborne assets to perform missions not normally thought of as primary missions for those aircraft. This is where the Air Force's strategic bombers can, as they have in numerous times in history, show their great flexibility and devastating effects in support of ground forces.

Training at the B-52 and B-1 Divisions of the USAF Weapons School, and at some operational bomber squadrons, currently includes a new mission type designed specifically for this environment. [9] This mission type is the "XINT" (pronounced "ex-int") mission, designed as an airborne interdiction sortie, with the specific purpose of halting the movement of ground forces in the vicinity of the FSCL. It is there, in the vicinity of the FSCL, that the ground commander may need to have more assets at his disposal to shape the battlefield for his campaign. Can this need for persistent and responsive support be filled by the Air Force's strategic bomber forces flying CAS and XINT sorties in the vicinity of the FSCL, using and improving the procedures and assets already in place on and above the battlefield?

Much has been written about CAS and BAI and their history, but very little has been discussed about the bombers role performing these difficult, yet important missions. Bombers have the ability to respond with flexibility and lethality across the entire spectrum of the battlefield. An analysis of the historical use of bombers on the battlefield will lead to an examination of current Air Force, Army, and Joint doctrine regarding CAS

and AI. Bomber and weapon capabilities will then be presented, particularly those that have a direct impact on missions in direct support of ground forces. Included in the discussion of capabilities will be battlefield management, particularly the use of the E-8 Joint Surveillance Target and Attack Radar System (JSTARS).

This issue will be analyzed using the following tenets of airpower: flexibility, versatility, and persistence. At the operational level, flexibility is measured by how quickly and decisively air operations can shift from Strategic Attack (SA) and AI to targets in direct support of the ground commander. Versatility is measured by the ability to achieve objectives at all three levels of war--in parallel operations, striking simultaneously and continuously against a broad spectrum of targets and with sufficient force to overwhelm the enemy. Persistence is measured by the ability to continuously apply airpower to deny an opponent an opportunity to seize the initiative and allow friendly forces to accomplish their assigned tasks.

By discussing current doctrine, both service specific and joint, and actual combat capabilities of the aircraft under the scrutiny of these measurement criteria, a true measurement of the bomber's contribution to shaping the battlefield in the area of the FSCL can be made.

The most tenuous doctrinal issue for the Army and the Air Force is the location of the FSCL. It is here that arguments persist over who controls targeting on the battlefield, the definition of proximity, allocation and apportionment of assets, and the responsiveness of airpower. This study will show that using control procedures and assets already in place, the Air Force's strategic bombers can be used in support of the ground commander's campaign on the expanded battlefield in the vicinity of the FSCL. This will

greatly increase the amount and effectiveness of air support currently available to shape the battlefield in this area. In this era of the shrinking military, with fewer assets available every day, it makes sense to take advantage of the flexibility and versatility of bomber aircraft. At the conclusion of this paper, it will be clear that today's strategic bombers are more than capable of providing the ground commander with awesome firepower to shape his battlefield.

Chapter 2: Background of Bomber Battlefield Operations

"It was as if a little part of the world suddenly blew up for no apparent cause"

Major General Rathvon McC. Tompkins, USMC
Commanding General, Third Marine Division,
describing the massive impact of a B-52 strike at
Khe Sanh. [10]

The close air support (CAS) mission has primarily been given to attack aircraft in the Air Force's inventory. While the Air Force's A-10, AC-130, and F-16 are formidable at this task, their numbers are limited, and are often threatened by Short Range Air Defenses (SHORAD) and Man Portable Air Defenses (Manpads) and Anti-Aircraft Artillery (AAA). Reasons for selection of the current aircraft for particular missions vary. The ability to have eyes/sensors on target is critical, especially due to the dynamics of the battlefield. Perhaps the strongest reason for "eyes on target" is to limit fratricide. Limitations in the ability to gain "eyes on" has resulted in the mission of CAS being designated a secondary mission for the strategic bombing forces of the Air Force. However, due to the advent of new avionics technology and weaponry, and given a larger buffer zone between friendly and enemy troops on the expanding battlefield, the CAS mission can now be performed more effectively by these aircraft.[11]

The strategic bomber, although not specifically designed to perform CAS, has performed this mission on several occasions in history, most recently during the Gulf War. The argument can be made that bombers were being used in the CAS role much

earlier than this, but this paper limits its scope to the use of the modern strategic bombers in the CAS and BAI role. This provides an historical base of experience to pursue the use of strategic bombers in direct support of ground commanders on a more extended basis.

On November 12, 1967, B-52's flying out of U Tapao, Thailand inadvertently struck targets within the established three kilometer (km) safety perimeter around friendly troops at Con Thien combat base in Vietnam. US Marines, watching the weapons from the B-52 detonate and cause secondary explosions from enemy positions within the safety zone, did not feel threatened or at risk by the proximity of friendly firepower. The Marines subsequently called for the testing of close air support operations using B-52s, but Air Force leadership did not want to shrink the protective perimeter. The Marines suggested the use of more radar beacons to improve accuracy of aiming, and the USAF agreed to the test. The results were very favorable, using a ground control van for final course corrections and countdowns to release. This test provided the impetus for perhaps the most widely recognized use of the strategic bomber in support of ground troops under siege during the Vietnam War. [12]

At the Khe Sanh combat base, between the months of mid- January to late March 1968, more than 10,000 Air Force fighter strikes, 5,000 Navy and 7,000 Marine strikes, and more than 2,500 B-52 strikes, were flown in support of the 26th Marine Regiment.[13] "According to the regimental Target Intelligence officer (TIO), Captain Mirza M. Baig, the B-52 was an accurate weapons system which the Fire Support Coordination Cell (FSCC) employed around Khe Sanh much the same as other supporting arms."[14] Operation Niagara, designed to support operations at Khe Sanh, flew 350 fighter sorties and 60 B-52 sorties around the clock every day for two months in support of the 26th

Marines. [15] The Marines who fought bravely there often cite the B-52 as directly responsible for their survival during that long battle. "...the devastating power and psychological effect produced by the Stratofortress, coupled with the surprise factor, made them an extremely valuable adjunct." [16] Vietcong Minister of Justice, Truong Nhu Tang, speaking of his experience during a B-52 attack, said, "The first few times I experienced a B-52 attack it seemed...that I had been caught in an Apocalypse. The terror was complete. One lost control of bodily functions as the mind screamed incomprehensible orders to get out."[17]

The method of delineating the location of air support strikes was based on the demonstrated accuracy of each platform. "The bombers struck targets beyond 1,100 meters of the base; tactical air and artillery took up the slack to within abut 250 meters and the organic weaponry of the defenders provided close in fires." [18] As a result of sound procedures, the B-52 was used effectively within the safety zone normally associated with fighter/attack aircraft. The battle for Khe Sanh highlights the persistence, flexibility, and versatility of the bomber.

