

THE NATION'S GUARDIANS
AMERICA'S 21ST CENTURY AIR FORCE



CSAF White Paper

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29 December 2007

We better be prepared to dominate the skies above the surface of the earth or be prepared to be buried beneath it.

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1. PURPOSE

This White Paper charts U.S. Air Force strategy for the next two decades and defines the Air Force's indispensable role in promoting and defending the national interest. In framing the strategic imperatives that face the United States and its Air Force, the paper lays out the urgent actions required to cope with today's and tomorrow's challenges. Accordingly, this White Paper is a definitive statement of Air Force intent to maintain its role as the guardian of America's freedom, security and prosperity—the Nation's force of first and last resort.

2. AMERICA'S GUARDIANS

Since the Nation's birth, it has been the constitutional duty of our military to ensure national survival, defend lives and property, and promote vital interests at home and abroad. To provide for the common defense, all of America's military Services strive for excellence in how they organize, train, and equip their forces to fight and win the Nation's wars. All are vital, interdependent components of a mighty joint team, united by a tradition of honor, valor, and devotion.

The Air Force exists to fly, fight and win—to achieve strategic, operational and tactical objectives—unhindered by time, distance or geography. The Air Force's mission is to “deliver sovereign options for the defense of the United States of America and its global interests—to fly and fight in Air, Space, and Cyberspace.” Thereby, jointly with our brothers and sisters in arms—Soldiers, Sailors, Marines, and Coast Guardsmen—we underwrite the national strategy of defending the Homeland and assuring allies, while dissuading, deterring and defeating enemies.

As the Nation's premier global, multi-dimensional maneuver force, the Air Force safeguards America by dominating the ultimate vantage of air, space and cyberspace. We provide *Global Vigilance*, *Global Reach* and *Global Power* in and through these domains.

- ***Global Vigilance*** is the persistent, world-wide capability to keep an unblinking eye on any entity—to provide warning on capabilities and intentions, as well as identify needs and opportunities.
- ***Global Reach*** is the ability to move, supply, or position assets—with unrivaled velocity and precision—anywhere on the planet.
- ***Global Power*** is the ability to hold at risk or strike any target, anywhere in the world, and project swift, decisive, precise effects.

With the oldest inventory in history, battered by 17 years of continuous combat, the Air Force's ability to fulfill its missions is already being tested. This is particularly true in cyberspace, seen by potential adversaries as a relatively inexpensive venue to offset our traditional advantages in air and space. Since the air, space and cyber domains are increasingly interdependent, loss of dominance in any one could lead to loss of control in all. Thus, superiority and freedom of action—the historically proven predicates of all joint operations, in all warfighting domains—cannot be taken for granted.

No modern war has been won without air superiority. No future war will be won without air, space and cyberspace superiority. Accordingly, the Air Force must be better postured to contend with both today's and tomorrow's challenges. To promote and defend America's interests through Global Vigilance, Global Reach and Global Power, the Air Force must attain cross-domain dominance. Cross-domain dominance is the freedom to attack and the freedom from attack in and through the atmosphere, space and the electromagnetic spectrum. It permits rapid and simultaneous, lethal and non-lethal effects in these three domains to attain strategic, operational and tactical objectives in all warfighting domains: land, sea, air, space, and cyberspace. Cross-domain dominance integrates systems, capabilities, operations, and effects in air, space and cyberspace to gain competitive advantage in any and all domains. It transforms our operational concepts to maximize synergy among air, space and cyberspace, thus generating a new array of simultaneous, synchronized effects.

Through cross-domain dominance, the Air Force grants joint freedom of maneuver in all warfighting domains: land, sea, air, space, and cyberspace. This, in turn, allows the Joint Force Commander to achieve desired outcomes across the full range of military operations: from humanitarian relief saving those in need, through preventing war via dissuasion and deterrence, to inflicting strategic paralysis on implacable opponents. Without the Air Force's ability to present this spectrum of capabilities to the joint team in peace, crisis and war, national security would be at risk.

