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THEATER APPLICATIONS OF THE FUTURE BOMBER FORCE

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Major, USAF

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own views and are not necessarily endorsed by the Naval War College, the Department of the Navy, or the Department of the Air Force.

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TABLE OF CONTENTS

THEATER APPLICATIONS OF THE

FUTURE BOMBER FORCE

Introduction

With the Soviet Union gone and increased social spending the drumbeat of Congress, a divisive debate is ongoing over power projection and the future of the bomber.[1] Now that the heavy bomber has been largely freed from the commitment to U.S. nuclear war plans, many have questioned its usefulness to military strategy in the "New World Order." We glimpsed the military persona of this new order in the Gulf War, where the U.S. energized the U.N. and regional nations against Iraq. Some characteristics of this successful projection of U.S. power were the chain of airfields connecting the U.S. to the theater, extensive host nation logistic and infrastructure support, and international cost and burden sharing. The role of the bomber in the Gulf War was primarily to add mass[2] to the coalition air power.

The critics charge the bomber force is a relic of the Cold War, that it had only a marginal impact in the Gulf War and has little utility for future military scenarios. They argue the bomber is inflexible, it cannot operate across the spectrum of conflict.[3] The 1986 raid on Libya (EL DORADO CANYON) represents the military operations of the future--measured force for limited objectives. Without the restraint of a bi-polar world, the focus has been on a smaller but more flexible power projection force to deal with these emerging crises. A force to provide humanitarian aid (Somalia), retaliate against terrorism (Libya), or emerge victorious from a major regional contingency (Iraq).

Power projection is a term synonymous with the U.S. military. The U.S. claim to being a military superpower is not her possession of large quantities of troops, ships, and aircraft. Superpower status is a result of our ability to project those forces outside our region. In a very simplified equation, our conventional power projection is the sum of our carrier battle groups, amphibious readiness groups,

[1]The term 'bomber' refers to long range aircraft designed to attack an enemy's war-making capacity and will. The bombers in the present force are B-52s and B-1Bs. The first B-2 unit will be operational by 1995.
[2]The ability to concentrate combat power at the decisive time and place. See Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force, March 1992
[3]Spectrum of Conflict is a concept that integrates the means of force into a scale. Conflicts of limited force would be at the low end of the spectrum, at the high end is nuclear war. A detailed explanation is presented in Chapt III.

strategic mobility forces, and bombers. The bomber is a crucial part of U.S. power projection, for it can respond quickly with sustained firepower to any point on the globe.[4]

The bomber force of 1993 is a force in transition, looking toward the future by developing its conventional capabilities and tactics. The current force of B-1s and B-52s will soon be augmented by the B-2. The Air Force, with the arrival of the B-2, will restructure so 176 bombers (80 B-52Hs, 80 B-1Bs, and 16 B-2As) will be available to the theater commander (CINC). The bomber forces will also get a wider array of ballistic munitions (or "dumb" bombs and mines), and advanced munitions including precision bombs and stand-off weapons. These changes amount to a revolutionary increase in the flexibility and capability of the bomber force. The technological improvements to the bomber force are all proven. The F-117 stealth aircraft performed superbly in the Gulf War. The U.S. used precision munitions extensively, with laudable success, as well as stand-off munitions such as the conventional cruise missile launched by the B-52s. Although the technology is proven, we are only beginning to fully explore the applications of advanced munitions and stealth from an aircraft with the bombers' range and payload. The CINC who wants to realize the potential of the bomber force can look to the Gulf War. The air campaign[5] in the Gulf was a brutal demonstration of stealth, precision munitions, and air superiority.

Framework

While deterrence remains a core mission of the bomber force, it is no longer the only mission.[6] Responding to new possibilities, the Air Force is developing an aggressive conventional bomber force with the agility to operate across the breadth of spectrum of conflict, and the depth to provide decisive force at the point of attack.

I contend the bomber provides the CINC an agile power projection capability with the versatility to be effective across the spectrum of conflict. The future bomber force represents more than just "better" bombers with "smarter" weapons; the synergism creates a revolutionary change in bomber capabilities. This requires us to be proactive in assessing the missions for the bomber force and

[4]Department of the Air Force, Bomber Roadmap, June 1992, 3

[5]There is some discussion as to whether there is an 'air campaign'--that as part of the overall campaign plan, air does not stand alone. However, since Joint Pub 1-02 defines a campaign plan as "a series of related military operations aimed to accomplish a common objective, normally within a given time and space," I will continue to use the phrase air campaign to describe the series of actions taken to achieve the objective.

[6]Bomber Roadmap, 2

understanding their capabilities and limitations, and avoid preconceptions about bomber employment. To the CINC,[7] this means he will be able to respond to a crisis quickly (unilaterally if required) with mass, precision, or both. The primary limitation for the future is the targets must be high value; value as measured by military, economic, diplomatic, or political impact of target destruction.

Can the bomber force have an "impact" role in force application scenarios other than global war? If so, how can the CINC effectively use the bomber force? To answer those questions, we must first address the capabilities and limitations of the bomber force, stealth and advanced munitions. After building my case for the revolutionized capabilities, I will applying the framework of case study analysis to some possible bomber force application scenarios. This will demonstrate how the CINC can use the bomber, within traditional doctrinal concepts and missions.

[7]This paper centers on what bombers can give the theater commander (CINC). I"ll not get into the finer points of whether it is the National Command Authorities or the CINC that "responds" to a crisis. For my purposes the CINC is the decision authority for military action in his theater.

CHAPTER II

Bomber Capabilities

"My solution to the problem would be to tell them frankly that they've got to draw in their horns and stop their aggression, or we're going to bomb them back into the stone age."

--Curtis E. LeMay, Mission with LeMay

Historically, the bomber has been used at the upper end of the spectrum of conflict. Proponents believed the bomber would be able to vault the trenches and the armies, overfly the navies and penetrate to the heart of the enemy, wreaking havoc on his "vital centers...in order to paralyze his resistance."[8] This earned the bomber the preface of "Strategic," it was soon amended to include "nuclear." For the last 48 years the strategic nuclear scenario has been inseparable from the bomber. Strategic attack, the traditional bomber mission, remains the motivating factor for any country to obtain and maintain a bomber force. This association, however, has often led to inflexibility in planning and employment. Current Air Force doctrine is clear in separating the mission from the aircraft:

> "Strategic attacks are defined by the objective--not by the weapon system employed, the munitions used, or the location."[9]

It is the weapon system then, not the mission, that defines for this paper what is a bomber.