Heavy bombers were called upon to perform the CAS mission again by Marines during the Persian Gulf War during the Iraqi attack on Khafji.

> "At the request of the Marine Commander, Lieutenant General Boomer, and with the approval of Lieutenant General Horner, CENTAF, a B-52 strike and two tactical air packages were diverted from Republican Guard targets to southern Kuwait where Iraqi armor was moving to reinforce the initial Iraqi penetration. The tactics employed, while not standard, resulted in a successful attack on approximately 100 Iraqi armored vehicles. As described in a field report, the effect of the B-52 strike was "like turning on a light in a cockroach infested apartment." The B-52 strike sent the vehicles scurrying for survival only to find that their movement was awaited by tactical air, eager to "squish them like bugs." [19]

When the US ground commander on site called for CAS, B-52s enroute to strike a Republican Guard target were diverted from the pre-planned mission, and bombers were on site within minutes. Although the ordnance they carried was not optimal for the armored targets, the responsiveness of airpower was critical in the eventual success of the engagement, and was once again proven. The bombers were effective in blunting the attack until A-10s arrived in the target area. The flexibility of B-52's was highlighted by the quick reaction time from the initial request for support to the target change, all happening within minutes. With the aid of the JSTARS providing coordinates and the axis of movement of the Iraqi armor, the B-52 crew quickly identified the column on their own radar and were able to strike these targets safely from high altitude, and helped turn the tide of the battle in the favor of coalition forces on the ground. [20]

Bombers performed Battlefield Air Interdiction (BAI) and in both Vietnam and in the Persian Gulf. During Vietnam, B-52s struck battlefield interdiction targets throughout the country solely in support of the ground campaign. Arc Light sorties struck lines of communications (LOCs), suspected troop concentrations, and logistics bases.

During the Gulf War, B-52s were used in the BAI role to strike the Republican Guard around the clock, to attrit and exhaust their forces in support of the coming ground campaign. BAI sorties were also flown to breach minefields, supply depots, and LOCs, clearly to shape the battlefield for the coming ground campaign.

In future operations, bombers will again be called on to perform the primary missions of AI and Strategic Attack in the early stages of the war. Bombers will also be tasked to provide battlefield support to the Ground Forces Commander in preparation for his offensive.

The bombers role on the battlefield at Khe Sanh and Khafji has shown us the strategic bomber is capable of providing the ground forces commander with responsive and devastating firepower in the area he needs it the most, in the vicinity of the FSCL. This is the area where second echelon enemy troops are preparing to have an immediate impact on his battlespace. The ability of the B-52 to strike CAS targets at Khe Sanh highlights its versatility and the importance of persistence in the application of airpower. Using bombers for CAS and XINT sorties provides the ground commander the capability to strike these targets regardless of their range from him, based solely on their immediate or near immediate impact to his coming fight, as was shown at Khafji during DESERT STORM. Using bombers in this fashion can occur with very little change to the procedures and mechanisms already in place, and provides the ground commander with more assets to shape the battlefield.

Chapter 3: DOCTRINE

The Air Force defines doctrine as "a statement of officially sanctioned beliefs and warfighting principles that describe and guide the proper use of air and space forces in military operations."[21] The Army defines it as "the statement of how America's Army, as part of a joint team, intends to conduct war and operations other than war."[22] Joint Pub 1-02 defines doctrine as "Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative, but requires judgment in application."[23]

In order to apply CAS and AI properly on the battlefield, it is important to understand the differences between service specific doctrine. It is also critical to understand that CAS and AI are missions, and are not specific as to the type of aircraft performing it. This chapter also includes a brief discussion of BAI, to provide a sound baseline from which to argue for the use of bombers in the CAS and the XINT mission.

Section 1. CAS

Air Force doctrine defines CAS as "air action by fixed and rotary wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces."[24] It further states that "CAS is simply the name applied to air attack of enemy forces that are currently in position to engage friendly ground forces, or "close proximity."[25]

AFDD 2-1.3, Counterland Doctrine, currently in draft status, further describes Close Proximity. "As used in relation to close air support, close proximity refers to enemy ground forces that are currently within range to engage friendly forces with

organic weapons. *This definition applies to those organic weapons which can supply a preponderance of effect on the battlefield, and does not apply to long range weapons such as ballistic missiles and fixed- or rotary wing aircraft."*[26] A key point of Air Force doctrine regarding CAS is the belief that the effects of CAS are the most focused, yet briefest of any counterland mission of the Air Force, and replicate what the Army considers to be supporting fires. [27]

FM 100-5 (Operations) is the Army's keystone warfighting doctrine, defines CAS as:

> "Close Air Support (CAS) missions support land operations by attacking hostile targets close to friendly ground forces. CAS missions require positive identification of friendly forces and positive control of aircraft.[28]

The critical parts of the Army definition lie in the fact that CAS supports operations against hostile targets close to friendly troops, and because of that, positive identification and positive aircraft control is required. Proximity is not addressed in the Army definition of CAS in FM 100-5.

Joint doctrine echoes the same idea, but includes the terminology of proximity. CAS is "Air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces." [29]

The common threads through all of these definitions are the closeness of the strikes in relationship to friendly troops and the requirement for detailed integration.

What is missing in all these definitions is a clear doctrinal definition of "proximity". Joint Pub 3-09.3 states, "CAS can be conducted at any place and time

friendly combat forces are in close proximity to enemy forces. The word "close" does not imply a specific distance; rather, it is situational. The requirement for detailed integration because of proximity, fires, or movement is the determining factor in designating air support as CAS. CAS provides firepower in offensive and defensive operations to destroy, disrupt, suppress, fix, or delay enemy forces."[30] The term "proximity" then, seems to be based on each specific situation as it arises on the battlefield. On the expanded battlefield, the term proximity may not have relevance to air support operations because of the significant engagement ranges of today's direct fire weapons systems. This serves to further blur the line between CAS and AI, and opens up the window to use aircraft not normally thought of as CAS weapons in the vicinity of the FSCL.