3. THE STRATEGIC IMPERATIVE

History is replete with examples of militaries that failed due to their inability to transform organizations and culture, adopt new operational concepts, or leverage breakthrough technologies. But militaries do not fail by themselves. Failure occurs in the context of an overall, national debacle, caused by systemic problems that fall into three distinct but related categories: failure to anticipate, failure to learn and failure to adapt. In contrast, victory comes to those who foresee, recognize and act on changes in the strategic environment. To succeed—indeed, to avoid catastrophic failure—we must redefine the Air Force for the 21st Century.

In the wake of the Vietnam War, the Goldwater-Nichols DoD Reorganization Act of 1986 and the collapse of the Soviet Union, tectonic shifts in the global security setting prompted extensive changes in Air Force culture and structure. Organizational and technological transformation brought about a quantum leap in airpower's effectiveness—compellingly demonstrated in operations such as: DESERT STORM,

maintaining no-fly zones in Iraq through NORTHERN WATCH and SOUTHERN WATCH, ALLIED FORCE in the Balkans, ENDURING FREEDOM, and IRAQI FREEDOM, as well as in operations providing life-saving relief to victims of tsunamis, famines, earthquakes, and hurricanes. Our transformation objectives were uniquely suited to the strategic context of the time. The U.S. Air Force harnessed space and cyber capabilities as the catalysts of precision, stealth, speed, reach, and persistence that became the hallmarks of late 20th Century warfare. In the process, the entire joint team—indeed, the entire free world—became increasingly dependent on space, electronics and the electromagnetic spectrum as the indispensable pillars of freedom of action. Consequently, 21st Century airpower is not merely the *sum but the product* of air, space and cyberspace superiority. Loss of control in any one of these domains risks across-the-board degradation—if not outright failure.

Today's confluence of global trends already foreshadows significant challenges to our organization, systems, concepts, and doctrine. We are at an historic turning point demanding an equally comprehensive revolution. The future strategic environment will be shaped by the interaction of globalization, economic disparities and competition for resources; diffusion of technology and information networks whose very nature allows unprecedented ability to harm and, potentially, paralyze advanced nations; and systemic upheavals impacting state and non-state actors and, thereby, international institutions and the world order. The following are salient features of this increasingly complex, dynamic, lethal, and uncertain environment:

- Violent extremism and ethnic strife—a global, generational, ideological struggle
- Proliferation of weapons of mass destruction and empowering technologies
- Rising peer competitors with voracious appetites for resources and influence
- Predatory and unpredictable regional actors
- Increasing lethality and risk of intrusion by terrorist and criminal organizations
- Systemic instability in key regions (political, economic, social, ideological)
- Unprecedented velocity of technological change and military adaptation
- Availability of advanced weapons in a burgeoning global marketplace
- Exponential growth in volume, exchange and access to information
- Surging globalization, interconnectivity and competition for scarce resources
- Dislocating climate, environmental and demographic trends

4. 21st CENTURY WARFARE

These global dynamics are closely intertwined with the changing character of 21st Century warfare. Having experienced—or vicariously learned—the cost of challenging the U.S. head-on, would-be adversaries are developing asymmetric approaches to attack vital levers of U.S. power. Their strategies seek to circumvent our core advantages, while undermining international support and domestic resolve.

Airpower's unprecedented lethality and effectiveness deter opponents from massing on the battlefield, driving them to adopt distributed and dispersed operations. They find maneuver space and sanctuary in dense urban areas, ungoverned hinterlands and

loosely regulated information and social networks. These enemies pose a significant challenge to our freedom of action and threaten our interests at home and abroad. Their operations are difficult to constrain with traditional force-on-force approaches, compelling all Services to think anew about the challenges of irregular warfare.

