May 2007/$6

AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION

2007 USAF Almanac

5TH Generation Fighters – a stealthy, more effective force mix.

See?

Less is more. And the stealthy F-22 Raptor and F-35 Lightning II bring the greatest capability available to the mission. A more efficient force mix means fewer people on the ground and fewer support aircraft in the air – with less risk to our servicemen and women. Result: a robust mission solution ready for any projected, emerging or current threat. See? **Game-changing** capabilities for an unfair fight. Virtually **impossible** to detect. F-22 and F-35. 5TH generation capability ***only*** from Lockheed Martin.

www.lockheedmartin.com

LOCKHEED MARTIN

We never forget who we're working for®

May 2007, Vol. 90, No. 5

AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION

www.afa.org

4 **Letters**

16 **Aerospace World**

22 **Index to Advertisers**

26 **Senior Staff Changes**

27 **Verbatim**

28 **Action in Congress**

30 **The Chart Page**

32 **The Keeper File**

160 **AFA National Report**

164 **Unit Reunions**

166 **This Is AFA**

168 **Airpower Classics**

About the cover: A bald eagle photographed by Tom and Pat Leeson. "USAF Almanac 2007" starts on p. 34.

2 **Editorial: The Feldstein Solution**
By Robert S. Dudney
The decision to increase national security spending is a question of politics and budgets rather than available resources.

12 **Washington Watch**
By John A. Tirpak
Dumped From the Portfolio; Congress Talks, but Doesn't Walk; The New Bomber Shuffle ....

34 **USAF Almanac 2007**
The Air Force in Facts and Figures
36 Structure of the Force
48 People
54 Budgets
62 Equipment
69 USAF Grades and Insignia
73 *Air Force* Magazine's Guide to Aces and Heroes

Major Commands
86 Hq. Air Force
88 Air Combat Command
91 Air Education and Training Command
94 Air Force Materiel Command
96 Air Force Space Command
98 Air Force Special Operations Command
99 Air Mobility Command
101 Pacific Air Forces
103 US Air Forces in Europe

Air Reserve Components
105 Air Force Reserve Command
107 Air National Guard

Field Operating Agencies
110 Air Force Agency for Modeling and Simulation
Air Force Audit Agency
Air Force Center for Environmental Excellence
Air Force Civil Engineer Support Agency
Air Force C2ISR Center
111 Air Force Communications Agency
Air Force Cost Analysis Agency
Air Force Flight Standards Agency
Air Force Frequency Management Agency
Air Force Historical Research Agency
Air Force Inspection Agency
Air Force Legal Operations Agency
112 Air Force Logistics Management Agency
Air Force Manpower Agency
Air Force Medical Operations Agency
Air Force Medical Support Agency
Air Force National Security Emergency Preparedness Agency
113 Air Force News Agency
Air Force Nuclear Weapons and Counterproliferation Agency
Air Force Office of Special Investigations
Air Force Operations Group
Air Force Personnel Center
Air Force Personnel Operations Agency
Air Force Real Property Agency
114 Air Force Review Boards Agency
Air Force Safety Center
Air Force Security Forces Center
Air Force Services Agency
Air Force Technical Applications Center
115 Air Force Weather Agency
ANG Readiness Center

Direct Reporting Units
115 Air Force District of Washington
Air Force Doctrine Center
116 Air Force Operational Test and Evaluation Center
US Air Force Academy

Auxiliary
116 Civil Air Patrol

118 **Guide to Air Force Installations Worldwide**
118 Major Active Duty Installations
124 Minor Active Duty Installations
127 ANG and AFRC Installations

130 **Records and Trophies**

135 **Gallery of USAF Weapons**
By Susan H.H. Young
A directory of US Air Force aircraft, missiles, and other aerospace assets.

AIR FORCE Magazine (ISSN 0730-6784) May 2007 (Vol. 90, No. 5) is published monthly by the Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. Phone (703) 247-5800. Second-class postage paid at Arlington, Va., and additional mailing offices. **Membership Rate:** $36 per year; $90 for three-year membership. **Life Membership (nonrefundable):** $500 single payment, $525 extended payments. **Subscription Rate:** $36 per year; $29 per year additional for postage to foreign addresses (except Canada and Mexico, which are $10 per year additional). Regular issues $4 each. USAF Almanac issue $6 each. **Change of address** requires four weeks' notice. Please include mailing label. **POSTMASTER:** Send changes of address to Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association.

Editorial

By Robert S. Dudney, Editor in Chief

The Feldstein Solution

MARTIN Feldstein, the Harvard professor who chaired President Reagan's Council of Economic Advisors, may well be the nation's most influential economist. He was not heretofore known to hold a hard-line view on defense.

That being the case, one is taken aback at Feldstein's most recent paper, an unsparing, 2,500-word analysis bluntly entitled, "The Underfunded Pentagon," published in *Foreign Affairs.* It is impressive stuff. Coming from the nation's reigning economic heavyweight, it cannot be easily ignored.

Feldstein's point is that the Pentagon is, well, underfunded—*really* underfunded. The author prescribes "a substantial increase" in the $550 billion defense budget, and claims the US could raise it by 50 percent fairly quickly.

Far from bemoaning "record defense spending," the 67-year-old economist reports today's expenditure "is probably not enough to ensure the security of the United States," given the tasks that face the armed forces. Heading up Feldstein's must-do list is "deterring other great powers, such as Russia and China." Rather than assuming away the danger of a big-power conflict, as many do, Feldstein calls for keeping US conventional dominance which requires modern warplanes, ships, and the like.

That, by itself, requires spending at today's level, he noted, but Feldstein itemizes three other threats: (1) regional powers—North Korea, Iran, Pakistan—with mass-destruction weapons, (2) stateless, globally entrenched terrorist networks, with "visions of re-creating the world order," and (3) localized terrorist practitioners motivated by hate.

In Feldstein's view, US forces are "either ill-suited or insufficient" to handle some of these problems. The nation, as a result, has to modernize its weapons generally, replace war-worn materiel, expand its ground forces, reshape forces for rapid deployment, and expand US intelligence. That takes money.

Such observations, while true enough, are hardly original. Of far greater value is Feldstein's take on two key economic questions: How much can the US afford to spend on defense? And in what way should Congress raise the money? The article does not recommend specific figures, saying such amounts can be determined only by a detailed budget process. Yet the need is certainly great. (The Air Force, for instance, claims it requires an extra $20 billion a year for 20 years.)

Feldstein focuses on three fundamental points, presented here in paraphrased form:

■ Today's defense burden is light. Spending now claims four percent of Gross Domestic Product (the nation's output), and that includes the costs of the wars in Afghanistan and Iraq. For the basic program, the figure is three percent, a near-historic low. In 1962, before the Vietnam War, defense took 9.3 percent of GDP, without causing economic damage. Obviously, there is plenty of room in the economy for a more robust defense effort.

The decision to increase national security spending is a question of politics and budgets rather than available resources.

■ The fiscal outlook isn't dire. The current budget situation in the United States, wrote Feldstein, "is healthier than often presumed." Today's federal deficit, for example, amounts to just two percent of GDP. That is low enough to allow, each year, a slight improvement in the national debt, though a variety of factors could change this situation.

■ Resources are growing. In the Reagan years, defense outlays rose to six percent of GDP, but then went down. What about going back to six percent? "The United States clearly could afford to do so if it wanted to," Feldstein wrote. The $13.8 trillion US economy is expected to grow by 15 percent in the next five years. New defense outlays would take one-sixth of that increment. Meantime, the Pentagon would get a huge annual infusion.

Feldstein's conclusion: "The decision to increase national security spending is ... a question of politics and budgets rather than available resources."

As for the second question—how would Congress raise money for a defense increase?—Feldstein has some controversial answers. The first is that it would be "a serious mistake" to plan on boosting defense by raising personal taxes. Feldstein calculates that a major DOD increase would require hikes on the order of 25 percent. That could kill public support.

In his view, tax increases aren't needed anyway. Because tax rates are graduated, taking more from higher incomes, the general rise in incomes automatically boosts tax revenues. Congressional Budget Office models show personal tax revenue will rise from eight to nine percent of GDP by 2016 and 10 percent in 2026.

The year 2026, however, is a long way off. Washington could accelerate the process by slowing or stopping the recent rise in non-defense programs, without cutting them. It could also limit a long list of "tax expenditures"—more than $700 billion in revenue lost as a result of special tax breaks.

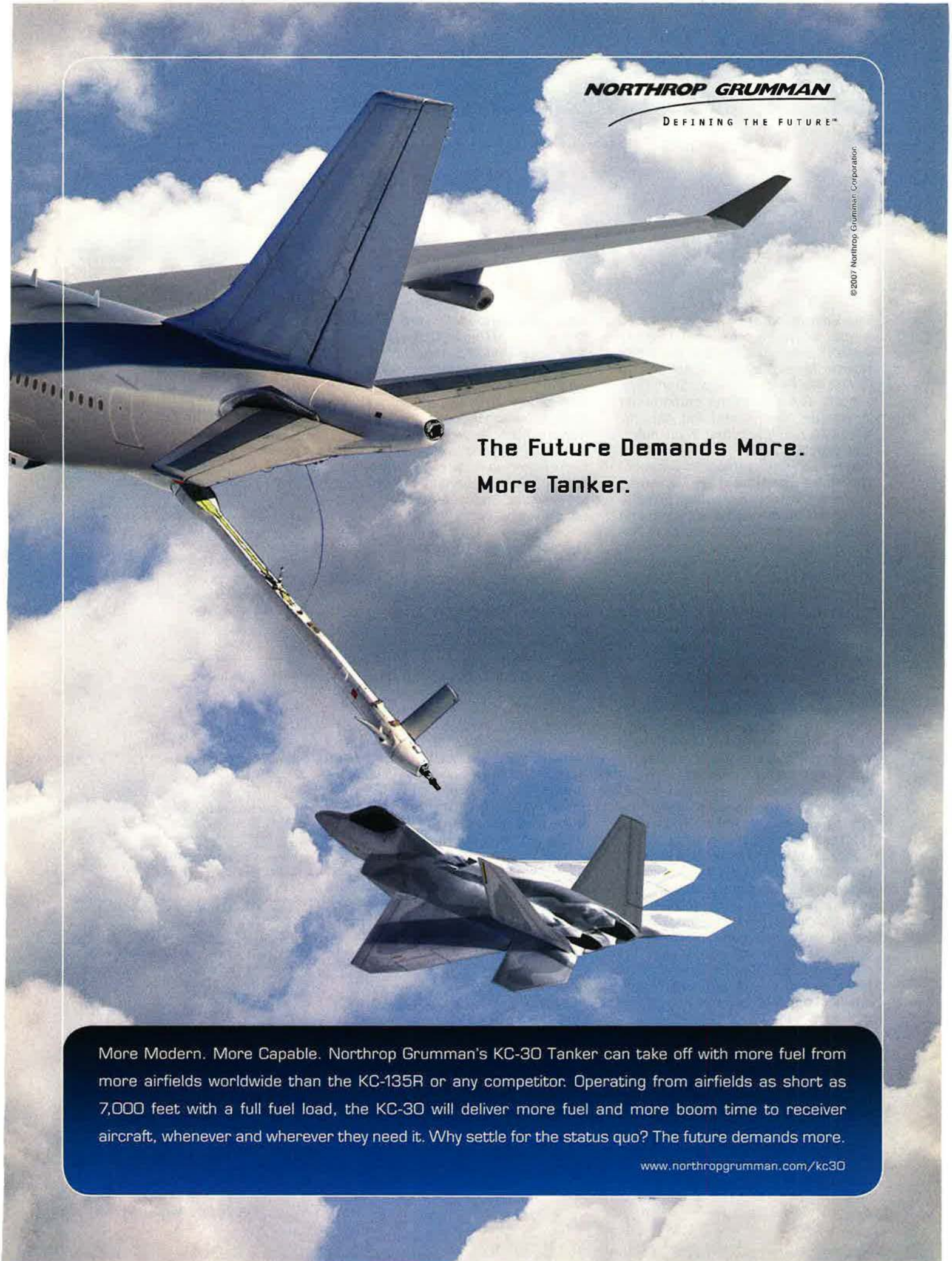
With these expedients, said Feldstein, defense spending would rise to five percent of GDP in 2011 and six percent by 2016. That would add hundreds of billions of dollars in buying power.

There are soft spots in the Feldstein solution. He himself acknowledges the danger posed by ballooning entitlement programs in years ahead. CBO projects that the combined costs of Social Security, Medicare, and Medicaid will rise from 8.7 percent of GDP now to 16 percent in 2036, dramatically squeezing other claims.

Then there are the political hazards of closing popular tax loopholes and reining in popular programs, something one Internet pundit, David Eisenthal, slams as "the classic brief on behalf of the military industrial complex ... against the middle class."

No one—certainly not Feldstein—expects this paper to provoke a sudden swelling of Pentagon coffers, but it could prove to be a point of departure for a more honest and realistic debate.

"I don't underestimate the political difficulty of getting that increase," Feldstein told a military audience at West Point last November. "It will take political leadership." Yet to be seen is whether Feldstein, whose warnings about deficits in the Reagan years won him the nickname "Dr. Gloom," is now indulging in blue-sky optimism. ■


NORTHROP GRUMMAN
DEFINING THE FUTURE™
©2007 Northrop Grumman Corporation
The Future Demands More.
More Tanker.
More Modern. More Capable. Northrop Grumman's KC-30 Tanker can take off with more fuel from more airfields worldwide than the KC-135R or any competitor. Operating from airfields as short as 7,000 feet with a full fuel load, the KC-30 will deliver more fuel and more boom time to receiver aircraft, whenever and wherever they need it. Why settle for the status quo? The future demands more.
www.northropgrumman.com/kc30

Letters

letters@afa.org

The Lavelle Affair

Your article in the February 2007 issue *["Lavelle, Nixon, and the White House Tapes," p. 82]* is not fair to former Air Force Chief of Staff Gen. John D. Ryan or to our commander in Vietnam, Gen. Creighton Abrams. It was certainly true that in my meetings with Gen. John Lavelle I told him that my order on "protective reaction" should be viewed liberally. I invented the term "protective reaction." Prior to my order, there was no authorization (under McNamara or Clifford) to destroy dangerous targets except when fired upon without special permission. Gen. Bus Wheeler, Adm. Tom Moorer, and General Abrams all agreed with the liberal interpretation on my order on protective reaction. The new orders permitted hitting anti-aircraft installations and other dangerous targets if spotted on their missions, whether they were activated or not.

General Ryan, as Chief of Staff of the US Air Force, expressed great displeasure with General Lavelle and was, indeed, upset when he came to my office after he found out that General Lavelle perhaps encouraged pilots, if not directed them, to lie about the coordinates on some of their missions. I can assure you that no one instructed General Lavelle to falsify any reports. One cannot permit the falsification of records in any military command. I have no regrets in supporting General Ryan, even though I admired General Lavelle as a fine gentleman with an otherwise great Air Force record. I can assure you that President Nixon never asked me to approve of any falsification of records by any officer in the US military.

Melvin R. Laird
Washington, D.C.

■ *Mr. Laird's statement that "new orders permitted hitting anti-aircraft installations and other dangerous targets if spotted on their missions, whether they were activated or not" confirms the fairness and accuracy of our article. Although 35 years late, Mr. Laird's admission fully vindicates the truthfulness of General John D. Lavelle before the United States Congress.*

Moreover, there is no evidence to support Mr. Laird's suggestion that General Lavelle encouraged or directed pilots to lie about coordinates on missions or falsify reports. At this point, the only remaining issue of veracity relates to the under-oath statements by senior officials of the Department of Defense to the United States Senate.—ALOYSIUS AND PATRICK CASEY

The Jointness Syndrome

I found Gen. Norton A. Schwartz's response *[in "Letters," March, p. 4]* to Rebecca Grant's "The Billy Mitchell Syndrome" *[December 2006, p. 52]* very interesting. I know him to be a thoughtful officer and have long held him in high regard. Nevertheless, he has misinterpreted the intent of the quote attributed to me. I was then (1997), and remain today, concerned that a careless application of "jointness" can result in unnecessary friendly casualties. But the quote in Ms. Grant's article is about the difficulty airmen face in convincing critics that the Air Force is "joint" in the best sense of the concept. Jointness is not about the Air Force supporting the Army; it is about the Army and the Air Force supporting the joint force commander. Often, the joint force commander will wish to employ air force capabilities in ways that achieve objectives at lower

Do you have a comment about a current article in the magazine? Write to "Letters," *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. (E-mail: letters@afa.org.) Letters should be concise and timely. We cannot acknowledge receipt of letters. We reserve the right to condense letters. Letters without name and city/base and state are not acceptable. Photographs cannot be used or returned.—THE EDITORS

AIR FORCE
JOURNAL OF THE AIR FORCE ASSOCIATION MAGAZINE

Publisher
Donald L. Peterson

Editor in Chief
Robert S. Dudney

Editorial afmag@afa.org

Editor
Suzann Chapman

Executive Editors
Adam J. Hebert, John A. Tirpak

Associate Editors
Lauren Bigge, Tamar A. Mehuron, Marc V. Schanz

Contributors
Walter J. Boyne, Bruce D. Callander, John T. Correll, Rebecca Grant, Peter Grier, Tom Philpott

Production afmag@afa.org

Managing Editor
Juliette Kelsey Chagnon

Assistant Managing Editor
Frances McKenney

Editorial Associate
Dina Elshinnawi

Senior Designer
Heather Lewis

Designer
Darcy N. Harris

Photo Editor
Zaur Eylanbekov

Production Manager
Butch Ramsey

Media Research Editor
Chequita Wood

Advertising adv@afa.org

Advertising Director
Patricia Teevan
1501 Lee Highway
Arlington, Va. 22209-1198
Tel: 703/247-5800
Telefax: 703/247-5855

Industry Relations Manager
Patricia Teevan • 703/247-5800

US and European Sales Manager
William Farrell • 847/295-2305
Lake Forest, Ill.
e-mail: BFarr80708@aol.com

Circulation audited by Business Publication Audit
BPA

It's about saving lives.