Going back to the historical example of Khe Sanh, a broader definition is offered, one that further aids in the argument for using bombers in the vicinity of the FSCL. "Close Air support in Vietnam includes all air attacks that are coordinated with the supported force. Radar controlled bombing and B-52 strikes, in this context, can be called close air support..."[31] This simple definition all of the key ingredients for successful CAS, the key is coordination with the supported force. The ability to provide the ground commander with more responsive air support in the vicinity of the FSCL is the issue, not "proximity".

Perhaps the most straightforward definition came from the Gulf War. "In a simple but very meaningful sense, CAS occurred when the ground commander tasked fixed-wing assets to destroy enemy forces short of the FSCL, regardless of the proximity to friendly ground forces."[32] This definition provides the key to the argument for allowing bombers to do CAS sorties. Strikes are done in support of the ground

commander, and proximity is essentially a meaningless term. The expanded battlefield blurs the term proximity and the accuracy of the bomber and it's new weapons free it to hit direct support targets with negligible risk to ground troops.

INTERDICTION

Air Force Doctrine states that Interdiction, " consists of operations to divert, disrupt, delay, or destroy the enemy's surface military potential before it can be used." [33] The USAF further states that interdiction is a from of air maneuver, and may have a devastating impact on the enemy's plans and ability to respond to the actions of friendly forces, even before friendly forces appear in the battlespace. Targets may include enemy Command and Control systems, personnel, material, logistics, and support systems. [34] The Army defines interdiction as:

> "Interdiction destroys enemy forces, delays, and disrupts their maneuver, and diverts their resources from the main effort. Interdiction is a means to direct combat power simultaneously throughout the depth of enemy forces and hasten enemy loss of initiative and ultimate destruction. Effective interdiction occurs when it is synchronized with maneuver to support the concept of operation of a single commander."[35]

Joint doctrine defines interdiction as "An action to divert, disrupt, delay, or destroy the enemy's surface military potential before it can be used effectively against friendly forces." [36]

Again, in all three cases, the phrase, "delay, disrupt, divert, and destroy", and the fact that it is in support of the ground forces finds its way into the definitions. Also inherent in these definitions, despite the absence of clarification, is the location of these enemy forces. Interdiction strikes the enemy past the FSCL, and targets are nominated by the ground commander and approved by the Joint Force commander and executed and

controlled by the Air Component commander. The issue is one of responsiveness when dealing with interdiction. Some targets just beyond the FSCL need to be struck immediately, and cannot wait for approval from the various targeting boards. This region was once covered by Battlefield Air Interdiction, but that mission no longer exists in doctrine.

BATTLEFIELD AIR INTERDICTION (BAI)

BAI was developed in NATO to allow ground attack aircraft to strike enemy armor formations inside or outside the FSCL, without being under the direct control of a Forward Air Controller (FAC). The US Army saw BAI as tool for the corps commander to shape the battlefield. With airpower being viewed solely as fire support for the ground maneuver, the Air Force had disagreements with the Army over providing battlefield support. BAI differed from interdiction in that it attacked targets nominated by Corps commanders that were closer to ground units than standard interdiction targets. AirLand battle doctrine relied on BAI to shape the battlefield and hold the enemy formations while ground forces maneuvered against them. The goal of BAI was to take away the enemy's freedom of maneuver, his sustainment, and will to resist. [37]The USAF deleted BAI from AFM 1-1 in 1992, but the concept of the mission is essentially the same as XINT.

Section 4: Summary/Conclusion

Joint doctrine will be applied when any air support is provided for the ground commander, as it will be a joint fight at such a time. The common thread through all three sources of doctrine in regards to CAS would be the proximity of the threat to friendly troops and the fact that "detailed integration" must take place. The common pieces

missing from all definitions include the definition of proximity, and discussion on control of the aircraft performing CAS.

Interdiction also shares common goals throughout all three sources of doctrine. The basic difference between Air Force and Joint Doctrine and that of the Army is that CAS and AI are considered "supporting fires" by the Army, and "maneuver" by USAF and Joint Doctrine. The critical argument occurs when deciding who picks the targets for each mission predicated on the necessity of the situation. Targets inside the FSCL (CAS) are allocated to the Land Component Commander (LCC), while AI targets are normally determined by the Air Component Commander (ACC), in support of the overall Joint Forces Commander's (JFC) Campaign. The Joint Targeting Board process currently does this. Targets are nominated by each component on a daily basis for inclusion into the Air Tasking Order (ATO). The board, made up of representatives from each service, assesses the target list and assigns a priority based on the Joint Force Commander's guidance. It is the JTB that prioritizes the target list for AI and SA sorties, and the ground forces commander's target list is nominated through his Battlefield Coordination Detachment (BCD).[38]

The goal of this study is to take the doctrine, procedures, and aircraft as they currently exist, and provide options for using strategic bombers for battlefield shaping sorties in the vicinity of the FSCL, in support of a ground campaign. This will provide more assets for the ground forces commander to shape the battlefield.

CHAPTER 4. AIRCRAFT/WEAPON CAPABILITIES

Section 1: Introduction

A brief discussion of the capabilities of the Air Force's strategic bombers, their weapons, and the aircraft that serve as the controlling agency is important in order to comprehend the unique qualities each bring to the fight. Ranging in age from the early 1960's to aircraft still being manufactured on assembly lines, the capabilities vary, but perform similar missions in several areas. The mission of the bomber has been evolving, from nuclear deterrence, to conventional bombing during the Vietnam War and Operation Desert Storm, to stand-off cruise missile launches for strategic attacks. The strategic bomber has been likened to a dump truck, given its ability to carry mass quantities of firepower a great distance. In this way, all of the current operational bombers are alike. The remainder of this chapter will be devoted to a cursory look at the strengths and weaknesses of the bombers and the weapons they bring to the battlefield, and highlight the important characteristics JSTARS contributes, as they relate to the issue of providing the ground commander additional capabilities to meet his needs.

Section 2: The B-52 Stratofortress

> "It is surprising that the Iraqi's seemed unafraid of high technology weapons. The most likely explanation is that while 'smart' weapons demonstrate allied omnipotence (and thus undermined Iraqi hopes of eventual success), they created little anticipatory anxiety and the personal threat from them was low. In contrast, B-52 bombs were concentrated, devastating and intense. They were indiscriminate, unpreventable, and the anticipatory anxiety, particularly when proceeded by leaflets, was high." [39]

The workhorse of the bomber fleet can be seen on television almost any time the United States sends aircraft in response to a foreign threat. Belching black

fumes from its eight engines, its actual or threatened presence over the battlefield has a sobering and deep psychological effect on both enemy and friendly soldiers.

