

BOMBERS IN THE AEF

by

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A Thesis Presented to the Faculty of the
School of Advanced Air and Space Studies
For Completion of the Graduation Requirements

SCHOOL OF ADVANCED AIR AND SPACE STUDIES

AIR UNIVERSITY

Maxwell Air Force Base, Alabama

June 2005

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Report Documentation Page				Form Approved OMB No. 0704-0188	
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1. REPORT DATE JUN 2005		2. REPORT TYPE		3. DATES COVERED 00-00-2005 to 00-00-2005	
4. TITLE AND SUBTITLE Bombers in the AEF				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Air University, School of Advanced Air and Space Studies, 325 Chennault Circle, Maxwell AFB, AL, 36112				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT see report					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 93	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

APPROVAL

The undersigned certify that this thesis meets masters-level standards of research, argumentation, and expression.

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ACKNOWLEDGEMENTS

I would like to thank Doctor Thomas Hughes, my faculty advisor at SAASS, for guiding and correcting me as I drafted early versions of this manuscript. His wealth of knowledge, insightful guidance and clarity of expression helped direct my thesis down the correct path. I would also like to thank Col (select) Edward Westermann for his constructive criticism.

Finally, I would like to thank my wife, Cheryl and our children, Catherine, Eric and Emily for their patience and understanding during my long hours away from home, in spirit if not in body. Without their support I could not have successfully completed this project. I am blessed to have such a loving family.

ABSTRACT

Since October 2001, the bomber force has, in effect, been in surge operations in order to support the regional combatant commander requests. This paper identifies bomber deployment difficulties and defines the causal factors of the deployment problem within the limits of the AEF construct and offers possible solutions. A brief historical review of the United States air force's pursuit of increased expeditionary capability and improved force management provides a foundation for this analysis. The current situation in the Air Force bomber forces highlights the criticality of instituting a viable solution to this problem. The dual requirements of expeditionary air forces to supply warfighting capability and to project forward presence provide a comparative construct to evaluate this problem and to identify solutions. The historic paradigm of strategic bomber operations suggests that improving the capabilities of bombers would resolve the problem by requiring fewer bombers per deployment. However, this analysis asserts that the paradigm has expanded to include the requirements for tactical and operational responsiveness and presence, which reduces the viability of a capability-based solution. As a forward presence problem, this paper asserts that neither a stricter adherence to the concepts inherent in *Global Reach*—*Global Power* or a permanent forward basing of a bomber unit is a viable long-term solution. The conclusion is that improved bomber capabilities are necessary, but only when coupled with the reorganization of the bomber forces to match the AEF construct. In order to accomplish this, the Air Force should reorganize the 80 combat coded B-1s and B-52s into 10 independent squadrons in support of the AEF. This solution does not require the acquisition of any bombers; however, it does require the resources necessary to create 10 independently deployable bomber units from the six that are available now.

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Introduction

The Air Force designed the Air and Space Expeditionary Force (AEF) construct to improve expeditionary capability and to increase the ability to manage the air forces. These are not new goals for the Air Force. The General Headquarters (GHQ) Air Force from 1935 to 1941 and the Composite Air Strike Force (CASF) from 1957 to 1973 were both efforts to improve expeditionary operations and leverage airmen's capability to manage and present air forces. Like today's construct, neither of these earlier designs was perfect. Today, the AEF structure struggles with bomber force integration.

This paper identifies bomber deployment difficulties and defines the causal factors of the deployment problem within the limits of the AEF construct and offers possible solutions. Since October 2001, the bombers have maintained an unsustainable deployment tempo. The negative impacts of this unsustainable deployment ratio are already becoming apparent in aircrew combat readiness and aircraft maintainability. Therefore, a solution to the unsustainable bomber deployment ratio is critical. The dual requirements of expeditionary air forces to supply warfighting capability and to project forward presence provide a comparative construct to evaluate this problem and to identify solutions.

The pursuit of improved expeditionary capability and force management are not new problems. In 1941, the newly formed U.S. Army Air Corps owed a debt to the GHQ Air Force. The War Department created the GHQ Air Force in 1935 in order to create an expeditionary capability recommended by air advocates. The air arm of the Army accepted the GHQ Air Force as an interim organization that put air forces on the path to independence. In addition, the GHQ Air Force allowed airmen to create a doctrine and to establish a force structure that proved significant in the Air Corp's success in World War II. In a similar way, the Tactical Air Command (TAC) created the CASF in 1957 to improve the expeditionary capability of the tactical air forces. Before CASF's activation, the Air Force had little ability to respond quickly to events in parts of

the world other than Europe and Northeast Asia. In addition, the CASF provided TAC with the ability to manage its force in order to respond to crisis.

The Air Force instituted the AEF construct in 1999 to increase its ability to support regional combatant commander requirements while simultaneously improving its ability to maintain and sustain the force. In the 1990s, the Air Force witnessed sharply decreasing force structure and rapidly increasing requirements for expeditionary operations. This drove the Air Force to create an organization that would improve its ability to confront ongoing requirements, accelerate operations in response to crisis, and better manage its force. By the late 1990s, the deployment requirements of Operations Northern and Southern Watch (ONW/OSW) were affecting the long-term sustainability of Air Force fighter units. As a result, the Air Force designed the AEF to improve its ability to support ONW and OSW while improving force sustainability. However, since the Air Force used ONW/OSW requirements as a framework to design the AEF, the changing strategic environment has created a need for some modifications in either the AEF construct or the force structure in order to match contemporary requirements to capabilities. This is particularly true in the bomber force.

When organizing the forces to implement the AEF construct, the Air Force spent money to reorganize fighter organizations, the combat units most integral to ONW and OSW. At that time, there were 33 independently deployable fighter units and seven dependent units. In implementing the AEF design, the Air Force invested in the resources necessary to convert the dependent units into independent units. At the same time, active bomber forces contained seven independent units and seven dependent units plus three guard and reserve units.¹ Since bomber forces were not critical to the deployment requirements at that time, ONW and OSW, the Air Force did not invest in an increase of independent bomber units. In addition, force reorganizations since the inception

¹ For the purposes of this paper, bomber forces are defined as B-1 and B-52 units. Though the B-2 certainly is a bomber, the overarching requirement for it to provide enabling operations for all AEFs in addition to the limited number of B-2s justifiably limit its use as a rotational force. In addition, the B-52s are organized in 6-ship UTCs, with each squadron containing one independent and one dependent UTC. The B-1s are organized in 4-ship UTCs, with each squadron containing one independent and two dependent UTCs. The two dependent B-1 UTCs in each squadron do not have enough personnel or resources to be combined in order to create an independent UTC.

of the AEF have reduced the number of active bomber units to six independent and nine dependent units plus one independent reserve unit.

The requirements for bomber forward deployments reached a saltation on September 11, 2001. Since 1994, regional combatant commanders (RCCs) increasingly relied on bomber units to provide both warfighting and forward presence in pursuit of their regional and campaign strategies. September 11th marked the beginning of a major upturn in bomber requirements and deployments that has forced the bomber units into surge operations. Although surge operations provide an organized framework to proceed from routine operations to crisis response, they are designed for short durations and over the long term they reduce combat capability. Surge operations over the past three years have degraded bomber force readiness to unacceptable levels, and the bomber force has witnessed reductions in both aircrew combat readiness and aircraft maintainability.

When evaluating the problem as a warfighting capability shortage, an expanding bomber capability paradigm centers the discussion. Historically, bomber's ability to perform long-range strike—where the required capabilities are limited to long-range delivery and number of targets attacked per sortie—defined the bomber capability paradigm. However, over the past decade RCCs have increasingly called upon the bombers to provide more than long-range strike operations. Now, the bomber capability paradigm includes tactical responsiveness and non-traditional bomber missions. If a capability shortfall is causing the unsustainable bomber operations tempo, then an increase in bomber capabilities should provide a solution.

During the Cold War, the nation maintained bombers on nuclear alert. With the advent of *Global Reach – Global Power* in 1989, the Air Force added the demands of wide-ranging, conventional operations to nuclear alert obligations. Since then, the RCCs have increasingly called upon bomber forces for forward deployments—creating deployment demands that have degraded bomber sustainability. If a mismatch between the concept of *Global Reach – Global Power* and the current RCC requirements defines the deployment

problem, the solution resides in determining the most appropriate way to use bomber forces to create the RCC's desired effects. First, the nation could more strictly limit the bomber force to a US-based alert force. Second, a bomber unit could be permanently forward-based in the region of greatest long-term concern in order to relieve the requirements of continuous rotational deployments. Third, the Air Force could reorganize the bomber force so that it aligns with the AEF construct.

The AEF construct undoubtedly increased the expeditionary capabilities of the Air Force and improved force presentation to the RCCs in peace as well as crisis. More than this, the AEF design improved force management by creating a predictable and sustainable deployment ratio as well as a framework for planning, programming, budgeting, and execution. However, the Air Force originally designed the AEF around the constraints of the operations of the time—ONW and OSW. In earlier attempts to create expeditionary constructs, changing circumstances and deficiencies drove changes to the construct or the force structure. In the same manner, the AEF needs to adapt to changing circumstances. The expanding paradigm of bomber operations and an increasing desire for bomber deployments has resulted in continuous surge operations for the past three and one-half years. Within the AEF's own scheme, a sustainable deployment ratio is one vulnerability period followed by four periods of reconstitution, training, and preparation (1:4). However, since 2001 the need to provide two simultaneous forward deployments per vulnerability period drove bomber deployments to a 1:2 ratio, an unsustainable deployment ratio that reduces combat capability and force readiness. Current bomber units are experiencing both of these effects, dictating an adjustment to the AEF construct.

Chapter 1

History of Expeditionary Air Forces

Air forces possess a unique expeditionary capacity. The pursuit and perfection of this capacity has been a driving force behind the evolution of the Air Force. The earliest combat operation attempted by the fledgling US Army Signal Corps involved an expeditionary operation in support of the 1916 Punitive Expedition into Mexico in pursuit of Pancho Villa.² Ordered to proceed in support of General John “Black Jack” Pershing, the 1st Aero Squadron of eight Curtiss JN3s deployed by railcar and executed its first mission only four days after receiving deployment orders.³ This expeditionary operation quickly took a turn for the worse as a combination of bad weather, desert conditions, missions in mountainous terrain, and inadequate airplane technology reduced the original force to only two aircraft within a month and these factors forced a return to Columbus, New Mexico. Even then, continuous problems with the replacement Curtiss N8s and R2s prevented the squadron from performing useful field service for Pershing’s forces for the remainder of the operation.⁴ Yet, during the short time the squadron was operational, it flew numerous scouting missions over terrain in which cavalry and infantry could not operate and served as a line of communication for Pershing by maintaining the first regular aerial mail route for the United States.⁵ Indeed, this early experience only increased the aviators’ attempts to leverage the expeditionary capability of the airplane. Not only were

²Juliette A. Hennessy, *The United States Army Air Arm: April 1861 to April 1917* (Washington, DC: Office of Air Force History, United States Air Force, 1958), 167.

³ Benjamin D. Foulois with C. V. Glines, *From the Wright Brothers to the Astronauts: The Memoirs of Major General Benjamin D. Foulois* (New York: McGraw-Hill, 1968), 125-126.

⁴ Hennessy, 172-173.

⁵ Foulois, 136.

the airmen motivated by this experience, Congress recognized the potential of air forces and made a significant investment by raising the military aeronautical budget from the \$300,000 allocated in 1915 to \$13,281,666 in 1916.⁶ Since this legendary operation, the pursuit of improved expeditionary capability remained a focal point for U.S. air forces.

There have been several attempts to leverage the inherent expeditionary capability of the United States's air forces through changes in organization. A review of these organizational initiatives, including the General Headquarters (GHQ) Air Force in the late 1930s and the Composite Air Strike Force (CASF) during the Cold War, suggests that the pursuit of improved expeditionary operations constitutes a fundamental goal in the history of U.S. air forces. Each of these initiatives served a dual purpose—creating an expeditionary capability in support of the nation's military strategy and increasing the airmen's ability to manage their air forces. Like all innovations, both the GHQ Air Force and the CASF required refinement as exercises and actual deployments highlighted the limitations of each. A review of these efforts provides an understanding of how previous generations dealt with the same types of problems faced by the current bomber forces.

General Headquarters Air Force (March 1935 – June 1941)

On March 1, 1935 the War Department established the GHQ Air Force at Langley Field, Virginia with Brigadier General Frank M. Andrews as the commander. The idea of a GHQ Air Force first gained currency in a Drum Board Report recommendation in October 1933. The Drum Board had reviewed War Department and Air Corps studies to identify the best way to employ the air arm. The board focused on a worst case scenario involving a two-front coalition attack by Great Britain and Japan against the United States.⁷ In this situation, the board suggested that the United States could gain significant advantage by

⁶ Foulois, 118, 136.

⁷ Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, vol. 1, 1907-1960, (Maxwell Air Force Base, AL: Air University Press, 1989), 67.

leveraging the inherent expeditionary capability of air forces to concentrate at the invasion sites and provide an initial defense while the army mobilized. The Drum Board proposed an organizational innovation, the GHQ Air Force, to provide this capability. Their optimism was supported by a 1933 deployment exercise that found “All air force units could be concentrated on either coast within two and one-half-days, and possibly within two days should it be desirable to press the movement.”⁸ Although the Drum Board did not recommend independence for the air arm, it did recommend the creation of a GHQ Air Force of 1,800 planes.⁹ However, it took another two years before the GHQ Air Force became a reality, and then only after a crisis and another board report.

The ill-fated Air Corps mail delivery operation during early 1934 provided sufficient public outcry to spur yet another military aviation review board, the Baker Board. The War Department gave the Baker Board the task of reviewing air preparedness.¹⁰ Much like the Drum Board in 1933, the Baker Board recommended in July 1934 the immediate creation of a GHQ Air Force, composed of a centrally controlled, consolidated air strike force.¹¹ While the GHQ Air Force did not represent complete independence, the airmen felt that the GHQ Air Force at least assured the concentration of offensive aviation under a central command with a modicum of independence.¹² Pushed by the air mail fiasco, the War Department acted on these recommendations and created the GHQ Air Force less than a year later.

Upon its inception, the GHQ Air Force had a two-fold purpose. First, it created an organization that allowed for rapid concentration of Air Forces in defense of the nation. Second, it provided the air arm limited, centralized control of the air combat forces. In order to expedite mobilization on the periphery of the

⁸ Brig Gen Oscar Westover, Commanding General, GHQ Air Force (Provisional), *Report on the Air Corps Command and Staff Exercises of 1933*, 1933, 5.

⁹ Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 1, *Plans & Early Operations: January 1939 to August 1942* (Chicago, IL: University of Chicago Press, 1953), 30-31.

¹⁰ Dewitt S. Copp, “Frank M. Andrews: Marshall’s Airman,” in *Makers of the United States Air Force*, ed. John L. Frisbee (Washington, DC: Office of Air Force History, 1987), 50-51.

¹¹ John F. Shiner, “Benjamin D. Foulois: In the Beginning,” in *Makers of the United States Air Force*, ed. John L. Frisbee (Washington, DC: Office of Air Force History, 1987), 32.

¹² Craven and Cate, 30.

nation, the GHQ Air Force concentrated its forces at three bases: the 1st Wing at March Field on the west coast, the 2nd Wing at Langley Field on the east coast, and a 3rd Wing stationed centrally at Barksdale Field in Louisiana.¹³ While the smallest, the 3rd Wing provided a mobile force for reinforcing either the 1st or 2nd Wing in a minimum amount of time. In addition to mobility, the independent nature of the GHQ Air Force provided combat air forces under the centralized control of an airman. Airman took this opportunity to create doctrine to support the independent missions of the GHQ Air Force, such as strategic bombing, that went well beyond the nation's policy of defense. The concept of strategic bombing—long-range strike with the intent of creating strategic effects—became integral to the GHQ Air Force, and the Air Corps Tactical School taught this concept to most future commanders of Army Air Forces in World War II. In addition, with this modicum of independence airman could now pursue resources that supported this independent mission. One of the results of this pursuit was the arrival of the first B-17s at Langley Field in March 1937.¹⁴

In March 1939, the GHQ Air Force became subordinate to the Air Corps, then commanded by General Henry “Hap” Arnold, rather than the General Staff.¹⁵ This move united the planning and operational roles of the air arm under the centralized control of an airman. Finally, on June 20, 1941 Army Regulation 95-5 created the Army Air Forces with General Arnold as its chief and incorporated the GHQ Air Force into the Air Force Combat Command.¹⁶ Like the GHQ Air Force, the creation of the Army Air Forces did not result in true independence, but it did provide a suitable substitute as the nation and the War Department mobilized for war. While it was in operation, the GHQ Air Force provided the intermediate step toward full independence for the air arm and a mobile combat force under the centralized control of an airman. The GHQ Air Force provided an excellent opportunity for the air forces to practice and improve independent air operations that were an integral part of World War II successes.

¹³ Copp, 54.

¹⁴ Copp, 56.

¹⁵ John W. Huston, ed. *American Airpower Comes of Age: General Henry H. “Hap” Arnold’s World War II Diaries*, vol. 1 (Maxwell Air Force Base, AL: Air University Press), 2002, 94.

¹⁶ Huston, 285.

However, after World War II the Air Force focused on the long-range strike mission that required little expeditionary capacity. It was not until after the Air Force had difficulty mobilizing forces for the Korean War that it once again worked to improve its expeditionary capability.