The battlefield proven HOOK2® GPS Combat Search and Rescue Radio System is compatible with U.S. and Coalition Forces. As the CSAR system of choice, the HOOK2 System features the AN/PRC-112G® software upgradeable transceiver and the Quickdraw2® Interrogator, a handheld interrogator that requires no aircraft modification.

Information superiority when it matters most.

With direct communications between a downed pilot and rescuers for terminal area guidance/communications, the AN/PRC-112G transceiver provides quick and accurate rescue information including two-way encrypted messaging and automatically updated global positioning.

Globally deployed. Saving lives today.

www.gdc4s.com/hook2
hook2info@gdc4s.com
1-800-424-0052

GENERAL DYNAMICS
C4 Systems

Air Force Association

1501 Lee Highway • Arlington, VA 22209-1198

Telephone: (703) 247-5800
Toll-free: (800) 727-3337

Press 1 *if you know your party's extension.*
Press 3 *for Member Services.*
(For questions about membership, insurance, change of address or other data changes, magazine delivery problems, or member benefit programs, select the "Member Services" option.)

Or *stay on the line for an operator to direct your call.*

Fax: (703) 247-5853

Internet: http://www.afa.org/

E-Mail Addresses

Field Services ..... **fldsvcs@afa.org**
Government Relations ..... **grl@afa.org**
Industry Relations ..... **irl@afa.org**
Information ..... **information@afa.org**
Member Services ..... **service@afa.org**
Policy & Communications (news media) ..... **polcom@afa.org**

Magazine

Advertising ..... **adv@afa.org**
AFA National Report ..... **natrep@afa.org**
Editorial Offices ..... **afmag@afa.org**
Letters to Editor Column ..... **letters@afa.org**

Eaker Institute ..... **eaker@afa.org**
Air Force Memorial Foundation ..**afmf@afa.org**

For individual staff members
first initial, last name, @afa.org
(example: jdoe@afa.org)

AFA's Mission

To educate the public about the critical role of aerospace power in the defense of our nation.

To advocate aerospace power and a strong national defense.

To support the United States Air Force and the Air Force family.

costs than might be expected from direct land force engagements ("close with and destroy") supported by air. The Army's failure to recognize the value of independent (in direct support of joint force commander objectives) application of air force capabilities has inhibited the development of true jointness for over 60 years. This myopic land force advocates' view has survived by pointing the finger of "parochialism" at airmen who are most interested in saving soldiers from the rigors and dangers of close combat.

I join General Schwartz in applauding the command sergeant major on the ground who could have demonstrated his eagerness for contact by assaulting the farmhouse but chose instead to rely on airpower to assure ultimate success in the mission. Here again, I believe General Schwartz missed Ms. Grant's point. She was lamenting the absence of airmen willing and able to articulate the value of this special application of air and space capabilities. This was not traditional close air support in which air capabilities are harnesses to a land force intent on closing with the enemy. This was a superb example of land and air capabilities harnessed more directly to the joint force commanders' mission. I admit that this difference may seem somewhat arcane—but comprehending it is key to ensuring that we (land and air forces) can do it again—routinely. We have to talk about it in order to broaden understanding and appreciation—and to underwrite future resourcing and the development of doctrine. Again I agree with General Schwartz—we want more of this kind of jointness. But we won't get it without talking about it.

General Schwartz's admonition to "emphasize contribution over attribution" is well phrased. In the end, those in charge of the distribution of resources (defining all of our futures) must be informed. In our system, they are informed through a process of advocacy in which specialists in the military use of the land, sea, air, and space mediums describe and advocate for the best use of their particular capabilities in achieving joint force objectives. Indeed, as I argued for better appreciation of airpower capabilities against surface forces in the roles and missions discussions of the 1990s, I was often criticized for my "parochial" views. As it turns out, had I been a more effective advocate, the Army might have been able to spend the money wasted on deep attack helicopters (a capability already aptly demonstrated

by fixed-wing airpower) on armor for soldiers and Humvees.

Finally, I am very grateful to General Schwartz for his willingness to put his valuable thoughts into this vital discussion. Sadly though, I must reflect that the thrust of his message may just be making Ms. Grant's point in yet another way.

Maj. Gen. Charles D. Link,
USAF (Ret.)
Vienna, Va.

[I wish to address] Gen. Norton A. Schwartz's comment regarding Dr. Rebecca Grant's Billy Mitchell story. General Schwartz wrote that Grant "expresses views on airpower advocacy which are blissful, nostalgic, ... and wrong."

As a WWII type, I'm shocked to see that naiveté has reached the highest level of USAF. Not only Billy Mitchell, but Frank Andrews, Hap Arnold, [Carl] Spaatz, and many more are wondering what's gone wrong. Looks like an agonizing reappraisal is in order for USAF leadership.

Brig. Gen. Richard M. Baughn,
USAF (Ret.)
Austin, Tex.

One of the highlights of my career was working for then-Col. Norty Schwartz at the Air Staff in the mid-90s. I owe a lot to his leadership and mentorship. The publishing of Grant's flippant non-response to his letter in the [March] issue is beneath the dignity of your magazine.

Col. Rich Smith,
USAF
Syracuse, N.Y.

Battle of the Boots

I am writing in regard to the recent editorial by Robert Dudney *["Editorial: The Battle of the Boots," March, p. 2].* Once again, we find the ugly argument being raised about who gets the lion's share of the budget. While I will be the first to praise the US Air Force on its outstanding accomplishments, I fail to understand the apparent resentment to increasing the size of the US Army and the Marine Corps. While China, Russia, North Korea, and Iran certainly loom large as potential foes, I disagree that future policy should revolve around plans for a major war with any of these countries.

More and more, the realities are that the enemies of the US will fight the types of asymmetric warfare the US public has the least willingness to fight. It will be a battle of suicide bombers, terrorists, and dedicated fanatics against the most vulnerable types of targets—civilian populations. In this type of battle, you can field a thousand F-22s and you will not be able to protect someone going to the grocery store. That type of security evolves from having soldiers in place and patrolling the streets, showing a presence every day and every night. It will be rooting out these enemies in their caves, homes, and villages—not the job for $360 million aircraft.

Tactical doctrine that requires identifying that enemy's "centers of gravity," where the Air Force can be most effective, is least useful in the type of asymmetric warfare the US is most likely to become involved in. We need only think of Bosnia, Somalia, Afghanistan, and potentially Darfur. Maybe these are more correctly identified as "Operations Other Than War," but most likely someone will be shooting at someone else.

I think the Army and Marine Corps have certainly shouldered a very heavy burden in Iraq and anything that can help ease that burden only strengthens the security of the United States.

Michael Kordus
Yardley, Pa.

Reference your article "The Battle of the Boots": I have trouble with it on a couple of levels.

[First, concerning] budget restrictions: Our forces were cut about 45 percent during the 1990s (during the Clinton Administration) as a "peace dividend" after the Cold War, and now we are finding ourselves inadequate [at insufficient strength] for the missions assigned. We are the guarantors of freedom for all of the free world, a responsibility acquired at the end of WWII. If we abdicate that responsibility, we do so at our own peril and that of the entire free world. God knows what future military requirements we will face; unfortunately, we do not. So responsible planners should err on the side of strength and not expand one service at the expense of another—world leadership has a price.

[Secondly, regarding] public support and anti-war movements: Is it any wonder that average Americans are growing tired of the war? Not if one looks at the daily bombardment of negative coverage given by the liberal/biased anti-Bush news media. How can they conclude anything else? Americans

need to hear the consequences of not spending more now to modernize and expand our forces, thereby insuring that we don't lose our national identity, our free enterprise capitalistic economic success, and our form of government. Senior military leaders and political leaders, other than the current crop of defeatists, should be on the stump at every opportunity to talk about the unacceptable alternatives. There will be no entitlement programs (Social Security, Medicare, etc.) if we do not prevail in this current conflict. [The enemies] have a very long-term plan and the patience to go with it; they want us dead. History is full of successful examples of early action with a smaller expenditure of treasure and lives, as opposed to waiting and paying a large price later. President Bush is steadfast and right about the significance of the war in Iraq, and military/political leaders need to energize themselves to be more vocal about the consequences of defeat in their public pronouncements.

Budget restrictions are nothing new in military planning, but they have never been more [threatening to] national survival than they are at this time. If a $20 billion (or $40 billion) annual increase is what it takes we, as a nation, need to get on with it and mount a campaign to overcome the negative peace-at-any-price media. Are you listening, Congress?

Maj. Gen. L.W. Svendsen Jr., USAF (Ret.)
Garden Ridge, Tex.

The Fighter Force We Have

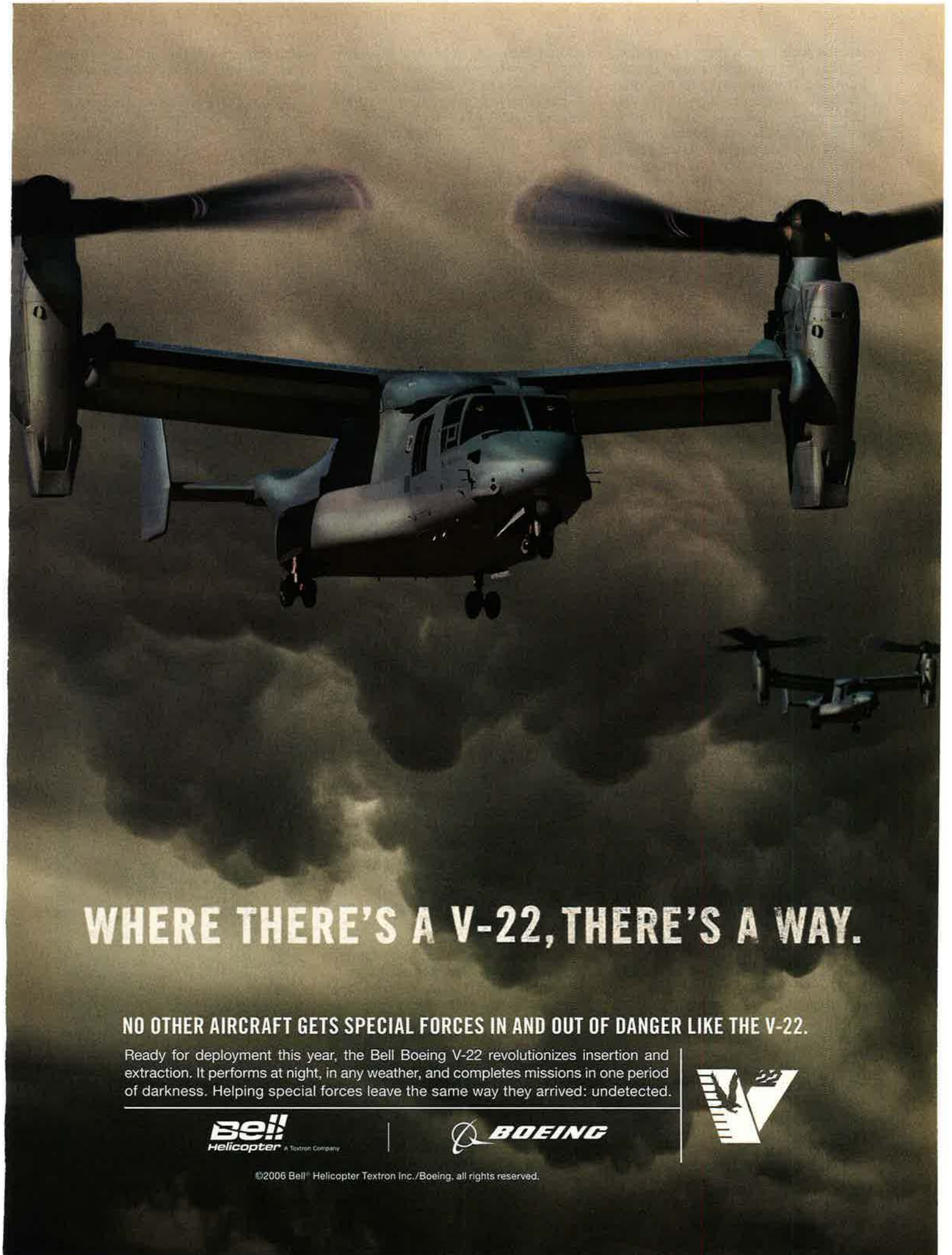
I have been reading with great interest the numerous articles regarding the aging of the Air Force aircraft fleet. John Tirpak's recent article presented a knowledgeable and informative account of how the Air Force is addressing the aging fighter force *["Making the Best of the Fighter Force," March, p. 40].* Since funding of new and upgraded aircraft is a somewhat divisive issue among the services and with and within DOD, I would like to clarify a statistic that Mr. Tirpak used. He states, "The F-16 was expected to fly about 250 hours a year, on average, but those deployed to combat have averaged 300 hours per year or more. Put another way, that means the most heavily used Falcons are aging at the rate of five years for every four in service." Since his premise is based on "average" use, I feel his conclusion also should be based on average use rather than "most heavily used." This would change the conclusion to read the average Falcons are aging at the rate of six years for every five years of service, a somewhat less stressful figure.

Thanks for keeping the issue of the aging fleet in the forefront. You are doing a great job.

John Stanley
San Antonio

Bird Dog Hero

I certainly can agree that those intrepid pilots who supported those of us on the ground were truly heroes. The story of Capt. Hilliard Wilbanks' heroism *["Bird Dog's Last Battle," March, p. 50]* brought back memories of heroic actions taken by our forward air controller down in the Delta in 1968. Capt. Bill Paquin (who I believe was a B-52 pilot who volunteered to serve as a FAC) was based in Bac Lieu Province. He and I shared a room in an old French villa with the advisory team. Bill was the epitome of the type of pilot you describe in the Wilbanks article. One day in mid-1968, Bill was flying in support of a Regional Force/Popular Force operation south of Bac Lieu City in Gia Rai District. As the operation unfolded, the small unit was surrounded by a larger VC force


WHERE THERE'S A V-22, THERE'S A WAY.
NO OTHER AIRCRAFT GETS SPECIAL FORCES IN AND OUT OF DANGER LIKE THE V-22.
Ready for deployment this year, the Bell Boeing V-22 revolutionizes insertion and extraction. It performs at night, in any weather, and completes missions in one period of darkness. Helping special forces leave the same way they arrived: undetected.
Bell Helicopter A Textron Company
BOEING
©2006 Bell® Helicopter Textron Inc./Boeing. all rights reserved.

and the American advisor called for air support. Unfortunately attack aircraft from Can Tho were en route but could not get there soon enough as the Viet Cong were on line and assaulting the small unit which was exposed in the middle of a rice paddy. Bill recognized that a delay would place the entire unit in jeopardy, so he made several runs on the VC lines firing up his WP rockets. These runs disrupted the assault. When he was out of rockets, he then made a couple of very low passes firing his rifle out of the window of his Bird Dog until he was shot in the legs through the floor of the aircraft. He then was forced to break off his attack and return to base for medical attention.

Captain Paquin's actions that day saved the small unit and enabled the troops to repel the VC. For this bravery in action, I believe Bill was recommended for the Silver Star and I firmly believe it was well deserved. My hat's off to all of the Air Force pilots who served and helped those of us who fought on the ground.

Col. Dick Williams,
USA (Ret.)
Belleair Beach, Fla.

A Thousand Words

A picture is worth a thousand words, and the picture painted by *Air Force* Magazine's "Chart Page" in its March 2007 issue on p. 10 is no exception *["That Giant Droning Sound"]*. The UAV flight hours chart and UAV aircraft numbers table might end up costing the Air Force more than a thousand words. According to the charts, the Army flew more UAV flight hours than the Air Force in 2006, and this is without counting small UAVs. Also, it looks like between 2002 and 2006 the Air Force increased its UAV inventory from 28 to 107 while the Army went from 65 to 290.