The B-52H was last built in 1961, and has undergone numerous upgrades, in avionics, weapons carriage, and crew composition. Defense Department planners currently envision the aircraft to be in service well into the 2040s.[40]

Originally designed to be a high altitude lone penetrator of Soviet Airspace during the Cold War, it has evolved into an all weather, high/low altitude, day/night aircraft capable of carrying nuclear or conventional weapons. The B-52 has an unrefueled combat radius of 3500 Nautical Miles (Nms), and its range refueled is only limited by aircrew factors.

The crew composition makes it especially suited for dealing with the complicated and detailed integration necessary on the battlefield. Two pilots, two navigators, and an electronic warfare officer allow for tremendous reliability in the receiving of messages and coordinating attacks with the ground or air liaison. The advantage of the multi-place crew takes on greater importance in the light of the communication capabilities of the BUFF (Big Ugly Fat 'Fellow'). The B-52 can function across the full spectrum of electronic communications using its numerous radios, all of which can function in a heavy communications jamming environment.

Another strength of the B-52 is it's loiter capability, giving it the ability to remain on station high above the battlefield awaiting target assignments. This gives tremendous capability and flexibility to the ground forces commander. Threat permitting, the BUFF can loiter for hours without refueling, and provide accurate and timely support to the forces on the ground. Navigating using radar or GPS updated dual Inertial Navigation

Systems (INSs), this accurate system integrated with the Electro-optical viewing system, comprised of a steerable low light TV and FLIR make target identification much easier. Pilots are also ANVIS-6 Night Vision Goggle (NVG) qualified. These new navigation avionics increased the B-52s accuracy considerably. It is not unusual for the average crew to strike within 150 feet of their target from an altitude of 40,000 feet using pure gravity weapons or "dumb bombs".

The greatest advantage the B-52 brings to the fight is its weapons carriage capability. The B-52 provides tremendous flexibility to the planner in the choice of weapons to employ, as well as having the ability to carry several types of weapons on each sortie. For example, loading an anti-armor weapon externally on the Heavy Stores Adapter Beams, and anti-personnel cluster bombs internally in the bomb bay gives flexibility when choosing the proper weapon for the target. In this manner, the bomber can cover multiple types of targets with one sortie. The release system allows for the crew to release external and internal weapons separately, in any number, at a chosen interval. An example of this concept will be given in the next chapter.[41]

Section 3: The B-2 Spirit

The newest of the Air Force's bombers, the B-2 Spirit was designed as a low observable, precision weapon system, designed to penetrate the most sophisticated enemy radar defenses and deliver weapons on target. Able to carry both nuclear and conventional weapons, and deliver them with pin-point accuracy, the Spirit is a truly unique bomber. The Air Force Bomber Road Map states, "The B-2's primary mission will be to penetrate and attack those time critical targets, which, if not destroyed in the first hours or days of a conflict, would have unacceptable consequences for US military forces." [4242] Based on discussions with the planners at Whiteman AFB, MO, the B-2s current mission of attacking these strategic targets deep in enemy territory, coupled with the limited number and incredible expense of the system would preclude it from ever taking part in shaping the battlefield through CAS or XINT operations. Their presence in the air campaign may free up the other bombers to pursue these targets sooner, relieving them from having to strike as many targets as they may have had to without the help of the B-2.[43] No further discussion of the B-2 will take place due to the this fact coupled with the classification level of the weapon system.

Section 4: The B-1B Lancer

The B-1B Lancer was developed as a dual role nuclear-conventional bomber, and has since been designated as a conventional weapons carrier only. Designed specifically for low level supersonic ingress into the target area, the Lancer brings many improvements to its original capabilities into the fight. Once maligned for poor Electronic Counter Measures (ECM) equipment, it can now bring its much-improved self protection suite to battle with three bomb bays capable of carrying 84 MK-82 500 pound

gravity weapons. The carriage capability has been upgraded to carry the modern cluster munitions designed for the battlefield. The crew of two pilots and one offensive systems operator (OSO) and one defensive systems operator (DSO) is also ideally suited for operations in the vicinity of the FSCL, due to reliability in receiving and coordinating attacks on battlefield targets. The multi-place crew of bombers is a definite strength when coordinating new targets over the battlefield. The ability for several crewmembers to concentrate on the new target information while someone else flies allows for a much greater chance of success. Like the B-52, the B-1's loiter capability is a advantage over smaller fighter aircraft, who must refuel frequently to remain on station

The strong suit of the B-1B has to be its Phased Array Synthetic Aperture Radar (SAR), which provides radar images with almost photographic quality. These pictures will greatly enhance the crews ability to identify targets passed by ground or air liaison. This is doubly important due to the aircraft's lack of optical viewing systems.

The B-1B has three bomb bays, and can load different weapons in each, giving much the same effect as mentioned earlier in the B-52 section. There are no longer provisions for the external mounting of weapons on the B-1B.

Other limitations to the B-1s use in battlefield shaping would be the lower useable service ceiling of approximately 25,000 feet, which may expose it to certain tactical Surface to Air Missile (SAM) threats, and also the complex weapons bay loading system.[44]

The keys to both of these aircraft performing the CAS/XINT mission are the weapons. While the majority of the standard gravity realized weapons are suitable for CAS operations, the weapons that have allowed the XINT mission to evolve are the CBU

(cluster bomb unit) 103/104/105. The heart of each of these weapons is the Wind Corrected Munitions Dispenser (WCMD).

Section 5. WEAPONS

The WCMD is an inertially guided tail kit which replaces the tail kit of the Combined Effects Munition (CEM) to make the CBU-103, the Gator to make the CBU-104, and the Sensor Fuzed weapon to make the CBU-105. The WCMD tail kit is designed to eliminate the effects of wind, launch transients, and ballistic errors on these CBUs, with the accuracy goal of 85-100 feet from 40,000 feet. Operational testing of the WCMD have yielded an average of 85 feet. [45] The WCMD straps on to a canister filled with a specific type of munition designed for a very specific mission.