Composite Air Strike Force (July 1955 – July 1973)

Demobilization after World War II reduced the world's greatest Air Force to a mere shadow of its former self by the time the North Koreans attacked across the 38th parallel on 25 June 1950. The next day, President Harry Truman ordered General Douglas MacArthur to use Air Force aircraft against all North Korean military targets south of the 38th parallel.¹⁷ Three days later, the President expanded this order to authorize air operations into North Korea.¹⁸ As early as 1 July, Lt Gen George Stratemeyer, commander of Far East Air Forces, requested a B-26 wing and two B-26 squadrons from outside the theater.¹⁹ In the United States, the Tactical Air Command (TAC) struggled to supply forces for these expeditionary operations despite General MacArthur's pleas for immediate action.²⁰ In order to support the combatant commander's requirement, TAC activated the 452nd Bombardment Group (Light), an Air Force Reserve B-26 unit out of Long Beach, California, on 10 August 1950.²¹ Before deploying, the crews underwent refresher training at George AFB in California, and it was not until October 27—four months after the beginning of the war—that Tactical Air Command's first combat unit initiated operations in the Korean theater.²² This dismal response to the Korean War became one of the driving forces behind TAC's pursuit of an organization capable of responding rapidly to global requirements.

¹⁷ Robert Frank Futrell, *The United States Air Force in Korea, 1950-1953* (Washington, DC: Office of Air Force History, United States Air Force, 1983), 22.

¹⁸ Futrell, *The USAF in Korea*, 35-36.

¹⁹ Futrell, *The USAF in Korea*, 68.

²⁰ Futrell, *The USAF in Korea*, 69.

²¹ Futrell, *The USAF in Korea*, 75.

²² Futrell, *The USAF in Korea*, 75.

The new national security strategy articulated by the Eisenhower administration in 1953 further prompted TAC to increase its efforts in developing an expeditionary construct. National Security Council policy paper 162/2, approved by the President on 30 October 1953, outlined the “New Look” strategy. To achieve economy of force, the United States would initially depend on indigenous forces to resist Communist attacks, but would maintain expeditionary air and sea forces to back them up. It also threatened the possibility of escalating the response to include nuclear weapons, and finally, if necessary, the ultimate option of “massive retaliatory power... by means and at places of our own choosing.”²³ Although the Strategic Air Command’s nuclear capability constituted the bulk of the Air Force’s contributions for supporting this new policy, President Dwight D. Eisenhower recognized the need for an expeditionary air force capable of responding to less hostile actions.²⁴ In order to meet this requirement, the Air Force needed an organizational construct that could harness the latent expeditionary capability of tactical air forces in order to respond rapidly to contingencies around the world.

In May 1954, TAC commander General Otto Weyland recognized that US Air Forces in Europe and Far East Air Forces were both fully committed and that the Air Force did not have an ability to respond to crises in other parts of the world. The lack of expeditionary capability to confront problems in the Middle East constituted a particular concern. As a result, he recommended that the Air Force direct TAC to create an expeditionary air force in the United States with the capability of rapidly responding to contingencies around the world.²⁵ Similar to the GHQ Air Force’s 3rd Wing, TAC could provide the forces necessary for expeditionary operations. Emphasizing the importance of the air force’s expeditionary capability, General Weyland remarked, “If shooting has broken out, even a handful of friendly fighters can turn the tide if they get there fast enough, before the aggressor can get set. A fighter squadron in time is worth an Air

²³ Walter A. McDougall, *The Heavens and the Earth: A Political History of the Space Age* (Baltimore, MD: Johns Hopkins University Press, 1997), 113.

²⁴ Futrell, *Basic Thinking in the USAF*, 425.

²⁵ Futrell, *Basic Thinking in the USAF*, 448.

Force, plus an army, a navy and a marine corps too late. A task force in two days is worth more than four or five wings in two months.”²⁶

An Air War College thesis by Col Richard P. Klocko titled “Air Power in Limited Military Actions” became the foundation for the expeditionary organizational construct. Col Klocko argued that with the Cold War reduced to an “atomic equilibrium,” the future confronted the United States “with a series of limited military actions as a recurring pattern of international strife.”²⁷ However, since no one could predict the location of any possible future crisis, the essential requirement was the nation’s ability to deploy force rapidly to a crisis area.²⁸ He went on to assert that the nation should leverage the expeditionary capability of a Ready Air Fleet to meet this challenge. As described by Col Klocko, this Ready Air Fleet consisted of an integrated, self-supporting organization capable of immediately deploying to a crisis area and stabilizing the situation until such time as normal operational forces could be moved into the area to augment or replace it.²⁹

These factors provided the impetus for the activation of the command element of the Composite Air Strike Force (CASF), Nineteenth Air Force, as an operational headquarters at Foster AFB, Texas on 8 July 1955.³⁰ Designed as an expeditionary force capable of confronting crisis, the construct also improved TAC’s ability to manage its force and further justified its existence at a time when global nuclear operations held center stage. As an operational headquarters with no permanently assigned aircraft or combat units, the Nineteenth Air Force’s primary mission was to prepare contingency plans and command short notice deployments of the CASF anywhere in the world.³¹ The U.S. Air Force identified supporting fighter, reconnaissance, tanker, airlift, and communications units for

²⁶ Leverett G. Richards, *TAC: The Story of the Tactical Air Command* (New York: John Day, 1961), 33.

²⁷ Richard P. Klocko, “Air Power in Limited Military Actions,” (Maxwell AFB, AL: Air War College, 1954), 64.

²⁸ Klocko, 64.

²⁹ Klocko, 65.

³⁰ Futrell, *Basic Thinking in the USAF*, 450.

³¹ Richard G. Davis, *Immediate Reach, Immediate Power: The Air Expeditionary Force and American Power Projection in the Post Cold War Era* (Washington, DC: Air Force History and Museums Program, 1998), 14.

contingency tasking. During peacetime, these units remained under the command of TAC. The task of maintaining readiness for contingency operations required that the units prepare deployment kits and maintain a high state of readiness. When a contingency required expeditionary operations, the Air Force attached the units to the CASF. Once the CASF was operational, the first strike elements were capable of arriving in the Middle East within 16 hours of notification with the total force in-place and ready for operations within 48 hours. Once deployed, the force was to be capable of operations for 30 days.³²

The CASF included a phased activation strategy that allowed for Air Force deployments as small as a 'show-the-flag' force up to those requiring mobilization of the entire CASF. In addition, upon deployment of the Nineteenth Air Force CASF, the Air Force would assign another Air Force Headquarters the task of generating an additional CASF that would be responsive to a subsequent contingency.

Two crises in 1958 tested the CASF. In July 1958, the President activated and deployed the Nineteenth Air Force CASF to Lebanon to help stabilize the Lebanese regime in the face of a wave of discontent that had already toppled governments in Iraq and Syria.³³ Once the first CASF deployed, TAC stood up a second CASF under the Twelfth Air Force. In August, the President deployed the second CASF to Taiwan as a deterrent to Chinese threats to invade a series of small Nationalist-held islands, Quemoy and Matsu.³⁴ In both instances, air forces arrived in their assigned areas quickly—forces reached Lebanon in two days and Taiwan in seven. As suggested by the proponents of air force expeditionary capability, the CASF deployments to Lebanon and Taiwan helped the United States obtain its objectives through their rapid response.

The AF successfully deployed the CASF for several other 'show-the-flag' operations as well as to Vietnam in 1964 following the Gulf of Tonkin incident and

³² Davis, *Immediate Reach, Immediate Power*, 13.

³³ Davis, *Immediate Reach, Immediate Power*, 15.

³⁴ Davis, *Immediate Reach, Immediate Power*, 15.

to Korea in 1968 as a result of the USS Pueblo incident.³⁵ However, as the Vietnam War became the overriding influence in the late 60s and early 70s, the Air Force reduced its dependence on the CASF. Given the disillusionment of the Vietnam War, the Department of Defense reduced the national military strategy's emphasis on expeditionary operations and the Air Force deactivated the command in 1973. During its tenure, the CASF created a predictable scheduling mechanism and a defined force presentation construct that created an expeditionary capability in support of national objectives. It took over two decades before a change in requirements resulted in another attempt to improve the expeditionary capability of the Air Force.

Air Expeditionary Force (October 1999 – Current)

In the mid 1990s, the Air Force recognized the need for an improved expeditionary organization and a force management tool for both planning and budgeting requirements. At the same time, the complex environment of the post-Cold War environment created an operations tempo that amplified the need for an organizing construct to improve the Air Force's ability to support RCC requirements while improving its ability to manage and sustain the force. Adding to the turmoil caused by the dissolution of the bipolar world, the active pursuit of a new world order created a driving force for global action that replaced the Cold War goal of global stability. President George H. W. Bush outlined the objective of a new world order in a March 1991 speech:

Until now, the world we've known has been a world divided -- a world of barbed wire and concrete block, conflict, and cold war. Now, we can see a new world coming into view. A world in which there is the very real prospect of a new world order. In the words of Winston Churchill, a world order in which "the principles of justice and fair play protect the weak against the strong. . . ." A world where the United Nations, freed from cold war stalemate, is poised to fulfill the historic vision of its founders. A world

³⁵ Richard G. Davis, *Anatomy of a Reform: The Expeditionary Aerospace Force* (Washington, DC: Air Force History and Museums Program, 2003), 7.

in which freedom and respect for human rights find a home among all nations.³⁶

The leadership of the United States was vital to the attainment of the goal of a new world order and this required a new national strategy. Accordingly, in 1993 the Clinton Administration defined a strategy of selective engagement.³⁷ Under this policy, the United States attempted to manage world affairs with enlightened self-interest for the benefit of itself and like-minded nations.³⁸ The Clinton Administration clarified this aspiration in the 1995 National Security Strategy, *Engagement and Enlargement*. This policy outlined the President's intention to sustain active engagement abroad to further U.S. security, bolster America's economic revitalization, and promote democracy abroad.³⁹ This growing intent to use military capabilities across the spectrum of conflict, with a new emphasis on the support of our national ideals, increased the Air Force's need for reinvigorated flexibility and capabilities.

Given this new policy of *Engagement and Enlargement*, the 1990s provided the United States with several opportunities for selective engagement including Iraq, Somalia, Haiti, Bosnia, Kosovo, and Liberia. Further, the Global War on Terrorism significantly increased global deployment requirements. However, expanded involvement in low-intensity conflict has not alleviated the primary task of the Department of the Defense: to fight and win the nation's wars. In sum, the end of the Cold War created an environment that is more unpredictable—yet the United States has remained determined to confront, if not lead, a new world order to benefit itself and its ideals.

The end of the Cold War created two simultaneous problems for the Air Force. First, the strategy of selective engagement meant an increasing Air Force operations tempo. The execution of ONW and OSW in Iraq was the primary reason for the increased operational tempo. But there was more. During the first

³⁶ President George H. W. Bush, "Address Before a Joint Session of Congress on the Cessation of the Persian Gulf Conflict," Washington, DC, 6 March 1991, n.p., on-line, Internet, 5 January 2005, available from <http://bushlibrary.tamu.edu/research/papers/1991/91030600.html>.

³⁷ Les Aspin, *Report on the Bottom Up Review* (Washington, DC: Department of Defense, October 1993).

³⁸ Davis, *Anatomy of a Reform*, 17.

³⁹ President William J. Clinton, *A National Strategy of Engagement and Enlargement* (Washington, DC: The White House, 1995), i.

term of the Clinton Administration, the U.S. continued three major operations (OSW, ONW and Restore Hope) and initiated seven more (Uphold Democracy, Provide Promise, Deny Flight, Deliberate Force, Joint Endeavor, Joint Guard, and Joint Force).⁴⁰ Many of these operations created a heavy burden on specific communities within the Air Force. Second, the pursuit of a 'peace dividend' reduced resources and, in particular, severely curtailed foreign basing. Beyond incurring a skyrocketing operational tempo, the Air Force lost 30 to 50 percent of its personnel, bomber and fighter aircraft and two-thirds of its major overseas bases from 1991 to 1998,⁴¹ creating a demand for a new organizing construct. The AEF concept offered a solution that promised to increase the expeditionary capability of the Air Force while improving its ability to manage and sustain the force.

The AEF construct provided a force presentation tool to better meet the warfighting commander's requirements and improved force sustainability by allowing for predictable scheduling. The first step in creating the AEF construct involved dividing the Air Force's capabilities into 10 equally capable AEFs. The Air Force placed these 10 AEFs on a rotational schedule to be available for response to RCC requirements. In addition, the concept of equal capability across the 10 AEFs created a more evenly shared burden across all Air Force units.

As it stands today, two AEFs—called paired AEFs—are available for immediate response during any given four-month vulnerability period. Through this 'force presentation' method, the paired AEFs provide the combatant commanders with two ready, standard force packages that contain balanced and known capabilities. Although a single AEF could provide a significant combat capability as a whole, it does not necessarily need to deploy as a unit. Rather, the AEF provides a menu of Air Force capabilities that allows a combatant commander to deploy specific capabilities while leaving other assets on call at their home station

⁴⁰ Davis, *Anatomy of a Reform*, 17-18.

⁴¹ Davis, *Anatomy of a Reform*, 13.

The AEF's provision for surge operations ensures the Air Force remains ready to respond to the nation's warfighting requirements. Within the AEF scheme, surge operations occur when Air Force capabilities are required at a rate higher than what is normally available from the two on-call AEFs. During surge operations, the Air Force accelerates the AEF rotation rate and makes follow-on AEFs available for deployment prior to their scheduled period. This flexibility brings air forces to action in an orderly, predictable flow, as deployments for Operation Iraqi Freedom demonstrated.

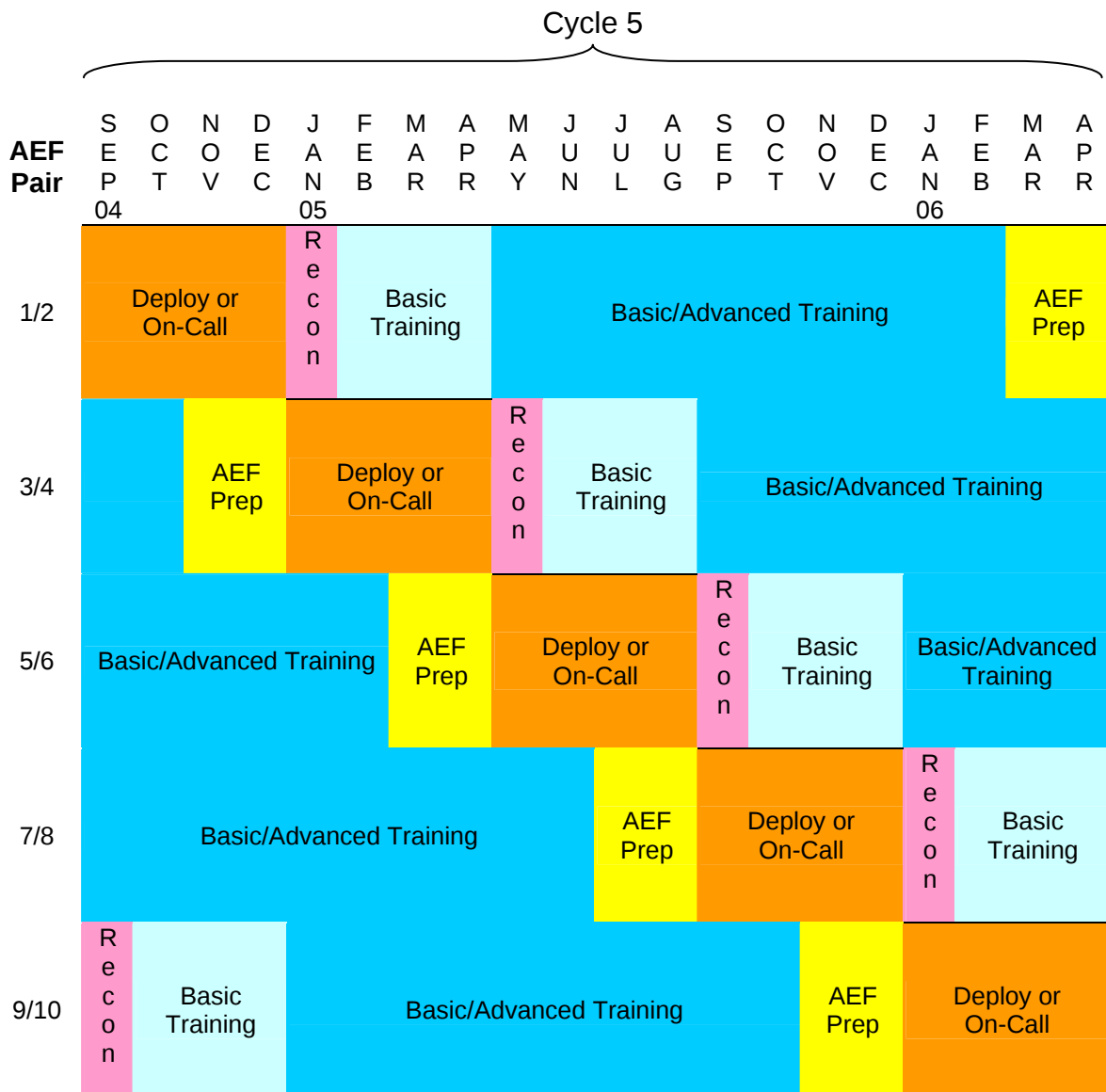


Figure 1: Typical 20-Month AEF Cycle

In addition, the AEF organization creates a sustainable deployment ratio for steady state operations. As shown in Figure 1, the Air Force designed the AEF around a 1:4 deployment ratio (1 vulnerability period followed by 4 training periods) with each of the vulnerability periods originally scheduled for three months. However, starting with AEF Cycle 5, the Air Force increased the vulnerability period length to four months in order to increase deployed personnel

continuity for the combatant commanders. In steady-state operations, after the four month vulnerability period, AEF assets are able to focus for four periods (sixteen months) on reconstitution, basic and advanced training, and preparation for the next rotation. The rotational aspects of the AEF provide predictability and sustainability in the force, with each unit aware months in advance when it is to be on-call and can schedule all other requirements around this obligation. In addition, sixteen months offers sufficient time for the forces to accomplish all of the basic and advanced training, maintenance and administrative requirements that enable a unit to maintain long-term sustainability and combat capability. However, the Department of Defense (DoD) shortens the sustainment period whenever it institutes AEF surge operations. By initiating surge operations, the DoD must recognize the trade-offs in short-term requirements and the long-term sustainability of the force.