In today's joint environment, should the Air Force even be concerned with these trends? It should if it wants to run the UAV show or thinks it should. In the past, the Headquarters United States Air Force has argued for becoming the executive agent for UAVs. That argument will be hard to make until the day the Air Force operates more UAVs and for longer flight hours than its "nonflying" sister services.

Granted it is all about the effect provided by the platforms more than the platforms themselves. However, in the halls of the Pentagon sometimes perceptions shaped by raw data actually guide decisions. And in this case the "giant droning sound" will be the perceived whining of the Air Force to be the "lead" for UAVs when it trails behind the Army in terms of inventory and hours flown. Maybe the Air Force should argue for being the executive agent for Humvees next. After all, according to its FY08 budget, the Air Force is buying more Humvees than aircraft or UAVs in Fiscal Year 2008.

Patrick Harding
Arlington, Va.

Airpower Classics

As a former B-29 crew member during the Korean War, I was happy to see the B-29 featured ["*Airpower Classics*," *March, p. 96]*. However I have a minor nitpick: The 19th Bomb Group was not a SAC unit, but was a unit of 20th Air Force. There was a SAC B-29 wing on Okinawa, the 307th, and another SAC B-29 wing at Yokota, Japan, the 98th.

Also, Okinawa had not yet been returned to Japanese government control. It was governed by the US Army Ryukyus Command during the Korean War.

Charles Sill
Modesto, Calif.

Bombers Over Korea

As a reservist who was called to EAD on 10 August 1950 and served in the 452nd Bomb Wing in Korea, I enjoyed very much your pictorial article "Bombers Over Korea" *[February, p. 58]*. Thanks for the great pictures of the B-26s and recognition of their mission.

I would like to point out one misconception that occurs in the captioning.

Although some reservists were activated for one year, many were called for 21-month periods of active duty. I was one of those, serving from 10 August 1950 to 23 April 1952.

I don't recall hearing any official policy for the different lengths of duty. However, it was my impression that those reservists who had significant prior (WWII) service were recalled for one year, whereas those of us with no prior service (my case) or a relatively short and usually postwar period of service got the 21-month tours.

My recollection is that most of the activated personnel were in for 21 months, but it's been awhile and I don't remember any stats ever being distributed or subsequently published.

In the fall of 1951, a significant number of reservists were transferred from the 452nd to other units in Korea, apparently to avoid decimating the squadrons in early 1952 when those 21-month hitches would be drawing to a close. I was transferred to the 502nd TAC Control Group on 2 September 1951 and remained with that unit until rotated back to the States for discharge in March of 1952.

I hope I'm not the 1,000th member who has offered this little correction, but I did want to help keep the record straight.

Thanks for providing a great magazine and getting the message out.

Allan Stone
Rocklin, Calif.

UAV Mystery

The "sense and avoid" technology that unmanned aerial vehicles lack today is a mystery *["UAVs—The Next Generation," February, p. 70]*. Wasn't a combat environment considered when these UAVs were developed? This technology should have been one of the first features developed on this vehicle. Any combat environment is going to have heavy air traffic. Three collisions in Afghanistan are unacceptable. Sense and avoid technology has existed for decades. The F-111 had terrain following radar. The new Lexus can parallel park autonomously due to sense and avoid technology. Granted, the Lexus isn't moving at 200 mph, but the technology does appear to exist. The ability to identify friend or foe on the ground is "sense and identify" not "sense and avoid." I understand this can be more technically challenging but not impossible, perhaps utilizing transponders.

Joel Menges
Hershey, Pa.

Photo courtesy of U.S. Department of Defense

Crossing domains shouldn't cross you up.

The General Dynamics Team has the expertise to provide you a secure computing environment that allows access to information across multiple domains from a single location – regardless of the network on which the data resides. Our design provides:

Meet the solution that *works* across multiple domains.

- Optimized streaming video and 3-D graphics
- Sustainable optimized performance
- Joint and coalition interoperability
- Technology evolution
- Global expansion
- Reduced life cycle costs and time to market

General Dynamics has more than 40 years of experience supporting the warfighter. So when it comes to cross domain solutions, General Dynamics is truly a master of the domain.

For more information, call 781-455-3508 or email nadia.short@gdc4s.com.
www.gdc4s.com/dtw

GENERAL DYNAMICS

Dolphin Technology Incorporated

MAXIM SYSTEMS

Washington Watch

By **John A. Tirpak**, Executive Editor

Dumped From the Portfolio; Congress Talks, but Doesn't Walk; The New Bomber Shuffle ....

You Cruise, You Lose

The Air Force has decided to retire its stealthy, nuclear-tipped AGM-129 Advanced Cruise Missile and, at the same time, cut its number of AGM-86B Air Launched Cruise Missiles, which also have nuclear warheads. It is a move that could well ripple through the B-52 bomber fleet.

Money, as always, played a prominent role in the decision. In its Fiscal 2008 budget request, USAF terminated funding for the ACM, of which it has about 460. The move apparently was made on short notice; just weeks before, USAF officials had been saying the ACM would be updated and maintained into the 2030s. (See "Strategic Force," February, p. 38.)

USAF photo

AGM-129 going into retirement.

In a March interview, Secretary of the Air Force Michael W. Wynne characterized the retirement as a simple cost-cutting step taken in light of the service's other capabilities.

Wynne said the service recently had taken "a good hard look" at all of its standoff weaponry, examining whether USAF needed it all and whether the expense was justified, given other options. The ACM, he said, was among the "isolated cases that are costing ... a lot of money, with a very low probability of use." There are alternatives, he said, noting, "We have B-2-delivered weapons. We have ICBMs. We have not taken down our entire cruise missile fleet. It's a portfolio."

Wynne said substitutes include "lower maintenance" systems with "a reasonable probability of getting through." He didn't specify a system, but USAF still has about 1,100 AGM-86B Air Launched Cruise Missiles, which are not stealthy.

Through a spokesman, the Air Force said the service will "restructure" the ALCM inventory, meaning a not-yet-determined number of ALCMs will also be retired. The spokesman said there is no set timetable for determining what will be retained.

The Air Force said the ACM retirement was "approved by the Secretary of Defense, based on analysis and recommendations from US Strategic Command and the Joint Staff."

The impact could spread. USAF wants to shrink its B-52 fleet from 94 to 56 bombers but has been blocked by Congress. The Air Force is not funded to maintain and crew all 94 B-52s; 18 of them are kept as attrition reserve aircraft. However, the ACM and ALCM can be carried only by the B-52. Because the nuclear cruise missile role at least partly justifies the B-52, eliminating ACM and reducing ALCM would inevitably reduce the need for B-52s in the nuclear role. If the Air Force were to retire 25 B-52s, it would leave about 460 cruise missiles without launch platforms.

Wynne stated that he is "not ... aware" of any plans to convert the stealthy ACMs to conventional weapons. The Air Force, in response to a query, said it has not made a "final decision on the disposition of the ACM" and will explore the possibilities of using the ACM "for conventional use or testing."

In a statement prepared for *Air Force* Magazine, the service said it will take 66 months for "demilitarization" of the ACM fleet, but "will not take any irreversible action ... until Congress has reviewed this force structure initiative."

Flying With a Limp

Secretary of the Air Force Michael Wynne lately has taken some heat on Capitol Hill. Some lawmakers have slammed his plans to cut Air Force personnel even as the Army and Marine Corps are adding troops. He's also taken hits for not requesting more gear. (See "Washington Watch: Murtha Demands, 'Give us a Number,'" April, p. 10.)

USAF photo by TSgt. Cohen A. Young

Wynne will believe it when he sees it.

Panasonic recommends Windows Vista™ Business.

intel Centrino Duo

It's not just a laptop. It's

actionable intelligence

from war zone to training zone.

Whether you are in training, creating a flight plan or in a war zone, you need a laptop you can count on. You need the durable, deployable MIL-STD-810F-compliant Panasonic Toughbook® 30. With a full magnesium alloy case, weatherproof construction and shock-mounted removable hard drive, the rugged Toughbook 30 stands up to drops, bangs, vibration, dust, dirt and moisture. With an integrated CAC reader option, your confidential data is guaranteed to remain safe. Because Toughbooks are built to outlast mission after mission, we offer fourth- and fifth-year warranties. For even more comprehensive coverage, we also offer our Protection Plus service package. Please call for details. **Work anywhere. Risk nothing.**

Tcughbook 30

1.800.662.3537, extension 7041
panasonic.com/toughbook/federal
toughbookfederal@us.panasonic.com

Panasonic ideas for life

TOUGHBOOK®

Wynne responds, though, that Congress may be talking the talk of modernization and reset, but hasn't walked the walk.

"All of the budgets we've sent over have all been cut," Wynne observed in an interview. Even though he frequently hears indignation and impatience, "the evidence is preponderantly against" a Congressional push to revitalize USAF, he said.

"The Air Force is trying very much ... to recapitalize within our own bounds, trying to find and husband resources by becoming more efficient across the board, including within our personnel," Wynne insisted.

He would "dearly love" to buy 38 F-22 fighters each year, rather than just 20, and to continue the C-17 line, buy more than 15 tankers a year, and replace F-16s with F-35s at much higher rates. However, he can't. "We don't have the money," said Wynne. And while Congress may grouse about USAF's condition, "there's a consistent theme here" in the real funding shortfall. "The Air Force is basically saying they don't have the money to modernize their equipment, and so they're going to limp into the future as best they can," Wynne said. It will find money within for only the highest priority programs.

Asked if the Air Force will get back the 6,000 airmen who have been sent to what he calls "ground force taskings" once the Army gets an increase in end strength, Wynne said discussions are under way about "possibly seeing a way clear to free up the 'in-lieu-of' ... missions that we've been at." For now, Wynne will proceed with cutting the 40,000 full-time equivalent Air Force personnel by 2009 because "I haven't been able to issue any other instructions to my budgeteers ... because there's no other funding being offered me."

Long Road to Long-Range Strike

It will take a few more years for the Air Force to evaluate its options for the next long-range strike system, despite the looming 2018 deadline to have a system on the runway, USAF Secretary Michael Wynne reported.

"We are hoping we can hold 2018," he said in a March interview, but "given all our other funding constraints," that will be a tough goal to achieve. "For right now, it's a great target," he said.

Wynne's comments belie previous USAF suggestions—even from Wynne himself—that USAF will have to start "bending metal" soon if it is to meet the LRS deadline imposed by last year's Quadrennial Defense Review.

Northrop Grumman illustration

J-UCAS has bred familiarity.

Technologies applicable to the LRS system are "coming along," he said in the interview, although the Air Force will have to invest some more money in propulsion and sensors. It can make good use of design and development work carried out on the now-defunct Air Force version of the Joint Unmanned Combat Air System, as well as demonstrations for refueling unmanned vehicles, he said.

However, Wynne feels that the overall concept has settled into being a system that can be manned—for nuclear missions and those requiring man-in-the-loop—or unmanned, for those occasions when "we want to send it up and keep it up in a refueled state for more than a week."

Once the Air Force is satisfied that it has achieved what he called "technology readiness," and has proved to its Pentagon masters that it can achieve the requirements set, Wynne said he believes the service will be able to move quickly into a hardware program.

"We know the stable of suppliers. We've been working with them pretty [well] on the [J-UCAS program], and my guess is we could go to a fairly rapid down select," he said.

Boeing and Northrop Grumman were the two companies involved in J-UCAS; they are now competing to supply the Navy with its carrier-capable Naval UCAS.

More Mobility Twists

If the Army and Marine Corps are expanding by a combined 92,000 troops, as decreed by President Bush, the Air Force will likely need more airlifters to haul around all of these new troops and their gear, and more airmen to integrate with new units and help coordinate air support. Maybe.

"We know that there will be a larger requirement for strategic lift" as a result of the ground force increase, USAF's Chief of Staff, Gen. T. Michael Moseley, told the Senate Armed Services Committee in March. Last year's mobility capabilities study verified a need for about 300 strategic airlifters, Moseley said.

However, he told the Senate panel, "we're in a very interesting place now" with regard to mobility aircraft. "Our land-component brothers are growing, our strategic airlift inventory is static, our C-5s are becoming much harder to maintain, and [their] reliability ... is in question. The C-17 line is about to be shut down." It all adds up to a "crease in history ... where we're going to have to make some decisions."

Two C-5 upgrade programs—an avionics improvement and a re-engining and reliability effort—are way over cost and have prompted the Air Force to re-evaluate whether the upgrades are worthwhile. (See "Washington Watch: Those Slippery Mobility Plans," April, p. 12.) The Air Force has not, though, rushed to request more C-17s, deciding to wait and see just how the Army and the Marine Corps apportion their personnel increases, and also to evaluate some new technologies and tactics in aerial resupply.

Wynne told this magazine that the service has begun to "really explore and employ" the Joint Precision Air-Drop System (JPADS), which combines steerable parachutes and satellite guidance to deliver cargo dropped from high-flying airlifter aircraft. The system has gotten very good very fast, and Wynne said it is now possible to put fairly hefty loads of cargo in a precise location without any aircraft having to touch down. That can't help but affect mobility requirements.

"We've gotten some of the 10,000-pound pallets to drop within ... 300 meters," Wynne said. "So, what I'm getting here is the ability to put in ... a helicopter landing zone

Lockheed Martin photo

Will there be fewer C-5s?

pretty much all of the supplies that a relatively large Army contingent could use."

He added, "Suddenly, I have sufficient precision that it actually alters the Army's need to carry subsistence with them. And therefore they become immediately more agile and ... flexible." The JPADS, he said, will allow Army commanders to "fight towards an objective" and be resupplied as soon as they attain it. He called it a "pretty cool" option.

This capability "begins to push back on how many intratheater lifts" the Air Force needs, Wynne said. It may allow some C-17s now performing intratheater resupply to return to strategic missions. It may also mean that the Air Force can live with fewer upgraded C-5s, especially if some are used in less critical domestic missions.

However, Air Mobility Command chief Gen. Duncan J. McNabb told *Air Force* Magazine in late March that JPADS will only help in the overall mobility picture, and not necessarily reduce the need for aircraft.

"It helps you most in the ground infrastructure," he said, in that JPADS will reduce the need to set up, man, and defend some forward bases, and in that it could "indeed save us a lot of money." However, the amount of cargo to be delivered won't change, he said: JPADS "won't scratch that itch."

Wynne said he expects that USAF will "ask to retire somewhere between 15 and 30" C-5As—the oldest and least-efficient ones—and use the unmodified A's "for domestic flights for the next, probably, 10 years."

The program will also likely be "stretched out, because the cost of doing it has gone up," Wynne reported.

But what about in the meantime? Should the Air Force buy more C-17s? The Air Force didn't request any C-17s in its Fiscal 2008 budget, and noted only two more that it would like to have under its "unfunded priorities" list to Congress.

Wynne believes that USAF has about 18 months to decide the issue. While Boeing has argued that it needs an immediate commitment from the Air Force to build more C-17s or it will continue shutting down long-lead production on some components, Wynne said with some testiness that he sees Boeing's ultimatum as a kind of corporate game of chicken.

"I think Boeing is confronting its patrons with a do-or-die situation, for which the patrons don't have the money," he asserted.

KC-X Descendants

The stakes in the Air Force's KC-X aerial tanker replacement program may be even higher than previously thought. That's because the aircraft selected may be the heir apparent platform to replace today's heavy intelligence-surveillance-reconnaissance fleet.

The Air Force plans an initial buy of about 179 tanker airplanes and will choose from Boeing's KC-767 and the Northrop Grumman-EADS KC-30. The program as now structured is probably worth about $40 billion in today's dollars.

However, Gen. T. Michael Moseley, Chief of Staff, told the Senate Armed Services Committee in March that the selected airplane could also be the basis of the next generat on ISR fleet. Responding to a question on the urgency of filling the capability hole left by canceling the E-10 multisensor aircraft, Moseley said, "Until we get through with the KC-X opportunity and see which airframe we get and see what opportunities we have down the road to look at a follow-on to AWACS, JSTARS, and Rivet Joint, ... I think we'll be OK."

The KC-135 tanker is the airplane to be replaced by the KC-X, and it served as the basis for a number of ISR types, such as the E-3 AWACS, the RC-135, and EC-135 fleet. The E-8 Joint STARS were built onto secondhand Boeing 707s—which are similar to the KC-135—as the starting point.

The Air Force had previously settled on the Boeing 767 as the basis of the E-10, but Moseley's remarks suggest that the service will seek commonality between the ISR aircraft and the tanker.

The ISR "heavies" number about 84 aircraft, and replacing all of them—without their elaborate electronics gear—would cost about $24 billion at today's list prices.