Combined Effects Munition (CEM)

The combined effects munition is an anti-personnel/anti-armor munition. Each canister uses 202 Bomb Live Unit (BLU)-97/B bomblets with armor piercing, fragmentation, and incendiary kill mechanisms. The shaped charge in the BLU-97/B can penetrate 7 inch armor, and the scored casing produces 300 30 grain fragments. It performs best against concentrations of armor and artillery, radars and radar vans, aircraft in the open or revetts, thin skinned vehicles, soft POL, and of course, personnel. It is not effective against moving or dispersed hard targets. The operator can adjust the size of the dispersion pattern several ways, either by changing the RPM of the canister as it falls, or by its opening height. For armored targets, the rule of thumb is 8 bomblets/1000 square feet. [46]

GATOR

The Gator is an anti-armor/personnel mine carrying 72 BLU-91/B antitank mines and 22 BLU-92/B antipersonnel mines. The BLU-91/B is armed within two minutes of canister opening, and remains armed for a preset time, then self destructs. It is a bi-directional, self-forging fragment warhead that can pierce 2.5-inch armor. It uses magnetic sensing, and detonates when the target is sensed, the mine is disturbed, the preset time expires, or the battery decays. The BLU-92/B functions essentially the same way, except when it lands it "senses" which direction is "up" and deploys four tripwires to 40 feet. It uses fragmentation as its kill mechanism, and detonates when force is applied to the tripwire, the mine is disturbed, or the preset timer expires or battery decays. Its original design was to prevent the clearing of the BLU-91/B minefield. There are some limitations with the GATOR that need to be taken into consideration. It has limited survival when laid down on hard surfaces, and mines tumble and can travel as far as 300 feet downrange during low altitude releases. The GATOR is best used to deny maneuver space to armor and infantry, and is fair in airfield and chokepoint operations. [47]

Sensor Fuzed Weapon (SFW)

The Sensor Fuzed weapon is the weapon of choice for destroying armor. Composed of 10 BLU-108/B skeet delivery vehicles, each carrying 4 skeet, the functioning of this weapon has often been referred to as the seven simultaneous sequential miracles. The truly amazing fact is that this weapon has exceeded all operational test goals. When the canister opens, the BLU-108/Bs deploy a parachute to slow it down. Once stabilized, a series of spin/lift rockets are fired, and the BLU gains a small amount of altitude and deploys the skeets in an "X"pattern. Each CBU-97 covers

an area of 1200 x 700 feet, and the total area covered by one of the skeets is 100 x 300 feet. The design criteria for the SFW was 1.5 kills per CBU, and as stated earlier, operational tests have greatly exceeded that number. After it senses a heat source like a tank engine, the skeet fires a self forging copper slug through the top of the target, disabling the target. The SFW was specifically designed to reduce second echelon and reinforcement forces, and is used best against concentrated armor or artillery.[48]

SECTION 6:E-8 JSTARS

Critical to the success of the XINT mission, the E-8C Joint Surveillance Target Attack Radar System (JSTARS) is a joint Army/USAF development designed to provide near real time wide area surveillance and targeting capability to ground and air commanders. It consists of a modified KC-135 aircraft with a multimode, side looking phased array radar providing essentially two products, moving target indicator (MTI) data, and SAR imaging data. MTI can detect targets from slow to 250 kph used to determine main lines of communication (LOCs), staging areas, hostile actions, enemy actions and avenues of enemy approach. SAR images can be used to "picture" terrain, and identify LOCs or fixed locations of troops on the ground. Typical radar coverage is +/- 60 degrees and the range is 80km to beyond 250km.[49]

The JSTARS aircraft has 12 UHF, three VHF, and two HF radios, all of which are secure and anti-jam capable. The VHF is capable of AM/FM operations in either secure or clear operating modes.[50]

The JSTARS main mission is to provide a real time picture to the theater CINC or JFC of the enemy's ground order of battle. This role is critical when performing the mission of attack support for CAS and XINT missions. Attack support targeting involves

the development of new targets, existing targets, and targets of opportunity. It supports AI and CAS operations by building target packages on both time critical and mobile targets, both of which will directly affect the ground campaign in the region of the battlefield being discussed. JSTARS can deconflict and detect attack assets and provide C3 for attack missions. It is critical to note the JSTARS **DOES NOT** provide "close control" to attack aircraft, but can provide target information through procedural control in coordination with other elements of the theater air control system (TACS) and airspace control measures. Other elements of the TACS include the Airborne Battlefield Command, Control, and Communications (ABCCC), Tactical Air Control Parties(TACP), Forward Air Controller (FAC), Control and Reporting Center(CRC), Control Reporting Element (CRE), and Special Ops.[51]

Section 7:ABCCC

The Airborne Battlefield Command and Control Center (ABCCC) is a specially equipped Air Force aircraft, designed to control air attacks on the battlefield. Designed around the standard EC-130E airframe, the ABCCC provides threat, intelligence, and target updates to CAS aircrews and radio relay to ground and air control elements. ABCCC manages the flow of aircraft into and out of the battle area. ABCCC acts as a backup to the air support operations center (ASOC) and Air Operations Center (AOC), and can temporarily assume their functions.[52]

Section 8:TACS Elements

TACPs are located with Army maneuver units from Battalion to Corps. When deployed TACPs report to the ASOC Director, who is normally the corps ALO. While Corps through Brigade TACPs function primarily as liaisons, battalion TACPs have the

primary responsibility of terminal control. The TACP mission is to advise and assist the ground commander in planning, requesting, and coordinating CAS. AWACS provides safe passage and radar control and surveillance for CAS aircraft transiting from bases/ships to the target area and back. CRCs are ground-based airspace control/air defense facilities that provide safe passage and radar control and surveillance for CAS aircraft transiting to and from target areas. CREs are mobile radar units normally deployed into forward areas to extend the radar coverage of the CRCs by providing early warning guidance and acting as a gap filler. They are subordinate to and can assume limited functions of the CRC, if required. [53]

Section 9: Conclusion

The Air Force's bomber fleet, though originally designed for strategic defense of the United States, has undergone the changes necessary to fight on the conventional battlefield. Possessing awesome firepower, redundant radio capability, highly trained crews, and loiter time, the B-52 and B-1 provide timely, accurate firepower to shape the battlefield. The flexibility and versatility of the bomber force is evident when comparing its current and evolving capabilities and mission types with those it was originally designed to accomplish.

The weapons mentioned are specifically designed for striking enemy ground troops, both in the CAS and XINT role. When used in conjunction with accurate and timely JSTARS data, they provide the ground commander with reliable, capable, persistent, and devastating effects on targets in his battlespace. The elements of the TACs provide an existing framework for bombers to operate in. The ground commander has the ability to target the enemy in the vicinity of the FSCL using his organic elements of the TACS without waiting for the targeting boards to meet and approve the targets normally thought of as AI. The use of CAS and XINT sorties provide him with this ability, and allowing bombers to fly these sorties will increase the amount and effectiveness of air support he currently receives.