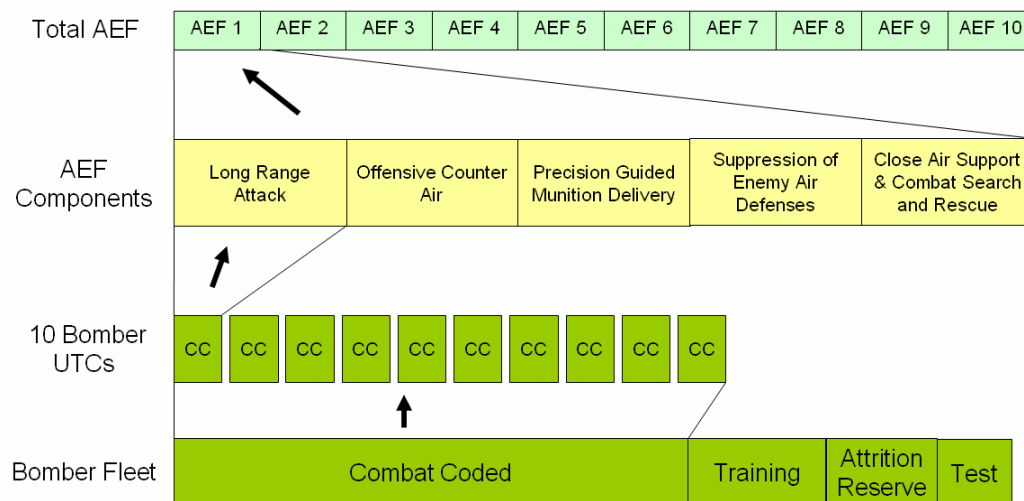


Figure 2: AEF Composition

By determining the standard capabilities required in each AEF and defining a sustainable deployment ratio, the Air Force creates a framework for planning, programming, and budgeting decisions. Steady-state requirements define the size of a single AEF. As shown in Figure 2, each AEF is currently composed of five capability types: long-range attack, offensive counter air, precision guided munition delivery, suppression of enemy air defenses, and close

air support/combat search and rescue.⁴² The bomber fleet provides the airframes to satisfy the long-range attack capability of an AEF. In a theoretically perfect world, the AEF planners divide the combat-coded bomber airframes into 10 UTCs, each supporting one of 10 AEFs. The combat coded aircraft constitute a portion of the entire bomber fleet. In fact, of the 152 B-1s and B-52s in the Air Force inventory, only 80 are combat coded. For current bomber force structure, the AEF framework would suggest that the Air Force would assign 10% of the combat-coded bomber force, or eight aircraft, to each AEF. Each AEF pair would then have two bomber UTCs composed of eight B-1s or B-52s. As long as these two UTCs support the steady-state requirements, the bomber force can maintain a sustainable deployment cycle offered by the AEF construct. However, when a specific fleet, such as the bomber fleet, cannot support the operational requirements, the short-term solution involves surge operations. If the Air Force determines the continuous need for an increased steady-state requirement, it must undertake the actions necessary to alleviate the unsustainable operations tempo incurred through long-term, surge operations.

In sum, the AEF provides a capability-based construct that increases Air Force responsiveness to RCC requirements and improves the Air Force's ability to manage and sustain a capable force. Prior to AEF implementation, loss of foreign basing and shrinking force structure severely limited the Air Force's ability to respond to combatant commander needs. At the same time, uneven deployment requirements overtaxed some units while underutilizing other units. All this created sustainment problems across the Air Force. Through the implementation of the AEF, the Air Force leveraged its expeditionary capability, increasing its flexibility to respond to requirements across the spectrum of conflict.

Conclusion

⁴² ACC/DOOS, interviewed by author, 17 March 2005.

Starting with the 1st Aero Squadron's expeditionary operations in support of the 1916 Punitive Expedition, the pursuit of an expeditionary capability has been fundamental to the history of the U.S. air forces. Although significant difficulties and limitations in airplane technology challenged this first attempt, the positive aspects of air operations justified a continuing investment in the expeditionary capabilities of the air arm. The GHQ Air Force and CASF improved the expeditionary capability in support of a changing national strategy and increased the airmen's ability to manage the air forces. In a similar way, the end of the Cold War confronted the Air Force with a changing national strategy that both increased the need for an expeditionary capability and reduced resources. These challenges provided the driving force to create the AEF construct, not unlike the GHQ Air Force and CASF, which could increase the expeditionary capability of the air forces and improve the ability of the Air Force to manage and sustain its forces.

The AEF construct has provided the Air Force with an ability to present Air Forces to the combatant commanders in a predictable and sustainable manner. The availability of two AEF pairs during any four month vulnerability period provides the regional combatant commanders with known and balanced force capabilities that are combat capable. In addition, the 1:4 deployment ratio is a sustainable rate of deployment for air forces. In order to continue the combat capability enjoyed by the U.S. Air Force in recent conflicts, the Air Force must provide the squadrons with enough time between vulnerability periods to train the aircrews from basic proficiency through advanced training and specialized AEF preparation. For example, a squadron needs time to integrate new crewmembers, complete administrative requirements, and perform maintenance to be prepared for the next vulnerability period. Lastly, although the Air Force can support increased deployment requirements through surge operations, these exact a cost in long-term sustainability.

The sudden change from the single focus of the Cold War to the concept of selective engagement created a new environment that threatened the fundamentals of Air Force command and control. In addition, RCC deployment

requests for specific units created unbalanced operational and personnel tempo problems within some Air Force organizations. The AEF construct solved these two issues through a standard force presentation model that created stability and predictability for the Air Force and an improved power projection capability for the RCCs. However, much like the GHQ Air Force and the CASF, the exercise of the AEF construct and changing environment over the past 10 years has caused some shortfalls. Despite offering a vast improvement over the lack of organizing principle of the early 1990s, the changing environment since the inception of the AEF has highlighted bomber force structure limitations that require consideration and resolution.

Chapter 2

An Unsustainable Deployment Rate

Historical attempts to create an expeditionary capability in the United States air forces have influenced the current Air Expeditionary Force (AEF) concept. None of these earlier attempts was perfect—the first air expeditionary force that participated in the pursuit of Pancho Villa, for instance, never achieved the objectives of the campaign. In a similar manner, the AEF offers an excellent framework supporting planning, programming, budgeting, and execution, however the integration of bomber forces has not been seamless. As the Air Force used Operations Northern and Southern Watch as a template for the AEF construct, the initial assumption regarding bomber forces was that bombers would be on-call but seldom deploy. However, in recent years, bomber forces have increasingly been deployed to provide warfighting capabilities and force presence for regional combatant commanders (RCCs). The implementation of direct attack and incorporation of stand-off weapons in the bomber force, combined with bombers' long dwell times in the air, have resulted in high demands for these platforms. In addition, the demands placed on the bomber force expanded to include missions such as close air support (CAS) and non-traditional ISR (NTISR). This transition from an on-call force with global reach to a deployed force in continuous support of multiple RCCs has invalidated AEF assumptions about bombers and threatens to make the AEF concept obsolete.

Table 1: B-1 and B-52 Force Structure

	Squadron	Combat Coded Bombers	
		<i>1 Oct 1999</i>	<i>1 Oct 2004</i>
B-1	Dyess – 9BS	12	12
	Ellsworth – 34 BS	---	12
	Ellsworth – 37 BS	12	12
	Ellsworth – 77 BS	6	--
	Mountain Home – 34 BS	6 ^a	---
	Robins – 128 BS (AFG)	8	---
	McConnell – 127 BS (AFG)	8	---
Total B-1s:		52	36
B-52	Barksdale – 20 BS	12	12
	Barksdale – 96 BS	12	12
	Minot – 23 BS	12	12
	Barksdale – 93 BS (AFR)	8	8
Total B-52s:		44	44
Total Combat Coded B-1s and B-52s:		96	80

^a From August 1996 to September 2002, the Air Force assigned the 34 BS to the 366th Wing (Composite) at Mountain Home AFB, ID. In the AEF alignment, the 366th was part of the Expeditionary Wing, which was a responsive force outside of the 10 AEF framework.

SOURCE: ACC/DRA, interviewed by author, 17 March 2005

When planners were creating the AEF concept in 1997-1999, their primary motivation involved supporting Operations Northern and Southern Watch in Iraq. At the time, operations had little need for bomber forces. Although each AEF pair in Cycle 1 included six B-52s and six B-1s, bombers remained on-call rather than deployed. This allowed the 96 combat coded bombers spread across 10

squadrons, as shown in Table 1, to support the AEF tasking without jeopardizing the ongoing requirements of a typical bomb wing. These other requirements included, and continue to include, rotating alert status for special weapons capabilities, such as Conventional Air Launched Cruise Missile (CALCM) Alert, Phase 1 and 2 exercises and inspections, Nuclear Surety and Operational Readiness exercises and inspections, aircrew upgrade, mission ready and proficiency training, and personnel development TDYs.

These myriad requirements stemmed from directives to support two Major Theater Wars (MTWs). The two MTW concept gave a typical wing of three operational squadrons two combat taskings. Operational requirements drove crew-manning ratios. A crew-manning ratio of 1.5, for example, would mandate 18 crews for each squadron with 12 combat capable aircraft. Simply stated, crew-manning ratios above 1.0 allowed increased numbers of combat sorties per aircraft. In addition, the Air Force directed the typical wing to maintain two war readiness reserve kits (WRSK) to support deployment and initial operations for two combat units. If the Air Force mobilized both combat units, the squadrons needed to mobilize all personnel and resources in support of the tasking. Upon notification of mobilization, the squadron would recall all personnel and resources from non-essential taskings and prepare them for combat duty. This ability to mobilize all personnel allowed the Air Force to man peacetime squadrons at the same crew-manning ratio as that mandated for combat operations. Furthermore, non-tasked squadrons could provide necessary personnel and resources to deploy fully mobilized squadrons.

The Air Force instituted the AEF as a peacetime construct capable of maintaining a steady-state operations tempo, with the added ability to create an orderly surge to high operations tempo when required. However, the Air Force did this without changing the assumptions regarding peacetime versus combat crew ratio manning in bomber units. Unlike the full-mobilization requirements caused by a MTW deployment, day-to-day functions of the bomber community continue unabated during the AEF cycle. While Air Force leaders want every aspect of squadron life to align with the AEF schedule, the inherent limitations in

scheduling aircrew qualification training, permanent changes of station, professional military training, and other external requirements constitute substantial obstacles to this goal. Therefore, the Air Force must incur one of two costs. First, the Air Force could increase squadron manning to account for ongoing requirements beyond an AEF deployment. This option ensures the squadron retains a full complement of personnel during AEF preparation and on-call months. But, increased squadron manning ratios means increased costs in many different ways, including training and flying requirements, direct and indirect costs of added personnel, etc. Second, the Air Force could use members of other squadrons and other AEFs to fulfill the manning and resource requirements for the current AEF tasking. While this scheduling solution ensures the bomber squadrons meet RCC's requirements, it eliminates predictability for individual members, an original goal of the AEF concept. Unfortunately, the Air Force has judged the first option's costs as too high and has consistently applied the second option.

Table 2: Bomber Alignment, AEF Cycle 1 (Oct 1999 – Dec 2000)

AEF Pairs	Unit Assigned	Bombers Assigned
1/2	Barksdale - 96 BS	6 x B-52
	Dyess - 9 BS	6 x B-1
3/4	Barksdale - 96 BS	6 x B-52
	Dyess - 9 BS	6 x B-1
5/6	Minot – 23 BS	6 x B-52
	Robbins – 116 BS (AFG) McConnell – 184 BS (AFG)	6 x B-1
7/8	Barksdale – 20 BS Barksdale – 93 BS (AFR)	6 x B-52
	Ellsworth – 37 BS	6 x B-1

9/10	Barksdale 20 BS	6 x B-52
	Ellsworth – 37 BS	6 x B-1

SOURCE: ACC/DOOS, interviewed by author, 17 March 2005.

As shown in Table 2, for AEF Cycle 1, planners divided the bomber force into six B-52 or six B-1 fighting units, also called unit type codes (UTCs). This decision was largely arbitrary and the product of simple division. Since there were not enough bomber squadrons to assign a single squadron to each AEF, the planners decided the best option involved dividing the squadrons in half. Given the bomber force structure in 1999, the Air Force designated a six-ship unit as the basic bomber fighting unit in the AEF. The intent was to schedule two, six-ship UTCs per AEF pair, each independently capable of deploying to its own forward operating location (FOL). However, the Air Force's decision to split the bombers across the 10 AEFs in six aircraft units, created a standard of half a bomber squadron earmarked as an independent fighting unit. This organizational construct essentially invalidated the Air Force's basic organizing unit, the squadron.⁴³ In addition, though the squadrons included two six-aircraft UTCs, these were not independently capable units. In fact, only one of the squadron's UTCs constituted an independent unit. The other UTC was a dependent unit, which meant that it could only operate at the same location as its matched independent unit. Therefore, a single squadron could not by itself support two independent deployments regardless of the AEF construct. In the event the independent UTC left the dependent UTC at home base, the dependent unit could only continue to operate by sharing critical resources with another independent unit at the home station. This mismatch between capabilities and requirements resulted in significant problems as RCC requirements called for the deployment of two, simultaneous, independent bomber UTCs per vulnerability period.

⁴³ Air Force Doctrine Document (AFDD) 2, *Organization and Employment of Aerospace Power*, 17 Feb 2000, 40.

Splitting an operational squadron into two fighting units for the purpose of the AEF without changing squadron organization, resources and personnel caused serious problems. Unity of command and unity of effort are the principles that underpin the squadron organizational concept. With unity of command, a single commander should lead the squadron in the pursuit of the unifying goal of maximizing combat capability for the assigned vulnerability period. Assigning a single squadron to two different AEFs required the squadron leadership to split responsibilities for the two sections and to pursue separate goals on different timelines. For all practical purposes, the Air Force requires a single bomber squadron to support the taskings of two squadrons without the leadership, personnel or resources to support the mission. By requiring these actions in a single squadron, the Air Force violated its own unity of command and unity of effort principles.

Table 3: Bomber Alignment, AEF Cycle 5 (Sep 2004 - Apr 2006)

AEF Pairs	Unit Assigned	Bombers Assigned
1/2	Dyess – 9 BS	12 x B1
3/4	Barksdale – 20/96 BS	6 x B52
	Barksdale – 93 BS (AFR)	6 x B52
5/6	Minot – 23 BS	12 x B52
7/8	Ellsworth – 34 BS	12 x B1
9/10	Ellsworth – 37 BS	12 x B1

SOURCE: ACC/DOOS, interviewed by author, 17 March 2005.

In the current AEF, the Air Force has assigned a single squadron to cover both pairs of an AEF tasking, as shown in Table 3. This measure seems to resolve the split squadron problem of earlier AEF cycles. Yet this decision does not match with fundamental AEF concepts, one of which is that AEF pairs allow the Air Force to deploy two independent Air and Space Expeditionary Task Forces (AETFs) during any AEF vulnerability period.⁴⁴ Likewise, the bomber alignment in AEF Cycle 5 appears to maintain unity of command and effort contingent upon activation of only one AETF per AEF vulnerability period. But, as soon as a second bomber FOL is required, the Air Force must choose between splitting a single squadron between two FOLs, a task the Air Force has neither resourced nor organized a single squadron to accomplish, or force the entire bomber force into surge operations. Surge operations remove the bomber force from the AEF cycle and rotate them at a higher rate in order to maintain the combat capability the RCCs require. Given this choice, since October 2001 the Air Force has maintained the bomber forces in surge operations in order to

⁴⁴ In October 2004, during an Air Combat Command bomber brief to the Chief of Staff of the Air Force (CSAF), the CSAF asked, “What can be done to make the bombers expeditionary?” The definition of ‘expeditionary’ is the ability to sustain two continuous, simultaneous bomber deployments.

maintain two, or more, active FOLs. (Ironically, the ongoing requirement for two FOLs per vulnerability period is specifically what the Air Force designed the AEF to handle for steady state operations, and they resourced the fighter community to handle such obligations.) Within the AEF construct, as long as steady-state requirements remain below 20% of the force during any vulnerability period, standard deployment ratios should suffice. In theory, steady state requirements that remain below two, independent, eight-aircraft deployments do not require surge operations. As seen in Figure 3 below, since June 2003 the steady-state requirement for bombers has remained below the theoretical surge limit of 16 aircraft deployed at two FOLs. However, when the Air Force organized bomber forces within Cycle 5 without the ability to manage the AEF's steady-state requirement, it committed the bomber squadrons to surge operations for the foreseeable future. But a prickly fact remains: air forces cannot sustain operating at surge rates for an extended period without experiencing reductions in force readiness and capability.