As for the E-10, it died for several reasons, according to Air Force Secretary Michael Wynne.

"I would say that the expense of it was probably more

Northrop Grumman illustration

KC-30 (here, tanking a B-2) or KC-767 will get the prize.

than anything" the chief factor in the E-10's demise, Wynne said in an interview. He said that "there may be coming a different portfolio" of systems that will accomplish the same mission intended for the E-10. The Multiplatform Radar Technology Insertion Program (MP-RTIP) radar, which was the centerpiece of the E-10, might be made small enough to fit on the long-endurance Global Hawk vehicle, which may be a "very [much] less expensive way" of accomplishing some of the mission.

Moreover, although the E-10 would have had "protection in depth" if it had been used in a homeland defense role—by virtue of operating well inside US border—"most of us [thought of it] as a part and parcel of conducting an attack offshore," Wynne noted, where "it would be a delightful target" for an enemy. ■

Aerospace World

By Marc V. Schanz, Associate Editor

The Raptor Steps Out

The F-22 Raptor, USAF's front-line air superiority fighter, chalked up numerous successes at its first Red Flag exercises, held Feb. 3-16 at Nellis AFB, Nev.

According to the Air Force, the F-22 forces made quick work of skillful "Aggressors" flying F-15s and F-16s and demonstrated they can coordinate and augment coalition air forces as well.

The exercises marked the first time the F-22 has flown alongside British and Australian strike aircraft. In nearly two weeks of twice-daily combat, the F-22s didn't miss a single mission. (See "Red Flag Raptors," p. 18.)

USAF photo by SrA. Larry E. Reid Jr.

The first operational MQ-9 Reaper, built by General Atomics, began training missions with the 42nd Attack Squadron on March 19 at Creech AFB, Nev. The unmanned turboprop vehicle has three weapons pylons under each wing and can carry up to 3,000 pounds of ordnance; it is a larger, faster, and more powerful version of the MQ-1 Predator. The unit will eventually receive 18 of the aircraft.

Panel Says, "No Guard on JCS" ...

An influential blue-ribbon panel has turned thumbs down on the idea of giving the National Guard a seat on the Joint Chiefs of Staff.

The Congressionally appointed Commission on the National Guard and Reserves announced in a March 1 report that it opposed the JCS idea, which has been forcefully promoted by various lawmakers and state governors.

The panel was commenting on proposed legislation known as the National Guard Empowerment Act, which was first introduced in 2006 and again this year.

Panel members argued that such a move would complicate the military chain of command. Air Force and Army officers have similarly claimed that the move would have the effect of creating a new military service.

"Our chief goal was to strengthen the role of the Guard Bureau, not create a separate and independent service," said commission member Patricia L. Lewis.

... But Endorses Other Changes

The commission did say that the chief of the National Guard Bureau should be elevated from three- to four-star status.

The panel is chaired by Arnold L. Punaro, a retired major general in the US Marine Corps. Its deliberations have been closely watched by the defense community.

The commission said that small changes could help increase the Guard's influence on the JCS, and that no alterations are needed in Title 10, the rules outlining how the Guard answers to service Chiefs and civilian Secretaries. A final report is due next January.

The panel also suggested that the Guard send its homeland defense budgets to the Department of Homeland Security—which would vet them and send the request to the Pentagon.

Airborne Laser Shot Delayed

The key test of the Airborne Laser—the shootdown of a representative tactical ballistic missile—has been postponed slightly from late 2008 to Fiscal 2009, marking yet another technical delay for the program.

It's taking longer than expected to integrate the beam control and fire-control systems on the ABL, which is carried in a 747 airframe, Boeing ABL

C-17s Headed for Dover

Dover AFB, Del., will receive the first of a planned 13 C-17 airlifters next month. It has not hosted a new aircraft system on the base since 1973, when it received its first C-5 Galaxys. The base will continue to operate 18 C-5s.

Dover's 326th Airlift Squadron, an Air Force Reserve unit, flew its final C-5 mission on March 10, while the active duty 3rd AS of Dover's 436th Airlift Wing flew its last Galaxy mission on March 14. Both squadrons will operate new C-17s that will start to arrive in June.

Lt. Col. Craig LaFave, AFRC 512th Airlift Wing program integration chief, said "Team Dover" will now be able to serve two missions: hauling heavy loads to forward bases with the C-5 and going directly to more austere locations with the C-17.

program director Greg Hyslop explained to reporters in March. As recently as last fall, the 2008 shot was considered likely. (See "The Airborne Laser Narrows its Beam," December 2006, p. 30.) The critical test will now take place seven years after its originally scheduled goal of 2002.

The program continues to achieve milestones, however, Hyslop reported. Recently, the target illuminator laser was fired during a test mission at Edwards AFB, Calif. It marked the first in-flight external laser firing and measured the aircraft's ability to track airborne targets and measure atmospheric turbulence.

Will the F-35s Fall Out?

All signs in mid-spring were that two F-35 fighters requested in the 2007 emergency supplemental would be withdrawn from the bill, after the Pentagon took Congressional heat for the way it asked for them.

The aircraft were included as an "in kind" replacement of F-16 fighters the Air Force has lost in combat or used up in heavy taskings overseas. The F-16s are being replaced with F-35 fighters, now in development.

However, various Congressmen charged that the fighters are not an "emergency" item, or that the Pentagon was trying to fund them by an end-run around the normal budgeting process. Congress allowed the Marine Corps to replace lost or worn-out helicopters with brand-new V-22 tilt-rotors, however.

Making the case for the Pentagon's emergency spending priorities to the House Budget Committee in early March, Deputy Secretary of Defense Gordon England conceded that DOD officials were reconsidering the F-35 request.

England pushed back, though, noting that when equipment is lost or consumed, it often can't be replaced with identical gear if it is no longer in production. In those cases, the designated replacement should be acquired.

"It's true it won't affect us this year or next year," England said of delaying the F-35 buys. However, "at some point in the future, we will be short equipment and we'll have another problem in terms of our asset base."

USAF photo by A1C Timothy Chacon

Tuskegee Airmen cut the ribbon at the dedication ceremony of a room in their honor at Bolling AFB, D.C., on March 28. They received the Congressional Gold Medal at the US Capitol the next day.

Tuskegee Airmen Receive Congressional Gold Medal

Surviving members of the famed World War II Tuskegee Airmen on March 29 were awarded the Congressional Gold Medal, the highest honor Congress can bestow on civilians.

President Bush presented the award in a ceremony held in the Capitol Rotunda. He said that the airmen fought two wars: one against the Nazis and the other against bigotry in their own country.

Bush added his hope that the award would in some way help "atone for all the unreturned salutes and unforgivable indignities" suffered by the pioneering African-American aviators more than 60 years ago.

Other dignitaries at the ceremony included Speaker of the House Rep. Nancy Pelosi (D-Calif.) and House Majority Whip Rep. James Clyburn (D-S.C.), who is the highest-ranking black member of Congress. About 300 of the Tuskegee Airmen, spouses, and relatives attended the ceremony.

The award was the result of legislation authored by Sen. Carl Levin (D-Mich.) and Rep. Charles B. Rangel (D-N.Y.), signed by President Bush last year.

In the segregated US Army Air Corps of the 1930s, blacks were not permitted to fly. President Franklin D. Roosevelt overruled his generals and ordered a program set up to recruit black men for a flying program. Just under 1,000 airmen received their wings after training at Tuskegee AAF, Ala., between 1942 and 1946. The name "Tuskegee Airmen" stuck.

Of the graduates, 450 served overseas in the European Theater in the 99th Pursuit Squadron and the 332nd Fighter Group, flying bomber escort, patrols, and strafing attack missions in Europe and North Africa. Many were killed and others were captured and held prisoners of war.

The unit attained fame as dogged fighter escorts to bomber missions over Nazi Germany. Benjamin O. Davis Jr., who later became USAF's first African-American general, was the commander of both the 99th and the 332nd. He died in 2002.

"What we accomplished hasn't always been recognized for, really, what it meant to the country," Tuskegee Airman Charles E. McGee told the *Washington Post* prior to the ceremony. He added that the airmen pioneered civil rights for blacks before "what we know as the civil rights movement."

Congress has awarded the medal to more than 300 individuals and groups since the first award in 1776, given to George Washington.

USAF Rethinks Flying Hour Cuts

Air Force Chief of Staff Gen. T. Michael Moseley admitted to lawmakers in February that he's having second thoughts about proposed cuts to flying hours in the FY 2008 budget and beyond. The cuts were meant to free up funds for programs.

"I'm at the verge of not being comfortable with this, and I've asked our folks to look at [if there is] not some way to migrate money back," he told the House Armed Services Committee on Feb. 28. He's not sure simulators can substitute for real flying time to the degree the service anticipated.

Moseley added that funding is only part of the problem—the other being the age of aircraft and their availability for training. Maintainers simply can't generate the number of sorties needed to produce combat-rated pilots, he said. The Air Force has had to "dumb down" the standard to a level of concern, Moseley admitted.

In the same vein, USAF vice chief Gen. John D.W. Corley told the same committee on March 13 that Air Force readiness has since 2001 declined 20 percent, while it's flying 1,300 fewer aircraft.

Boeing Sounds C-17 Alarm Again

Boeing has begun to shut down long-lead production for the C-17 airlifter and will continue the process unless it gets some new orders soon, the company said in March.

The move is the first step in an "orderly shutdown" of the supply chain for the airlifter, company officials said. Boeing claimed that without further orders, layoffs will begin in early 2008 and the line will close completely by mid-2009.

Air Force Secretary Michael W. Wynne considers the announcement a hardball attempt to coerce more orders from the service, for which funds are lacking. (See "Washington Watch: More Mobility Twists," p. 14). When Boeing made the same pitch last year, Congress added 10 C-17s to the Air Force's budget.

Including the Congressional adds, USAF is buying a total of 190 C-17s. Firm orders are on the books from Australia, Britain, and Canada and NATO. Other nations, such as Sweden, have indicated a desire to buy C-17s, but have not appropriated the money to do so.

Boeing maintains that with a 34-month lead time to build one of the airlifters, they need a commitment now to ensure that no gap in production will occur. The company wants to continue building the airplane at 15 per year, which is considered the most efficient rate.

The Air Force included just two C-17s in its Fiscal 2008 "unfunded priorities" list.

Deputy Secretary of Defense Gordon England was pressed on the C-17 issue in February budget hearings. He said, "At some point, we do have to stop the production of the airplane."

Two F-16s in Unrelated Crashes

Two F-16s crashed in separate incidents on March 12, one in Nevada and one off the coast of Florida. Both pilots survived.

In Nevada, an F-16 assigned to the 16th Weapons Squadron at the Air Force Weapons School crashed at the end of a runway while on approach to the Tonopah Test Range airfield. The pilot ejected safely and there were no injuries or damage to property on the ground. The fighter was on a night training mission over the Nevada Test and Training Range, and the cause of the accident is under investigation.

On the same day, an F-16 from Air Force Reserve Command's 482nd Fighter Wing at Homestead ARB, Fla., crashed about 75 miles southeast of the base into the Florida Straits. The fighter was from the 93rd Fighter Squadron and at the time of the accident was flying a routine training mission. The pilot ejected safely and was rescued.

Combat-Ready C-130J Delivered

The first combat-ready C-130J that will serve an Air Mobility Command active duty unit was delivered by AMC chief Gen. Duncan J. McNabb in March. The aircraft went to the 463rd Airlift Group at Little Rock AFB, Ark.

Previous J model Hercules have all gone to Air Education and Training Command and the Guard and Reserve, in a variety of roles including transport, weather reconnaissance, training and psychological operations.

The 463rd AG currently operates a fleet of 13 C-130Es and 14 C-130Hs and has flown a high tempo of tactical airlift missions. They have been credited with taking 5,200 US convoys off the roads of Iraq.

"City in a Box," By 10:30 Tomorrow

Air Mobility Command in February packed an Army "city in a box" into a C-17 and flew it from Dover AFB, Del., to a forward area in the Middle East.

The "Force Provider" package was developed by the Army to get an entire 150-soldier tent city into one C-17—improving on a unit developed after Operation Desert Storm that set up a 550-soldier tent city. The original version took 60 personnel a week to put together, but the new one can be

Red Flag Raptors

The F-22 extended its winning streak at its first all-up Red Flag combat training exercises, where the Raptor-led "Blue" forces scored a lopsided victory over Red Air "Aggressor" forces using their best tricks.

Fourteen F-22s of the 94th Fighter Squadron at Langley AFB, Va., flew daily from Feb. 3-16 at the Nellis AFB, Nev., wargame, which included more than 200 US and coalition aircraft. The F-22s didn't miss a single scheduled mission—unprecedented for a fighter so early in its operational status and a tribute to the skill of its maintainers, according to Col. Thomas Bergeson, 1st Operations Group commander. Bergeson and 94th commander Lt. Col. Dirk Smith discussed the exercise with reporters at the Pentagon in a March teleconference.

The event marked the first time the F-22s have flown with coalition aircraft. Australian F-111s and C-130 tactical transports flew in the wargame, as did British GR-4 Tornados and C-130s. Participating types from the US included stealth B-2 bombers and F-117 attack aircraft, as well as F-15s, F-16s, F-5s, and Navy EA-6B Prowler jammer airplanes.

Smith said the F-22s, augmented by F-15s, typically protected a strike package of about 50 aircraft against a numerically superior defending force. The 94th—most of whose pilots have less than 100 hours in the F-22—consistently defeated the F-15s and F-16s of Nellis' Aggressors, the 414th Combat Training Squadron. The 414th quickly upped the ante of their tactics, and by the third day, "we were seeing their 'A' game, if you will," Bergeson reported. Only one F-22 was "lost" in the wargames.

Bergeson noted that "very few, if any" Red Air survived the F-22-led Blue force attack.

Red Flag provided an opportunity to explore the "synergies" of combining stealth aircraft with a variety of nonstealthy types in a number of scenarios, Bergeson added. The F-22s helped "open up a lane" for the nonstealthy aircraft to get past Red defenses.

As they did in Operation Northern Edge last year, the F-22s remained in the fight after expending their weapons, providing forward-area eyes for the rest of the Blue force, and directing comrades around or toward Red threats. (See "The Raptor in the Real World," February, p. 32.)

They also performed close air support and "dynamic retargeting," which involves changing a ground target well into the mission, Smith reported. "Time critical" targets were also struck.

The F-22s went against ground threats simulating real-world air defenses, including communications jamming, networked surface-to-air missiles, and anti-aircraft artillery. The Aggressors attempted to lure the F-22s into "SAM-bushes," trying to get the Raptors to pursue them into areas densely defended by surface weapons.

Each day of the exercise involved two "wars"—a daytime fight and one at night, with eight Raptors flying during the day and six at night, Smith reported. Red Air was permitted to "regenerate"—sometimes four or five times—after being "killed" in the exercise, but Blue forces were not. That in itself represented a tougher situation than the real world, since an enemy would likely lose his best airplanes and pilots early and offer a diminishing defense as a real war proceeded.

Bergeson described the Nellis units as "probably the best Red Air on the planet" and said the F-22 pilots are now "better than we were [before] ... because of the fantastic training" the Aggressors provided.

THE ARMORED SECURITY VEHICLE THAT MORE THAN LIVES UP TO ITS NAME.

When tactical mission requires you to be well outside the wire, make sure your airmen are riding with the toughest/smartest protection on four wheels.

The M1117 ASV from Textron Marine & Land.

This is not some beefed-up truck. It's a true armored vehicle with three levels of designed protection and a v-shaped hull.

The M1117 ASV. For security and protection, it's very hard to beat.

Protects against 360-degree small arms fire, anti-tank mines under any wheel, and overhead artillery burst fragments

Exterior: modular ceramic appliqué

65+ mph top speed; tires have run-flat inserts

www.textronmarineandland.com

WINNING TECHNOLOGY™

Textron Marine & Land //
TEXTRON Systems

assembled in less than four hours with the same personnel.

The newer kit was designed as a modular system of housing, food service, laundry, water and fuel storage, waste water collection, electrical power, showers, and latrines, according to Army officials.

Airmen and civilians at Dover's 436th Aerial Port Squadron worked 24-hour operations supporting the transport of the tent city deployments. Three additional 550-soldier kits were diverted from sea transport and sent aboard C-5s and contract aircraft, according to 436th AW officials. During a 10-day period, the Dover port received and airlifted 1,500 tons of equipment.

Fuel Substitution Gathers Steam

The Air Force plans to certify its entire fleet of B-52s to run on a new synthetic fuel blend by the end of the year, the service's top civilian logistics official told a Senate Finance Committee hearing in February. The move is hoped to shave down USAF's $7 billion annual energy bill.