CHAPTER FIVE: CAS AND XINT OPERATIONS

Section 1: Introduction

Imagine the comfort a ground commander would have knowing there are air assets on station, ready to support his impending ground offensive maneuver, or assist while under pressure in the defense, and knowing these assets could not only cover the battlefield directly in front of him, but could also effect the battlefield just beyond the FSCL, where enemy troops may be moving to reinforce or attack. The existing TACS system can provide him with that assurance and bomber's can add to that capability.

The purpose of this chapter is to provide current operating procedures for bomber CAS, as well as to highlight possible procedures and provide a scenario for the mission of XINT.

Section 2: Current Bomber CAS Operations

CAS is not the primary mission for strategic bombers. The bomber is primarily designed for striking interdiction and strategic targets with either long range or mid range stand-off precision weapons, or after air superiority has been attained, overflying interdiction targets and striking them with precision and non-precision gravity weapons. This does not, as mentioned earlier, preclude the bomber fleet from being capable and more than able to carry out CAS missions.

Bomber units are familiar with the Joint Fire 9 line message, the doctrinal standard for coordination between a controlling agency like an Air Liaison Officer (ALO), FAC, or the aircraft providing targeting support, whether it is ABCCC, AWACs, or JSTARS. Bomber crews are also familiar with the risks and general procedures for

providing CAS, although only a handful of crews have done it in combat or training. This may seem like quite a stumbling block; in reality, CAS missions are no different from any other mission for the bomber for one very good reason. For the most part, the B-52 and the B-1 are coordinate bombers. They load geographic/geodetic coordinates into their bombing computers and initiate bombing runs when they reach the bomb release line determined by that computer. The J-Fire 9 line message also provides the crew approximate run in headings for the attack, location of friendly troops, and location of threats. The only aspect of the strike to be determined by the crew is the number of weapons to be employed, and bomb release timing/spacing for maximum effect.

The B-52 does have the capability to put an optical sensor on the target, as previously discussed, however, this capability is used only for refining the final aiming of the bombardier and cannot practicably be used for target identification. From an altitude of 40,000 feet, enemy tanks would be impossible to differentiate from friendly tanks. Because of the inability to optically identify friendly forces and targets, it is critical to emphasize the importance of the accurate coordinates when using the bomber in the CAS role.

A possible CAS scenario might have a ground commander being allocated Killer/Scout F-16s to provide CAS for his upcoming offensive maneuver. The Scout F-16 provides coordination and targeting information to the "Killer" F-16s, who check in with him, and then proceed to their targets. While this is happening, high above them, the bomber loiters, in radio contact with the scout F-16 and JSTARS, ready to respond to a target the F-16 relays that is suitable for the Bomber to strike without the requirement for positive identification or "eyes on". The FAC may also pass control to JSTARS, who

may locate a target in the vicinity of the FSCL in the XINT region. Either way, the bomber instantly brings increased firepower to the equation, and can directly affect the battlefield for that ground commander. Using bombers for CAS carries old baggage with it, to include fighter/bomber turf wars, visions of massive fratricide by inaccurate weapons, or the impression that there are better targets for heavy bombers to strike. Bombers are thought of as "strategic"; striking targets deep in country, affecting tomorrows or next week's war, not the battle at hand. When bombers take off, they already have a target, and are not thought of as being flexible enough to change missions or targets enroute.

In Operation Desert Storm, this tactic was implemented using "kill boxes," an area of the desert several kms square, where the bomber could aim at the brightest radar return within a designated radius measured in thousands of feet, without fear of hitting any friendly troops, only the enemy. JSTARS was used to locate and pass target data of suspected Republican Guard concentrations, to be struck by bombers and other coalition aircraft. This gave the bomber the flexibility necessary to take off with an alternate target, and receive an updated target while airborne. The concept of "kill boxes" is currently used in several theaters, as it provides great flexibility and responsive support to the battlefield commander to strike emerging targets within his Area of Operations (AO).[54]

JSTARS remains, doctrinally, little more than a sensor. Since the Gulf War, many thoughts have been directed to figuring out different ways of using JSTARS data. JSTARS can pass data directly to ABCCC as it identifies potential targets on the ground. Depending on target location, the ABCCC can either call in attack aircraft or call in a FAC to direct the attack, depending on target location in relation to friendly troops. If a

visual identification of the target is necessary to avoid fratricide, the FAC will then direct the proper asset to strike the target.

If JSTARS gets the doctrinal authority to act as ground-attack Weapons Directors (similar to AWACS), ABCCC can be removed from this loop, and JSTARS can call in the attack directly. As previously stated, JSTARS can't identify whether targets are friendly. So, if ABCCC and a FAC aren't involved, then the bomber attack must be restricted to the area enemy columns may be moving to reinforce, but where friendly troops are not in danger of fratricide. This is the "XINT" region.

XINT

Bombers have their greatest effect in shaping the battlefield just beyond the range of direct fire weapons, where intense coordination isn't required, and fratricide is not a possibility. It is there that the bomber brings the most power to the battlefield fight. It is a valid assumption that B-52's will not fly low over a battlefield, they will fly in the high altitude sanctuary above MANPADS, SHORAD, and all but the heaviest AAA. At that altitude, the greatest concern is lining up properly on the target and ensuring avoidance of any strategic SAM threat.

The flight time from most bomber forward operating locations (FOL) means any troop concentration planned against will almost certainly be moved by the time bombers are on station. Additionally, newer weapons such as CBU-105 Sensor Fuzed Weapon/Wind Corrected Munitions Dispenser were designed for exactly this tactic. WCMD was created to make CBU's more effective from high altitude. SFW was designed to hit linear targets such as mechanized units in road-march. Airborne sensors will have to identify and designate mobile targets once airplanes get to the battle area.

Using the TACS already in place to control aircraft and identify targets, the bomber can be added to the aircraft already striking these targets. Once the enemy is located, a bomber can rain down destruction like an entire squadron of fighters, and do it with virtual impunity.

Air planners in Korea wanted to get away from using the CAS descriptor, because the XINT mission occurs in an area where friendly troops are not in proximity to the enemy. BAI is fairly descriptive, but is simply no longer in USAF doctrine. Interdiction is fairly accurate, but interdiction also has specific connotations. The Contingency Theater Automated Planning System (CTAPS), the computer program currently used to build the Air Tasking Order (ATO) and delineate the air campaign plan doesn't allow the insertion of a descriptor not already in the database. CTAPS has certain, specific, pre-defined mission types that are acceptable, and these must be used when publishing an ATO. That left interdiction, INT, as the most logical choice.