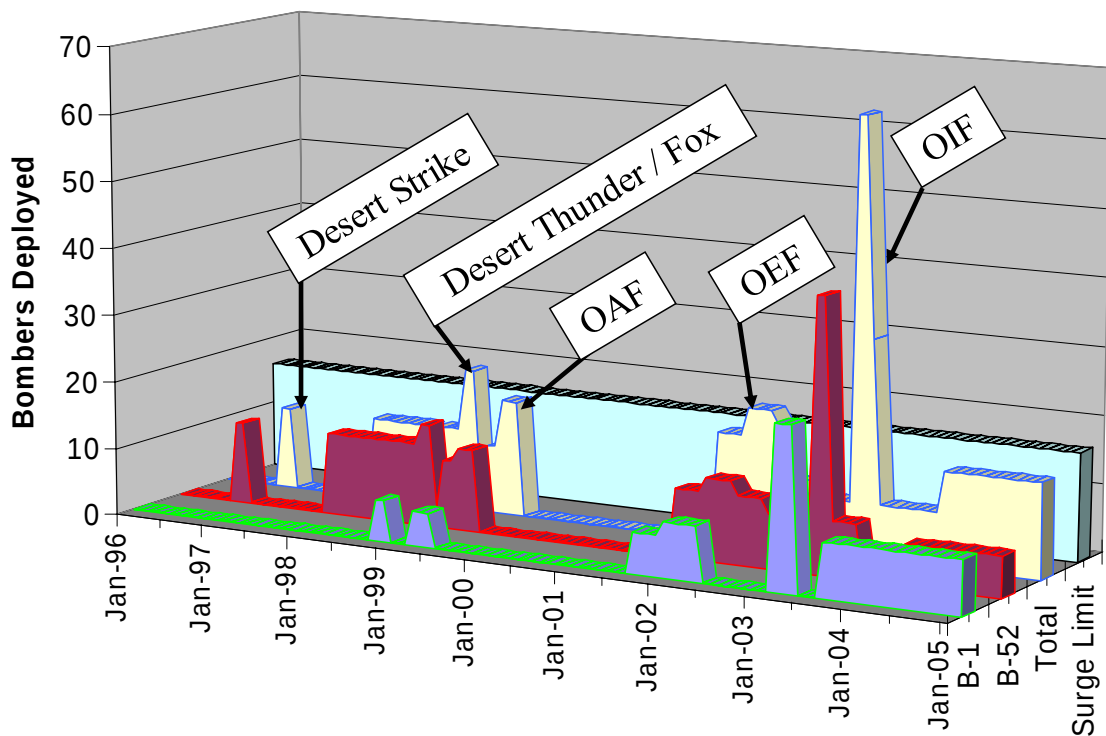


Figure 3: Bomber Contingency Deployment History (Jan 1996 - Dec 2004)

Surge operations exercise several negative effects on the B-1 and B-52 force. Prior to September 11, 2001, the assumption of twelve bombers covering a single FOL, except during times of surge operations (as experienced during Operation Allied Force) appeared reasonable. However, since October 2001, bomber forces have maintained an almost continuous deployment of at least 12 bombers at two FOLs, and during OIF the Air Force increased this to 64 bombers at four FOLs.⁴⁵ The negative effects caused by these operations involve a degradation in the combat readiness of the bomber force over time.⁴⁶

Barring an increased squadron manning ratio to provide the necessary personnel to maintain a squadron's steady state throughput, qualification/upgrade training and other necessary day-to-day tasks, even current operations force mission ready squadron personnel to maintain a deployment rate that is much above what the AEF concept projects. Since the Air Force has decided to maintain the bomber forces in surge operations, the current bomber deployment rate requires each bomber unit to deploy for one out of every three rotation periods, resulting in a squadron deployment rate that is 165% higher than that envisioned by the AEF.⁴⁷ Furthermore, since the Air Force has not increased squadron manning to account for squadron overhead requirements, the typical mission ready crew deployment rate is closer to twice that designed by the AEF.

This high deployment rate affects aircrew combat capability. While deployed, aircrews employ specific capabilities. The specific capabilities required by an operation are typically significantly smaller in scope than the full range of capabilities a bomber crew is required to maintain to support the unit's entire combat capability. Therefore, most proficiency training must occur during

⁴⁵ Lt Gen T. Michael Moseley, *Operation Iraqi Freedom - By the Numbers*, USCENTAF Assessment and Analysis Division Report, 30 April 2003, 7.

⁴⁶ Air Combat Command Bomber Squadron Ready Aircrew Program (RAP) Reports, ACC/DOT, interviewed by author, 25 January 2005.

⁴⁷ The six active duty bomber squadrons are required to maintain two forward operating locations. They are currently using 120-day rotations. The one AFR B-52 squadron is able to rotate for shorter durations (60 days) in order to provide intermittent relief.

the basic and basic/advanced training period of the AEF cycle. The realignment of training requirements with the AEF cycle—rather than the fiscal year—was supposed to dovetail the training requirements with the squadron’s AEF cycle; however, surge operations have had a negative impact on squadron proficiency training, and at the end of FY04 bomber units reported an inability to meet their training requirements.⁴⁸ Not only have the bomber squadron commanders reported a difficulty in meeting training requirements, given the expectation that the AEF deployment rates will continue, they expect to have difficulty in accomplishing the requirements in the future. As an example, in an October 2003 Air Combat Command report, a B-1 squadron commander asserted, “Due to these factors, there is no way I can accurately project my ability to accomplish the 20-month RAP requirements.”⁴⁹

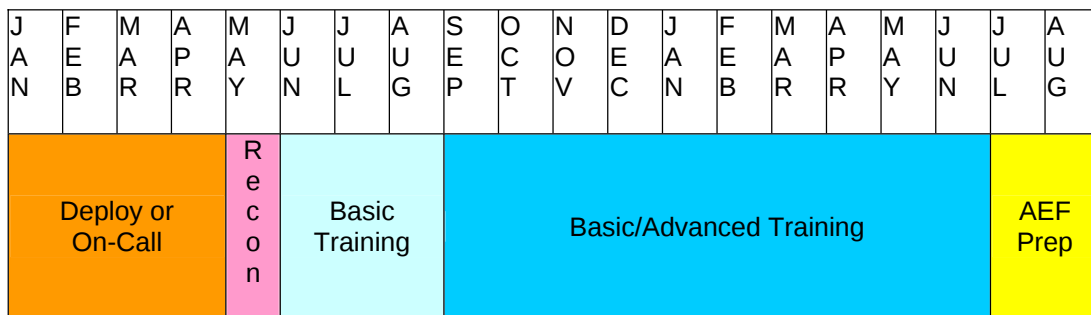


Figure 4: Typical 20-Month AEF Cycle

Given the forecast for a four-month deployment followed by eight months of reconstitution, training and preparation, the squadrons have little time to accomplish training and maintenance. As shown in Figure 4, the first month upon returning from deployment is necessary for reconstitution. In addition, the two months prior to deployment are required for AEF preparation (both in training focus and physical preparation of resources). This leaves only five months to complete basic and basic/advanced proficiency training. Moreover, the

⁴⁸ Air Combat Command Bomber Squadron Ready Aircrew Program (RAP) Reports, ACC/DOT, interviewed by author, 25 January 2005.

⁴⁹ Air Combat Command Bomber Squadron Ready Aircrew Program (RAP) Reports, ACC/DOT, interviewed by author, 25 January 2005.

continuous cycle of qualification training required by personnel entering the squadron and upgrade training within the squadron takes a backseat during periods of AEF preparation, deployment, and reconstitution due to lack of instructors and resources. This situation pushes even more training requirements into the already dense schedule that is required during the basic and basic/advanced training periods.

Aircraft mission capable rates provide another indication of potential problems. Maintaining mission capability of the required number of combat coded airframes is a multi-faceted task with cascading effects throughout the fleet. For example, to maintain six B-1s at Diego Garcia, the parent organization must continuously rotate aircraft from the home base for phase maintenance. B-1s require phase maintenance after every 600 hours of flight time (B-52s every 300 hours). Since the flight time from the home bases to Diego Garcia is approximately 30 hours in duration, this leaves 540 hours of useable flight time available for the aircraft on station. Sortie durations to a typical country in the Central Command AOR are about 15 hours. If the deployed squadron is required to fly three sorties per day, an aircraft swap-out must occur about every 12 days to maintain fleet phase maintenance requirements. Reducing the requirement to two sorties per day stretches this rate to about every 18 days. The home base personnel must support these aircraft rotations, which further reduces the amount of training they can accomplish during their training period. The requirements for aircraft rotation in addition to aircraft downtime for aircraft equipment upgrades increase the maintenance requirements for the entire fleet. Excessive maintenance requirements often begin to create problems with aircraft mission capability rates. Figure 5 below indicates this snow-balling effect is occurring within the B-1 fleet.

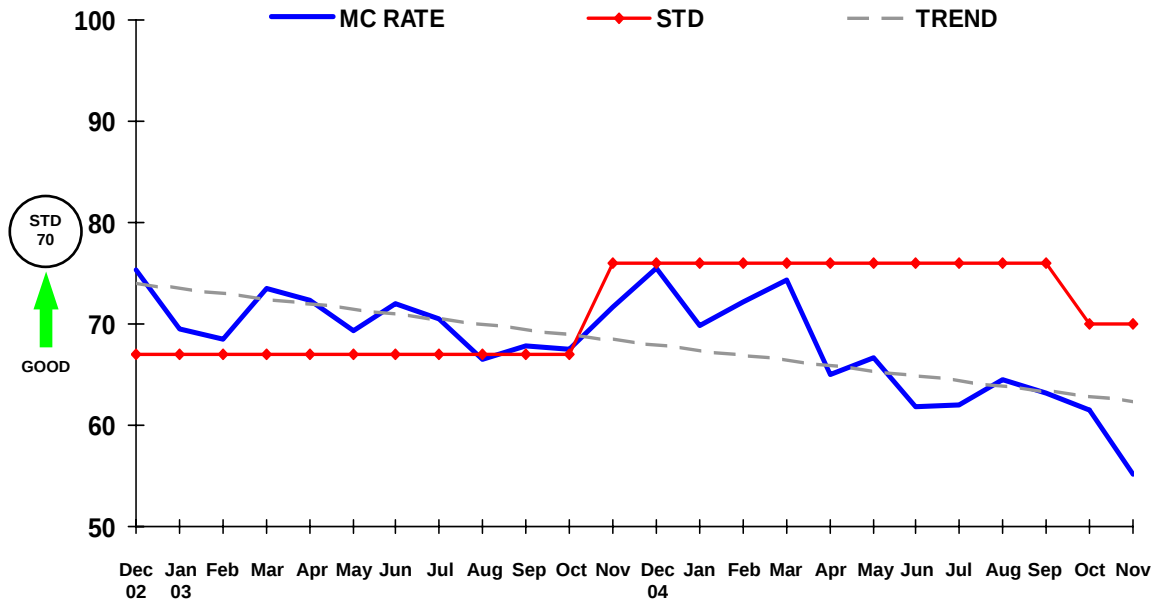


Figure 5: B-1 Fleet Mission Capable Rates (Dec 02 - Nov 04)

SOURCE: ACC/LGP, "COMACC Maintenance Performance Indicators, Nov 04," Briefing given to Air Combat Command commander, December 2004.

This chart also assumes perfect aircraft maintenance. But, high sortie rates during deployed operations decrease the amount of time maintenance personnel have to maintain the aircraft in mission capable status. When surge operations reduce the mission capability rate of the bomber fleet, the aircraft rotation and maintenance requirements become more onerous. As the trend in Figure 5 indicates, the B-1 fleet is experiencing a pronounced long-term negative effect due to bomber surge operations.

While current operations require fewer deployed aircraft than the AEF steady state requirement, the bomber force is not organized or resourced to match the AEF construct. This failure to resource and organize the bomber force according to the AEF requirement—two independent fighting units per AEF pair capable of independent operations from two FOLs—has caused the Air Force to institute surge operations throughout the bomber force. In addition, squadron manning below that required to maintain combat capability and day-to-day operations increases the deployment rate of mission ready personnel, which simultaneously removes scheduling predictability and combat proficiency. All this

means that, as expected, surge operations have created unsustainable effects on bomber force capability and combat readiness.

At the inception of the AEF, the Air Force resourced tactical fighter units to match the capabilities required within the AEF construct. However, at that time, operations required few bomber deployments and the Air Force neither reorganized nor resourced the bomber force to match the requirements within the AEF construct. Bomber steady-state requirements have changed over the past decade and it is now time to revisit the bomber force structure and capabilities within the AEF construct. The next two chapters examine this problem, first as a function of a capability shortage and then as a function of the forward presence now required by some RCCs.

Chapter 3

A Capability Problem?

The bombers have been in surge operations since October 2001. Three years of this pace is taking its toll throughout the bomber force in both reduced crew combat readiness and aircraft maintainability. Whereas the last chapter described the scope of this problem, this chapter looks at the possible solutions centering on bomber capability. If the unsustainable level of bomber deployments is driven by a lack of bomber capabilities, increasing those capabilities may provide a long-term solution.

What defines bomber capability? Historically, bomber's ability to perform strategic bombardment—where the required capabilities are limited to long-range attack and number of targets attacked per sortie—wholly defined the bomber capability paradigm. As early as World War I, air forces began to leverage long-range attack capabilities in an attempt to attain strategic military objectives directly—now referred to as strategic effects. The French first recognized that this mission required unique equipment and training, so they established three escadrilles (squadrons) to form the Groupe de Bombardement No. 1 in late 1914.⁵⁰ The ability to fly long-range strikes into the heart of the adversary's support areas allowed early bombers to attack communication links, industrial targets and populations in an effort to create strategic effects. In fact, throughout World War I, bombers struck a broad range of target types in search of strategic,

⁵⁰ Lee Kennett, *The First Air War, 1914-1918* (New York: Simon & Schuster, 1991), 49.

operational or tactical effects. Unfortunately, the rudimentary capabilities of World War I bombers limited their overall success at creating strategic effects. However, even the limited success in these early attempts laid the foundation for the bombardment strategy of World War II.

World War II witnessed a more aggressive pursuit of strategic effects through the employment of long-range bomber strikes. Prior to World War II, US air planners declared that the destruction of the 154 targets listed in AWPDP-1 would produce strategic success without incurring the costly stagnation experienced during World War I. Strategists incorporated the German electric power system, transportation, petroleum, aircraft assembly plants, and aluminum and magnesium factories in these strategic targets sets.⁵¹ In their optimism, they went as far as to suggest that precision attacks on these few targets would collapse the German military and civilian establishments. This mindset laid the foundation for the current capability/requirement gap.

The apparent simplicity of destroying 154 targets met the realities of World War II, in which the destruction of one target required approximately 1000 B-17 sorties (see Figure 6).⁵² In a monumental attempt to provide the

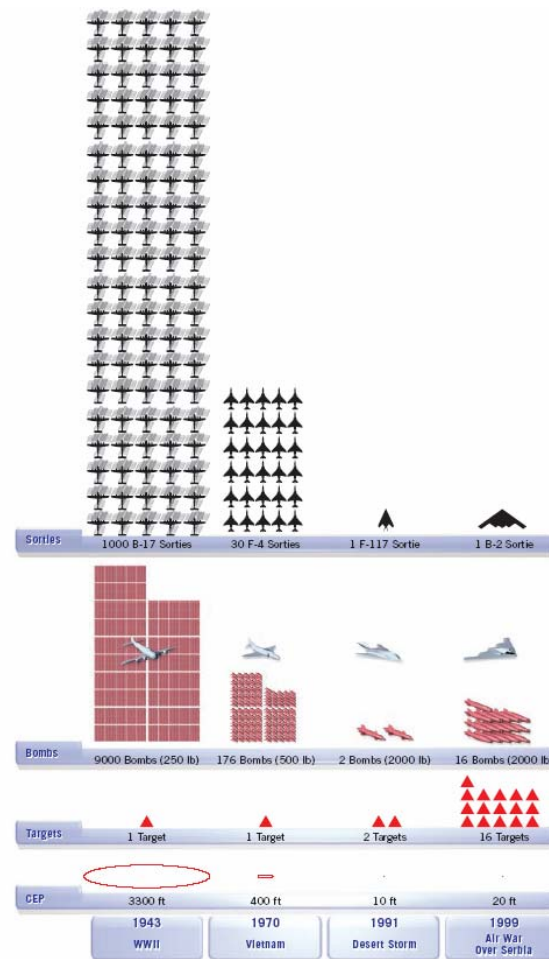


Figure 6: History of Bomber Capabilities

SOURCE: Deptula, *Effects-Based Operations*, 2001.

⁵¹ Tami Davis-Biddle, *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing, 1914-1945* (Princeton, NJ: Princeton University Press, 2002), 206.

⁵² Brig Gen David A. Deptula, *Effects-Based Operations: Change in the Nature of Warfare* (Arlington, VA: Aerospace Education Foundation, 2001), 8.

capability necessary to meet the strategic bombardment requirements of World War II, the Americans and British produced approximately 74,600 medium and heavy bombers.⁵³ With the advent of the atomic bombs at the end of World War II, the historic definition of strategic bombing reached its pinnacle. The ability to deliver a nuclear weapon became the primary purpose for strategic bombers throughout the Cold War. This focus on nuclear weapon delivery limited the Air Force's desire or ability to spend the funds necessary to narrow the gap between the bomber's conventional capabilities and requirements.