Use of the synthetic fuel will be approved for unrestricted flight operations across the B-52 fleet as soon as analysis is done of tests on the type at Edwards AFB, Calif., and Minot AFB, N.D, Michael A. Aimone, the Air Force's logistics, installations, and mission support chief, said. Inspections showed no damage to the engines from the synthetic fuel.

Aimone explained that a domestic producer of synthetic fuel was chosen by the Air Force to manufacture the new fuel from natural gas. However, the gas-to-liquid process doesn't assure the Air Force of a dependable supply of jet fuel yet, due to the vagaries of domestic natural gas production. Production from coal, oil shale, and biomass sources would solve the constraint.

Penetrator Bomb Test Succeeds

The Defense Threat Reduction Agency reported success with the first explosive test of the Massive Ordnance Penetrator (MOP) conventional weapon in March. The weapon was exploded within a tunnel at the White Sands Missile Range, N.M.

The conventional 30,000-pound penetrating bomb is designed to defeat hard and deeply buried targets such as bunker and tunnel facilities. It is designed to be carried in B-2 and B-52 bombers and employed from high altitudes using GPS navigation for guidance. The weapon contains more than 5,300 pounds of explosives.

The planning for the test began nearly three years ago, and the test was not related to the recently canceled "Divine Strake" experiment slated for

The War on Terrorism

Operation Iraqi Freedom—Iraq

Casualties

By April 6, a total of 3,260 Americans had died in Operation Iraqi Freedom. This total includes 3,253 troops and seven Defense Department civilians. Of those fatalities, 2,634 were killed in action by enemy attack, and 626 died in noncombat incidents.

There have been 24,476 troops wounded in action during OIF. This includes 13,545 who returned to duty within 72 hours and 10,931 who were unable to quickly return to action.

Air Strikes Destroy IED Cell, Other Threats

Coalition air strikes in early March killed key enemy fighters and destroyed a large cache of materials used for making improvised explosive devices. Similar attacks destroyed several vehicles equipped with anti-aircraft artillery weapons and heavy machine guns.

On March 2, an air attack west of Taji targeted several members of a terrorist cell who were gathered at an area known for anti-coalition activities, according to Multinational Force-Iraq officials. The air strike killed several key terrorists and destroyed vehicles equipped with AAA and ammunition. The next day, another strike in Arab Jabour led to the rescue of four Iraqis and the death of seven terrorists hiding inside a building with another piece of AAA and rocket-propelled grenades.

On March 5, air strikes destroyed a building that housed a large cache of materials used to build roadside bombs in the city of Mosul. Ground forces called in an air attack to destroy about 50 IEDs, 200 bags of fertilizer, blasting caps, and grenades.

Operation Enduring Freedom—Afghanistan

Casualties

By March 31, a total of 373 Americans had died in Operation Enduring Freedom, primarily in and around Afghanistan. The total includes 197 troops and one DOD civilian killed in action and 175 who died in nonhostile incidents such as accidents.

A total of 1,148 troops have been wounded in Enduring Freedom. They include 462 who were able to return to duty in three days and 686 who were not.

Emergency Gas Delivered

A C-130 aircrew answered an urgent call for supplies on March 12, rushing 24 55-gallon drums of fuel and other supplies to the 1st Battalion, 508th Parachute Infantry Division. The supplies were air-dropped within eight hours of the request for resupply.

Elements of the 508th were fighting Taliban forces in the Ghorak Valley when they started running out of fuel. They were engaged in Operation Achilles, a campaign in the Helmand Province run by the International Security Assistance Force.

The airdrop was performed with low-velocity parachutes from less than 5,000 feet above ground. The 9,000 pounds of cargo landed within 38 yards of the desired point of impact.

Leaflets Discourage Spring Offensive

An Air Force C-130 dropped some 30,000 leaflets over the mountains of southeastern Afghanistan on March 7 in a campaign to deter Taliban activity. The airdrop was in direct support of Operation Achilles, an ongoing mission by the International Security Assistance Force to secure the southeastern region of the country.

The leaflets warned Taliban militants not to interfere with coalition activities. The Taliban has consistently launched spring offensives through the porous border region between Pakistan and Afghanistan. According to ISAF, operations such as the leaflet drop will focus on improving security by helping village elders take charge of local communities without the influence of extremists.

The mission was performed by an aircrew with the 379th Air Expeditionary Wing.

Joint Cargo Aircraft

Team JCA — C-295

Trust means *everything* to the warfighter. The C-295 from Team JCA *embodies* this trust. That is why it serves armed forces in Iraq, Afghanistan and elsewhere around the world, whether in the heat of battle or disaster relief missions, every single day. This trusted performance is backed by the C-295's mission availability of over 95%, and low operational costs that will save more than $10 billion in life-cycle fuel-cost savings. That's an efficiency that uses half the fuel than the competition. The C-295 from Team JCA: as strong, and as ready, as the people who rely on it.

www.raytheon.com/TeamJCA

EADS CASA NORTH AMERICA

Raytheon

Customer Success Is Our Mission

Index to Advertisers

Affinity Financial Corp. 49
Armor Holdings 57
AT&T 53
Aviation Nation ..... Cover III
Bell 9
Boeing ..... 41, 84-85, Cover IV
C-27J Team 33
Cast Navigation 29
Commemorative Air Force 8
General Atomics 45
General Dynamics 5, 11, 31, 61
Gulfstream 117
In Search of Daedalus 10
Lockheed Martin ..... Cover II, 65
Northrop Grumman 3, 109, 165
Oregon Aero 7
Panasonic 6
Pratt & Whitney 163
Raytheon 21
Siemens 37
SymbolArts 7
TEAC 23
Textron 19
USAA 159

AFA Annual Fund 161
AFA Air & Space and Technology Exposition 167
AFA Original Tees 164
AFA Resume Assistance Service 164

Nevada, according to DTRA. The Air Force Research Laboratory Munitions Directorate at Eglin AFB, Fla., is executing the MOP contract and providing management and technical support.

Grand Forks Eyed as KC-X Base

Grand Forks AFB, N.D., should be studied as a possible basing location for the service's next generation air refueling aircraft, Air Force Chief of Staff Gen. T. Michael Moseley said during a recent visit there.

During a tour of the base March 13, Moseley met with base officials and airmen to discuss the base's follow-on mission after the 2005 Base Realignment and Closure round—which takes away Grand Forks' KC-135s—is implemented. While Grand Forks is slated to get a joint mission operating Global Hawks and Predators along with the Air National Guard, Moseley told the North Dakota Congressional delegation that the base is a top-tier candidate for the new tankers.

Sen. Kent Conrad (D-N.D.) announced that plans called for a site review team from Air Mobility Command to visit the base in late March to inspect infrastructure and facilities and decide what improvements would be needed for a new tanker mission.

Illinois Wing Gets New C-40

Air Force Reserve Command received a new aircraft type in February, when the C-40C was delivered to the 932nd Airlift Wing at Scott AFB, Ill. The aircraft, which is a variant of the Boeing 737 airliner, will augment the unit's C-9Cs as a VIP transport.

The C-40 can fly for 10 hours or so, which will broaden the unit's capabilities. The aircraft feature upgraded avionics that handle classified communications and auxiliary fuel tanks that allow nonstop flight to Hickam AFB, Hawaii, or Ramstein AB, Germany.

The wing is the only Reserve unit in the state. The aircraft delivered is one of three that the unit will receive.

With the new C-40, the 932nd will once again be partnering with the active duty 375th AW at Scott through an active associate unit.

Pratt Engine Chosen for KC-767

Boeing has selected the Pratt & Whitney PW4000-94 engine to power the KC-767—Boeing's entry in the USAF KC-X tanker competition. The choice marks the first military application for the PW4000 engine family, which has logged many hours on civilian airframes such as Boeing's 767 and the Airbus A300/310.

The PW4000 family includes models with thrust ratings from 52,000 pounds to 98,000 pounds. The engine meets all current and anticipated emission and noise regulations, according to a Pratt & Whitney statement.

Pratt & Whitney engines equip several Boeing-USAF heavy types. The

Air Force Likely To Seek 20 Additional F-22s

It looks like the Air Force will request at least 20 more F-22 Raptors, and the tide may be turning to get even more, service Secretary Michael W. Wynne told *Air Force* Magazine.

Wynne has argued since 2006 that the Air Force mustn't close down the F-22 line until the F-35 line is up and running at a substantial build rate. However, Congress has not moved to bring the F-35 into production in the desired timeline, and that may force the F-22 issue, Wynne said.

"The way the Joint Strike Fighter is going, we may yet need another tranche of F-22s simply to continue to bridge the gap and make sure the President has a fifth generation fighter line available for expansion if he needs it," Wynne maintained. The F-22 is being bought at 20 airplanes a year through 2009.

"It looks to me like that argument could take us at least into '10 and ... get you some deliveries in the '12-'13 time frame," he added. That would get close to overlapping the F-35 production at the current schedule.

Wynne confessed that, given the stellar performance of the F-22 in recent wargames, "I don't know what the total quantity required is," even though USAF has verified 381 as its hard requisite. However, he noted that he sees "a growing consensus that 183 doesn't give you the breadth you might need."

He said, "More and more of the think-tank articles and the influencers ... are starting to consider that 18-[Raptor] squadrons are ... not what you really want, and it's just another demonstration that the Air Force is getting thinly spread."

Moreover, he believes the service can make some headway toward getting F-22s restored in the future if USAF uses the Navy's aircraft carrier justification: presence and deterrence. "Presence has an impact. ... You really don't want to be called on to use your might. You want the presence of it to be sufficient."

Empowering the digital battlefield

Digital mission data, tactical and recon video are critical to achieving combat superiority in today's digital battlefield. Our Mission Data Recorders (MDR) record the highest quality digital video and capture digital mission data from any airborne or ground vehicle. Our modular architecture creates flexibility to meet multiple operational requirements. This powerful recording platform provides critical data that can be extracted and then distributed throughout the battlefield.

Mission Data Recorders:

- **Support Network-Centric Operations**
- **Digital Video/Audio Recording: HUD, FLIR, and MFDs**
- **Digital Data Recording: PCM, ACMI, MFOQA, HUMS, Ethernet and 1553**
- **Real-Time Image Capture and Compression**
- **High-Speed Network Architecture**
- **Mission Data Loading**
- **Removable Solid-State Memory Modules**

TEAC's Digital Debrief Stations integrate and synchronize video and aircraft digital data to deliver 21st century mission debrief capabilities, including 3-D playback or full ACMI capability. In today's digital battlefield, we offer more choices, superior reliability, long-term support and lower life cycle costs. If it's worth a mission... it's worth a TEAC.

TEAC Aerospace Technologies

Tel: 01.323.837.2715 Fax: 01.323.837.2815 E-mail: amcgowan@teacaerospace.com www.teac-aerospace.com

CSAR-X Bidding Reopened

The Air Force will reopen the bidding for its new combat search and rescue helicopter program to the original three competitors now that the Government Accountability Office has completed its review of the award.

The Air Force had selected Boeing for the CSAR-X program last November, but the GAO found merit in the formal protests of losing competitors Lockheed Martin and Sikorsky. They argued that the Air Force ignored its own guidelines and requirements in making the award to Boeing.

At stake is a contract to build about 141 aircraft valued at more than $15 billion.

After initially rejecting the GAO's recommendation to reopen the bidding, the Air Force agreed to rephrase and clarify some of its award criteria in an amended request for proposals. Only those companies that competed for the original contract can resubmit bids.

In a March 22 statement, the Air Force said its amended RFP would "clarify its intent with respect to the evaluation of operations and support costs."

In choosing Boeing's twin-rotor HH-47 as the winner of the CSAR-X contest last fall, the Air Force said the aircraft offered the best value and fastest in-service date among the competing aircraft, which included Lockheed Martin-Agusta Westland's US101 and Sikorsky's S-92 Superhawk. (See "Aerospace World: Boeing Wins CSAR Contract, but Competitors Protest," January, p. 15.)

Boeing said the reopened competition allowed the other companies "an undeserved second chance" and competitive edge, now that they have access to some of Boeing's cost data through the protest process.

F117 engine equips the C-17, and the venerable TF33 powers the B-52 and the KC-135.

Cadet Satellite Reaches Orbit

A satellite built by US Air Force Academy cadets was launched into orbit March 8 aboard an Atlas V rocket from Cape Canaveral AFS, Fla.

The FalconSat-3 launch culminates three years of work. A launch failure last year destroyed FalconSat-2.

Cadets will operate the satellite via the academy's ground control station. They will use FalconSat-3 to gather scientific data for the academy's Space Systems Research Center. The center runs an astronautical engineering course in which cadets design and build microsats for Pentagon research programs.

FalconSat-3 contains five military experiments that are the work of the academy's physics and atmospheric research center and other government agencies. Included are experiments on spacecraft-induced turbulence and on ionospheric plasma bubbles that can affect space-based communications. Also being investigated is micropropulsion: a low-thrust electric pulse system that could power future satellites. FalconSat-4 and 5 are already in development.

Denmark Signs Up for JSF

Denmark signed the Joint Strike Fighter production, sustainment, and follow-on development memorandum of understanding Feb. 27—marking the completion of nearly three years of multilateral negotiations, reviews, and approvals by each of the nine partner nations.

The signing ceremony was held at the US Embassy in Copenhagen. Danish

News Notes

■ The Air Force in March renamed its Air Mobility Warfare Center at Ft. Dix, N.J. The new name is the Air Force Expeditionary Center. It will be the focus of expeditionary training activities such as Eagle Flag exercises. First established by former Air Force Chief of Staff Gen. Ronald R. Fogleman in 1994, the center has become a clearinghouse for air mobility training, geared toward expeditionary deployments.

■ An Air Force C-130 from Homestead ARB, Fla. flew a planeload of relief supplies to Bolivia in March, to aid victims of floods caused by heavy rains. Coordinated with US Southern Command, the US Agency for International Development, and the Navy, the effort helped deliver more than 4,800 water containers, 2,300 hygiene kits, and four water pumps. The C-130 crew came from the 156th Airlift Wing in Puerto Rico, with members of the 70th Aerial Port Squadron at Homestead helping to load the supplies.

■ The Air Force awarded Northrop Grumman $12.5 million to start engineering work on replacement engines for the E-8C Joint STARS. In February, the Air Force announced the selection of a Pratt & Whitney team to supply a propulsion pod system that includes the JT8D-219 engine. The new engines are expected to sharply improve reliability and reduce sustainment costs on the Joint STARS.

■ After serving more than twice as long as expected, the oldest GPS satellite on orbit will soon be taken offline. Air Force Space Command said SVN-15 had orbited for 16 years as of October 2006. The satellite has begun to develop trouble with its operational clocks, however, and on March 14, control authority for the satellite moved from the 2nd Space Operations Squadron to the 1st SOPS for "end of life" testing. After the month-long testing process, the satellite will be boosted into a disposal orbit.

■ Lockheed Martin received a $40.4 million contract in March to finish engineering on the A-10C Precision Engagement program. The work, including software updates and flight tests, will continue through May 2008. The program upgrades the A-10 to the A-10C. It allows the fighter to use precision guided weapons such as Joint Direct Attack Munitions and the Wind-Corrected Munitions Dispenser and improves situational awareness, target identification, and information displays.

■ A new satellite communication system will give the B-2 stealth bomber the ability to send and receive battlefield information nearly 100 times faster than it can today, Northrop Grumman said in May. The Air Force gave the company the green light to begin developing the first part of the extremely high frequency satellite communications program for the B-2. The first increment will replace the B-2's flight-management computers with a single processing unit developed by Lockheed Martin. The next increment will give the aircraft the ability to send and receive on EHF frequencies. The final increment will integrate the new EHF capabilities into the bomber's controls and displays.

■ The 366th Fighter Wing's sole F-16 unit flew its last mission from Mountain Home AFB, Idaho, on March 16. The 389th Fighter Squadron has given up its F-16 mission as the wing transitions to the F-15E mission exclusively. The last five F-16s went to the 157th Fighter Squadron at McEntire ANGS, S.C., under dictates from the 2005 Base Realignment and Closure process. About 40 of the squadron's 107 F-16 aircraft maintenance airmen will remain in Idaho and retrain on the Strike Eagle—all of which are scheduled to be in place by 2011.

■ The Air Force gets one of the Defense Department's most power-

USAF photo by SrA. Garrett Hohan

The C-130 Hercules, shown here, is coming to the end of its service at Elmendorf AFB, Alaska. The base is scheduled to receive its first C-17 next month.

Minister of Defense Soren Gade added his signature to the agreement already signed by Australia, Britain, Canada, Italy, the Netherlands, Norway, Turkey, and the US.

The agreement follows the model of the early F-16 program, in which multinational partners bore shares of development cost and enjoyed some share of production.

JSF Second Engine Studied

Developing a competitive "second source" engine for the F-35 Joint Strike Fighter wouldn't yield any savings, according to a study funded by Pratt & Whitney, which builds the fighter's F135 engine.