In an ATO mission line, "X" in front of anything means airborne alert. (Ground alert is prefixed with a "G.") The term XINT comes from the need in the ATO to distinguish the alert interdiction mission from CAS and regular interdiction. This identifies the participating assets to the support platforms.

In theory, the B-52 or B-1 can now depart from the FOL fully loaded, with full chart and threat coverage of the theater, and an intelligence briefing on the expected troop activity. As the bombers approach the battle area, crews come under the control of AWACS and then contact JSTARS. If a good target is being tracked, JSTARS passes a J-FIRE 9-line and the bombers attack the target immediately. If no targets are currently available, the bombers enter a preplanned alert orbit. Once JSTARS locates a target, the

information is passed via the J-Fire 9-line message. The bomber crew determines the best axis of attack, locates an initial point (IP) to start the bombing run and departs the orbit.

A more advanced tactic utilizes on-board weaponeering, allowing bombers to kill more targets per mission. The bomber has the capability to release varying amounts of weapons at different intervals, as well as different types of weapons on multiple passes. Bomber crews also have the luxury of carrying a simple laptop for weaponeering rather than trying to "guesstimate" how many weapons are needed. The amount of weapons needed to disable or destroy a target is dependent on many variables, most notably the type and accuracy of weapons being released, the type of target, and the desired effect. To illustrate, a two-ship of B-52s carrying CBU-87's might each attack a target singly with externally mounted weapons only, then roll across in formation to release their bomb bay weapons. Three targets could be attacked in this scenario, with 18, 18, and 12 weapons being dropped per pass.[55]

The Air Force's 93d Wing, the home of the JSTARS Squadron, is currently working out procedures for passing the necessary data to bombers to join the direct attack portion of the air war. JSTARS has the ability to provide good target descriptions, including length, width, axis, number of vehicles, direction and speed of movement. JSTARS will primarily be in the sensor role, passing target data to ABCCC, and designated attack aircraft called in either by the ABCCC or a FAC. As JSTARS refines its employment doctrine, they will be capable to operate in a weapons director role.

It is important to remember that XINT is not a new doctrinal concept, it is simply a procedure currently in place to allow the interdiction of time sensitive and emerging

targets by airborne alert aircraft. JSTARS is necessary because bombers do not have the sensors required to locate these targets on their own. There is a move away from using ABCCC and FAC's because attacks do not occur within close proximity to ground troops.

Weapons Selection for Moving Targets is a critical planning function necessary to ensure success of XINT. From high altitude, the distance traveled by a target during weapon time of fall (TOF) is important, even for slow moving targets. A few hundred feet is extremely significant relative to most weapons' area of effectiveness. As an example, a target traveling at 11 mph will move 1000 feet during the 60 second TOF. If the target is a long convoy, it may be possible to simply attack a portion of the convoy by aiming for the middle and keeping the bomb train short. In this case, choosing a bomb/CBU interval to optimize damage on the segment attacked is relatively easy. Generally, attacking the front segment of the convoy may bring the entire convoy to a halt, making follow-up attacks simpler. Another option is to strike the target centroid, with some weapons hitting ahead and behind, compensating for any change in the convoy's speed after weapons release. The best weapon option is the one that provides the largest area of effectiveness. Sensor Fuzed Weapon is an excellent choice against moving targets, as it requires only a few weapons to bring an entire convoy to a halt. Once the convoy is stopped, a variety of other weapons can then be employed more effectively, causing more lasting damage. A CBU-89 Gator minefield laid ahead of the convoy may also halt it temporarily. However, the disadvantage of this option, as discussed earlier, is Gator mines may shatter upon hitting a hard-surfaced road.

XINT can be used to attack any emerging or time sensitive target, and the bomber's flexibility and versatility allow it to optimize its weapons employment to each specific target.

Section 4.Conclusion

The Air Force's bomber force has been showing its flexibility, versatility, and persistence throughout history. It can provide the ground force commander with a tremendous amount of firepower to shape his battlefield.

Using bombers to fly the CAS mission makes sense, as long as certain guidelines are followed. Improvements in avionics and weapons allow bombers to be much more accurate and can strike targets well within 1000 meters of friendly ground troops. All of the WCMDs are accurate within 30 meters, the key again is to have accurate coordinates. Training is currently in place at bomber and JSTARS units, and at the Weapons School for the respective bombers.

XINT provides flexible and responsive firepower where and when it is needed to strike emerging and time sensitive targets. The ability of the bomber to get bombs to who need them when they are needed is the bottom line. These two missions would bring bombers into play shaping the battlefield, providing the ground commander with flexible, versatile, and persistent firepower across the full spectrum of the battlefield.

Using bombers in both missions provides a significant increase in the responsiveness and amount of firepower currently available to the ground commander. No physical changes need to be made to the current TACS structure to allow this to occur. Procedural changes with regard to JSTARS becoming a weapons controller need to be addressed. On the expanded battlefield, where proximity provides a safe buffer

from airborne fratricide between enemy and friendly troops, using bombers makes sense and can provide tremendous support to the ground commander.

CHAPTER SIX: ANALYSIS

This paper examines the issue of using strategic bombers for battlefield shaping by applying the tenets of flexibility, versatility, and persistence from Air Force doctrine. These tenets highlight the strength of airpower on the battlefield. The bomber, originally designed to perform missions on a strategic level, is equally capable of performing missions on the tactical level. While not thought of as a tactical aircraft, the bomber is flexible, versatile, and persistent in its effect on the battlefield.

Flexibility: Flexibility allows air and space forces to exploit mass and maneuver simultaneously to a far greater extent than surface forces.

Webster's dictionary defines Flexible as: "Responsive to change: Adaptable." [56]

Arguably, the B-52 can be the most flexible airplane in the Air Force inventory. Although the B-2 has yet to be proven in combat, and the B-1 was first used in December 1998 in Operation DESERT FOX, they have proven their capability in testing and in daily operations. History has shown that the bomber has flown a variety of missions successfully in the past. In the course of Vietnam and the Gulf War, as well as the numerous cruise missile strikes since the war, the bomber has flown all types of missions effectively. Using the historical record from Vietnam, the role of the B-52 ran the gamut from Strategic Attack, Interdiction, Battlefield Air Interdiction, and Close Air Support, while many B-52s still sat their Nuclear Alert sorties in the United States. If we use the Desert Storm model, if a war begins with an air campaign used to prepare for, or even preclude a ground campaign, most of the bomber's strategic attack and interdiction targets will already have been hit during the initial air campaign. This being the case, the non-stealth bombers (B-1/B-52) will be able to spare enough assets to cover the

battlefield support missions on an around-the-clock basis. In other models like Korea, the war can readily be lost UNLESS the added resources necessary for success represented by strategic bombers perform the missions laid out in this paper. Air Force doctrine speaks of a "Decisive Halt" when discussing a "New View of Conflict". [57]The point of this decisive halt, according to the doctrine, is to "force the enemy beyond their culminating point through the early and sustained overwhelming application of air and space power."[58] In this scenario, the bomber is able to apply that overwhelming power in the form of XINT and CAS sorties, thereby proving their flexibility.