The bomber has been called many things in the past twenty years depending on the agenda of the author. The term bomber has historically meant relatively long range aircraft designed to attack strategic targets in an enemy's homeland. The central defining characteristic of the bomber is its offensive nature. Its role in campaign plans has been to carry the conflict to the enemy, attacking enemy capability, will, or both. As WWII gave way to the Cold War, the doctrinal employment of bombers changed little. The targets remained the political, economic and military infrastructure of the enemy; to apply the bomber in any other capacity (i.e., Deep interdiction against the numerically superior Soviet armies) would be

[8]BGen William Mitchell, quoted by Christopher Miller, *Terror from the Skies, Exploiting the Psychological Impact of the Heavy Bomber*, Naval War College Paper, 11 February 1991

[9]Air Force Manual 1-1, Vol II, Basic Aerospace Doctrine of the United States Air Force, March 1992, 147

squandering an asset already over tasked with targets. The new national security environment requires we reassess the characteristics and use of the bomber force.

Range

The primary inherent characteristic of the bomber is range. The bomber, to meet its offensive mission requirements, had to be able to reach the enemy. This requirement for range represents the most important functional difference, and engineering trade-off, between the fighter and the bomber. The bomber evolved into a platform for weapon delivery, with limited defense.

While the bomber brings its range capability to the force mix, the effects and constraints of range go beyond just the aircraft. Aircraft range and the ability to operate at maximum range impacts all levels of conflict, and effects the choices available to the CINC and the air planner.[10]

Range is more than just the ability to strike deep targets. The range at which one can achieve air superiority has often been the margin between victory or defeat, and can be seen as the defining aspect of at least two major campaigns in WWII. McArthur's campaign in the Pacific was chiefly the puruit of airfields from which to project and protect the next assault for an island airfield.[11] The one time he extended beyond the range of his land based air cover, Leyte Gulf, inferior Japanese forces nearly battered him when they achieved a momentary naval superiority. Another example is the campaign in North Africa, which had been,

> "...and in fact continued to be, a fight for air bases; air bases from which we could stretch forward our air superiority over the enemy's ports and sea supply routes, superiority under cover of which our air forces and naval forces, surface and submarine could secure command at sea..."[12]

Range, especially air superiority at range, becomes a critical element of success in modern war.[13]

[10]See the case studies used by Col. John A. Warden III in his book, The Air Campaign, Pergamon-Brassey's, 1989. His five case studies, used to study air superiority, are based on the capability of the participants to strike each other's air fields, rear areas, and battle lines (pgs 16-20).
[11]Ibid., 26
[12]The Lord Tedder, Air Power in War, A.D. Peters and Company Ltd.
[13]For example, the Combined Bomber Operation was considered to be failing in late 1943 because of high losses. At the point of attack, the US didn't have air superiority to prevent unacceptable levels of loss. By early 1944 the number of bombers in the formations combined with fighter escorts allowed sufficient air superiority. Within four months from the failures against Schweinfurth (26% loss rate), Eighth AF conducted Big Week of February 1944 (3% loss rate), and subsequent bomber operations were successful. See Stephen L. McFarland and Wesley Phillips Newton, To Command the Sky, Smithsonian Institution Press, 1991

The air planner has a slightly different perspective of range. The aircraft with greater range gives him more planning flexibility. He can use depth to engage centers of gravity in sequential operations (DESERT STORM and the phased air campaign against air defenses, military infrastructure then military forces) or cumulative operations (WWII and the bomber offensive against petroleum, oil and lubricants). The planner can build force packages to use complementary capabilities to overwhelm, deceive, frustrate, and eventually destroy an enemy. Aircraft able to fly their mission without air refueling effectively add range to other aircraft. Range also translates into tactical flexibility when conducting an attack. The planner can use "extra" range to build deceptive strike routes and achieve surprise by taking advantage of terrain, defensive orientations, or synchronization with other forces.

If range is so important to the planner, what about the success of short range aircraft in the Gulf War? During DESERT STORM, Fighter/Attack aircraft did well without the range of the bomber. Since these aircraft are faster and more maneuverable than the bombers, the trade off for range seems pointless with forward basing and air refueling. Why have a more costly, less maneuverable aircraft?

The current generations of Fighter/Attack aircraft rely on either air refueling or forward basing (usually both) to accomplish their missions. There are several disadvantages to both means of compensating for range limitations. Forward bases require third nation acquiescence, if not outright support. This involves the U.S. in coalition warfare and the associated constraints and compromises. Forward bases also expose U.S. forces to counterattack, requiring resources for constant air superiority and base defense. The effectiveness of forward bases depends on the available infrastructure to support the air package. Runway size, ramp space, base structures, lines of communication, etc., are constraints on operations from forward bases. These constraints were largely absent from our DESERT STORM air campaign. One lesson we might take from the DESERT STORM is that without long range aircraft, forward basing is a pre-condition for air superiority. As we continue to draw down from overseas bases, we increase dependence on long range aircraft for power projection.

The need for air refueling aircraft puts additional strain on forward bases. The availability of air refueling aircraft will determine the number of sorties flown. Although the bombers also need air refueling aircraft, they can be effective with air refueling aircraft from bases in the U.S. Bombers from outside the theater can provide a balance to forward based aircraft, adding firepower without using theater air refueling aircraft. If positioned in theater, they can provide mass without drawing on air

refueling assets. Simply put, forward basing and air refueling make all aircraft more effective. They cannot compensate entirely for the inherent range limitations of the current Fighter/Attack aircraft.

Payload

Early in the bomber development, payload was less important than range since the challenge of getting to the target and back was the chief engineering problem. This was consistent with early theories of strategic bombing that placed great emphasis on psychological impact. The focus was more on the act of dropping a bomb, than on destruction of specific targets. U.S. doctrine evolved between the wars and placed significance on target destruction; valid targets were those key plants critical to the enemy's industrial web.[14] The focus was on quantifiable target damage, as determined by mathematical modeling.[15] The solution was to increase one factor in such modeling--payload. Payload requirements increased and future bomber designs maximized payload within range specifications.

Payload is a crucial advantage for bombers in a conventional role. The heavy payloads of bombers allow them to bring greater massed firepower against an enemy. A thumbnail comparison between the F-111 and the B-1B is enlightening. The F-111 can carry four 2,000lb bombs; the B-1B can carry up to twenty-four.[16]

An argument against the bomber payload advantage is its lower sortie rate when missions are flown from the continental U.S. The forward deployed fighter, when compared to a bomber flying from the U.S., may indeed be able to put similar payload on targets since it can generate more sorties each day. The bomber based in the U.S. spends more time in transit to the target and will require more maintenance because of the additional flight time The full effects of mass, especially with a smaller bomber force, would require some measure of forward deployment.