Over 45 years after World War II, the planners for Desert Storm used airpower to create strategic effects. However, the employment of strategic bombers in that war demonstrated an increasing disparity in capabilities versus requirements. The introduction of new capabilities for strategic bombers throughout the Cold War focused on nuclear operations, largely ignoring the improvements in conventional capabilities. In fact, the only strategic bombers to fly in Desert Storm were B-52Gs. Due to a lack of precision capability, the Air Force limited the B-52Gs to area targets. As the tactical air forces employed precision weapons to destroy multiple targets per sortie, bomber missions typically required the employment of a three-ship formation for each target. By the Gulf War's end, the advantages of precision attack created a driving force for the integration of all-weather, day/night, precision weapons throughout the Air Force.

⁵³ *World War 2 Bombers: The Strategic Weapons Which Struck at the Enemy's Military-Industrial Heart*, n.p., on-line, Internet, 31 Jan 2005, available from <http://www.2worldwar2.com/bombers.htm>.

Table 4: Bomber Weapon Capabilities

Weapon	B-1	B-2	B-52
Standoff			
AGM-86C, CALCM			20
AGM-154, JSOW	12	16	12 (0 after FY06)
AGM-158, JASSM	24	16 (FY05)	12
GBU-39, SDB	96 (FY09)		48 (FY10)
Direct Attach (Guided)			
GBU-10, Paveway II LGB			10
GBU-12, Paveway II LGB			13
GBU-31, 2000lb JDAM	24	16	12
GBU-37, GAM		8 (0 after FY07)	
GBU-28, (INS/GPS LGB)		8	
CBU-103/104/105/107, WCMD	30/15/25/25		16/16/16/16
MALD/MALD-J			16
GBU-38, 500lb JDAM	18 (FY05)	80	12 (FY06)

CALCM (Conventional Air Launched Cruise Missile, long-range cruise missile with 2000lb warhead), JSOW (Joint Standoff Weapon, GPS-aided, glide cluster bomb), JASSM (Joint Air to Surface Standoff Missile – medium range cruise missile with 1000lb class warhead), SDB (Small Diameter Bomb-250lb unitary warhead, GPS-aided, glide weapon with 60NM range), LGB – Laser Guided Bomb, JDAM – Joint Direct Attack Munition (GPS-aided unitary warhead), GAM – GPS-Aided Munition, INS –Inertial Navigation System, WCMD Family— the CBU-103 (Combined Effects Munition), CBU-104 (GATOR antipersonnel and anti-vehicle mines), CBU-105 (Sensor Fuzed Weapon), and CBU-107 (Passive Attack Weapon), MALD (Miniature Air Launched Decoy).

Sources: ACC/DRA, interviewed by author, 4 April 2005.

The resulting integration of GPS-aided weapons and laser-guided bombs (LGBs) in the bomber fleet exponentially increased their capabilities (see Table 4). Operational Allied Force in 1999 witnessed the first employment of the GPS-Aided Munition (GAM, GBU-37) by the B-2. Before Operation Enduring Freedom in 2001, the Air Force had integrated the Joint Direct Attack Munition (JDAM,

GBU-31) across the bomber fleet. JDAM integration forever changed the concept of bomber employment. Bombers can now destroy multiple targets per sortie, with the capability to change targeting information in-flight and to achieve a high probability of success. The increase in capability continues to accelerate with the acquisition of smaller precision weapons, such as the 500 lb JDAM and Small Diameter Bomb (SDB). These improved munitions have dramatically increased bomber capabilities: in the past 10 years, B-2 capability has gone from eight targets per sortie with GAM, to 16 targets per sortie with JDAM, and to 80 targets per sortie with the 500 lb JDAM. Furthermore, the SDB promises to increase this capability to 216 targets per sortie.⁵⁴

Historically, air power analysts have measured bomber capability by the number of sorties per target, and since Desert Storm, number of targets per sortie. However, since 2001 the bombers have demonstrated capabilities well beyond this historic paradigm. No longer do bombers take off in formation to strike only pre-planned targets, followed by a return to base to prepare for tomorrow's sorties. Rather than a singular focus on delivering weapons to preplanned targets, many, if not most, targets are struck using the real-time targeting process. Real-time targeting occurs through in-flight targeting of weapons assigned to an airborne alert mission or by retargeting weapons from assigned targets to higher priority targets. In fact, during OIF more than 79% of the air strikes used the real-time targeting process.⁵⁵ After the third day of OIF, bombers routinely launched without any specific targeting information.

Flexible in-flight targeting is not the only new capability provided to regional combatant commanders (RCCs) by bomber forces. In low intensity conflicts, the sanctuary provided by high altitude flight, above 25,000 ft, combined with the bomber's long-loiter capability and large weapons payload creates a platform that is highly desired in the Global War on Terrorism (GWOT). Prior to the advent of GPS-aided weapons, bombing accuracy improved with

⁵⁴ Frank Colucci, "Small Precision Bomb on Fast Track," *National Defense*, July 2004, n.p. on-line, Internet, 1 February 2005, available from http://nationaldefense.ndia.org/issues/2004/Jul/Small_Precision.htm.

⁵⁵ Moseley, 5.

lower altitude releases, which exposed the aircraft to more threats. Now, the opposite is true. With GPS aiding, weapons become more accurate when dropped from higher altitudes. In addition, the recent employment of Litening targeting pods on B-52s has enabled bombers loitering over the battlespace to accomplish non-traditional intelligence, surveillance and reconnaissance (ISR) while retaining the ability to execute precision kinetic attacks. Finally, bombers dropped millions of leaflets during Operations Enduring Freedom and Iraqi Freedom in support of information operations. These tasks combined with long-endurance capability, large weapons payload, and a crew force trained for rapid, flexible response signaled an expansion to the historic paradigm of bomber capabilities. To manage the force better, the Air Force must recognize these changes and redefine bomber capabilities. During interviews at Air Combat Command, some staff officers even went so far as to suggest that the bomber mission paradigm has so expanded that 'long-range attack' no longer sufficiently defines the bomber mission and that they now consider bombers as supporting the mission requirements for the next-generation gunship.⁵⁶

As the Air Force pursues the goal of rapid execution of time critical targeting, the bomber capabilities paradigm includes tactical and operational responsiveness. Responsiveness centers on the ability of a bomber to respond to a joint fire request in the required amount of time. As the Air Force develops the capability to create effects within the Find, Fix, Target, Track, and Engage (F2T2E) cycle in minutes rather than days or hours, tactical responsiveness becomes a critical capability. The historic paradigm of bomber capabilities, based on targets per sortie, does not include any consideration of responsiveness. For preplanned target sets, the mission planners would determine the most efficient routing through the battle space in order to release all weapons on their designated coordinates. However, the new paradigm requires bomber responsiveness to in-flight requests to achieve the desired effects, whether kinetic, non-kinetic, or ISR support. Under the old paradigm, increasing the number of targets per sortie only required more mission planning

⁵⁶ Author conversations at Air Combat Command, Langley Air Force Base, VA, 17 March 2005.

and a possibly longer routing throughout the country to cover multiple targets over a wide expanse. In fact, during Operation Enduring Freedom, it was common for a single B-52 to fly around the entire country of Afghanistan dropping individual leaflet bombs targeted for each specific area. However, under the new paradigm of responsiveness, just because a single bomber could carry enough weapons to cover all of the targeting requests during its mission period does not mean that it can be responsive to more than a small part of the battle space. Current operations in Iraq require aircraft to respond to preplanned close air support (CAS) requests within 10 minutes and to unplanned requests within 30 minutes. Therefore, if the bombers cannot create effects in the entire area of operations within this amount of time, the bomber's excess capability is useless to the joint commander for these operations.

Given the speed of bombers—about 8 miles per minute—an aircraft will need to be within 80 miles of a target in order to respond in less than 10 minutes. In Iraq, this provides a response area that covers about 12 percent of the country. In addition, multiple requests from different locations only increase response time. While joint planning can prioritize the location for the bomber alert orbits, surprises and multiple requests can quickly overwhelm a single bomber, regardless of type and numbers of weapons. In operations requiring responsiveness, fewer—albeit more capable—bombers achieve less, not more.

The second element of responsiveness in contemporary bomber operations requires recognition that tactical responsiveness requires tactical presence. Again, the historic paradigm of bomber operations required bombers to be over the battle space only long enough to complete their preplanned mission. Now, to assure responsiveness to time critical taskings, most operations require bombers to provide continuous tactical presence during an operation. The ability to provide tactical presence requires a minimum number of airframes and aircrews in order to take into consideration crew capacity to function in a high-stress environment throughout a vulnerability period and sortie duration—and this is to say nothing of ongoing aircraft maintenance requirements.

Table 5: Approximate Bomber Sortie Durations

<i>FOL</i>	<i>Destination</i>	<i>Sortie Duration</i>
Diego Garcia, BIOT	Kabul, Afghanistan	15 hours
Diego Garcia, BIOT	Baghdad, Iraq	17 hours
Anderson AFB, Guam	Seoul, Korea	16.5 hours
Fairford RAS, England	Baghdad, Iraq	17 hours

Assumes 5-hour airborne alert period in vicinity of destination

Given the typical sortie durations shown in Table 5, it becomes clear that having fewer airframes severely limits the amount of tactical presence, and thus responsiveness. Typically, six hours are required for maintenance and munitions loading time between flights. Using this assumption, and given the standard mission capability rates for B-1s and B-52s of 75%, a minimum requirement of seven bombers exists at each forward operating location to provide 24-hour tactical presence. Lengthening airborne alert periods offers a potential solution, but there is a limit to how long a crew can maintain a high level of performance; Air Force regulations reflect this and limit an aircrew without augmentation to sortie durations of less than 16 hours.⁵⁷ Moreover, these numbers are optimistic in that major maintenance requirements further reduce efficiency when the squadron maintains these sortie rates over a long period. All of these factors suggest that regardless of the capability of the individual bomber, reducing the number of airframes decreases the Air Force's ability to provide the required level of tactical responsiveness.

Still, the expansion of bomber capabilities may well be a factor in the current bomber operations tempo within the AEF construct. In order to design a steady-state requirement for bomber forces, the bomber paradigm must capture the reality of contemporary bomber operations in order to encompass the

⁵⁷ Air Force Instruction (AFI) 11-202, Volume 3, *General Flight Rules*, 16 February 2005, 70.

concept of on-station assets that are capable of quick response to joint requirements across the spectrum of kinetic and non-kinetic effects as well as non-traditional ISR.

If a capability shortfall drives the unsustainable bomber deployment ratio, the Air Force needs to match bomber capabilities to actual requirements. While suggesting that the Air Force purchase additional bomber platforms to better match capabilities to requirements offers one solution, it is not a timely, or even necessary, solution in the short term. However, making the bombers we currently have more capable to perform assigned missions could provide the Air Force a solution to the current unsustainable operations tempo. In this case, the decision involves whether the old paradigm of long-range attack shapes the capability/requirement gap, or if the new, broader bomber capability paradigm is the driving force behind the deployment requirements.

If the causal problem involves a capability shortage using the historic paradigm of bomber capabilities—long-range attack—then the solution is to create bomber capabilities that enable more numerous, flexible kinetic attacks per sortie. This is a continuation of the dramatic increase of bomber capabilities as outlined in Table 4. Again, if targets destroyed per sortie is the issue, then accelerating acquisition of smaller weapons that leverage precision to increase effectiveness will enable a single platform to destroy more targets per sortie.

Table 4 describes Air Force efforts to pursue the acquisition of smaller weapons that enable bombers to carry more weapons per sortie, including the 500 lb JDAM and the 250 lb Small Diameter Bomb (SDB). Originally, the Air Force mounted the JDAM GPS-aided guidance tail kit and fins on a 2000 lb warhead. After recent operational experience and testing, the Air Force recognized the potential benefits of smaller warheads. The reduction in size of these weapons is a direct result of increased accuracy due to the introduction of on-board GPS-aided navigation. GPS-aided navigation has created near-precision weapon accuracy.⁵⁸ For most targets, a near-precise weapon is able to

⁵⁸ A weapon is defined as “precision” if it can achieve a circular error probable (CEP) of less than 3 meters. While the Air Force originally required the JDAM to have a maximum CEP of 13 meter, actual JDAM

use a smaller explosive weight and still achieve the desired effect. Despite its small size, the Air Force required the SDB to be capable of engaging 80 percent of the fixed targets.⁵⁹ The SDB, for example, is capable of penetrating 5 feet of steel-reinforced concrete.⁶⁰

Reduced warhead size offers several benefits. First, it is possible for aircraft to carry more of these small weapons. With its wings folded, the SDB is only 7.5 inches in diameter and about 6 feet long.⁶¹ This small size will enable most platforms to quadruple their weapon capacity over the original 2,000 lb JDAM. Second, the smaller warheads create a much reduced damage area (26 foot blast radius for SDB versus the 82 foot blast radius for the 2,000 pound JDAM)⁶² thus enabling precise targeting while minimizing collateral damage. This capability will be most useful in areas of high collateral damage concern, such as urban areas.

Furthermore, the acquisition of weapon fuzes that the aircrew can adjust from the cockpit during the mission promises to improve weapon effectiveness. Currently, fuze limitations require that the aircrews select the weapon fuze settings prior to flight. However, in current operations, air planners seldom assign targets prior to flight. Therefore, the aircrews must select generic fuze settings that are sufficient for a broad range of targets. Once in-flight, the aircrews are unable to modify these settings and this often results in non-optimum weapons effects against the actual target. Yet, with the acquisition of the Joint Programmable Fuze, or another similar fuze, the planners do not need to select fuze settings prior to flight. These in-flight programmable fuzes provide a full spectrum of weapon effects, from a burst above ground optimized for soft target kills to a delayed detonation optimized for penetrating hardened targets. Once notified of their target assignment, the aircrew determines the optimum

employment has shown that it is capable of achieving CEPs very near that required for the “precision” designation—hence the designation “near-precision.”

⁵⁹ Colucci, n.p.

⁶⁰ *Small Diameter Bomb, or SDB System*, n.p., on-line, Internet, 24 Apr 2005, available from http://www.boeing.com/defense-space/missiles/sdb/sdb_back.htm.

⁶¹ “Small Munition Represents Big Win,” *Boeing Frontiers*, October 2003. n.p., on-line, Internet, 1 Feb 2005, available from http://www.boeing.com/news/frontiers/archive/2003/october/i_bitn.html.

⁶² Colucci, n.p.

fuze setting for the desired effect and selects the fuze settings through the weapons management console. The ability of the aircrew to select fuze settings in-flight enables the optimum engagement of varied target types and eliminates the need to preset the fuze settings prior to the sortie. The combination of smaller weapons and flexible fuzing creates improved bomber capability to strike more targets per sortie. If the Air Force identifies targets affected per sortie as the capability shortfall, the acceleration of these acquisition programs for all of the bomber platforms is the best solution.

If the Air Force decides to use the contemporary, broader paradigm of bomber capabilities as a guide, it must pursue an even broader array of capability improvements for its bomber force. In addition to creating bombers more capable and efficient at accomplishing traditional missions, the Air Force must also expand the scope of capability improvements to encompass all of the current bomber missions beyond kinetic target destruction.

In this case, the Air Force should still pursue smaller, more flexible precision weapons. But, the justification will not be merely to increase the number of strikes per sortie. In fact, bomber crews release few weapons on most sorties flown in support of current RCC requirements. The driving force behind these smaller weapons should be the ability to accomplish more surgical strikes, in order to respond to small unit requirements in difficult terrain and urban areas. In addition to a surgical strike capability, the SDB is a glide weapon capable of striking targets greater than 60 miles away.⁶³ The glide range will allow the bombers to respond to simultaneous targeting requests while remaining outside of the range of most anti-aircraft defenses.

Beyond surgical strike capability, the bombers must be capable of rapid coordination and joint integration contingent on the acceptance of the new paradigm that broadens the definition of bomber capabilities. In order to better integrate bombers into joint operations, the Air Force must provide the planes with improved capabilities in the areas of command and control, data transfer, and situational awareness. If, indeed, bombers are becoming the next

⁶³ *SDB System*, n.p.

generation gunships, the Air Force must update the current ad hoc equipment arrangements and create robust, integrated systems that smoothly transfer and display joint tasking and situational awareness information through the aircraft systems to the crew for rapid execution. An example of this expansion of capabilities is the addition of non-traditional ISR to the bombers' missions. The potential to execute ISR requests becomes possible by combining long loiter times with the capabilities of an advanced targeting pod. To accomplish this, the Air Force must not only integrate the targeting pod information throughout the bomber systems, but new systems must enable target, threat, and ISR data sharing across the joint network.

If the unsustainable bomber operations tempo results from an expanding bomber capability paradigm, an appropriate solution encompasses an improvement to bomber's long-range attack capabilities, but goes much further. Whereas a solution based on the older paradigm of bomber capabilities emphasizes an accelerated acquisition of smaller, flexible, precision weapons, the solution based on the new paradigm also requires improvements in NTISR, joint integration and information flow. In reality, it is not possible for the Air Force to limit bomber requirements to the historic paradigm of long-range strike. RCCs require the broadened paradigm and demand that bombers meet these requirements to enable their integration in future operations. Furthermore, without improved communication and situational awareness capabilities enabled by seamless integration in the joint information network, bombers will not be able to accomplish even the simplest missions of preplanned target destruction. Although the Air Force recognizes these improvements are required, the current steady state operational demand should increase their acquisition priority.