The consulting firm of Whitney, Bradley, and Brown conducted the study for Pratt. It found that a second JSF engine would increase the cost of ownership of the F-35, and that any savings from regular engine procurement competitions would be offset by the inefficiencies of smaller production runs.

The WB&B group also said that engines account for only a small number of fleet groundings, suggesting that it's not necessary to have a backup source in the unlikely case that the primary engine develops technical problems. The F135, based on the F119 used in the F-22, has performed well in tests so far.

The Pentagon has twice tried to kill the alternative engine program, claiming it's not needed and that the money is required elsewhere. Last year, Congress restored the funds. The GE-Rolls Royce team is developing the F136 power plant. (See "Aerospace

ful supercomputers this month—the SGI Altix 4700—and expects to have it running by October. The computer will be used for a range of duties, from designing new aircraft, weapons, and aircraft upgrades to simulating huge battles with thousands of independent elements. Added to existing processors, it will be capable of 85 trillion floating-point operations per second, or 85 teraflops. Its 4,608 dual-core processors will be water-cooled. The device will be housed at the Aeronautical Systems Center Major Shared Resource Center, Wright-Patterson AFB, Ohio.

■ Aviano AB, Italy, faced mobs of protesters, a bomb, and a road full of casualties in March—as part of a simulated contingency run by NATO. The exercise tested the base's ability to deal with large and simultaneous crises. The evaluation is designed to push the units tested to and beyond their limits by forcing them to deal with many incidents in a short period of time.

■ The C-130 Avionics Modernization Program will begin fielding aircraft in 2010, and crews are training now to get ready for it, Boeing said in March. Flight crews and maintenance personnel will get more than 50 hours of classroom instruction and 12 hours in the company's system integration laboratory, focusing on the procedures for the new avionics technology. More than 100 airmen had received the intensive training as of March 7, Boeing said. Flight-test personnel, instructors, and initial cadre from operational units will train over the next several years. Boeing is conducting ground and flight testing on the first modernized aircraft, a C-130H2 model, and flew the second aircraft for the first time in late March.

■ The Cooperative Avionics Test Bed, a modified 737 designed to prove out the design of the F-35 fighter's avionics suite, flew from California to Lockheed Martin's Fort Worth, Tex., facility on March 2 to prepare for airborne mission systems testing later this year. The "CATbird" will integrate and help validate the performance of all sensor systems before they are flown on the F-35. During second-phase modifications at Fort Worth, the company will install a series of test stations in the CATbird's main cabin, along with instrumentation to monitor and measure the flight performance of sensors. The nose of the 737 airliner has been modified to simulate the F-35's nosecone and a 13-foot canard has been attached to the fuselage to stand in for the F-35's wings.

■ Air Force announced March 15 that Barksdale AFB, La., and McGuire AFB, N.J., will be the test bases for the service's new energy initiatives pilot test program. The two bases were selected due to geographic location and operational and facility characteristics. The program will review buildings, offices, hangars, and other facilities on the base and examine fuel efficiencies. The program will also monitor the introduction of alternative fuels in the ground vehicle fleet and in aviation operations and suggest ways to improve efficiencies through flight planning and loading practices. The best ideas from the two bases will be shared across the Air Force.

■ Airmen with the 376th Air Expeditionary Wing at Manas AB, Kyrgyzstan, visited a local school in March to help teach English and give the students a view of American culture. The group met with about 30 students and fielded a range of questions, such as the difference between schools in America and Kyrgyzstan, the economics of both countries, and how each of their governments work. The program is a joint effort by the US Embassy and Manas Air Base under the Public Diplomacy Outreach Program. ■

World: Second F-35 Engine Has a Cost," October 2006, p. 14.)

Jay Zeamer Jr., MOH

Jay Zeamer Jr., a Medal of Honor recipient and bomber pilot with the US Army Air Corps in World War II, died at a Maine nursing home on March 22. He was 88 and was the only living recipient of the nation's highest military honor from the World War II AAF. Zeamer was also one of 36 living Medal of Honor recipients from that war, according to the Congressional Medal of Honor Society.

Zeamer was a captain when he volunteered for a mapping mission over an area near Buka in the Solomon Islands, a Pacific chain that was heavily fortified by the Japanese. While photographing the airdrome on Buka, Zeamer's crew spotted about 20 Japanese fighters—some of which were taking off to intercept the bomber. Zeamer continued with his run, even after an attack where he suffered gunshot wounds to both arms and legs.

Despite his significant injury, Zeamer maneuvered the damaged airplane so his gunners could fight off enemy fighters, resulting in a 40-minute pitched battle where five enemy airplanes were destroyed. According to his citation, he refused medical aid until the enemy had broken combat.

Zeamer, who was promoted to lieutenant colonel, was a Carlisle, Pa., native who grew up in Orange, N.J. He graduated from the MIT with bachelor's and master's degrees in engineering. After the war, he worked at Pratt & Whitney, Hughes Aircraft, and Raytheon. He retired in 1968 to Boothbay Harbor, Maine.

Chase Nielsen, 1917-2007

Retired Lt. Col. Chase J. Nielsen, one of the "Doolittle Raiders," died March 23 at his home in Brigham City, Utah. He was 90 years old.

Nielsen was navigator of Crew #6 on April 18, 1942, when B-25 Mitchell bombers led by Lt. Col. Jimmy Doolittle launched from USS *Hornet* and struck the Japanese homeland for the first time in World War II. Nielsen's airplane was one of those forced to ditch off the coast of China. He was one of eight who were captured by the Japanese and spent the next 40 months as prisoners of war.

After the war, he remained in the Air Force until his retirement in 1961, after which he worked as an engineer at Hill AFB, Utah.

Of the 80 men who participated in the Doolittle Raid, 60 survived the war and 14 are living today.

B-52s Fly "Koa Lightning" Raid

Four B-52s made a mock attack on Hawaii in February, practicing a long-distance Pacific bombing run and possibly paving the way for use of a bombing range on the Big Island.

Exercise "Koa Lightning" involved B-52s that flew from Guam and back. Attacking a point on the island of Oahu, the B-52s were intercepted by Hawaii Air National Guard F-15s and practiced their defensive tactics.

The bombers are deployed to Guam from Barksdale AFB, La. The 18-hour round-trip missions from Guam to Hawaii were comparable to flying from Washington, D.C., to Sweden and back without landing. Two aerial refuelings were needed for the mission.

Similar exercises—during which no munitions are dropped—are held every quarter, but this one was a dry run for possibly dropping inert ordnance on the Pohakuloa Training Area on the island of Hawaii. The Air Force wants to change regulations so it can use nonexplosive rounds at Pohakuloa. Current rules say aircraft must fly low enough to eyeball targets, but B-52s typically release satellite guided bombs from 25,000 feet. ■

USAF photo

An airman and a soldier jump into a tub of cleaning solution after entering a bunker housing a simulated chemical weapons lab April 12 at Ramstein AB, Germany. Army and Air Force members are training together in a chemical response exercise so that they may respond as a single unit if needed.

Senior Staff Changes

NOMINATIONS: To be General: Victor E. **Renuart Jr. To be ANG Major General:** Shelby G. **Bryant,** Howard M. **Edwards,** Norman L. **Elliott,** Steven E. **Foster,** Robert D. **Ireton,** Emil **Lassen III,** George T. **Lynn,** Robert B. **Newman Jr.,** Timothy R. **Rush,** Stephen M. **Sischo. To be ANG Brigadier General:** Craig W. **Blankenstein,** William J. **Crisler Jr.,** Johnny O. **Haikey,** Rodney K. **Hunter,** Jeffrey R. **Johnson,** Verle L. **Johnston Jr.,** Jeffrey S. **Lawson,** Bruce R. **Macomber,** Gregory L. **Marston,** James M. **McCormack,** Deborah C. **McManus,** John E. **Mooney Jr.,** Daniel L. **Peabody,** Kenny **Ricket,** Scott B. **Schofield,** John G. **Sheedy,** John B. **Soileau Jr.,** Francis A. **Turley,** James R. **Wilson,** Paul G. **Worcester.**

CHANGES: Maj. Gen. Chris T. **Anzalone,** from Deputy, Test & Assessment, MDA, Arlington, Va., to Deputy, Test, and Deputy, Logistics & Fielding, MDA, Huntsville, Ala. ... Brig. Gen. Burton M. **Field,** from Cmdr., 1st FW, ACC, Langley AFB, Va., to Cmdr., 332nd AEW, ACC, Balad AB, Iraq ... Brig. Gen. Maurice H. **Forsyth,** from Dep. Dir., Global Ops., Jt. Staff, Pentagon, to Dep. Combined Forces Air Component Cmdr., CENTCOM, Al Udeid AB, Qatar ... Brig. Gen. Jonathan D. **George,** from Cmdr., 55th Wg., ACC, Offutt AFB, Neb., to Dep. Commanding General, Combined Security Transition Command-Afghanistan, CENTCOM, Kabul, Afghanistan ... Brig. Gen. Blair E. **Hansen,** from Vice Cmdr., 9th AF, ACC, Shaw AFB, S.C., to Dir., ISR Capabilities, DCS, Intel., USAF, Pentagon ... Brig. Gen. Bradley A. **Heithold,** from Vice Cmdr., Warner Robins ALC, AFMC, Robins AFB, Ga., to Dir., Plans, Prgms., Rqmts., & Assessments, AFSOC, Hurlburt Field, Fla. ... Brig. Gen. (sel.) Francis L. **Hendricks,** from Study Dir., DARPA, Pentagon, to Vice Cmdr., AAFES, Dallas ... Maj. Gen. William L. **Holland,** from Dep. Combined Forces Air Component Cmdr., CENTCOM, Al Udeid AB, Qatar, to Vice Cmdr., 9th AF, ACC, Shaw AFB, S.C. ... Brig. Gen. James M. **Kowalski,** from Cmdr., 552nd ACW, ACC, Tinker AFB, Okla., to Dep. Dir., Global Ops., Jt. Staff, Pentagon ... Brig. Gen. Susan K. **Mashiko,** from PEO, Environmental Monitoring, National Polar-Orbiting Operational Environmental Satellite Sys., Integrated Prgm. Office, Silver Spring, Md., to Cmdr., Mil. Satellite Comm. Systems Wg., SMC, AFSPC, Los Angeles AFB, Calif. ... Brig. Gen. William N. **McCasland,** from Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif., to Dir., Space Acq., Office of the Undersecretary of the AF, Washington, D.C. ... Brig. Gen. Ellen M. **Pawlikowski,** from Cmdr., Mil. Satellite Comm. Systems Wg., SMC, AFSPC, Los Angeles AFB, Calif., to Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif. ... Brig. Gen. John I. **Pray Jr.,** from Cmdr., 89th AW, AMC, Andrews AFB, Md., to Sr. Dir., White House Situation Room, NSC, Exec. Office of the President, Washington, D.C. ... Brig. Gen. Katherine E. **Roberts,** from Spec. Asst. to the Dep. Dir., NRO, Office of the Undersecretary of the AF, Chantilly, Va., to Dir., Signals Intel. Sys. Acq. & Ops., NRO, Office of the Asst. SECAF for Space, Chantilly, Va. ... Brig. Gen. Lawrence L. **Wells,** from Dep. Dir., Air & Space Ops., ACC, Langley AFB, Va., to Cmdr., 380th AEW, ACC, Al Dhafra AB, UAE. ■

Verbatim

By John T. Correll, Contributing Editor

Solutions From Deep Space

"Climate change is the No. 1 problem facing the world today. I'm not discouraging anyone from being green conscious, but I would like to see what (alien) technology there might be that could eliminate the burning of fossil fuels within a generation ... that could be a way to save our planet."***—Paul Hellyer, 83, former Canadian defense minister turned UFO enthusiast,*** **Ottawa Citizen,** ***Feb. 28.***

Rating Rumsfeld

"I think that Donald Rumsfeld will go down in history as one of the worst Secretaries of Defense in history."***—Sen. John McCain (R-Ariz.), Associated Press, Feb. 20.***

Read My Lips

"For the umpteenth time, we are not looking for an excuse to go to war with Iran. We are not planning a war with Iran."***—Secretary of Defense Robert M. Gates, Pentagon news briefing, Feb. 15.***

Elderly Airpower

"We have never flown fighters this old. If you're driving a 28-year-old car, you can expect some problems. And 28-year-old cars don't go flying around at 700 miles per hour and pull nine Gs."***—Lt. Gen. David A. Deptula, F-15 pilot and Air Force deputy chief of staff for intelligence, surveillance, and reconnaissance,*** **Fort Worth Star-Telegram,** ***Feb. 27.***

Willing Workers

"Some say it is useful to compare the brothels to college cafeterias run by private companies who recruit their own staff, procure foodstuffs, and set prices. Where there's demand, businesses crop up, ... but to say women were forced by the Japanese military into service is off the mark. This issue must be reconsidered, based on truth, ... for the sake of Japanese honor."***—Nariaki Nakayama, speaking for 120 Japanese legislators who deny that Korean and Chinese "comfort women" were forced into brothels in World War II, Associated Press, March 2.***

Missile Defense Looks Better

"This is all a result of Iran. Governments see that Iranian missiles can hit Europe, and suddenly they are very worried about the threat from ballistic missiles. They have to look at missile defenses."***—Tim Williams, Royal United Services Institute for Defense and Security Studies in London, on changing European attitudes toward US missile defense program,*** **Christian Science Monitor,** ***Feb. 26.***

Good Questions

"The budget proposes to add 92,000 active [duty] Army and Marine Corps personnel to the force over the next five years. ... An increase of this size will require us to either permanently increase the size of the defense budget or cut back on weapons programs. ... Once adopted, such increases are not easily undone. ... We all understand the stress on our forces in Iraq, but only some of these additional people would be trained and ready to help relieve that stress in the next year or two. ... Do we intend to stay in Iraq for years to come? Does the Administration think the long war with terrorism is going to be won with large ground forces operating in foreign nations?"***—Sen. Carl Levin (D-Mich.), Senate Armed Services Committee hearing, Feb. 6.***

Stalin the Peacemaker

"Stalin was both the greatest military leader of the 20th century and a remarkable politician who sought to avoid the Cold War and establish a long-term detente with the capitalist world."***—Geoffrey Roberts, Irish professor of history,*** **Stalin's War: From World War to Cold War, 1939-1953,** ***Yale University Press.***

Tin Ear Revisionists

"Today, the Air Force has become so politically correct that nobody can figure out what it's saying. For instance, in 2005 Air Force leaders issued a revised mission statement, arguing that 'our mission is our guiding compass, and it must be clearer than ever before.' The statement began, 'The mission of the United States Air Force is to deliver sovereign options for the defense of the United States.' Sovereign options? Sounds like a mission statement for currency traders rather than warfighters. Whatever happened to Global Reach-Global Power?"***—Loren B. Thompson, Lexington Institute, March 6.***

Other Side of Proliferation

"I am among those who believe that major war among major countries is on the wane—not because mankind has changed but because of the proliferation of nuclear weapons."***—Military historian Martin van Creveld, Hebrew University of Jerusalem,*** **Washington Post,** ***Feb. 18.***

Wild Blue Megabytes

"Recently the Chief of Staff of the Air Force and I took steps to focus and accelerate Air Force efforts in cyberspace: updating the service's mission statement, standing up a Cyberspace Task Force, and asking major commands to develop potential organizational options up to and including an additional major command. The Air Force is particularly dependent upon cyberspace and well postured for the cyber battle. Without dominance in cyberspace, operations in the air and space domains as well as those on land and sea remain at risk."***—Secretary of the Air Force Michael W. Wynne,*** **Air & Space Power Journal,** ***spring issue.***

Reconsider the Reduction

"The Air Force personnel decreases continue the downward glide-slope of airmen which began in 2004 and are projected to end in 2009 with 65,000 fewer personnel. If we are to expect that the Air Force will provide the same amount of global power and global reach to joint forces, I believe that personnel reductions of this magnitude should be reconsidered in this budget and in future years."***—Rep. Ike Skelton (D-Mo.), chairman of the House Armed Services Committee, Feb. 28.***

Total Force Short

"The equipment readiness of our Guard and Reserve today is totally unacceptable. ... For the units that remain here in the continental United States, 88 percent of those units are not ready. If you're talking about red, yellow, green [readiness ratings], ... red would be 'not ready.' ... In the Air Guard it's 45 percent red. The National Guard has indicated to me this is worse than the worst readiness days of the hollow force in the late '70s and early '80s."***—Arnold L. Punaro, chairman of the Commission on the National Guard and Reserves, press briefing, March 1.***

Action in Congress

By Tom Philpott, Contributing Editor

Better Care for Wounded Troops; Fallout From Walter Reed; Speeding Mail to the Fronts ....