Flexibility

A third defining characteristic of the bomber is flexibility. This flexibility has both tactical and strategic aspects. From a strategic standpoint, the U.S. can quickly launch bombers in response to a crisis, or forward deploy them to show resolve. The bombers can be used against a wide range of targets and defenses, and are able to operate in a multiple mission capacity. On the tactical level, targets can be

[14]Patrick Cronin, The Quest for Targets That Count: Lessons Learned from Allied Strategic Bombing in the Second World War, Center for Naval Analyses, 1989, 15

[15]Ibid., 16

[16]Robert S. Dudney, "The Bomber Roadmap", *Air Force Magazine*, September, 1992, 42-46. A more likely payload would be sixteen 2,000lb bombs, with one of the B-1B's three bays used for additional fuel.

changed quickly, or an attack recalled, even during a mission. Bomber crews can use damage assessment techniques during the mission to efficiently use the weapons.

The bomber is also flexible in both role and missions, having been successfully employed in both Aerospace Control and Force Application roles. Those missions include Counterair--attacking enemy aircraft and facilities; Strategic Attack--attacking the enemy war making potential; Interdiction--attacking troops and supplies before they can reach the battle area; and Close Air Support--attacking enemy forces in contact with friendly forces.[17] The bomber is the only element of the nuclear triad able to provide a range of deterrence and firepower outside the venue of nuclear war.

However, these inherent characteristics are not revolutionary nor do they expand the roles or missions of the bomber. Commanders have frequently tasked the bombers outside the traditional mission of strategic attack. Some examples of this have been reconnaissance, electronic combat, and maritime missions. It is the flexibility to apply firepower at different *levels* of conflict that is revolutionary. The key elements of this revolution are stealth, precision guided munitions, and stand-off weapons. Together with the bomber characteristics of range, payload, and flexibility, they place U.S. adversaries in the position of *always* being vulnerable to attack. This new bomber force returns the initiative to the U.S. Attack can occur at the place and time of our choice; without the need to wait for more visible US forces to move into position, and with firepower to strike objectives while minimizing collateral damage.

Stealth

Stealth characteristics represent the technological leap forward that validates Douhet's vision of "...the magnitude and power of aerial offensives, and realize that no really effective method of parrying them exists..."[18] When we add stealth to the inherent bomber characteristics of range, payload and flexibility, the weapon system assumes a new level of capability.

Stealth means more than just minimized radar cross section. The goal is to prevent the acquisition and successful targeting of the aircraft. The means of acquisition--the first step in the defense against the bomber--include visual detection, noise, infra-red emissions, radar emissions, and radar cross section (RCS). While all these have impact on the ability of the bomber to successfully penetrate, I will concentrate on the reduction of RCS.

[17]AFM 1-1, Vol II, 10-11
[18]Giulio Douhet, The Command of the Air, Putnam Publishing, 1942, 61

The technical aspects of achieving lower RCS are beyond the scope and classification of this paper. The ability to achieve a low RCS depends on optimizing aircraft size, shape, aspect, and materials. Even these factors, especially size, offer different RCS results depending upon the frequency of the radar being used. Despite warnings about the "...inadequacy of any bold statement about an aircraft's RCS...,"[19] a general comparison is useful for understanding how we can employ bombers with a mix of stealth characteristics. Using front aspect as the point of comparison, the B-1B has an RCS 1% of the B-52. The Air Force, applying B-2 research, significantly reduced the B-1B RCS. The detection range of a clean F-16 is equivalent to that of the B-1B.[20] The third bomber in our force, the B-2, was designed from the ground up to penetrate the most sophisticated air defenses. On the basis of the ability of the F-117 to evade detection we can reasonably expect similar success with the B-2.[21]

The stealth capability of the B-2, and to a lesser extent the B-1B, give considerable freedom of action to the air planner. Alone, the stealthy bombers can penetrate sophisticated air defenses to strike targets. Depending on the military objectives of the conflict, those targets may serve to further degrade enemy air defenses, exposing more targets to follow-on attacks. Follow-on attacks not only by bombers, including B-52s, but other "non-stealthy" forces such as the F-15E, A-6, TLAMs, etc. In tandem with other air/ground/sea forces, the synergism of stealth attacks was clearly demonstrated in DESERT STORM. The F-117, in concert with stand-off missiles and conventional non-stealth aircraft, disrupted, saturated, isolated and destroyed the Iraqi air defenses. In a joint campaign, stealth can provide both surprise and deception, letting U.S. forces take full advantage of synchronization of forces and technological superiority.

This allows the CINC to use his air power advantage asymmetrically to accomplish U.S. objectives. As Edward Luttwak points out, "The logic of relying on long-range air power against an enemy whose only strength lay in short range ground fire now seems self-evident."[22] The benefit of this asymmetric application of force is even greater with the payload advantage of the bombers. The regional powers of the future will tend to be ground oriented. To achieve regional hegemony implies the ability

[19]Air Chief Marshall Sir Michael Knight, Strategic Offensive Air Operations, Brassey's (UK), 1989, 95

[20]Kevin J. Kennedy, *Stealth, A Revolutionary Change to Air Warfare*, Naval War College paper, 13 February 1992, 9

[21]A problem was found with low observability testing of the B-2 in July, 1991. The Air Force believes it has found a fix for the test anomaly, and must demonstrate specific performance characteristics before Congress releases funds. See *Air Force Magazine*, February 1993, 19

[22]Edward N. Luttwak, "Victory Through Airpower," *Commentary*, August, 1991, 28

to hold at risk the territory of regional states. If a regional power becomes an adversary of the U.S., it is likely because of aggression against another state. (No case study needed here, see Iraq, Libya, Serbia, North Vietnam, and Germany in both World Wars.) The fact they are a threat indicates their potential, and willingness, for offensive action against their neighbors. Such a force may be vulnerable to the asymmetry of an air campaign.

On the other hand, what is the future of stealth? If our adversaries obtain countermeasures to stealth, we would have a small number of costly aircraft without the performance of their non-stealthy counterparts. The high cost of stealth not only drains the defense budget of funds for other weapon systems, it impacts on funds for operations and maintenance, weapon upgrades, and facilities. The costs of stealth raise some searching questions. How willing will we be to risk an $865 million "national resource" in a low level conflict?

When the costs get so high, then the numbers invariably fall. The B-2, once a force of 132 bombers declined to 75 and now stands at 20. It seems the concept of a few stealth bombers is contrary to the argument that bombers can provide the theater commander with mass in his air campaign. Mass seems to mean more bombers, at least more than the 16 operational B-2s currently called for. Why use costly stealth when we can overwhelm defenses with strength?