Regardless of what definition of bomber capabilities is used, the solution to the unsustainable bomber operations tempo will be more complicated than increasing a bomber's capability to strike more targets, integrate better with the joint force, and provide a broader scope of capabilities to support close air support, non-traditional ISR, and non-kinetic effects. Logically, increased precision results in the need for fewer platforms. Therefore, a capability-based

solution founded on the historic paradigm of bomber capabilities suggests that increasing bomber capabilities should reduce the number of bombers necessary to meet RCC demands. However, targets destroyed per sortie does not drive current or future operations tempo problems. In fact, in operations other than war, tactical responsiveness and tactical presence are equally, if not more, important than the ability to destroy an increasing number of targets. While a solution based on the historic paradigm of bomber capabilities would suggest assigning fewer aircraft per AEF pair, the importance of responsiveness and coverage over the battle space tends to increase the number of bombers necessary.

The new focus on tactical responsiveness does not negate the Air Force's pursuit of improved capabilities. In fact, maintaining a capability edge is a requirement for future successes. However, mere improvements in the capability of each bomber to create effects are only part of the solution. Responsiveness requires tactical presence, which results in a requirement for a minimum number of bombers. Therefore, the concept of solving the excessive bomber operations tempo with improved capabilities that enables the Air Force to assign fewer bombers to each AEF will not be effective under the contemporary bomber paradigm.

Complicating this entire discussion is the larger requirement for bombers to enable future major military operations through rapid global strike. Bombers provide a unique global ability to achieve effects that are critical in the early hours of a crisis. They provide these capabilities to the regional combatant commanders through the Global Strike Task Force (GSTF) construct. Within this construct, bombers create strategic effects through global strike that enable the nation's forces to operate successfully in a crisis environment. These two constructs, the steady-state based AEF and crisis-based GSTF, must work in concert in order to provide the full range of effects. Currently, the B-2s and CALCM-capable B-52s provide the on-call capabilities required from the GSTF. Overall, no solution to the current problems experienced by B-1s and B-52s in

the AEF construct can reduce the critical enabling capabilities provided by the GSTF.

There is more nuance to capabilities-based solutions to bomber deployment rates than first meets the eye. The Air Force continues to align and resource bombers using a historic paradigm of bomber operations: preplanned destruction of fixed targets—referred to as long-range attack. Yet, the RCCs request and employ bombers for a varied array of missions that require expanding the definition of bomber operations. These missions include close air support, non-traditional ISR, and airborne alert for time sensitive and dynamic targeting. The reality of bomber operations in the current AEF structure has expanded far beyond historic definitions to encompass new missions that require tactical responsiveness and presence over the battle space. If the cause for the excessive operations tempo is simply a capability shortage among bombers, the rapid acquisition of capability improvements will improve the bomber force's ability to meet the RCC's requirements. These improvements are smaller, more flexible weapons that increase each bomber's ability to create kinetic effects in combination with improved data flow architectures necessary to improve joint integration. Upon initial review it would seem that these improved capabilities would allow fewer bombers to meet RCC requirements by either enabling the Air Force to assign fewer bombers to each vulnerability period or reduce the operations tempo of the individual bomber UTC packages. However, the expansion of RCC requirements from servicing preplanned targets to providing a responsive operational and tactical presence tends to increase the number of bombers the Air Force must assign to each AEF. Therefore, while the Air Force must still pursue improved bomber capabilities, this on its own will not resolve the capability/requirements gap.

Chapter 4

A Presence Problem?

Setting aside a discussion of the limits of bomber capability, the unsustainable deployment rate of the bomber force may result from an inability to provide the necessary presence for the RCCs. If bomber deployment rates are primarily the product of RCC's demand for presence, the solution might reside in improving the bomber force's organization or increasing resources to provide the required support while improving the Air Force's ability to maintain and sustain the bomber force. RCCs essentially focus on two concerns: presence in their regions and warfighting. This chapter evaluates the current bomber operations tempo as a function of presence.

The concept of *Global Reach—Global Power*, first articulated in 1990 in an Air Force white paper, asserted that the Air Force's ability to respond globally through force projection suited to the conditions of an unpredictable world.⁶⁴ This concept of a CONUS-based force responding globally has remained in Air Force future vision statements.⁶⁵ However, the concept of bombers remaining on CONUS alert as a suitable alternative to forward presence has not been persuasive to RCCs. Indeed, in the post September 11 world, bombers have maintained a continuous forward presence in at least one area of responsibility (AOR). If the unsustainable bomber operations tempo is a function of an

⁶⁴ Donald B. Rice, *Global Reach—Global Power*, white paper (Washington, DC: Department of the Air Force, 1992), 8.

⁶⁵ F. Whitten Peters and Gen Michael E. Ryan, *Global Vigilance, Reach & Power: America's Air Force Vision 2020* (Washington, DC: Department of the Air Force, 2000), 5-8.

unrecognized change in global presence concepts, possible solutions may exist through a stricter adherence to the concept of *Global Reach—Global Power* or a basic reorganizing of the bomber forces.

After the fall of the Berlin Wall in 1989, Secretary of the Air Force Donald Rice recognized the need for a new vision to guide the Air Force through the transition from the Cold War into the future. Air Force vision was woefully out of date, and had not been promulgated since 1945 when General Henry “Hap” Arnold wrote *Air Power and the Future*. Of note, even in that first Air Force vision statement, General Arnold asserted the importance of power projection: “In any future war the Air Force, being unique among armed services in its ability to reach any possible enemy without long delay, will undoubtedly be the first to engage the enemy and, if this is done early enough, it may remove the necessity for extended surface conflict.”⁶⁶ With the Cold War came the United State’s formal adoption of the national strategy of containment of Soviet communism, introduced by George Kennan in his famous X-article published in the summer of 1947.⁶⁷ Throughout the Cold War, containment drove a military strategy of forward defense that included a large network of main operating bases.

The end of the Cold War brought shrinking military budgets, and Secretary Rice recognized the need to change the organizing concept of the Air Force from forward defense to power projection. He also recognized that the unique characteristics of the Air Force—speed, range, flexibility, precision, and lethality—were well suited to support the nation’s security needs in the evolving world order.⁶⁸ His *Global Reach—Global Power* emphasized that in this new, more unpredictable world the Air Force needed to emphasize force projection capabilities.⁶⁹ He emphasized the “ability to concentrate force in a responsive manner over great distances—to change the military and/or political conditions

⁶⁶ Gen Henry H. Arnold, “Third Report of the Commanding General of the Army Air Forces,” in *The War Reports* (Philadelphia, PA: J.B. Lippincott Company, 1945), 453.

⁶⁷ X [George F. Kennan], “The Sources of Soviet Conduct,” *Foreign Affairs* 25, no. 4, (July 1947), n.p., online, Internet, 21 May 2005, available from <http://www.foreignaffairs.org/19470701faessay25403/x/the-sources-of-soviet-conduct.html>.

⁶⁸ Donald B. Rice, *The Air Force and U.S. National Security: Global Reach—Global Power* (Washington, DC: Department of the Air Force, June 1990), 1.

⁶⁹ Rice, *AF and U.S. National Security*, 3.

necessitating the response—is a key attribute of the Air Force.”⁷⁰ As overseas basing, Air Force manning, and budgets decreased during the early 1990s, the Air Force increasingly identified *Global Reach—Global Power* with CONUS-based forces that could be put on alert status with the ability to respond to worldwide taskings in minimum time. In 1995, the Air Force further highlighted this concept in a white paper called *Global Presence*. It asserted that the combination of global situational awareness and strategic agility with lethality, which are inherent Air Force capabilities, enable the nation to project military power worldwide in minutes or hours.⁷¹

In 1996, an updated Air Force vision statement, *Global Engagement: A Vision for the 21st Century Air Force* incorporated the concepts found in *Global Presence*. *Global Engagement* extended the emphasis on CONUS-based response forces with the introduction of the Air Expeditionary Force (AEF) concept by admitting that the Air Force was increasing the role of expeditionary forces to maintain its global engagement capability. Furthermore, it asserted that in the future, CONUS-based forces likely would become the primary means for crisis response and power projection.⁷² During the transition to the 21st century, the Air Force embraced the AEF concept and the assertions annunciated in *Global Engagement*. This transition to an expeditionary force required an update to the Air Force vision statement.

In 2000, the Air Force issued *Global Vigilance, Reach and Power: America’s Air Force Vision 2020*. This vision solidified the Air Force’s commitment to the Air Expeditionary Force concept. The AEF offered RCCs ready air and space force packages from which they could create tailored force packages for specific contingencies. Moreover, by using a rotational force predominantly stationed in CONUS, the AEF would provide predictability and stability for Air Force personnel. Reminiscent of General Arnold’s vision, *AF Vision 2020* asserted that through responsiveness, global mobility and lethality,

⁷⁰ Rice, *AF and U.S. National Security*, 7.

⁷¹ Gen Ronald R. Fogleman and Sheila E. Widnall, “Global Presence,” *Joint Force Quarterly*, no. 7 (Spring 1995): 99.

⁷² Gen Ronald R. Fogleman and Sheila E. Widnall, *Global Engagement: A Vision for the 21st Century Air Force* (Washington, DC: Department of the Air Force, November 1996), 11.

an AEF could deploy to a region “fast enough to curb many crises before they escalate.”⁷³ *AF Vision 2020* was the vision statement in effect on September 11 and remains the current Air Force vision statement.

While the AEF concept has performed superbly through Operation Enduring Freedom, Operation Iraqi Freedom and the larger Global War on Terrorism, the new environment has changed the RCC’s requirements for power projection, especially as it relates to the bomber force. In recent years, Air Force bombers have transitioned from the concept of *Global Reach—Global Power* to a power projection construct fundamentally based on forward presence. The transition did not occur instantly on September 11. Actually, the transition started in 1994 and continues to the present; today there are continuous forward deployments of at least two independent bomber units. In 1994, Iraq mobilized two Republican Guard divisions near Kuwait’s border. In response, the United States executed Operation Vigilant Warrior, in which Air Force fighters deployed to the region. Furthermore, two CONUS-based B-52s struck targets in view of the Iraqi army and the Air Force placed other CONUS-based B-52s on conventional alert. Within four days, Iraq announced that it would withdraw its troops.⁷⁴ This operation offered a near perfect demonstration of the *Global Reach—Global Power* concept.

In 1996 despite warnings from the United States, Iraq moved 40,000 troops into northern Iraq, threatening the Iraqi Kurdish population. In response, the United States deployed two B-52s to Anderson AFB in Guam and then executed Operation Desert Strike. The two B-52s flew 34-hour sorties to fire 13 conventional air launched cruise missiles before landing at Diego Garcia. The Air Force then deployed four additional B-52s to Diego Garcia. These actions, plus the deployment of F-117 and F-16 aircraft, a heavy brigade task force, and a second aircraft carrier to the region, created a deterrent effect. Iraqi forces stood down and withdrew into garrison over the following weeks. After a month of conventional alert, the bombers returned to Barksdale AFB. These two

⁷³ Peters and Ryan, 3.

⁷⁴ John T. Correll, “On Course for Global Engagement” *Air Force Magazine* 82, no. 1 (January 1999): 26.

examples of power projection were exactly the quick reaction force presence model *Global Reach*—*Global Power* had emphasized. However, later deployments continued to increase in length in order to meet the RCC's requirement for forward presence rather than the Air Force's promise for rapid force projection.

Operation Desert Thunder constituted the next step in increasing demands for bomber presence. In the fall of 1997, Iraq violated the no-fly zones, threatened to shoot down U2 reconnaissance over-flights and interfered with United Nations weapons inspector teams. In response, the United States deployed twelve B-52s to Diego Garcia to provide forward presence to coerce Iraq to comply with UN resolutions. Unlike previous force projection operations, Desert Thunder was a long duration deployment, over one year in length, requiring several rotations of B-52 units. Desert Thunder ended without achieving Iraqi compliance with UN resolutions. The deployment then became a part of Operation Desert Fox in December 1998, with a four-day strike targeted against Iraq's ability to manufacture, store, maintain and deliver weapons of mass destruction and its ability to threaten or otherwise intimidate its neighbors. Operation Desert Fox witnessed the first operational use of the B-1 as six B-1s deployed to the AOR for conventional strike missions into Iraq. Three B-52s remained on Diego Garcia after Operation Desert Fox, and became involved in Operation Allied Force in the European Command AOR only three months later, striking targets enroute to their new operating base in England.

Operation Allied Force required the deployment of twelve B-52s and five B-1s and provided another example of force projection and global mobility. The bomber forces started to build-up in theater in February 1999, only two months after Desert Fox, and played a vital part in Allied Force until its end in June 1999. Moreover, for the first time, the United States employed a B-2 from its home base in Missouri. The B-2 proved the sensation of Allied Force as it flew global power missions and employed the new GPS-aided munition.

The transition from a CONUS-based bomber response force ready to respond to the nation's global warfighting or presence requirements to forward

presence happened slowly over the past decade. While the transition has been incremental, the reality of bomber operations after September 2001 has induced an unsustainable operations tempo given the current dependence on forward presence and current bomber organization. There are at least three possible options to alleviate this problem. First, the Department of Defense could return to a stricter adherence to *Global Reach—Global Power*, in which CONUS-based bombers satisfy the requirements for global presence. Second, the Air Force could return to a position of forward defense, with bombers permanently assigned to a forward main operating base to alleviate the need for rotational bomber employments. Finally, the Air Force could reorganize the bomber forces internally to better meet the steady-state requirement of the AEF for two independently capable bomber fighting units available for simultaneous deployment during each vulnerability period.

In order to be viable, each of these options must meet the dual requirements of power projection: presence and warfighting. Presence is the posturing of military capability to deter an actor or affect a situation. Warfighting is the direct application of military force to compel an adversary.⁷⁵ In other words, a viable solution must offer a viable deterrent force. In cases when deterrence fails to achieve the objective, the force must provide the warfighting capability to meet the RCC's objectives.

Adherence to Global Reach – Global Power

The first option of stricter adherence to the assertions of *Global Reach—Global Power* would return the Air Force posture primarily to a CONUS-based bomber force with a few, short-term global deployments necessary to emphasize the importance placed on a specific situation by the United States. While this option would resolve the bomber's unsustainable operations tempo, it would be

⁷⁵ Fogleman and Widnall, "Global Presence," 94.

unacceptable to the RCCs since it fails the dual criteria of presence and warfighting.

The Goldwater-Nichols Act of 1986 reorganized the Department of Defense and placed the authority for regional shaping and warfighting in the hands of the RCCs. This limited the service components to the task of providing forces to meet RCC requirements. In this system, the RCCs request the forces they deem necessary to complete their mission, the Secretary of Defense approves these forces, and the services supply them. Therefore, to implement this option—relying primarily on a CONUS-based bomber force—the RCCs would have to be convinced that bombers could provide an effective deterrent force from intercontinental distances. Reviewing operations over the past decade, it becomes apparent that the RCCs do not believe regional adversaries are persuaded by the long-range deterrent aspects of *Global Reach—Global Power*.

The Cold War nuclear standoff created an environment suited for the deterrent power of long-range strike. The enemy was known, the targets were fixed, and the enormous potential of nuclear annihilation made the threat of nuclear bombers on alert believable. All of these factors combined to make CONUS-alert nuclear bombers a viable deterrent force. Even today, the deterrent power of nuclear retaliation remains effective against potential adversaries. An often cited example of this occurred just prior to Desert Storm. At this time, the Iraqis had armed nearly 200 SCUD warheads and bombs with chemical and biological agents for use against the coalition.⁷⁶ However, on the eve of Desert Storm, Secretary of State James Baker met with Iraqi Foreign Secretary Tariq Aziz to impress upon the Iraqi government that any use of nuclear, biological or chemical (NBC) weapons against coalition forces would result in an overwhelming response. In late 1995, Iraqi leadership admitted they took this too mean the United States would retaliate with nuclear weapons

⁷⁶ National Defense University, *Strategic Assessment 1996: Elements of U.S. Power*, n.p. on-line, Internet, 21 Feb 2005, available from <http://www.ndu.edu/inss/Strategic%Assessments/sa96/sa96ch16.html>.

against Iraq, and this deterred them from employing their NBC weapons during the conflict.⁷⁷

But CONUS-based bombers armed with conventional weapons may not have the same deterrent effect as the same planes loaded with nuclear weapons. There is a quantum reduction in weapons effects between nuclear and conventional weapons—even with the improved accuracy of conventional munitions. A moderately sized nuclear weapon of 1-megaton yield still has a million times more explosive power than a 2,000 lb. JDAM, and every adversary recognizes the ability of nuclear strikes to deny their ability to reach their objectives or even to threaten their existence. At the same time, recent history is replete with examples of long-range conventional strikes that failed to significantly alter a situation. For instance, while the long-range strikes of Operation Desert Strike, Operation Desert Fox, and the simultaneous cruise missile attacks on the Sudan drug factory and Al-Qaeda training camp in Afghanistan demonstrated United States' resolve, the long-term deterrent effects on each of the actors proved insignificant.

Moreover, deterrence depends on the adversary's belief that you will exercise your threat if they do not meet your demands. For CONUS-alert to be persuasive, the adversary has to believe that the United States is ready and willing to unleash an immediate, overwhelming response. Yet, the United States typically escalates in a linear manner without immediately employing long-range strike. Therefore, before it is apparent that the United States is willing to act, adversaries expect preemptory actions, such as a deployment forward of a strike force. In addition, while alert status reduces response time, it does not significantly increase the force's ability to conduct sustained conventional operations in a region. Sustained conventional operations require forward deployment to shorten sortie durations, and this requires significant logistical support. Given this demonstrated escalation method, adversaries know they can wait for more significant action, such as forward presence, prior to responding to our nation's deterrent or compellent threats.

⁷⁷ National Defense University, n.p.