Meanwhile, ascendant powers—flush with new wealth and hungry for resources and status—are posturing to contest U.S. superiority. These adaptive competitors are translating lessons from recent conflicts into new warfighting concepts, capabilities and doctrines specifically designed to counter U.S. strengths and exploit vulnerabilities. They are advancing in all domains. For example:

- “Generation 4-plus” fighter aircraft that challenge America’s existing “4th Generation” inventory—and, thus, air superiority—with: overwhelming numbers and advanced weaponry; sophisticated integration of electronic attack and advanced avionics; emerging low-observable technologies; and progressive, realistic, networked training
- Increasingly lethal, integrated air defense systems (IADS) that threaten both our Airmen and aircraft, and could negate weapons used to suppress or destroy these systems
- Proliferation of surface-to-surface missiles with growing range, precision, mobility, and maneuverability—capable of delivering both conventional and non-conventional warheads
- Proliferation of unmanned aerial systems (UAS) capable of conducting low observable, persistent, intrusive missions in both lethal and non-lethal modes
- Resurgence of offensive counterspace capabilities
- Increasing ability of even marginal actors to surveil the disposition of U.S. and allied assets through commercially available and widely accessible means
- Attacks through cyberspace are already creating tactical, operational and strategic effects at low cost and with relative impunity

Even if we continue to successfully dissuade and deter major competitors, their advanced equipment is proliferating worldwide. We are bound to confront these weapons systems wherever America engages to promote and defend its interests. We must also be vigilant to adversary breakthroughs in fields such as cybernetics, nanotechnology, biotechnology, electromagnetic spectrum physics, robotics, advanced propulsion, etc. We cannot assume that the next military revolution will originate in the West. Indeed, the hub of innovation in science and engineering education has shifted eastward. Therefore, we must anticipate innovative combinations of traditional and new concepts, doctrines, weapons systems, and disruptive technologies.

5. A STRATEGIC CROSSROADS

As a consequence of these global dynamics and shifts in the character of 21st Century warfare, we are at a strategic crossroads. The Air Force has aggressively pursued air dominance through focused, sizable investment in Airmen, aircraft, weapons, training and essential support structure—to include fundamental and applied

research. The investment has paid off; no U.S. ground forces have been attacked from the air since 1953. The Cold War was won through deterrence, backstopped by America's nuclear might. DESERT STORM is commonly called the "100-hour war"—that's how long the ground campaign lasted—because the preceding 1000-hour air war made it so. After the Iraqi army limped from the battlefield with sufficient capability to attack its own citizens, the Air Force imposed regional containment through Operations NORTHERN WATCH (to protect the Kurds) and SOUTHERN WATCH (to protect the Shia). Operation ALLIED FORCE, which compelled the Belgrade regime to bend to NATO's will and stop the slaughter of innocents, was won through airpower without the need for a costly ground campaign. Brutal dictatorships were toppled in Afghanistan and Iraq in record time, with many of the necessary effects accomplished from the air. However, the advantages that accrue from air dominance can no longer be taken for granted. Consequently, America's freedom of action in all warfighting domains—land, sea, air, space, and cyberspace—is no longer assured.

From this point forward, the Air Force should expect to be challenged not only in the air domain, but in and through space and cyberspace as well. In January 2007, China demonstrated the ability to hold satellites at risk and the willingness to contest the space domain. State and non-state actors are already exploiting cyberspace to gain asymmetric advantage. In April 2007, Estonia was the victim of a well-coordinated, far-reaching cyber attack which brought its technologically sophisticated government to a virtual standstill. Insurgents in Iraq, Afghanistan and elsewhere exploit electronics and the electromagnetic spectrum to kill and maim through improvised explosive devices (IEDs), while propagating their message of hate to the world. Thus, perhaps for the first time in the history of warfare, the ability to inflict damage and cause strategic dislocation is no longer directly proportional to capital investment, superior motivation and training, or technological prowess.

The Global War on Terrorism is a generational struggle we must win. The Air Force will continue to fly and fight in the various theaters of this war. At the same time, we owe the Nation a holistic approach that balances today's exigencies with the far-reaching, long-term implications of looming threats. America's Air Force will succeed in the 21st Century only by developing and resourcing a strategy that closes the gap between ends and means. The window of opportunity is shutting fast. Time is not on our side.