In DESERT STORM, according to Jeffrey Record,

> "only a handful--56 F-117As--were stealthy. Yet within a few days of Desert Storm's initiation, the US had achieved near-complete air supremacy over Iraq, and did so with unprecedented low loss rates in terms of friendly aircraft downed by enemy fire. It is doubtful whether a significantly lower loss rate could have been achieved had every US and allied aircraft been completely stealthy."[23]

The net result of the high cost of stealth is its impact on the force size. The bulk of the bomber force is not stealth. Of the 176 bombers called for in Air Force plans, only 16, less than 10%, are B-2s. Eighty are the "anti-stealth" B-52s and the remainder the "reduced RCS" B-1.

These are valid concerns but somewhat misplaced. The costs of stealth are admittedly high, regardless of whether we are building stealth characteristics into a fighter, a bomber. a transport aircraft, or a missile. Materials, production tolerances, skilled labor, etc., all combine to drive up the program cost. Our political system, facing high program costs, often chooses to reduce production or delay procurement--these in turn drive up unit costs. The point here is not what would be a more cost effective weapons buy, because we have already made that decision. The result is the future bomber force. At issue are two things, the opportunity of the CINC to use stealth bombers, and whether a force of this size can provide sufficient mass against a large target set.

I don't think the recent experience, or the general philosophy, of the U.S. military is to substitute a cheaper weapon system for one with superior survivability. Just the opposite is true for stealth. The U.S. increased the survivability of the initial attacking force by using the F-117 over the cheaper F-111, although the F-111 could have carried more munitions. The superior survivability of stealth may not be cheap, but it is cost-effective. By using stealth aircraft, the air planner avoided the need to use (and expose) support aircraft for escort, electronic warfare, and command and control, and additional air refueling aircraft. It can be *more* cost-effective to use stealth. As noted by the Senate Armed Services Committee in 1991, "two B-2s, with no support aircraft, could perform the tasks of an armada of 75 non-stealthy aircraft."[24] Can we afford not to use them?

While acknowledging the limited numbers of full stealth aircraft in the bomber force, the use of "smart tactics" will permit the bombers to complement each other and hold a wide range of targets

[23]Jeffrey Record, Why the Air War Worked, *Armed Forces Journal*, April 1991, 44-45
[24]Dagnija Sterste-Perkins, Congressional Research Service, "B-2 Strategic Bomber," *CRS Issue Brief*, 11 February 1992

at risk.[25] The low loss rate in DESERT STORM that Jeffrey Record refers to might have been the same if *all* the aircraft were stealth, I consider it unlikely if there had been *no* stealth aircraft. His observations highlight the value of even a few stealth aircraft. The F-117 destroyed 30% of all the strategic targets and in the first days of the air war neutralized the air defense network that in turn kept loss rates low.[26] For bomber forces the air planner could achieve similar synergism by using B-2s against heavily defended air defense and command and control targets, B-1s against medium threat targets, and the B-52s against low threat targets. Using combinations of direct attack and stand off munitions allow the theater commander to maximize his stealth advantage while still covering a large target base.

The future bomber force, against a notional target set based on DESERT STORM, can destroy enough targets within the first five days to disrupt an enemy's decision cycle, stagger his offensive actions, and expose his flanks to attack. The Bomber Roadmap standard is a "hypothetical list of 238 initial, high priority targets that a theater CINC might have to destroy early on."[27] The authors then break the target set into 1250+ target elements, "aimpoints, corners of a building, for example that must be hit to destroy the target set."[28] This force of 176 bombers, the smallest since WWII, has sufficient payload with precision munitions to strike 100% of that notional target set. Stealth and advanced munitions allow the force to retain properties of mass and sustained firepower despite fewer aircraft.

Finally, the argument that technological advances will counter stealth in the near future misses the point of using stealth on attack aircraft. The military advantage of stealth is to achieve tactical surprise and avoid being killed. While there are certain frequency radars that may detect a stealth aircraft, it remains problematic that they can detect and identify it in time to alert their defenses. Stealth works for survivability by disrupting and degrading the entire sequence of actions an enemy must take to get a kill. The enemy must not only detect the stealth aircraft, "but also to track it continuously (locate it and determine where it is going), to establish fire control (send a missile within striking distance), and to conduct a kill (missile acquires the B-2 and gets close enough to detonate its warhead within lethal range). The purpose of stealthiness is to make this entire sequence of procedures very difficult, if not impossible, and inordinately expensive."[29]

[25] Bomber Roadmap, 7
[26] F-117 AF magazine
[27] Bomber Roadmap, 4
[28] Ibid.,4
[29] "B-2 Strategic Bomber," 3

CHAPTER III

Advanced Munitions

"I saw the bomb go in, I saw it penetrate. Then the explosion came out the hole the bomb had made, and then the doors blew off the bunker. I knew I had knocked out the target." --Maj. Gregory A. Feest, F-117 pilot, on the destruction of an interceptor operations center with first bomb on Iraq in DESERT STORM.[30]

Advanced munitions planned for the bomber force include both Precision Guided Munitions (PGMs), precision munitions (PMs), and stand-off weapons. Each offers unique advantages that give them, in aggregate, a high degree of flexibility.

PGMs use terminal guidance to strike a designated target. They usually require a man-in-the-loop to either designate the target, as in laser guided bombs, or guide the weapon to the target, as in the maverick missile or the A-6 electro-optic guided bomb. The most common, and least expensive is the laser guided bomb. The GBU-15, a 2,000lb laser guided bomb was very effective in the Gulf war. It allowed coalition forces to destroy or neutralize targets with fewer sorties and less collateral damage than standard munitions.[31] The relentless video footage of PGM strikes throughout the war had a psychological impact on both sides. The real impact of PGMs changed U.S. Navy policy on the type and quantities of PGMs kept with the carrier battle group, and redirected attention to the often neglected area of weapons procurement for all the services. The public relations impact will be to obtain the quality recorders needed for timely bomb damage assessment and, in Admiral Mixson's words, "provide...good press coverage of targets struck."[32] This is more than just good PR in the States. The Iraqi's also had access to the broadcasts, and it is not hard to imagine the uneasiness such footage creates among those unfortunate people working inside the "target sets."