A review of deterrence theory strengthens these assertions. In the early 1980's recognized experts in the political science field completed a study of fifty-four cases from 1900 to 1980 in which a third party attempted to deter action by an aggressor against an ally.⁷⁸ The study found that presence matters. It also found the factors that made the most significant contributions to deterrence included trade, military assistance, and 'local' military balance. Two of these factors justify the effectiveness of forward presence. First, moving forces to the region demonstrates military assistance. Second, the presence of actual forces in theater affects the local military balance.

Today, in the real world, PACOM is using similar justifications to declare that location matters for deterrent capability. The current forward deployment of bomber units to Guam is a byproduct of the recognition that CONUS-based alert bombers provide inadequate deterrence, and that forward presence is required. Recently, the Air Force questioned PACOM's requirement for continuous forward presence and offered CONUS-based alert as an alternative. But PACOM maintained their position. In this case, PACOM contended only forward presence is persuasive in the minds of potential adversaries. Not only is forward presence persuasive as a statement of national will, but the increased warfighting capability represented by forward-deployed bombers provides a tangible improvement to support other potential PACOM operational requirements. Therefore, an increased adherence to the concept of *Global Reach—Global Power* fails to meet the RCC's presence requirements.

Stricter adherence to *Global Reach—Global Power* also fails the warfighting requirement of power projection. Returning to a CONUS-based alert force, without making any changes to the bomber force structure, does not alter the bomber force's ability to provide warfighting requirements. The fact is that the current bomber force structure is designed to support a CONUS-based alert construct, and this is exactly what has caused the current problem inside the AEF construct. The RCCs have recognized the benefits of operating bombers in

⁷⁸ Paul Huth and Bruce Russett, "What Makes Deterrence Work? Cases from 1900 to 1980" *World Politics* 36 (July 1984): 496-526.

theater, even during periods between crises. The current bomber force structure cannot support the required deployment rate, which the Air Force has defined as a 1:4 ratio. Ultimately, an attempt to return to a stricter adherence to the concepts of *Global Reach*—*Global Power* restricts future use of bomber forces to either ineffective long-range deterrence through conventional alert, or a continuation of the current problems associated with an unsustainable operations tempo. Therefore, since returning to the historic mission of CONUS-based alert is not a viable option, the Air Force must adjust the bomber force structure to better meet the RCC's two-fold requirements of presence and warfighting.

The Air Force can choose between two frameworks to improve the organization of bomber force structure to meet power projection requirements better while reducing the operations tempo to a sustainable rate: either a geographic reorganization or an internal reorganization of bomber force structure. Both of these options address the two-fold requirement of power projection. The geographic reorganization achieves this by forward basing a portion of the bomber force while maintaining the sizing of current bomber squadrons; the internal reorganization reduces the squadron size in order to create 10 fighting units to match bomber force structure to AEF requirements.

Permanent Forward-Based Unit

If properly located, permanent forward basing of a bomber unit would reduce the steady-state requirement from two simultaneous deployments during each AEF vulnerability period to one. As shown in Figure 7, the forward-based unit would provide the power projection requirements of a second bomber unit of an AEF pair. Within the AEF structure, this would reduce the requirement from 10 independent bomber fighting units to six. The forward-based bomber unit would provide continuous coverage of one-half of each AEF pair, while the five CONUS bomber units would provide a flexible, power projection capability for each AEF pair—much like the 3rd Wing at Barksdale in the 1930s provided the necessary swing force in the GHQ Air Force construct.

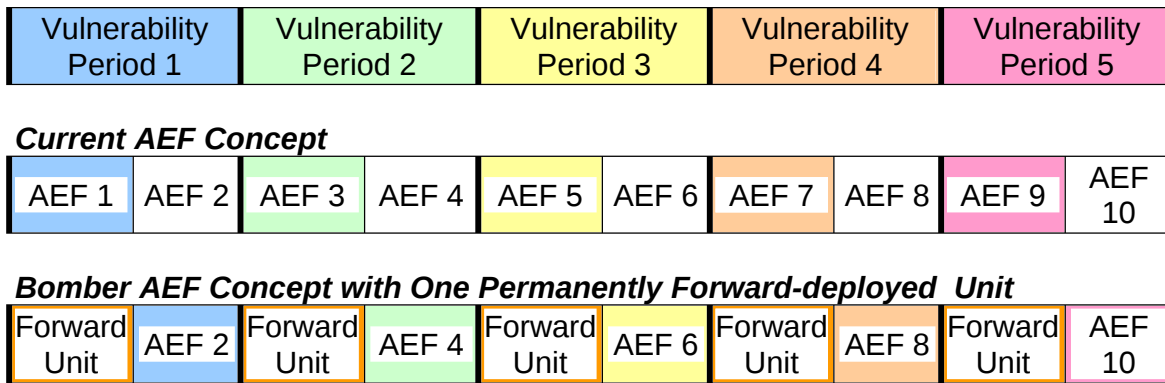


Figure 7: AEF Alignment Options.

As long as one of the forward presence/warfighting requirements during each AEF vulnerability period was within the region of the forward-based unit, the current six active bomber squadrons of 12 combat coded aircraft could meet the sub-surge requirements of the AEF.

Several disadvantages offset the apparent simplicity of this reorganization option. First, the inherent inflexibility of the permanently forward-based unit reduces the long-term viability of this option, especially considering the significant one-time costs of creating the permanent base support necessary for a forward-deployed unit. In addition, the forward-based unit loses its ability to gain the long-term force sustainment advantages inherent in the rotational aspects of AEF concept. Finally, if the requirement for simple presence expands to include force projection missions, the single, forward-based unit could find itself in an unsustainable operations tempo without any prospect for relief.

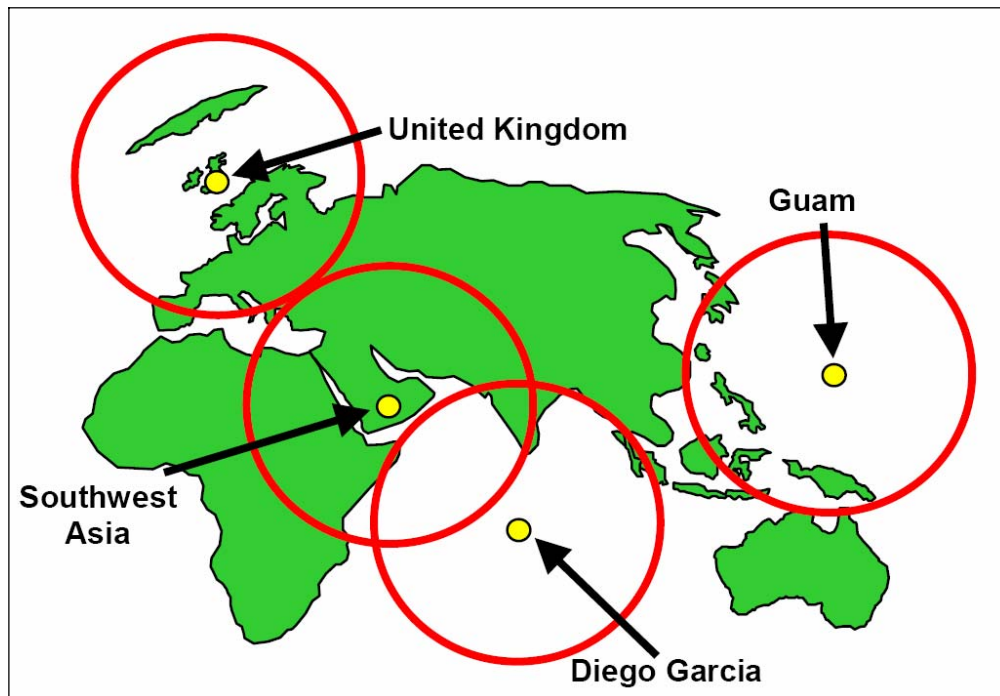


Figure 8: Typical Bomber FOLs and Unrefueled Combat Radii.

SOURCE: US Air Force, *USAF Long Range Strike Aircraft White Paper*, 2001

As future threats create shifting regional requirements, the Air Force may find the significant one-time costs of creating a permanent forward-based bomber unit wasted as power projection requirements shift to regions beyond the influence of the permanent forward base. While current threats indicate a persistent requirement for forward presence in the Middle East and Asia/Pacific regions, Figure 8 shows that a single base in either region may not be located optimally for any future threat in those regions. Another concern is the limitations imposed by sovereign countries in which these potential basing locations exist. Of the four bases depicted in Figure 8, only Guam is a United States territory. For the remaining locations, a sovereign government will require approval authority of all bomber operations initiated from their territory, which could severely limit the effectiveness of the forward-based bomber unit. These factors suggest that an evolving threat scenario could negate the positive aspects of the permanent forward base. In effect, a forward-based bomber unit may well place too many of the Air Force's bomber resources in the wrong place at the wrong time.

The AEF concept does more than provide a tailored power projection force for the RCCs. The second justification involves the force sustainment advantages gained through the rotational aspects of the AEF concept. The predictability of the limited vulnerability window (four out of every 20 months), allows the units to accomplish the day-to-day administrative and training requirements during non-vulnerability time. These activities, such as qualification training, continuation training, professional military education, and personnel leaves are necessary to maintain a ready force. Furthermore, during the two months prior to the vulnerability window, all of the units associated with the AEF are dedicated for preparation training. This training allows the force to optimize its readiness for the coming vulnerability period through focused training and force integration during preparatory exercises. However, due to the continuous presence requirements associated with the permanently forward-based unit, it would not be able to take advantage of these training opportunities

As long as simple forward presence of the bomber force satisfied the RCC's requirements, the forward-based unit could pursue the standard training and administrative requirements of force maintenance. However, if the mission expanded to require operational missions to provide power projection within the theater, the forward-based unit could find itself in an unsustainable operations tempo without prospect for relief. As soon as an RCC increases the power projection requirements of the forward-based unit beyond simple presence, the requirement for relief of the forward-based unit would force the Air Force to create a rotational deployment plan. This requirement would create within the bomber force a worse situation than is currently occurring, since only five rotational bomber units would be available to cover the requirements of five AEF pairs. Thus, the only viable option seems to be the reorganization of the bomber force to better align with the AEF construct.

AEF Alignment

The Air Force must align the bomber force structure with the AEF construct to gain both advantages of the AEF—force presentation and force

management—and to meet both RCC requirements—presence and warfighting. The causal factor in the bomber's unsustainable operations tempo is the Air Force's failure to organize and resource the bomber force structure to match the AEF construct. Initially, this will require the Air Force to organize the bomber force into 10 independently capable UTCs, each comprised of 10% of the capability of the combat coded bomber force. An option exists to maintain the current organization of two UTCs per squadron. However, as mentioned earlier, this defies the basic organizing principles of a military unit: unity of command and unity of effort. Therefore, the Air Force should organize and resource these 10 units as squadrons, assigning each to an AEF. This organization would provide 20% of the combat capable force, 16 B-1s or B-52s, for employment during any AEF vulnerability period. Assuming the RCC requirements for bomber forward presence since Operation Iraqi Freedom (continuous forward deployment of 14 B-1s or B-52s) will continue into the future, the current bomber force could meet requirements given this new organization within the AEF rotational schedule

Reorganizing the bomber force to align with the AEF construct allows the bomber force to provide both presence and warfighting capability in two different regions simultaneously while maintaining a sustainable operations tempo. Furthermore, while the long-term costs of continuous rotational deployments exceeds that of a permanently forward-based unit(s), the inherent flexibility in the AEF construct is worth the potential added cost. Finally, as this option adheres to the AEF construct, it also allows the bomber force to take full advantage of the long-term force sustainment inherent in a rotational deployment construct.

By aligning the bomber force with the AEF construct, the bomber force can provide continuous steady-state presence or warfighting capability in two regions. As a force presentation model, the AEF provides RCCs a selection of deployable force capabilities. At a steady-state level (less than two simultaneous AEFs deployed forward), the RCCs select from the available capabilities within the two on-call AEFs for forward deployment to provide either presence or warfighting capabilities. If RCC requirements exceed the capability provided by

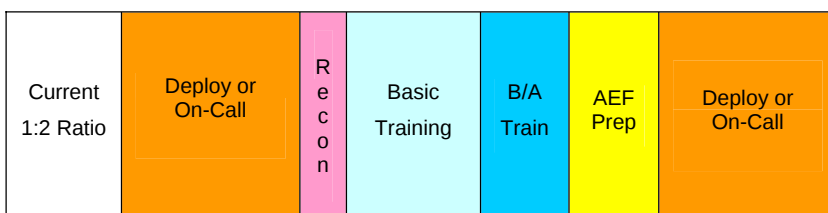
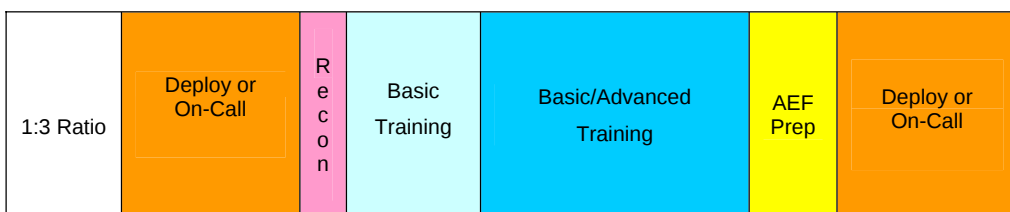
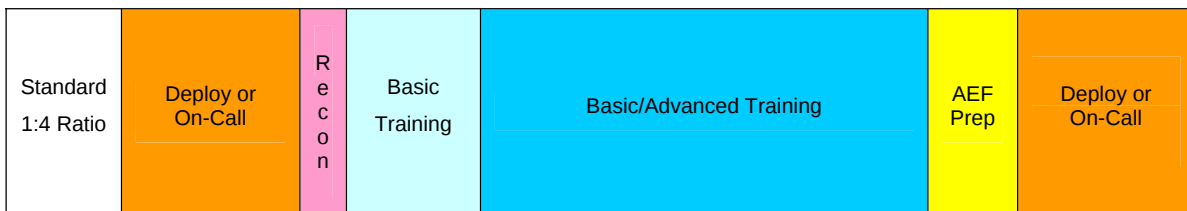
two AEFs, the AEF provides a seamless method to accelerate air force operations to surge levels.

Flexibility constitutes another advantage of alignment with the AEF construct over the establishment of a permanent forward-based bomber unit. In the short term, the costs of establishing a permanent forward base exceed the costs of rotational deployments. If the requirement for bomber operations remains continuous for several years within reach of this forward base, the economies of scale enable the forward-based unit to become more economical. However, there is an off-setting cost inherent in establishing a permanent forward-based unit, flexibility. If future areas of interest shift away from the permanently-based bomber force, the permanent forward-based unit might lose effectiveness. But an inherent advantage of the AEF organization involves its ability to respond to the shifting requirements without any additional costs.

Bomber force alignment within the AEF construct allows the bomber force to take advantage of the inherent force sustainment opportunities of the rotational deployment construct and this is perhaps the single most important advantage. The steady-state AEF rotation rate of four months of deployment vulnerability followed by 16 months of reconstitution, basic training, advanced training, and AEF preparation training offers a sustainable operations tempo (1 vulnerability period: 4 training periods). This rate of rotation provides enough time to ensure sustainable bomber operations. By providing significant amounts of training time between vulnerability periods, the squadron can accomplish all training and personnel actions necessary to maintain a combat ready force over the long-term. As seen in current bomber operations, bomber units incur long-term sustainability costs when rotation tempos increase above this ratio. An increased rotation rate is entirely acceptable during intermittent periods requiring higher operations tempos, such as Operations Allied Force, Enduring Freedom and Iraqi Freedom. However, when steady-state operations require the force to maintain the current rotation ratio (1:2) indefinitely, the bomber force is unable to maintain long-term sustainability.

The advantage of aligning the bomber force with the broader organizational construct of the Air Force is important. In their current alignment of six fighting units covering 10 AEF vulnerability requirements, the bomber force loses the predictability and training opportunities presented through the standard AEF rotation plan. Since a 1:2 rotation rate is substantially higher than the required 1:4 rate, the standard bomber squadron is unable to accomplish all administrative and training requirements during the much shortened training period. Bomb squadron commanders addressed this problem in their training reports last fall. One squadron commander stated that future AEF rotation requirements would negatively affect his ability to meet training requirements and another commander stated that there was no way that he could project his ability to accomplish future training requirements.⁷⁹

J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
A	E	A	P	A	U	U	U	E	C	O	E	A	E	A	P	A	U	U	A	E	C	O	E
N	B	R	R	Y	N	L	G	P	T	V	C	N	B	R	R	Y	N	L	G	P	T	V	C



⁷⁹ Air Combat Command (ACC) Bomber Squadron Ready Aircrew Program (RAP) Reports, ACC/DOT, interviewed by author, 25 January 2005.

Figure 9: Deployment Ratio Impact

Figure 9 shows that as deployment ratios increase, training time decreases, since all of the other requirements are fixed. Over the same period of five years, the standard 1:4 ratio provides a squadron with three training periods of 13 months each, for a total of 39 basic and advanced training months out of every five years. In contrast, the 1:2 ratio only provides a squadron with 25 months of basic and advanced training. Furthermore, this increased ratio spreads the training across five training periods. The result is twofold: less training opportunities and a reduced opportunity to advance to the most difficult training. The most significant effect is the reduction in advanced training. While on deployment, aircrews typically specialize in only a small percentage of the combat capabilities in which they are required to remain proficient. Upon return from deployment, crews must regain proficiency in several mission areas. In addition, the training program nested in the AEF construct suggests a step-wise advancement from basic to advanced and finally to AEF preparation training. A shortened training period prematurely ends this step-wise advancement, leaving the crews without the desired, and sometimes required, level of proficiency prior to their vulnerability period. In sum, increasing deployment ratios and thus reducing training time directly results in reduced combat capability. Over the long-term, this slow decline in combat capability cascades through the force as even the instructors lose the level of proficiency and knowledge once held as a standard.