Wounded Warrior Assistance

The House unanimously approved a legislative package designed to improve support services for all wounded troops and their families in the wake of the scandal at Walter Reed Army Medical Center, Washington, D.C.

The Wounded Warrior Assistance Act passed in late March by a vote of 426-zero. The Senate must pass a companion measure.

At Walter Reed, many wounded troops lived in poorly maintained quarters and faced numerous bureaucratic hassles in attaining needed care. Housing conditions came under special scrutiny after the *Washington Post* reported poor conditions in about half of the 54 rooms in Building 18 at the complex.

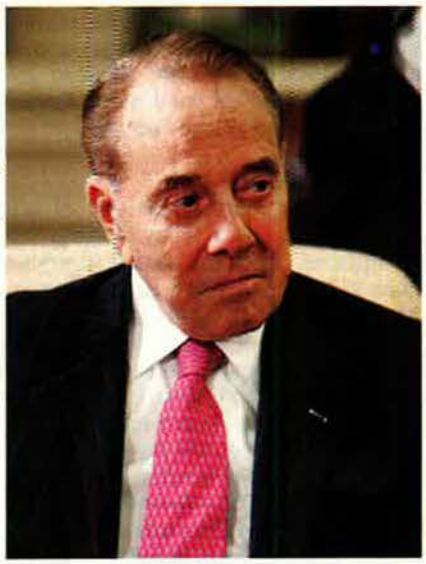
The legislation would give war wounded and their families a stronger team of advisors and advocates to guide them through treatment, recovery, and disability evaluation.

Highlights of the Bill

Rep. Vic Snyder (D-Ark.), chairman of the House Armed Services military personnel subcommittee, and Rep. John McHugh (R-N.Y.), the panel's ranking Republican, called the package a good "first step" toward ensuring that wounded service members get the support and care they need.

Specific provisions included:

- Assignment of a case manager for all outpatients to oversee medical and dental care. No case manager would be responsible for more than 17 patients at a time.
- Creation of service member advocates to assist outpatients and their families with any welfare or quality of life challenges, regardless of whether family members have moved near to the hospital or still reside at home. Advocates would have no more than 30 cases at a time.
- Twice-yearly surveys of wounded troops on quality and timeliness of care, adequacy of living conditions and case management, and fairness and timeliness of the disability evaluation process.
- A hotline for outpatients and families to report on deficiencies in medical support facilities including housing. Staff would have 96 hours to substantiate and rectify problems, to include relocating outpatients with complaints about adequacy of quarters.
- Military medical facilities will notify members of Congress when a service member has been evacuated from a theater of operations for care, if the injured member consents. Presumably this would allow lawmakers to keep track of injured constituents.
- Assignment of an independent medical advocate for service members going before medical evaluation boards.
- A maximum caseload of 20-to-one, and standardized training, for physical evaluation board liaison officers. These officers help members through the disability evaluation system.

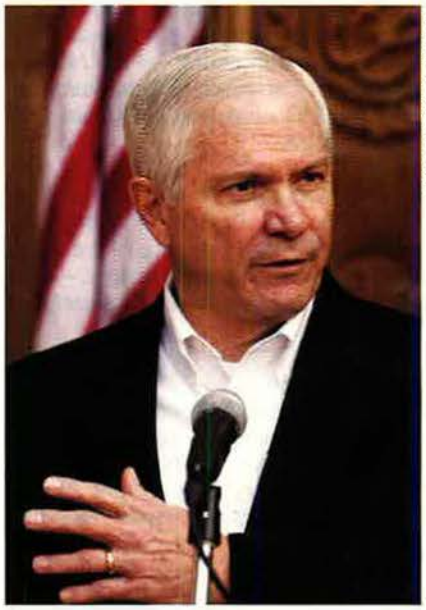


AP photo by Pablo Martinez Monsivais

Dole will co-chair commission.

More Walter Reed Fallout

Former Sen. Bob Dole and former Health and Human Services Secretary Donna E. Shalala were named to co-chair a comprehensive review of military medical care at the Department of Defense and Department of Veterans Affairs.



AP photo by Cherie A. Thurlby

Gates wants a comprehensive review.

The review was commissioned by President Bush on March 6 to recommend ways to improve the care, rehabilitation, transition to civilian life, and access to benefits and services for war veterans and disabled retirees.

Secretary of Defense Robert M. Gates directed the Army to provide an action plan to fix the outpatient situation at Walter Reed. Gates said part of the problem clearly was caused by caseworkers who were "overwhelmed" by the numbers of outpatients they had to monitor.

Gates also tasked David S.C. Chu, undersecretary of defense for personnel and readiness, to conduct a comprehensive review of all military medical care programs, facilities, and procedures.

Pentagon officials have maintained that the quality of patient care at Walter Reed was not at issue. Problems instead centered on bureaucracy, delays in determining disability ratings and, for some soldiers, dilapidated housing.

War Mail

Rep. Vito Fossella (R-N.Y.) has reintroduced legislation that would give

Photo courtesy of www.house.gov/Fossella

Fossella delivers the mail.

military families free mail privileges when sending letters or packages to service members serving in Iraq and Afghanistan or to loved ones hospitalized as a result of war-related injury or illness.

Fossella said some military families are spending hundreds of dollars out-of-pocket to sustain a flow of "care packages" to loved ones assigned to war zones. These troops are often forward deployed to dangerous areas for a year or more. That is putting additional strain on family budgets.

In a news release, he said it is "common for a typical family to spend at least $1,500 annually on postage for care packages, which often consist of necessities like shampoo, powder, blankets and linens, phone cards, and toothpaste."

Fossella said that to "help make life better for our soldiers and to ease the financial burden on those back home, this bill will cover the cost of mailing a monthly package to our servicemen and -women in Iraq and Afghanistan."

He had introduced an identical bill in the 109th Congress and it cleared the House but was dropped during final negotiations with the Senate.

Supplemental Fight

As President Bush and Congress this April headed toward their clash over troops in Iraq, billions of dollars in military and veterans health care were on the line.

The new defense supplemental bill, HR 1591, set a 2008 deadline to get US combat troops out of Iraq, which set it up for a Bush veto. That would also take down money to close a funding shortfall for military and veterans health care.

The legislation included:

- $2.8 billion for defense health care, or $1.7 billion more than requested by the Bush Administration.
- $730 million that would help finance Tricare and obviate the need for fee increases.
- $450 million for post-traumatic stress disorder treatment and counseling.
- $450 million for traumatic brain injury care and research.
- Some $20 million to address problems experienced by outpatients at Walter Reed hospital.
- About $14.8 million for expanded burn care.

Another $1.7 billion is earmarked for VA health care, including $550 million for a maintenance backlog at VA facilities and almost $500 million more to improve VA health administration treatment for a rising number of patients. And $100 million would be provided to allow veterans to use private mental health care providers. Finally, $62 million is to speed claim processing of returning veterans. ■

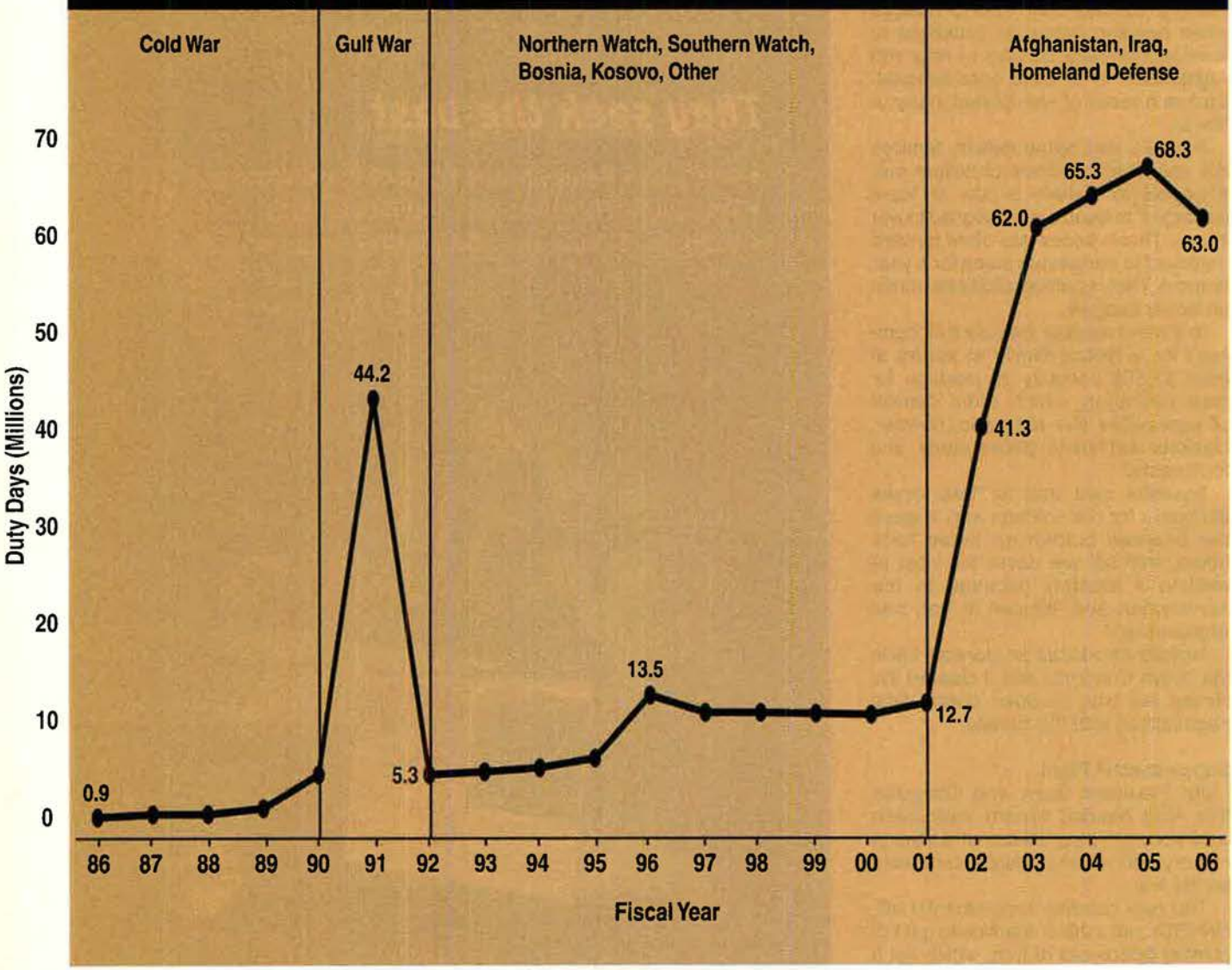
The Chart Page

By Tamar A. Mehuron, Associate Editor

Guard and Reserve, Backups No More

The US military reserve has seven parts—Air National Guard, Air Force Reserve, Army National Guard, Army Reserve, Navy Reserve, Marine Corps Reserve, and Coast Guard Reserve. In Cold War days, DOD fielded a large active force, and the reserve was a seldom-used backup. That changed with the 1991 Gulf War and involuntary call-ups, which continued in the 1990s as the Total Force shrank and the reserve took on an increased role in operations. Since Sept. 11, 2001, wars in Afghanistan and Iraq have sent reserve usage soaring, as seen in this chart. The Commission on the National Guard and Reserves recently warned, "The force cannot be sustained over the long term at this level of utilization."

Reserve Component Contributions in Peace and War



Source: Commission on the National Guard and Reserves, "Strengthening America's Defenses in the New Security Environment: Second Report to Congress," March 1, 2007.

When it's go time

This airman isn't thinking about net-centric environments and seamless interoperability. In the heat of the battle, he's focused on one thing only – making life or death decisions.

At General Dynamics, we know conceptual buzzwords don't mean a thing at times like these. What matters is this airman has the concrete capabilities he needs to make superior decisions with speed, precision and confidence. That's why we are working to arm the tactical warfighter with robust, intuitive and informative solutions that always work, anywhere, anytime.

...I just know it works.

With our proven leadership in systems integration and information assurance, we are engineering the transformational solutions that will ensure this warfighter always has the technological upper hand, whenever and wherever it matters most.

www.gdc4s.com

GENERAL DYNAMICS
C4 Systems

Trusted. Core to Edge.

The Keeper File

FDR Shatters the Illusion

By the 1930s, many Americans had come to believe that the US should have kept out of World War I. Isolationism was strong. In 1935, Congress began enacting neutrality laws to prevent entanglements in response to fascist aggression.

President Franklin D. Roosevelt, however, grew fearful that isolationism, far from keeping the peace, was clearing a path for militarism directed from Rome, Berlin, and Tokyo. FDR's concern spilled into view after Japan attacked China in July 1937. A few months later, he delivered a dramatic speech in Chicago, warning that aggression was like a disease and peaceful nations should "quarantine" aggressors.

This pivotal speech sparked a national uproar, forcing FDR into a tactical retreat. However, the President had broken the isolationist spell. The real world had again intruded into American thoughts, and, soon, the nation took its first steps toward arming for war.

"The Quarantine Speech"

President Franklin D. Roosevelt
Address at the Dedication
of the Outer Link Bridge
Chicago
Oct. 5, 1937

Find the full text on the Air Force Association Web site
www.afa.org
***Air Force* Magazine**
"The Keeper File"

THE present reign of terror and international lawlessness began a few years ago. ... Without a declaration of war and without warning or justification of any kind, civilians, including vast numbers of women and children, are being ruthlessly murdered with bombs from the air. In times of so-called peace, ships are being attacked and sunk by submarines without cause or notice. Nations are fomenting and taking sides in civil warfare in nations that have never done them any harm. Nations claiming freedom for themselves deny it to others.

Innocent peoples, innocent nations, are being cruelly sacrificed to a greed for power and supremacy which is devoid of all sense of justice and humane considerations. ...

If those things come to pass in other parts of the world, let no one imagine that America will escape, that America may expect mercy, that this Western Hemisphere will not be attacked, and that it will continue tranquilly and peacefully to carry on the ethics and the arts of civilization. ...

The peace-loving nations must make a concerted effort in opposition to those violations of treaties and those ignorings of humane instincts which today are creating a state of international anarchy and instability from which there is no escape through mere isolation or neutrality.

Those who cherish their freedom and recognize and respect the equal right of their neighbors to be free and live in peace, must work together for the triumph of law and moral principles in order that peace, justice, and confidence may prevail in the world. There must be a return to a belief in the pledged word, in the value of a signed treaty. There must be recognition of the fact that national morality is as vital as private morality. ...

There is a solidarity and interdependence about the modern world, both technically and morally, which makes it impossible for any nation completely to isolate itself from economic and political upheavals in the rest of the world, especially when such upheavals appear to be spreading and not declining. There can be no stability or peace either within nations or between nations except under laws and moral standards adhered to by all. International anarchy destroys every foundation for peace. It jeopardizes either the immediate or the future security of every nation, large or small. It is, therefore, a matter of vital interest and concern to the people of the United States that the sanctity of international treaties and the maintenance of international morality be restored. ...