Precision munitions include guided weapons, but without the terminal seeker of the laser guided bombs. The weapons currently being planned for the bomber force include the Joint Directed Attack

[30]James P. Coyne, "A Strike by Stealth," *Air Force Magazine*, March 1992, 43
[31]Bruce W. Watson, et al., The Military Lessons of the Gulf War, Green Hill Books, 1991, 76
[32]Rear Admiral Riley D. Mixson, "Where We Must Do Better," Proceedings, August 1991, 39

Munition (JDAM). The JDAM I[35] is a 2,000lb weapon that uses GPS assisted inertial guidance. Although the JDAM I is accurate to within 45 ft.,[36] it is not up to PGM standards (less than 10 feet). One specific advantage of JDAM is it can strike a target when weather or lighting preclude the terminal guidance of PGMs. While we do not often think of weather as a problem in the Middle East, it did challenge U.S. forces at the peak of the "Scud War."[37] Cloud cover in that region can "obstruct targets up to 30% of the time and for Northeast Asia the figure rises to as high as 60% in the worst weather seasons."[38] Since there is no need for a designator, the operator is removed from interaction with the weapon after release--it is "fire and forget." Depending on the release parameters, the JDAM's target may not have to be overflown, increasing survivability and allowing a wider range of attack axes.

However, these weapons still require the aircraft to get well within missile range and possibly the range of ground fire. While this may not be an insurmountable problem for the stealthy B-2 and the high-speed B-1B, the relatively slow, and detectable B-52 is more vulnerable against modern integrated air defenses.[39] Stand-off munitions give the bombers greater flexibility against the toughest defenses. The Air Force will arm the future bomber force with the Tri-Service Stand Off Missile to combine 100nm+ range with a precision warhead, optional sub-munitions, and stealth characteristics. This combination of the bomber with stand-off weapons was demonstrated in the Gulf war. The first aircraft launched in DESERT STORM were B-52s armed with conventional cruise missiles.[40]

Advanced munitions are key to applying bomber forces across the spectrum of conflict. The force can apply sufficient firepower against targets at the high end of the spectrum, while allowing minimum collateral damage at the low end of the spectrum. Advanced munitions can allow the bombers to take full advantage of their payload by maximizing target destruction with minimum bomb tonnage.

[35]The JDAM II is a 500lb weapon with the same inertial guidance. The JDAM III is a 2,000lb weapon that combines the guidance of JDAM I witha precision seeker to "strike within 10 feet of a target, day or night, in adverse weather. See Bomber Roadmap, pg 6

[36]Bomber Roadmap, 7

[37]"Victory Through Air Power," 28

[38]Bomber Roadmap, 6

[39]It deserves to be noted that the B-52 were conducting low altitude bombing missions in Southern Iraq within an hour of the F-117 strikes. In one example a three-ship of B-52s executed a multi-axis attack against an Iraqi airfield. Twenty B-52s attacked Iraqi targets in the first night without a loss. See "The Buff at War," by Capt. Doug Fries in *Air Force Magazine*, June 1992, 44-49

[40]The aircraft were launched from Barksdale AFB, Louisiana. See "The Buff at War."

The DESERT STORM example indicates how the PGMs act as a force multiplier. To destroy a WWII target required an average of 4,500 sorties; in DESERT STORM a single F-117 sortie was needed.[41]

The political constraints of military operations in peacetime set the bounds for conflict at the low end of the spectrum. The need to minimize collateral damage is a governing factor for the theater commander in selecting his course of action. For example, the U.S. conducted the strike on Libya, EL DORADO CANYON, under the unique microscope of peacetime. President Reagan, requesting Prime Minister Thatcher's approval to use the F-111s in Lakenheath, said these aircraft, "because of their special characteristics," offered "the lowest possible risk of civilian casualties and casualties among United States personnel."[42] There is no option other than PGMs for the CINC who has to minimize collateral damage. As a result of our DESERT STORM success, the world may see the U.S. as having an *obligation* to use our advanced technology to limit damage to civilian populations.

While we expect political constraints and associated collateral damage concerns at the low end of the spectrum, limiting collateral damage can be an important part of a more intense campaign. Col. John Warden, who developed the concepts for the air campaign, sought targets that would isolate the leadership from the people, while avoiding the civilian damage that might reinforce Saddam's hold on power. As a result, whether a target was "Doable,' meant 'without unnecessary civilian casualties or collateral damage.'"[43]

Another concern about PGMs is the public impression, created by all the PGM video footage in the Gulf War, of perfect accuracy. Inexperienced civilian decision makers, or their staffs, might have unrealistic expectations of the efficacy of PGMs. The inclination to use PGMs against all targets could deplete theater inventories and add unnecessary cost to the defense budget. Cost is especially prohibitive when the CINC uses stand-off weapons.

Conveying the fallibility of PGMs to the decision makers might be difficult. The DESERT STORM images have revived that monster of American policy options--the surgical strike. While there is no evidence the Reagan administration used the term in EL DORADO CANYON, the previous quotation conveys the hope of precise results. The military results of the strike were disappointing. Against the Azziziyah barracks, the U.S. sent nine F-111s,

[41]"Why the Air War Worked," 45
[42]David C. Martin and John Walcott, Best Laid Plans: The Inside Story of America's War Against Terrorism, Harper Collins, 1988, 290
[43]James P. Coyne, "Plan of Attack," *Air Force Magazine*, April 1992, 42

"(but) only two dropped their bombs. Neither scored a direct hit. One F-111... dropped its bombs on a residential neighborhood near the French Embassy."[44]

Not only were the results less than desired, the collateral damage was high.

"The carnage in the Bin Ghashir neighborhood where four 2,000-pound bombs had fallen on residential streets was as ghastly as the scene of any terrorist attack--severed hand lying in the rubble, a father grieving over the body of his three year old child, exposed electrical wires crackling in pools of blood, water, and sewage."[45]

The modern electronic media conveys this to the world more vividly than words on paper. The media can bring the result of US military imperfection into the homes of the American people, and the rest of the world, with a visceral and unpredictable impact. The CINC may find himself walking a tightrope between popular expectations and military reality; a quandary of our own making.

Advanced munitions may make decision makers more likely to use force. Our experience with nuclear weapons (opposite collateral damage effects of precision munitions) indicates they have a stabilizing effect on policy. Decision makers were less likely to use force, and not only because of the fear of retaliation. The "notion of actually using these weapons...was an abomination."[46] Advanced munitions present the decision maker the opposite cause--effect relationship. If the U.S. can attack a target cleanly, without "abominable" effects, the decision makers may be willing to select the military option early in a crisis. Bernard Brodie wrote, concerning nuclear weapons, "Stability is achieved when each nation believes that the strategic advantage of striking first is overshadowed by the tremendous cost of doing so."[47] Today the cost ranges from the adverse publicity of a small strike gone awry (Aborted raid to free hostages in Iran) to an unexpected conventional escalation (Iraqi Scud attacks against Israel). The CINC must have a good grasp of his flexible deterrent options incorporating diplomatic, political and economic means. He must present the military options realistically; temper the military "can-do" attitude with sound judgment.