6. REDEFINING THE AIR FORCE FOR THE 21st CENTURY

The Air Force strategy is framed in terms of *ends, means, ways, and risk*. The *ends* are the objectives we must achieve. The *means* are capabilities and resources. The *ways* define how we employ the *means*. The essence of our strategy is to use required *means* in innovative *ways* to attain the desired *ends* with acceptable *risk*.

Ends: Protect Democracy and Guard Freedom

The Air Force's commitment to America's joint team is to provide forces proficient across the range of military operations to protect the United States, its interests,

values and allies; deter conflict and prevent surprise; and, should deterrence fail, prevail against any adversary. Airmen deliver global surveillance, global command and control, and the requisite speed, range, precision, persistence, and payload to strike any target, anywhere, anytime, in any domain—and assess the results. Global Vigilance, Global Reach and Global Power grant Joint and Combined Force Commanders the ability to safeguard the Homeland, assure allies, dissuade opponents, and inflict strategic dislocation and paralysis on adversaries—all while minimizing the loss of life associated with land warfare.

Ways: Global Vigilance, Reach and Power through Cross-Domain Dominance

Innovation, flexibility and integration are the hallmarks of all successful strategies. Airmen must develop creative solutions—ways—to gain and maintain superiority in air, space and cyberspace, exploiting the synergies of cross-domain dominance to attain a quantum leap in mission effectiveness. To this end, we must: refocus our organization and culture on the warfighting mission; implement advanced operational concepts to fly, fight and win in all domains; leverage game-changing technologies; and recapitalize our aging equipment.

Any organizational renaissance begins with people. We must prepare our Airmen for a future fraught with challenges, fostering their intellectual curiosity and ability to learn, anticipate and adapt. To this end, we are reinvigorating warrior ethos, revitalizing the world's most advanced training system and expanding 21st Century educational opportunities. Our expeditionary Airmen must be prepared to deploy and ready to fight. While we enrich our Airmen's culture, leadership, training, education, and heritage, we will care for their families and provide for their future.

We are committed to enhance Total Force Integration. We are developing concepts, strategies, force management policies and practices, and legal authorities to access sufficient Air Reserve Component forces without the need for involuntary mobilization. Though the Air Force is already the model for melding its Guard, Reserve and civilians with its active duty elements, we can and will push this synergy to new levels.

We must continue to inject Airman's global, inherently three-dimensional perspective into all levels of planning and execution. We will better prepare our officers for key joint leadership positions by bolstering cultural, language and academic skills—as well as practical experience—to ensure they are articulate airpower advocates, capable of fully integrating and leveraging our distinctive capabilities in joint and coalition arenas.

In an era of intense competition for resources, all Services must avoid unnecessary duplication and overlap in acquisition, procurement, manning, and operations. To this end, we will continue a series of cross-Service initiatives already underway with the aim of generating new joint synergies across all warfighting domains: land, sea, air, space, and cyberspace. We will also work with the rest of DoD to enhance collaboration and interoperability with the Department of Homeland Security, Department of State, the

Intelligence Community, law enforcement agencies, and other interagency partners to facilitate a more effective orchestration of all elements of national power.

America's strategic partnerships are more important than ever. Our Air Force will strengthen and broaden coalitions, capitalizing on the global community of like-minded Airmen, while attending to interoperability between allies and partners. Building these relationships not only expands, extends and strengthens Global Vigilance, Global Reach and Global Power, but also leverages airpower's value as an engine of progress and, thus, as a potent instrument of America's diplomacy in an increasingly interconnected world.

The U.S. Air Force is formulating innovative operational concepts to anticipate, adapt to, and overcome challenges. We are transforming our thinking from considering the space and cyber domains as mere enablers of air operations to a holistic approach that factors in their interdependence and leverages their unique characteristics. We must continue to push this conceptual envelope—and expand the boundaries of existing tactics, techniques and procedures—to fully exploit the synergies of cross-domain dominance.

We will accelerate the deployment of evolutionary and disruptive technologies, as we address the urgent need to recapitalize and modernize. We must bolster our advantage through continued investment in our own science and technology, as well as outreach and integration with industry, academia and think tanks. We will reform our procurement and acquisition system to ensure full transparency, open competition and adherence to operational timelines.