Again, the difficulties presented by surge operations are acceptable over the short-term. However, the problems incurred due to continuous surge operations since October 2001 reduces the long-term sustainability of the force. Initially, this suggests that the Air Force has not sized the bomber force correctly for the task. However, if the Air Force reorganized the current B-1/B-52 force of 80 combat coded bombers to match the AEF construct by creating 10 independent combat units, the bomber force would meet the current steady-state requirements. While maintaining a 1:4 deployment ratio would solve the current

sustainability problem, it would also align the bombers with the rest of the Air Force and retain flexibility to confront future realities. Adherence to the AEF construct also allows the bomber force to take full advantage of the rotational aspects of the AEF. The most important gain is in the ability of the squadrons to accomplish a complete cycle of basic, advanced, and AEF preparation training between vulnerability periods.

Table 6: Current B-1 and B-52 Force Structure

	Squadron	Combat Coded Bombers
B-1	Dyess – 9BS	12
	Ellsworth – 34 BS	12
	Ellsworth – 37 BS	12
Total B-1s:		36
B-52	Barksdale – 20 BS	12
	Barksdale – 96 BS	12
	Minot – 23 BS	12
	Barksdale – 93 BS (AFR)	8
Total B-52s:		44
Total Combat Coded B-1s and B-52s:		80

SOURCE: ACC/DRA, interviewed by author, 17 March 2005.

The creation of 10 independent, bomber UTCs aligned with the AEF will require the reorganization of the current bomber force and an investment in resources. As shown in Table 6, the current bomber force structure is comprised of three combat coded B-1 squadrons and three active and one reserve combat coded B-52 squadrons. Given the current force structure, the most viable course of action involves creating four B-1 squadrons and six B-52 squadrons. In order to meet this goal, the Air Force would need to add an additional squadron of B-1s, for a total of four B-1 squadrons with eight aircraft each. This would reduce the required number of combat coded B-1s by four aircraft. The Air Force could add these to the B-1 attrition reserve, or retire the aircraft and use the savings to offset the required increase in the B-52 fleet. The reduction in the number of combat coded B-1s is due to the fact that the costs associated with recapitalizing the retired B-1s are prohibitive. However, the B-52 force has several extra

airframes that the Air Force could integrate into an expansion with a minimal amount of investment.

The active B-52 fleet is comprised of three combat-coded squadrons. To achieve the goal, the Air Force would need to create three additional active B-52 squadrons, resulting in a total of six B-52 squadrons with eight aircraft each. The 17 B-52s stationed at Minot AFB that are in excess of the required B-52 attrition reserve would provide a relatively inexpensive solution to this problem. As the Air Force already maintains these aircraft, it could re-code 12 of them as combat-coded aircraft with modest additional funding. The addition of 12 B-52s to operational status would require an additional \$407 million for sustainment costs.⁸⁰

The reserve unit at Barksdale provides another possible source for B-52 airframes. Although this unit represents additional capability, its inability to support 120-day AEF rotations make it of limited use in the AEF construct and leaves its airframes underutilized. Three solutions could mitigate this problem. First, the Air Force could activate the reserve unit's eight combat coded aircraft in order to provide the assets and resources for one of the new squadrons. Second, the Air Force could earmark the reserve B-52 squadron as a ready-reserve outside of the AEF construct. However, this solution does not integrate the reserves and the active force into a single air and space force in peacetime and wartime as intended by the Total Force Policy.⁸¹ Finally, a more radical change would be to incorporate the B-52 reserve unit into the B-52 Formal Training Unit (FTU), and use the offsets from this move to aid the funding of a new active B-52 squadron. This last option would allow complete integration of the B-52 reserve unit, while reducing its deployment requirements. The major roadblock to this move involves the nuclear mission requirement for the B-52 FTU that would make it difficult to integrate a reserve unit. However, recent reports indicate that a significant reduction in U.S. operational nuclear weapons

⁸⁰ Chief of Staff of the AF Briefing, ACC/LG, subject: Making Bombers Expeditionary, 15 Mar 2005, 15.

⁸¹ Gen Michael E. Ryan, *The Future Total Force* (Arlington, VA: HQ/USAF, 1998), 4.

could occur in the near-term, thus alleviating the need for the B-52 FTU to maintain a concurrent nuclear mission.⁸²

The really difficult requirement is the additional spares kits and personnel the new squadrons would require to be independent UTCs. In an initial report, Air Combat Command estimated that the one B-1 spare kit would cost \$128 million and the three B-52 spare kits would cost \$207 million. As for additional personnel, the B-1 unit would require the addition of 85 people and the three B-52 units would require 1,075 people. The personnel estimates include a broad range of manpower, including maintainers, operators and base support personnel.⁸³

Although the costs of bomber force restructuring are significant, it results in a truly expeditionary bomber force. The retirement of four B-1s plus the integration of the eight aircraft reserve unit would provide significant offsets for the creation of an expeditionary bomber force. Even if the number of combat-coded bombers remain the same, the investment in resources and reorganization would result in 10 independently deployable UTCs matched to support AEF requirements. Furthermore, this solution would reinstitute the critical aspects of unity of command and effort through the creation of 10 squadrons with the resources and leadership to focus on a single mission, supporting the RCCs requirements through the AEF construct.

Conclusion

Starting with General Arnold's first vision statement in 1945, the basic vision of the air forces has remained relatively consistent. The consistent theme centers on the assertion that the air force has the unique ability to provide global

⁸² Elaine M. Grossman, "U.S. General: Precise long-range missiles may enable big nuclear cuts," *Inside the Pentagon*, 29 Apr 2005, n.p., on-line, Internet 29 Apr 2005, available from <http://aimpoints.hq.af.mil/display.cfm?id=3143&printer=yes>. The plan is to reduce the operational strategic nuclear warheads from the current 4500 to 1500-2200. In addition, the *Treaty Between the United States of America and the Russian Federation On Strategic Offensive Reductions* was ratified by the Senate in March 2003. This treaty states that by December 31, 2012 the aggregate number of strategic nuclear warheads will not exceed 1700-2200 for each party.

⁸³ Chief of Staff of the AF Briefing, ACC/LG, subject: Making Bombers Expeditionary, 15 Mar 2005, 15.

reach. Using this capability, air forces will be able to deal with a crisis in its early stages and, if air forces arrive early enough, it may resolve the crisis without the need to deploy other forces. With the end of the Cold War, the Air Force re-emphasized *Global Reach—Global Power* as an organizing construct to deal with an uncertain world. However, since the issuance of this vision statement in 1990, the requirements for operational and tactical presence have slowly increased the global deployment requirements for bombers to an unsustainable rate.

The Air Force embraced the AEF construct specifically to combat the problem of unsustainable fighter deployment rates stemming from Operations Northern and Southern Watch. The Air Force broadened the AEF construct across the force as a force presentation model to the RCCs and to increase force maintainability through predictability. The original founding requirement of the AEF construct had virtually no requirement for bomber presence, so the bomber forces were not organized to match the AEF construct. The increasing requirement for bomber forward presence has now highlighted this mismatch in bomber force organization in the AEF construct. Similar to when Operations Northern and Southern Watch (ONW/OSW) motivated the Air Force to embrace the AEF construct and resource tactical fighter units, the current unsustainable deployment rate for bombers should provide the necessary impetus to find and implement a long-term solution for bomber force structure.

This chapter considered three solutions. Returning to a *Global Reach—Global Power* construct—in which bombers provide global presence from CONUS—does not meet the RCC's two-fold requirement of presence and warfighting. Therefore, either an external or internal reorganization of the bomber force is necessary to gain the advantages of the AEF construct: force presentation and force maintainability. The Air Force could implement an external reorganization through the permanent, forward basing of a bomber unit in order to provide continuous presence in a region that it predicts will require long-term rotational deployments to maintain presence. But this is to place a bet at the Roulette table. If the global situation evolves to make the permanently-

based unit outside an area of concern, the Air Force will have lost the benefits and still incurred the large costs necessary to create a permanent base. In addition, any time the RCC requires more than simple, operational presence in the region, the forward-based unit would incur an unsustainable operations tempo. Moreover, permanent forward basing does not take advantage of the rotational benefits of the AEF construct and over the long-term it fails to confront the structural problems of the bomber force.

The Air Force designed the AEF to confront this problem. One of the fundamental concepts of AEFs is that AEF pairs allow the Air Force to deploy, at a minimum, two independent Air and Space Expeditionary Task Forces (AETFs) during any AEF vulnerability period. Reorganizing the bomber force structure to match the AEF framework provides a solution that both secures the advantages offered by the rotational aspects of the AEF while providing two, independently deployable bomber units for each AEF vulnerability period. In order to maintain unity of effort, organizing along the AEF construct is a requirement regardless of the presence of an unsustainable deployment rate. However, the presence of an unsustainable deployment rate should motivate the Air Force to organize and to resource its bomber units so they can provide their unique capabilities in support of the Air Force mission for the long term. The Air Force currently has enough bombers to cover the steady-state deployment requirements with a sustainable deployment rate if the Air Force would reorganize and resource the bomber forces within the AEF construct.

Conclusion

The Air Force instituted the AEF construct in 1999 to improve force presentation and force management. Although the construct has proven useful in attaining these goals, the assumptions made concerning bomber force structure at the inception of the AEF combined with an increasing requirement for bomber operations have resulted in an unsustainable deployment rate for the bomber force. In 1999 the driving force behind the majority of deployments involved the dual requirements of Operations Northern and Southern Watch (ONW/OSW) and the effects of these operations on the fighter community. Since these operations required little bomber support, the Air Force chose to concentrate on organizing and resourcing other heavily tasked units, such as fighter squadrons, in line with the AEF construct. However, the requirement for forward deployments of bomber units has steadily increased over the past decade, with a significant increase in steady-state requirements since October 2001. The fact that the Air Force failed to align the current bomber force structure with the AEF has meant surge operations for bomber units for over three and one-half years. The current situation demands a solution and requires the reorganization and resourcing of bomber units to sync up with the AEF construct.

The pursuit of an improved expeditionary capability and better force management has been a continuous thread in Air Force history. The earliest example of U.S. air force's expeditionary operations occurred during the Punitive Expedition in pursuit of Pancho Villa in 1916. Although the expedition's air operations proved less than stellar, the results inspired Congress to increase funding to improve future expeditionary operations. The creation of the GHQ Air Force in 1935 enabled a rapid concentration of forces necessary to confront an attack and provide for the initial defense of the United States as the other arms

mobilized. Moreover, the GHQ Air Force created a semi-independent air arm that allowed airmen to improve their ability to manage the air forces. During the critical interwar years, this relative autonomy was critical to the creation of the doctrine necessary to enable the successful World War II air operations. Shortly after the Korean War, the Air Force recognized the criticality of an improved expeditionary capability necessary to confront the changing global environment. With the Cold War reduced to a nuclear stalemate, the Air Force sought a capability for responding rapidly to smaller crises around the world. Tactical Air Command (TAC) recognized this requirement and created the Composite Air Strike Force in 1957. Under this construct, 19th Air Force provided the standing headquarters that prepared for contingency operations around the world. TAC assigned units to support these contingency operations from other numbered Air Forces and then provided them the resources necessary to support potential deployments. Beyond providing a rapid reaction force, the CASF also provided a construct for surge operations. In addition, the CASF provided a framework for force management within TAC, until the national military strategy deemphasized the importance of expeditionary operations after the Vietnam War.

In a similar way, The Air Force implemented the AEF construct in response to a changing national military strategy after the Cold War. Increasing requirements for expeditionary operations combined with decreasing force structure drove the Air Force to design a new construct to confront steady-state requirements, to accelerate operations to gain the advantage in crisis, and to manage the force. ONW and OSW provided the framework for the AEF construct with an initial emphasis on improving the expeditionary capability of fighter forces. However, increasing forward deployment requirements for bomber units and the changing strategic environment have now shifted the focus to bomber force structure.

The increase in bomber deployments did not occur instantaneously on September 11th. Starting in 1994, the RCCs began to call on bomber units for forward deployments of increasing length. After September 11th, the RCCs dramatically increased requests for forward deployment of bombers. These

requirements have forced bomber units into maintaining an unsustainable deployment rate. In effect, the bomber forces have been in surge operations continuously since October 2001. The long-term results of surge operations are becoming evident in the bomber force through reduced combat readiness and aircraft maintainability.

The highest levels of the Air Force have recognized the need to make the bomber force truly expeditionary. This paper examined two possible solutions. The first framed the problem as a shortfall in capabilities. Using the historic paradigm of bomber capabilities—bomber operations limited to long-range strike, where the only consideration is targets attacked per sortie—an increase in capabilities offers the possibility for a reduced number of airframes. Therefore, the unsustainable deployment rate could be resolved by deploying fewer bombers to cover each requirement. The problem with this solution is that the definition of bomber capabilities has transitioned from simple target destruction to providing a vast array of capabilities for the RCCs. These capabilities, such as non-traditional ISR, CAS, alert-CAS, and alert-interdiction, all require tactical presence, which in turn requires more, not less, airframes. Moreover, many of these missions do not require kinetic attacks. Although increased capabilities assist in maintaining a combat capable force, the additional requirements of deployed bombers, especially tactical presence, prevents a capability-based solution from resolving the unsustainable deployment rate.

The second solution framed the problem as a shortfall in forward presence. Using this requirement for forward presence as guide, three options exist. First, the Air Force could reduce the deployment requirements by insisting on a closer adherence to the concepts included in *Global Reach—Global Power*. The Air Force organized and resourced the current bomber force for the Cold War mission, nuclear deterrence. For this mission, the bomber force maintained alert in the continental United States and was ready for deployment during crisis. When the Air Force published *Global Reach – Global Power* in 1989 as a transitional national military strategy for the post-Cold War era, it suggested that bombers could provide global deterrence through nuclear and conventional

readiness from their CONUS bases. Unfortunately, theory and practice do not indicate that CONUS-based conventional alert bombers provide an effective deterrence, nor are they capable of providing sustained effects in a theater. With these factors in mind, the RCCs have increasingly called upon bomber forces for continuous forward deployments—creating deployment demands that have degraded bomber sustainability. Therefore, a viable solution requires a move forward, not a return to the outdated concept of *Global Reach-Global Power*.

The second option, permanent forward basing of a bomber unit, would provide a short-term fix to the unsustainable deployment rate. However, the inherent inflexibility of such an option could leave the bomber force less able to deal with future crises. This would be especially disadvantageous if the area of concern moved beyond the reach of the forward-based unit. Furthermore, the forward-based unit would be unable to take advantage of the long-term sustainability inherent within the AEF 1:4 rotational deployment construct. In fact, whenever the RCC requires more than simple forward presence, the forward-based unit would enter a period of continuous operational flying requirements, without hope for any relief.

The third option, reorganization of the bomber forces to match the AEF construct, provides a solution that not only achieves the RCC's desired objectives, presence and warfighting, but it also creates the basis for a sustainable deployment rate for the bomber forces. Currently, the active bomber force maintains only six independently deployable units to support a 10 AEF construct. As soon as the RCCs require the bomber forces to maintain an expeditionary posture, defined as the ability to sustain two continuous, simultaneous bomber deployments, the bombers are forced into surge operations. Surge operations are appropriate when supporting significant operations, such as Operations Allied Force, Enduring Freedom, and Iraqi Freedom. However, they create long-term negative effects in the force if maintained for long periods of time. At present, it seems that the Air Force has sized the bomber force appropriately for supporting the RCC's steady-state requirements. However, inappropriate organization and insufficient resources

have turned these seemingly supportable requirements into continuous surge operations for the bomber force.

Recently, the Air Force deployed the B-52 reserve unit and a B-2 unit as a stopgap measure to relieve the other bombers units from a single AEF rotation. Since the reserve unit cannot support a 120-day rotation, the Air Force deployed them for 60 days, and directed the B-2 unit to cover the remaining 60 days of the deployment. While this relieved some of the pain of continuous surge operations on the bomber force, it does not offer a long-term solution to this problem. As demonstrated, the reserve unit is not capable of supporting a 120-day rotation and deploying them requires another bomber unit to cover the full rotation. Additionally, the Air Force took a risk by deploying the B-2s for an AEF rotation. The B-2s provides a unique capability—global strikes that remove critical threats to enable the rest of the joint force to accomplish their missions. The commitment of a B-2 unit to a single AEF deployment reduces its ability to support its broader, primary mission. Until the Air Force resolves the unsustainable bomber operations tempo, stopgap solutions may be necessary. However, for the long term, better solutions are available.

The current bomber force structure includes 80 combat-coded aircraft. If the Air Force reorganized these into 10 squadrons, with eight combat-coded aircraft per squadron, the bomber force could support the RCC's steady-state requirements within a sustainable deployment rate. This is exactly the problem the Air Force designed the AEF to resolve. This paper has suggested offsets, to include the retirement of four B-1s and the integration of the reserve B-52 squadron into the FTU, in order to allow for the reorganization. However, the critical shortfall has been in the shortage of the necessary spares kits that four additional independent UTCs would need. Another benefit of this reorganization is the reinstatement of the principles of unity of command and effort, through the creation of squadrons with the appropriate leadership and resources to support independent operations. Finally, the benefit of creating 10 independently deployable UTCs is grounded in the benefits of the AEF—enhanced force presentation to the RCCs and increased force management for the Air Force.

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