The accuracy of advanced munitions, even PGMs, is catching up to the public perception. Advanced munitions continue to improve as both the aircraft and the weapons are becoming more

[44]Ibid., 309
[45]Ibid., 310
[46]McGeorge Bundy, Danger and Survival, Random House, 1988, 237
[47]Bernard Brodie, Strategy in the Missile Age, Princeton University Press, 1971.

precise and reliable. The F-111 that misidentified the radar offset and struck the neighborhood near the French Embassy probably would not have made that error with a Global Positioning Satellite receiver. This system was widely used in the Gulf War and is planned for the future bomber force.

The cost of PGMs is certainly an issue, and especially troublesome for the CINC, who will have limited quantities of the more expensive munitions. The balance between very costly stand-off weapons, costly PGMs, and inexpensive dumb bombs depends on the conflict. The planner should select the weapon based on the mission, the enemy defense, the hardness of the target, the potential for collateral damage, the time constraints, and the assets available. Once air superiority is gained, the planners' options increase as the type and numbers of aircraft he can use increases.

DESERT STORM provides a sound example for the use of these weapons in an air strategy. The Coalition used some of its most expensive weapons in the first day of the air war. Stand-off weapons attacked the largely unknown Iraqi air defense threat. The stealth aircraft provided mass against hardened targets with PGMs. Iron bombs also played a role. In one example, B-52s with 1,000lb bombs and CBU-89 Gator mines attacked an air base within an hour of the stealth attacks. As Coalition air forces isolated and destroyed the air defense network, the planners could add more aircraft to the sortie packages. The video images may have been somewhat misleading--of the 85,000 tons of bombs dropped, only 8,000 were precision munitions[48] While that 8,000 tons certainly paved the way for the other 77,000 tons, it indicates PGMs were not over-used in the Gulf War. As the air campaign progressed from the hardened targets to softer targets, the use of dumb bombs increased.

After this discussion of stealth and advanced munitions, one criticism might be that I have overstated the revolution in capabilities. However, a comparison of the present bomber force with the future force is revealing. The current force can cover only 24% of the Bomber Roadmap notional target set; within eight years the force can cover 100% of the targets, with fewer aircraft. Revolutionary may be an understatement.

Having made a case for the capability of the bomber force, the questions still to be answered are: Can the bomber force have an "impact" role in scenarios other than global war? If so, how can the CINC use his bomber force most effectively?

[48]"Victory Through Airpower," 28

CHAPTER IV

Case Studies and Force Application

"A President's hardest task is not to do what is right, but to know what is right."

--Lyndon Baines Johnson, State of the Union Address, 4 Jan 1965

Spectrum of Conflict

Spectrum of conflict is a useful tool to compare levels of conflict in terms of means, risk, probability of occurrence, and continuity. Risk and probability are characteristics of the spectrum of conflict, although they are inverse to each other. At the low end of the spectrum, low intensity conflict has a higher chance of occurring but carries with it the least risk tor the U.S. Conversely, the high end of the spectrum, nuclear war, poses the greatest risk for the U.S. interests, but has the lowest probability of occurrence. As conflicts move to the higher end of the spectrum, the common thread is the introduction of heavier firepower--the military means. Means is the military force applied to an enemy. The low end of the spectrum has limited military force and may include peacetime operations short of conflict. Such operations generally do not need the firepower of the bomber forces. Most military activity at this end of the spectrum is in the category of security assistance, show of force, or presence operations. While the bomber conduct show of force operations, especially with its psychological associations, I will leave that scenario unexplored. For my purposes, the low end of the spectrum for bomber force application will be counter-terrorism operations. The high end is strategic attack in global nuclear war--the mission of the bomber since Hiroshima.

I will not look at the global war scenario as a case study. To demonstrate the bomber force's flexibility in operating across the spectrum of conflict I will use three cases. They are counter terrorism (EL DORADO CANYON), peacetime contingency operations (Cuban Missile Crisis), and major regional contingency (DESERT STORM).

EL DORADO CANYON

EL DORADO CANYON was a counter-terrorism operation conducted against the government of Libya, and Muhamar Quaddafi in particular. The U.S. intent was to retaliate against Libya for state sponsored terrorism. Communication intercepts linked Libya to the La Belle disco bombing that killed two American soldiers. The specific objective was to deter Libya from terrorism. If the attacks resulted

in less than desired physical damage (which they did), there would not be follow-on strikes (there were not). Libyan behavior would determine the need for follow on attacks.[49]

There are some key aspects to this scenario. First, collateral damage must be minimized. Second, it was a unilateral U.S. operation. We would attack with or without the approval of the world community. Third, risk to Americans had to be as low as possible. As then Vice Adm. Kelso said "I don't want any of our aviators walking down the streets with a noose around his neck."[50]

What bomber force would we employ in this scenario? The planner might decide on a force composed solely of the B-2s. There is no need for either mass or sustained firepower of a large bomber force; but the small target set and need to minimize risk to U.S. forces require stealth and precision.

Bomber Force Advantages

The first advantage is the simplicity of using fewer strike aircraft, fewer direct support aircraft such as the air refueling tankers and fighter combat air patrol, and fewer indirect support aircraft such as E-2Cs and EA-6Bs. On the basis of F-111 capacity of four 2,000lb PGMS per aircraft, what required 18 F-111s could have been planned for four B-2s. The same weapon load would require 36 F-117s.

The second advantage is surprise based on stealth characteristics of the B-2. The psychological impact on both Quaddafi and his military of a stealth attack is difficult to measure, but he certainly could not feel safe. He would lose what little warning he had in the 1986 attack.

The third advantage is the agility to penetrate enemy airspace at the point of our choosing. We can flank enemy defenses and positions to further extend the inherent surprise of stealth.

The fourth advantage is reducing the risk of having the aircrew killed or captured. The political problem of having aircrew in the hands of our enemies, reminiscent of Lebanon, is less likely with fewer, more capable aircraft.

The fifth advantage is the objective. Stealth aircraft can achieve the psychological impact of the operation, and do it with our most accurate combination of weapons and platform.

The sixth advantage is freedom of action. The U.S. could conduct a unilateral attack. The tactical need for external support or overflight rights would not constrain the planner.

[49]Best Laid Plans, 300
[50]Ibid., 286

Bomber Force Disadvantages

The primary disadvantage is economy of force. The decision makers put relatively low priority on target destruction in relation to desired end state. With limited resources, the CINC may choose to hold the bombers in reserve, and "accept some risks in areas where vital national interests are not immediately at stake."[51] Instead of bombers, the U.S. could forward base or deploy other attack aircraft and/or use stand-off munitions from aircraft or naval vessels.