Means: Revitalizing the Air Force

The U.S. Air Force has been in continuous combat since 1990—17 years and counting—taking a toll on our people and rapidly aging equipment. While we remain globally engaged, we recognize the imperative of investing in the future through recapitalization and modernization. We must field flexible systems, capable of providing full-spectrum effects across the entire range of military operations, from a catastrophic attack on the Homeland, through major theater contingencies, to irregular warfare and humanitarian relief.

We must position the Air Force to secure America's superiority in all domains, including: appropriate mixes of stand-off capabilities; penetrating manned aircraft; enhanced cyber capabilities; advanced unmanned combat systems; operationally responsive space; and breakthroughs in fields such as electromagnetic spectrum physics, directed energy, nanotechnology, bioengineering, super-stealth, and hypersonics—all wedded to innovative concepts and superior training.

To meet current and future challenges, we will maintain a credible deterrent that convinces potential adversaries of our unwavering commitment to defend our Nation, its allies and friends. The U.S. nuclear arsenal continues to serve as the ultimate backstop

of our security, dissuading opponents and reassuring allies through extended deterrence.

As the demand for global intelligence, surveillance, reconnaissance, and communications continues to grow, our reliance on assured access to space will increase exponentially. The challenge is to find an affordable pathway to secure space—striking the right balance among hardening, countermeasures and reconstitution. We need to deploy high-altitude, high-speed, air-breathing systems to mitigate risks to space-based capabilities. The Air Force will continue to provide the entire joint team with exacting intelligence, surveillance and reconnaissance in air, space and cyberspace. We will also develop new concepts that merge sensors and shooters into a seamless, ubiquitous force that can permeate adversary defenses.

Throughout history, war-fighters at all levels have operated with limited information and constrained situational awareness. With advances in sensors, information sharing and network-centric systems, our operators are suffering the embarrassment of riches—they are, quite literally, struggling with information delivered at a velocity and volume far exceeding human ability to process and absorb. We must develop and field systems that are not just network-centric, but knowledge-centric. These systems process, filter and integrate data, presenting information in a format that enables quick, logical decisions. To this end, we will develop self-forming, self-healing networks that harness the power of machine-to-machine interfaces, freeing up human resources for activities where intellect and warrior spirit are indispensable.

In September 2007, the Air Force stood up Cyber Command to provide combat-ready forces, trained and equipped to conduct sustained operations in and through the electromagnetic spectrum, fully integrated with air and space operations. We will continue to develop and implement plans for maturing cyber operations as an Air Force core competency. Our objective is to provide flexible options to the decision-makers to deter, deny, disrupt, deceive, dissuade, and defeat adversaries through destructive and non-destructive, lethal and non-lethal means.

Soldiers, Sailors, Marines, and Coast Guardsmen share a sacred bond with Airmen: we will not leave a comrade behind. We are modernizing combat search and rescue forces to fulfill the moral imperative to locate, support and recover our joint warriors. The Air Force is committed to fielding a new combat search and rescue aircraft; advancing our rescue concepts of operation; and enhancing survival, evasion, resistance, and escape (SERE) training—all to ensure that the Air Force remains the premier combat search and rescue force for the entire joint team.

The Global War on Terrorism has highlighted the importance of specialized airpower to meet the requirements of Special Operations Forces. We will continue to provide aircraft, unmanned aerial vehicles, agile combat support, and trained personnel to meet Combatant Commanders' special operations requirements. Air Force Special Operations Command is establishing a new main operating base in New Mexico, with world-class training ranges and facilities to accommodate its growth. In addition, the Air

Force continues to refine tactics, techniques and procedures to enhance the synergies between airpower and Joint Special Operations Forces.

An enduring element of our national security strategy is to engage forward in peace, crisis and war. Accordingly, we must maintain a sufficient rotational base to sustain our forward-deployed and forward-based posture, as well as enhance our ability to project and protect those forces—a moral imperative and a military necessity. The Air Force will work with Combatant Commanders and partner air forces to secure basing and counter potential anti-access strategies. We will continue to develop new ways of projecting power without projecting vulnerabilities and design systems that facilitate reach-back, thus maximizing effects while minimizing forward presence.