Allowing bombers to fly CAS and XINT sorties under the control of AWACS, FAC, ABCCC, or JSTARS actually fits a model already set out for us in history and in doctrine. As mentioned in the second chapter, final guidance for release at Khe Sanh was given to the B-52s by radar vans monitoring the bomber's position inbound to the target. Instead of radar vans, we now have more capable assets like JSTARS performing essentially the same mission. Due to guidance units on the weapons, as well as more precise guidance and avionics on the bombers, these strikes are now capable of being much more accurate, and thereby safer and more effective. We must be willing to apply new technology to an old mission and allow the bombs to get to who needs them, when they are needed.

In terms of time, space, and resources, it makes great sense to use bombers for this mission. Bombers have the loiter capability to actually be on station throughout the entire campaign. Assuming we have air superiority, which is critical for any support on the battlefield, they can hold until replaced by other bombers. The resources bombers bring to this fight is tremendous when compared to other aircraft. Weapons payload and

selection is much greater than on the aircraft currently performing CAS. The lack of specific CAS precision weapons like the Maverick missile is made up for by sheer volume and variety of weapons, and by assigning the bomber the correct target on the expanding battlefield.

The idea of using heavy strategic bombers in direct support of the ground campaign in the CAS or XINT role is an example of the flexibility of airpower.

Versatility: Versatility in airpower stems from the fact that it can be equally employed effectively at the strategic, operational, and tactical levels of warfare.[59] Again, using Websters, "Capable of doing many things. Having many uses or serving various functions." [60]

The versatility of the bomber has been seen through history. Continuing upgrades to the avionics and weapons place it at the forefront of any operations in the future. CAS and XINT operations will enhance the ground commanders' ability to shape the battlefield in preparation for his campaign. While targeting is based on his needs, the aircraft will remain under the control of the ACC through the TACS.

In certain theaters, using bombers in the CAS/XINT role is critical. The ability for bombers to have an impact on the battlefield was seen in Vietnam and in the Gulf. General Schwarzkopf, the Joint Force Commander and Land Component Commander for the Coalition in the Gulf War was vehement about having B-52s strike the Republican Guard around the clock until the ground portion of the war began. The Republican Guard was identified as the Center of Gravity of the Iraqi forces, and Schwarzkopf wanted them hit with bombers. The bombers provided a capability no other aircraft had. That capability was the ability to strike the Guard in all types of weather, day or night, with

reliability, and devastating physical and psychological firepower. [61] This ability to strike at the Strategic, Operational, and Tactical centers of gravity simultaneously is a quality unique to airpower, and especially unique to the bomber.

Persistence: Persistence suggests continued efforts. Airpower's inherent exceptional speed and range allows its forces to visit and revisit wide ranges of targets nearly at will. Websters describes persistence as "tenacious, enduring, continuous." [62] The purpose of XINT and CAS is to shape the battlefield and kill, delay, disrupt, and divert enemy forces from massing an attack on friendly troops. To accomplish this, the attacks must be persistent in order to inflict the damage necessary. The B-52 showed persistence at Khe Sanh striking around the clock in support of the US Marines there. In the Persian Gulf, the BUFF flew BAI sorties against Republican Guard troops around the clock while still striking key strategic and interdiction targets across thousands of miles. In this case, the bomber was exhibiting its tremendous flexibility, versatility, and persistence almost simultaneously.

Based on the examination criteria of flexibility, versatility, and persistence, it is clear using the strategic bomber force for these tactical missions holds great potential for shaping the expanding battlefield of today, and tomorrow.

CHAPTER SEVEN: SUMMARY

> "The ground war has started. Our number one job is support of the ground forces. Close Air Support and Air Interdiction missions are not weather canceled by some decision maker removed from the scene. The time has come for every flight lead to make every reasonable effort to attack the target and get his flight back home. Our ground guys are depending on every sortie. From now on, it is up to every aviator to make it happen."
>
> General "Buster" Glossen, CENTAF/DO, in a message to all airmen on the eve of the ground offensive.[63]

The strategic bombing force of the United States provides any Joint Force Commander with tremendous and flexible firepower he can place anywhere he wishes on the battlefield. There exists today, however, a perceived gap between the Air Force and the Army on the battlefield when it comes to CAS and AI.

Airpower has the unique capability to maneuver offensively across vast distances in short periods of time, and mass firepower against the target of the commander's choosing. This has been demonstrated numerous times in history, and can be seen anytime the US threatens some dictator with force. Due to its flexibility, versatility, and persistence, airpower is the weapon of choice.

The Army desires airpower to be a supporting arm to their maneuver, to provide attached airborne artillery in support of the ground offensive, targeting the enemy in ways and means that he cannot with his organic assets, and also controlling those apportioned aircraft as well.

Using bombers to shape the battlefield makes sense, and is a proven concept. Since the beginnings of bomber CAS, technology, weaponry, and crew capability have

gotten significantly better. Doctrinal changes are not necessary, only procedural ones, and these are already being accomplished at units across the country.

The Gulf War saw the initial use of JSTARS, with tremendous results. Since that time, JSTARS crews have been working with bomber crews on the development of the new mission and tactics of XINT. The significant capabilities of JSTARS in tandem with the strategic bomber and the TACS will yield great dividends when the need arises.

The Air Force strategic bomber force can accurately and safely strike targets normally thought of as being reserved for fighter/attack aircraft, and has the capability to range the entire battlefield from their high altitude haven. It is time that the Air Force recognizes the tremendous capabilities the bomber brings to the battlefield fight, on both sides of the FSCL. It is also time for the Army to realize the Air Force is concerned about supporting their ground campaign, and intends to do so fully, should the need arise. Bombers flying CAS and XINT sorties, in the vicinity of the FSCL, targeting the enemy in support of the ground commander's campaign can bring tremendous firepower to bear across the depth of the battlefield.

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