The second disadvantage would be the political embarrassment of losing an $864 million[52] aircraft to a third-world terrorist. This might be as politically damaging as having an aircrew captured. If we substitute the B-1 or B-52, then the air planner will want additional support aircraft. This means losing the unity of command with more units involved, forward deploying at least one carrier group, and possibly having to get some external support.

Cuban Missile Crisis

This might seem an unusual choice for a scenario. This crisis is commonly thought of as one where cooler heads prevailed to prevent military action that might have led to war. Without recounting the entire crisis in detail, this simplified view is not accurate. Both sides had a fear of nuclear exchange and neither leader would regard a nuclear outcome as "remotely acceptable."[53] The primary reasons the President dismissed the air strike were the large scale required to ensure target destruction, possible analogies to "Pearl Harbor" and surprise attack, and the probability of collateral damage. It became increasingly clear a "surgical strike," a term used in this crisis, was not possible. The only military option was a large scale air attack that would likely require a follow-on land invasion. Early in the crisis, President Kennedy had decided to conduct an airstrike, but the military could not provide one that was either "limited or surgical."[54]

Today the CINC can provide the President with a broad range of options, to include a limited air strike. This scenario differs from the EL DORADO CANYON example because of the objective and the risk. Rather than just trying to influence behavior, the military attack is also seeking a satisfactory level of target destruction. "The missiles were the problem, and their removal was the solution. This reality gave early strength to the proposal for their elimination by air attack with conventional

[51]AFM 1-1, Vol II, 11
[52]"B-2 Strategic Bomber," 3
[53]Danger and Survival, 453
[54]Ibid., 400-401

weapons."[55] The risk of escalation is the other difference between the raid on Libya and the Cuban Missile Crisis. If the U.S. does not destroy the targets in the first attack, the enemy might have the capability to counterattack with a weapon that would escalate the crisis.[56]

The Cuban Missile Crisis is also an interesting study because it brings into focus some issues the CINC may face when tasked to destroy an adversary's weapons of mass destruction.[57] One issue is to ensure complete destruction of the target in the first attack so the enemy has no capability to escalate the conflict. Subsequent attacks may lose the element of surprise, reveal campaign strategy and tactics, and even the intelligence sources used to locate the targets. A second issue is avoiding casualties. Preventing unnecessary civilian casualties is always a concern, but it becomes more important when conducting a pre-emptive attack in peacetime Limiting civilian casualties reduces adverse public opinion and may make subsequent diplomatic efforts easier.

The bomber forces best suited for this attack might be B-2s and B-1s. The air planner must achieve surprise, but his mission also requires mass. To destroy the targets in the first attacks, he must commit a large part of his force. He also has to prepare for follow-on operations against surviving targets, and sustained operations in the event of escalation. Some B-2 and B-1 assets will be held in reserve, along with the B-52 assets.

Bomber Advantages

The first advantage is mass. The bombers have the capability to "concentrate combat power at the decisive time and place."[58] By concentrating precision attacks against the weapons of mass destruction, the air planner can use the heavier payload of the bomber to ensure target destruction with fewer aircraft. Certainty of target destruction is critical when the targets are weapons an enemy could use retaliate--and escalate--the conflict.

[55]Ibid., 398

[56]McBundy states that a requirement for the air strike was the missile s be attacked before becoming operational, and "this opportunity passed sooner than we initially expected...in that sense time ran out on an air strike." He also states, and I fully agree, " that Robert Kennedy was probably wrong to suggest later that an initial air strike would have risked blowing up the world." See Danger and Survival, 456

[57]While I consider nuclear weapons to be the only real weapon of mass destruction, chemical and biological weapons are also grouped in this category because of their ability to spread mass terror. In selecting targets, all of these are often grouped in the same category

[58]AFM 1-1, Vol II, 11

The second advantage is rapid initial response. One policy goal was to remove the missiles before they became operational. After the missiles were operational there was the risk of escalation. The attacking force of bombers could plan and conduct the strike, with mass, within the first days of the crisis. However, once the Soviets knew they had been discovered, their technicians worked around the clock to finish the sites before American action.[59] Other forces might require forward basing or deployment to the region that would warn an adversary.

The third advantage is flexibility. The U.S. can make a political statement by the rapid repositioning of the bomber force "to go on alert, deploy, launch, recall or redirect."[60] While this is contrary to obtaining surprise, it may strengthen the diplomatic options.

The fourth advantage is surprise. The bombers' ability to conduct the attack with fewer aircraft, to include support aircraft, reduces the opportunity an enemy has to react to the attack. Rapid response means we can act before an enemy is aware that we have detected his actions. While the option to threaten an opponent by repositioning the force is a bomber advantage, so is the ability to conduct an attack without lengthy prepositioning or preparations. Especially in today's environment where almost any government can be plugged into satellite information. The loss of surprise at the strategic level gives the enemy an advantage in employing diplomacy and other means against the U.S., in addition to preparing his tactical defenses.

Bomber Disadvantages

The primary disadvantage is risk of reckless decision. I have already discussed the possibility that stealth with precision munitions facilitates the decision to use military force. This crisis is an example of the relationship between efficacy and decisionmaking. The original intent was to conduct an airstrike. When the scale of such an attack was understood, a less violent means of confronting the Soviets was developed. The successful strategy of diplomatic measures with a naval quarantine emerged because the U.S. could not conduct a "surgical strike." Political and diplomatic measures, harder to control and with uncertain results, lose their appeal when the limited objective can be quickly and decisively obtained through the use of force. The more certain the outcome of force, the greater appeal it has to a decision maker when other factors (such as U.S. public opinion) are equal.

[59] Danger and Survival, 403
[60] Bomber Roadmap, 3

The second disadvantage is political risk. While I prefer to judge the bomber force as a complementary whole and not single out aircraft, the B-2 presents a unique dilemma to a theater commander. He cannot dismiss the possible damage to U.S. prestige, both here and abroad, of losing a B-2. A fiercely debated weapon system, it has a psychological association with the U.S. military.

DESERT STORM

The first challenge to General Schwartzkopf in the Gulf War was the task of deterring, or repulsing an Iraqi attack on Saudi Arabia. The coalition began deploying aircraft to the theater almost immediately. The first U.S. fighter squadron was combat ready 34 hours after the deployment order; the Royal Air Force had a squadron of Toronados operational within 48 hours.[61] Whether Iraq planned to invade is certainly up for debate, what is not debatable is that within five weeks the "Coalition outnumbered Iraq in both defensive and offensive aircraft."[62] From that point on Iraq no longer had the ability to conduct and sustain successful offensive operations.[63]

The role of the bombers in the Gulf War is a hint of their potential in a regional conflict. Although only the B-52s were employed, they participated from opening night through the ground war. The B-52 employment was not limited by doctrine. The attacks covered offensive counter air (airfields), suppression of enemy air defenses (Radar facilities), battlefield air interdiction (supply dumps), and strategic attack (ammunition factories), even mobile targets (Scud medium range missiles).[64] The future bomber force, with stealth and advanced munitions, offers even greater flexibility to the air planner. The future bomber force will be able to strike more targets earlier, reach more heavily defended targets, destroy targets with fewer sorties, and require fewer support aircraft.