Risk: Failure to Anticipate, Learn, Adapt

All strategic planning is based on a set of assumptions. Surprise occurs when core assumptions are proven wrong. To succeed, we must continually validate our strategy across the *ends, means, ways, risk* framework. We should not assume that future conflicts will resemble the current fight in Iraq or Afghanistan—lest we lose the ability to project global power, inflict strategic paralysis, deter nation-states, destroy their fielded forces, and defend our Homeland, its allies and friends.

For a nation whose security is predicated on an enduring strategy of dissuasion and deterrence, the most fundamental risk is failure of deterrence. Deterrence is a function of capability, will and credibility and, thus, exists in the eye of the beholder. Its success—or failure—is measured only in the breach. To mitigate the risk, we must retain a modern, secure and well-trained force and evolve new deterrence concepts. In particular, it behooves us to rethink concepts such as extended deterrence and conceive new ways to deal with actors who might be deemed “undeterrable” in the Cold War construct.

Strategic risk can also mount through the accumulation of shortfalls in recapitalization and modernization, stale operational concepts and failure to revitalize warrior ethos. Recapitalization is about more than replacing aging aircraft; it is about ensuring the combat effectiveness of all air, space and cyberspace forces. The success of the Air Force and the joint team depends upon the ability of our people and organizations to adopt new, relevant operational concepts, suitable to the dynamics of the strategic environment. Cross-domain dominance is essential to victory.

7. FROM HERITAGE TO HORIZON

Billy Mitchell’s appeal for strategic foresight still resonates today: "Nations nearly always go into an armed contest with the equipment and methods of a former war. Victory always comes to that country which has made a proper estimate of the equipment and methods that can be used in modern ways."

Complacency breeds failure. In the 1920s and 1930s, when our political and military leaders assumed the Nation was appropriately postured for the future, we failed to anticipate the coming crucible. Despite the vocal objections of a few, we entered World War II unprepared for the demands of total war. Likewise, we engaged in both Korea and Vietnam unprepared for the challenges of limited war. America paid a heavy price in blood and treasure for this strategic myopia. To cite but one example: on August 1, 1943, American Airmen flew a daring, low-level mission to strike Hitler's largest oil refinery—Ploesti. The target was demolished, but attrition was brutal: 44 of 177 B-24 Liberators were shot down and 540 of 1720 Airmen were lost. Through determination, ingenuity and innovation—as well as our industrial might—we persevered. The Nation and its entire military adapted in the midst of these fights to win decisively in World War II, restore the *status quo* in Korea, terminate the conflict in Southeast Asia, and, having exorcized the ghosts of Vietnam, deliver a swift victory in DESERT STORM.

We must learn from history. Our shared touchstone of warrior virtues and single, unifying purpose remain unchanged: fly, fight, win. We must remain true to the legacy of valor and devotion, so boldly written with contrails and smoke across the skies from Ploesti and Schweinfurt, through MiG Alley and downtown Hanoi, to Kandahar and Baghdad. This legacy defines our role in the American way of war—to risk the lives of Airmen to kick down the opponent's door so thousands need not die.

We will have neither the buffer of time nor the barrier of oceans in future conflicts. The Air Force is smaller in December 2007 than it was in December 1941. The character, tempo and velocity of modern warfare already severely test our ability to adapt. Therefore, redefining the Air Force for the 21st Century is an urgent national security requirement—not a luxury we can defer. If we are to defend America and promote its interests, the Air Force must continue to provide the joint team with prompt, persistent, decisive air, space and cyberspace effects.

The Air Force is often first to the fight and last to leave. We give unique options to all Joint Force Commanders. The Air Force must safeguard our ability to: see anything on the face of the earth; range it; observe or hold it at risk; supply, rescue, support or destroy it; assess the effects; and exercise global command and control of all these activities. Rising to the 21st Century challenge is not a choice. It is our responsibility to bequeath a dominant Air Force to America's joint team that will follow us in service to the Nation.