A CINC could face a similar scenario but without the time, infrastructure, and coalition support that contributed to the Gulf War's success. If Iraq had chosen to continue its offensive, the loss of Saudi Arabia would have limited our ability to deploy to the theater and dampened the enthusiasm of the neighboring states to join the U.S. against Iraq. The importance of the bomber force in this scenario would be to provide initial response. This initial response will accomplish two things. First it will show the resolve of the U.S. to commit military force against the aggressor. Second, the U.S. can use the bombers against whatever targets are needed to help our ally to repulse the attack. Preferably, the initial

[61] Military Lessons of the Gulf War, 62
[62] Ibid., 62
[63] I agree with Col. Warden when he states "no nation enjoying air superiority has ever lost a war by force of enemy arms." See The Air Campaign, 129
[64] "The Buff at War," 49

targets will help our ally gain air superiority. The missions could include, depending on the severity of the situation, strategic attacks, interdiction, or close air support.

Bomber Advantages

The first advantage is mass. In a major regional contingency, such as the Gulf War, there will be a large number of targets. This requires the air planner to prioritize his targets to concentrate his air forces. In DESERT STORM, the forces concentrated against air defense command and control as the priority targets.[65] The bomber force can provide mass against the priority targets while allowing the air planner to strike secondary targets with minimum combat power.

The second advantage is flexibility. The flexibility of the bomber force has already been discussed. In a regional crisis where forces are forward deployed, is the bomber can use its large fuel load to loiter in an area. The planner can task bombers to attack targets in a rapidly changing battlefield, find and strike mobile targets, or conduct follow on attacks. Combine this loiter capability with precision munitions and the air planner can provide near instant response to battlefield demands.

Bomber Disadvantages

The chief disadvantage of the bomber force may be economy of force. If two precision munitions are needed to destroy a target, the planner must either release more weapons, try to find another target, or use the bomber when a smaller, less expensive aircraft would be equally effective. The bomber force uses more theater resources. The larger aircrew (five on the B-52, four on the B-1, and two on the B-2), more technicians and maintenance support, and airfield spaces, draw resources from other air assets that may be more flexible in targeting. Airborne the bomber uses fuel at twice the rate of a fighter, may require support aircraft for electronic counter-measures, early warning against interceptors, and air refueling aircraft. The air planner might be tempted to cover more targets, spreading the force out and reducing its contribution to primary targets.

[65]"The Air Campaign," *Military Review*, Sept 1991, 22

CHAPTER V

Conclusions

Considerations

The bomber force is an agile, flexible, and responsive component of America's power projection arsenal. As the Air Force continues modifications the force will expand its target coverage to include the hardest, most heavily defended targets. Stealth and advanced munitions allow the CINC to consider the bomber in any attack scenario. From the low end of the conflict spectrum, where political sensitivities are high and the priority is on minimizing collateral damage; to the high end, with a large target base protected by modern air defenses.

If stealth and precision munitions represent a quantum leap in capabilities, combining them with the inherent bomber characteristics of payload, range, and flexibility creates a revolution. The bomber can now bring rapid initial response and sustained firepower against targets across the spectrum of conflict. The bomber will also free the theater commander of some of his forward basing constraints, retaining the option of unilateral action.

These characteristics-- rapid initial response and sustained firepower--will vary with the situation. Rapid initial response, especially against a fast moving enemy ground offensive, is perishable. If the decision to use the bombers is delayed then the opportunity to influence the conflict may pass. The CINC must assess the point where a bomber attack may be too late to affect the war. He must also push for early intervention when it is in the national interest to stop an aggressor. Sustained firepower of the bombers loses its effects the greater the distance from the target. The closer to the target the CINC can place his bombers, the more effective they will be in sustaining an air offensive.

Recommendations

The future bomber force represents an opportunity for U.S. power projection. As our forward bases disappear, the U.S. becomes more reliant on coalitions, the aircraft carrier, and the bomber. The bomber can operate throughout the spectrum of conflict; to accomplish diverse missions under the most adverse conditions.

There are three recommendations to exploit the potential of the bomber force. The first is integration. The bomber force can provide rapid initial response with significant firepower against an

enemy. The force can sustain the attacks at a high rate while naval forces, composite wings, amphibious groups, etc., begin deployment. As forces in the theater become operational they can assume the burden for sustainment from the bomber forces. The bomber forces can then shift to a theater role providing mass and flexibility to the joint campaign. The bomber is most effective used as part of the mutually supporting joint team. The CINC has to have the follow on assets to continue to prosecute the conflict. He needs the bomber force to provide the rapid initial response to deter and delay the enemy while he deploys other forces.

The second is selecting targets of value. This depends on the urgency of the campaign and the political goals. The CINC must also ensure his air power is not squandered against targets of minimal value. Using bombers to attack combat elements might be crucial to a successful defense, but in the long term attacking the enemy concentrations deeper, striking at the logistic points of his vulnerability, will produce greater effects over the long term. This also applies to the different levels of conflict. "The value of bombardment depends on the strategic value of the targets it can actually destroy, and the less a war is conventional, the fewer are the stable and easily identifiable targets of high value."[66]

The third recommendation is ensuring the intelligence community can provide accurate information on targets and threats, and that the information reaches the mission planners in a timely manner. Noted by some as a problem during DESERT STORM, it becomes critical if the CINC must rely on a rapid initial response from long range to blunt an enemy offensive. The unit planners must be tied into the CINC's intelligence and planning staffs. How well these staffs work in war is related to their practice in peacetime. Exercises that link the organizations and allow them to uncover problems are necessary for a commander who needs rapid initial response. The CINC's staff should integrate the bomber force into the Deliberate Planning Process (and Crisis Action Planning exercises) to familiarize them with the bomber's capabilities, limitations, and requirements.

Long range, large payload, stealth, and precision are the physical characteristics of the future bomber force. For the CINC and his air planner, the bomber force can bring rapid initial response, sustained firepower, mass, and synergism. The CINC must establish the environment to exploit this potential. The bomber force is an adaptable tool in the commander's toolbox of military forces. As long as the U.S. wishes to remain a superpower, she must have the ability to deter her enemies, failing deterrence, the freedom to fight wherever her interests are threatened.

66"Victory Through Airpower," 29

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