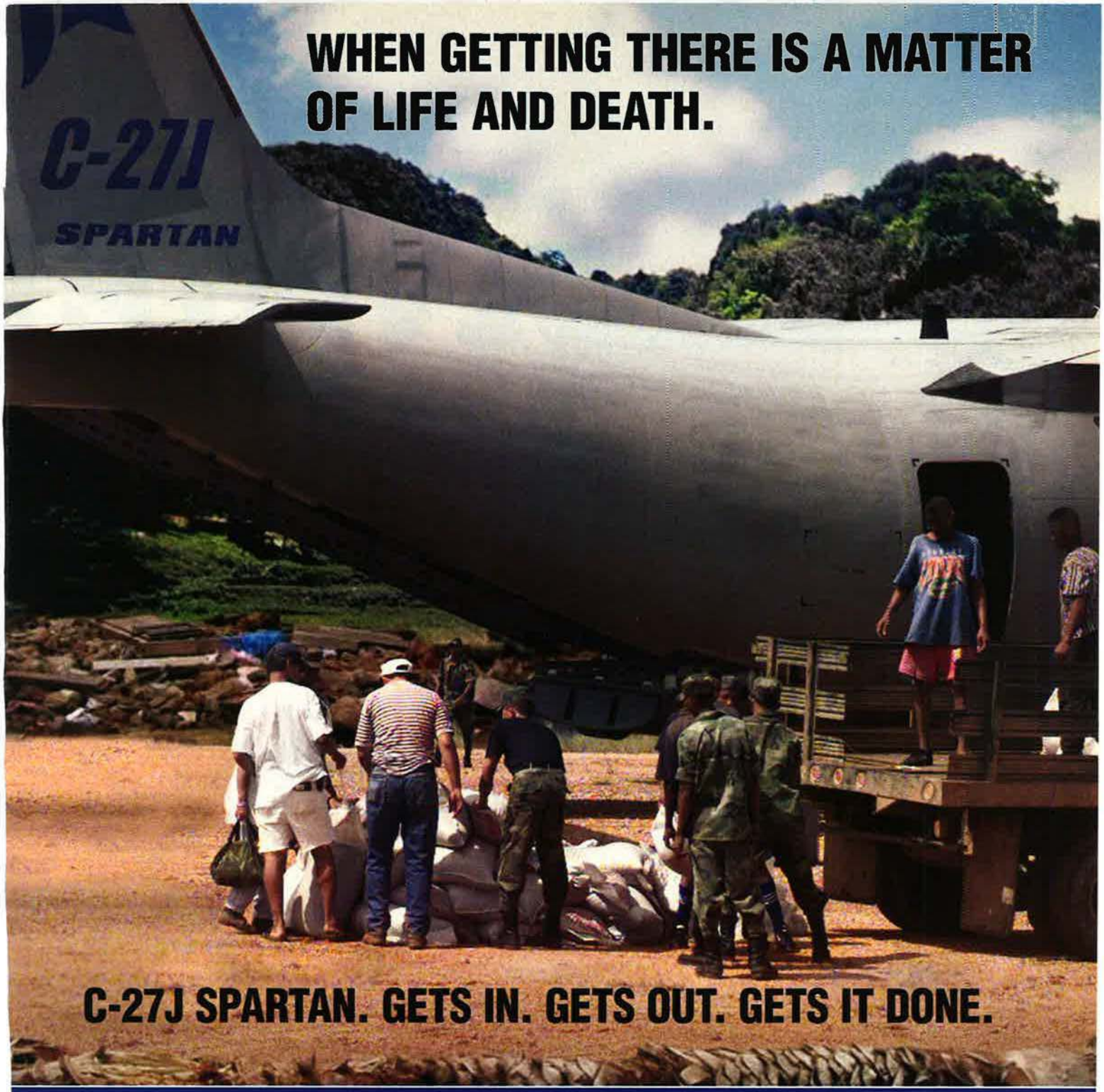
How happy we are that the circumstances of the moment permit us to put our money into bridges and boulevards, dams and reforestation, the conservation of our soil, and many other kinds of useful works rather than into huge standing armies and vast supplies of implements of war. I am compelled and you are compelled, nevertheless, to look ahead. The peace, the freedom, and the security of 90 percent of the population of the world is being jeopardized by the remaining 10 percent who are threatening a breakdown of all international order and law. ...

It is true that the moral consciousness of the world must recognize the importance of removing injustices and well-founded grievances; but at the same time it must be aroused to the cardinal necessity of honoring sanctity of treaties, of respecting the rights and liberties of others, and of putting an end to acts of international aggression.

It seems to be unfortunately true that the epidemic of world lawlessness is spreading. When an epidemic of physical disease starts to spread, the community approves and joins in a quarantine of the patients in order to protect the health of the community against the spread of the disease. ...

War is a contagion, whether it be declared or undeclared. It can engulf states and peoples remote from the original scene of hostilities. We are determined to keep out of war, yet we cannot insure ourselves against the disastrous effects of war and the dangers of involvement. We are adopting such measures as will minimize our risk of involvement, but we cannot have complete protection in a world of disorder in which confidence and security have broken down. ...

Trust between nations must be revived. Most important of all, the will for peace on the part of peace-loving nations must express itself to the end that nations that may be tempted to violate their agreements and the rights of others will desist from such a course. ■



Hurricanes. Tsunamis. Earthquakes. Floods. One of the National Guard's most challenging missions is disaster response. The C-27J Spartan Joint Cargo Aircraft's (JCA) best-in-class speed, payload, range and performance in austere environments make it perfect for transporting time-sensitive aid and personnel to where they are needed most, even if there isn't a runway.

WWW.C-27J.COM **C-27J TEAM**

GMAS GLOBAL MILITARY AIRCRAFT SYSTEMS
No Compromise

AleniaNorthAmerica
A Finmeccanica Company

L3 communications

BOEING

USAF Alma

© Arthur Morris/Corbis

nac 2007

About the Almanac

On the following pages appears a variety of information and statistical material about the US Air Force—its people, organization, equipment, funding, activities, bases, and heroes. This Almanac section was compiled by the staff of *Air Force* Magazine. We especially acknowledge the help of the Secretary of the Air Force Office of Public Affairs, Air Staff agencies, major commands, and reserve components in bringing up to date the comparable data from last year's Almanac.

A word of caution: Personnel figures that appear in this section in different forms will not always agree (nor will they always agree with figures in major command, field operating agency, and direct reporting unit reports or in the "Guide to USAF Installations Worldwide") because of different cutoff dates, rounding, differing methods of reporting, or categories of personnel that are excluded in some cases. These figures do illustrate trends, however, and may be helpful in placing force fluctuations in perspective.

—THE EDITORS

© Leeson photo

Edited by Tamar A. Mehuron, Associate Editor

The Air Force in Facts and Figures

2007 USAF Almanac

Structure of the Force

How the Air Force Is Organized

There is considerable variation in how the major commands and subordinate units of the Air Force are organized. This overview describes both the typical organization chain and USAF's Air and Space Expeditionary Force.

The **Department of Defense (DOD)** is a Cabinet agency headed by the Secretary of Defense. It was created in 1947 to consolidate pre-existing military agencies—the War Department and the Navy Department. Subordinate to DOD are the three military departments (Army, Navy, and Air Force), each headed by a civilian secretary.

The **Joint Chiefs of Staff (JCS)** constitute the corporate military leadership of DOD. The Chairman and vice chairman of the JCS serve full-time in their positions. The service chiefs are the military heads of their respective services, although JCS responsibilities take precedence.

The **Department of the Air Force** is headed by the Secretary of the Air Force, who is supported by a staff called the Secretariat. The Chief of Staff, USAF, heads the Air Staff, and the military heads of the major commands report to the Chief of Staff.

Most units of the Air Force are assigned to one of the **major commands.** Major commands are headed by general officers and have broad functional responsibilities. Commands may be divided into **numbered air forces.**

The fundamental unit of the working Air Force is the **wing.** The typical Air Force base is built around a wing. Some wings are commanded by a general officer, while others are headed by a colonel. An objective wing contains an **operations group,** which includes aircrews, intelligence units, and others; a **maintenance group,** which includes maintenance squadrons; a **support group,** which includes such functions as civil engineers, logistics readiness, and security forces; and a **medical group.**

Most individual officers and airmen are assigned to a **squadron,** which may be composed of several **flights.**

In addition to these units, there are numerous others, including centers, field operating agencies, and direct reporting units.

Air and Space Expeditionary Force

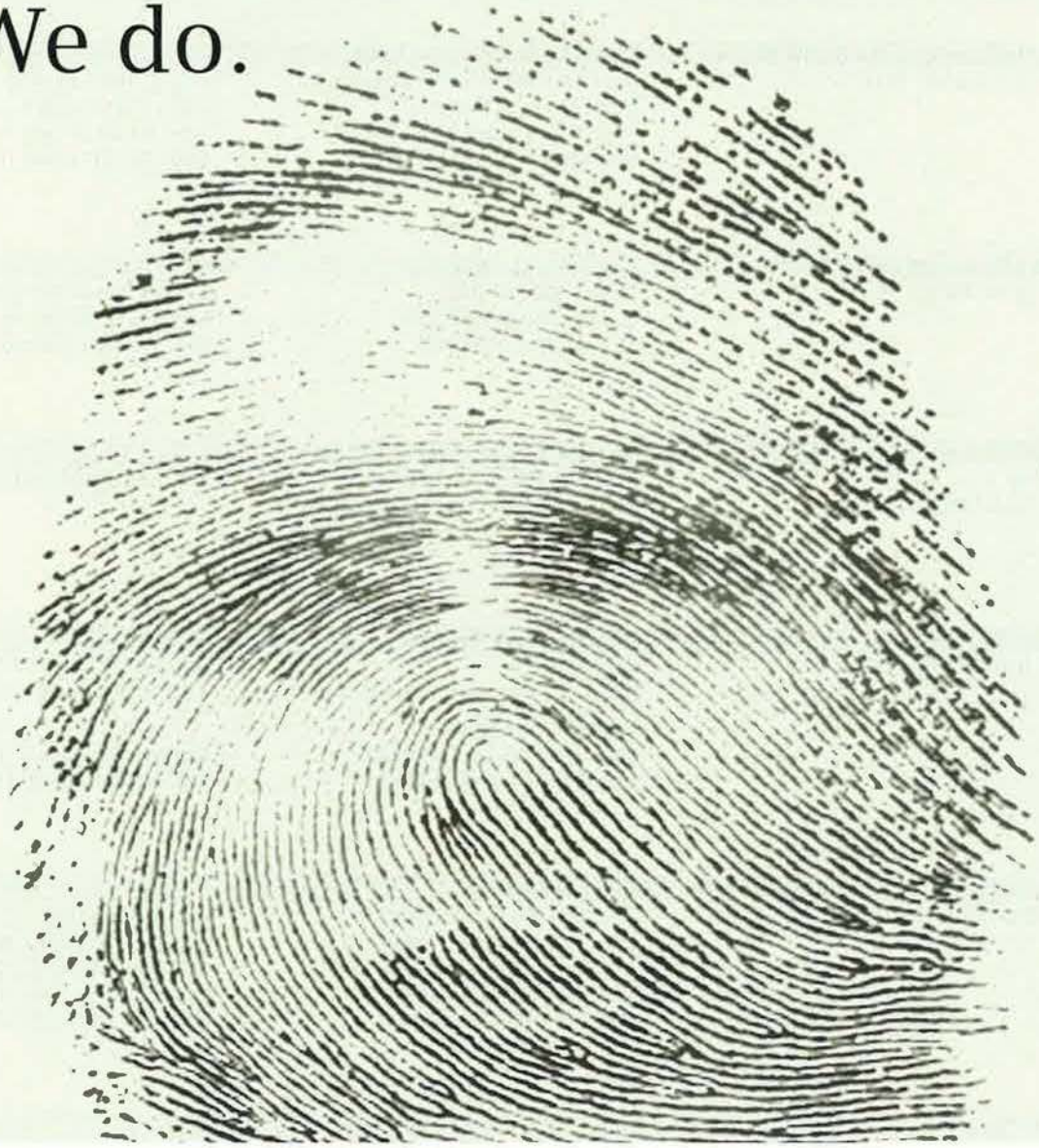
To relieve chronic optempo problems stemming from back-to-back deployments and operations, the Air Force developed an expeditionary concept initially called the Expeditionary Aerospace Force. The term EAF has since been supplanted by the term Air and Space Expeditionary Force **(AEF).** The term AEF also refers to a basic organizational unit. USAF groups its power projection and support forces into 10 AEF "buckets of capability." The 10 AEFs are grouped into five pairs. Initially, these five pairs of AEFs rotated through a 15-month cycle, with each pair assigned to one of five 90-day periods. In fall 2004, USAF revised its AEF arrangement, extending the cycles to 20 months, divided into five 120-day periods. The Air Force also incorporated its on-call forces into the standard AEF rotation.

During each 120-day period, a designated pair of AEFs is vulnerable to deployment. Each AEF comprises combat air forces **(CAF),** mobility air forces **(MAF),** and low-density, high-demand **(LD/HD)** forces consisting of various active duty, ANG, and AFRC units.

USAF's LD/HD forces include battle management, combat search and rescue, command and control, and reconnaissance assets. They are in near constant use and, consequently, rotate more frequently than most CAF and MAF elements.

The new expeditionary system began with Cycle 1 in October 1999. Cycle 4, which began June 1, 2003, included two temporary stopgap AEFs, designated AEF Blue (June 1-Oct. 31, 2003) and AEF Silver (Nov. 1, 2003-Feb. 29, 2004), formed in the wake of Operation Iraqi Freedom. They mostly comprised forces not used in the war. During the Blue and Silver deployments, USAF was able to reconstitute its wartime forces for return to the standard rotation cycle. ▪

Who helps doctors see each patient as one of a kind? We do.



Innovations from Siemens can be found everywhere. And more advanced personalized healthcare is an innovation that's closer than you think. Our technology and process advancements in imaging, laboratory diagnostics and information technologies are enabling customized care based on patients' individual needs. Interventions can begin earlier — before a patient experiences symptoms of disease. Hospitalization can be minimized and overall healthcare costs reduced. At Siemens, our innovations today are working toward a healthier tomorrow.

automation & control • building technologies • energy & power • financial services • hearing solutions
industrial solutions • information & communication • lighting • medical solutions • transportation • water technologies

usa.siemens.com/oneofakind

SIEMENS

The Nation's Air Arm and Its Early Leaders

Designation	Commander (at highest rank)	Dates of Service
Aeronautical Division, US Signal Corps	**Chief, Aeronautical Division**	
Aug. 1, 1907-July 18, 1914	Capt. Charles deForest Chandler	Aug. 1, 1907-June 30, 1910
	Capt. Arthur S. Cowan	July 1, 1910-June 19, 1911
	Capt. Charles deForest Chandler	June 20, 1911-Sept. 9, 1913
	Maj. Samuel Reber	Sept. 10, 1913-July 17, 1914
Aviation Section, US Signal Corps	**Chief, Aviation Section**	
July 18, 1914-May 20, 1918	Lt. Col. Samuel Reber	July 18, 1914-May 5, 1916
	Lt. Col. George O. Squier	May 20, 1916-Feb. 19, 1917
	Lt. Col. John B. Bennet	Feb. 19, 1917-May 20, 1918
Division of Military Aeronautics, Secretary of War	**Director of Military Aeronautics**	
May 20, 1918-May 24, 1918	Maj. Gen. William L. Kenly (Kept same title three months into absorption by Air Service)	May 20, 1918-August 1918
Army Air Service	**Director of Air Service**	
May 24, 1918-July 2, 1926	John D. Ryan	Aug. 28, 1918-Nov. 27, 1918
	Maj. Gen. Charles T. Menoher	Jan. 2, 1919-June 4, 1920
	Chief of Air Service	
	Maj. Gen. Charles T. Menoher	June 4, 1920-Oct. 4, 1921
	Maj. Gen. Mason M. Patrick	Oct. 5, 1921-July 2, 1926
Army Air Corps	**Chief of Air Corps**	
July 2, 1926-Sept. 18, 1947[a]	Maj. Gen. Mason M. Patrick	July 2, 1926-Dec. 13, 1927
	Maj. Gen. James E. Fechet	Dec. 14, 1927-Dec. 19, 1931
	Maj. Gen. Benjamin D. Foulois	Dec. 20, 1931-Dec. 21, 1935
	Maj. Gen. Oscar Westover	Dec. 22, 1935-Sept. 21, 1938
	Maj. Gen. Henry H. Arnold	Sept. 29, 1938-June 20, 1941
Army Air Forces	**Chief, Army Air Forces**	
June 20, 1941-Sept. 18, 1947	Lt. Gen. Henry H. Arnold	June 20, 1941-March 9, 1942
	Commanding General, AAF	
	Gen. of the Army Henry H. Arnold	March 9, 1942-Feb. 9, 1946
	Gen. Carl A. Spaatz	Feb. 9, 1946-Sept. 26, 1947
United States Air Force	**Chief of Staff, USAF**	
Sept. 18, 1947	Gen. Carl A. Spaatz	Sept. 26, 1947-April 29, 1948

The title General of the Army for Henry H. Arnold was changed to General of the Air Force by an act of Congress May 7, 1949. The position of Chief of Staff was established by a DOD-approved Army-Air Force Transfer Order issued Sept. 28, 1947.

[a]The Army Air Corps became a subordinate element of the Army Air Forces June 20, 1941. Since the Army Air Corps had been established by statute in 1926, its disestablishment required an Act of Congress, which did not take place until 1947. Between March 9, 1942, and Sept. 19, 1947, the Army Air Corps continued to exist as a combatant arm, and personnel of the Army Air Forces were still assigned to the Army Air Corps.

USAF Leaders Through the Years

Secretaries of the Air Force

Stuart Symington	Sept. 18, 1947	April 24, 1950
Thomas K. Finletter	April 24, 1950	Jan. 20, 1953
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955
Donald A. Quarles	Aug. 15, 1955	April 30, 1957
James H. Douglas Jr.	May 1, 1957	Dec. 10, 1959
Dudley C. Sharp	Dec. 11, 1959	Jan. 20, 1961
Eugene M. Zuckert	Jan. 24, 1961	Sept. 30, 1965
Harold Brown	Oct. 1, 1965	Feb. 15, 1969
Robert C. Seamans Jr.	Feb. 15, 1969	May 14, 1973
John L. McLucas (acting)	May 15, 1973	July 18, 1973
John L. McLucas	July 18, 1973	Nov. 23, 1975
James W. Plummer (acting)	Nov. 24, 1975	Jan. 1, 1976
Thomas C. Reed	Jan. 2, 1976	April 6, 1977
John C. Stetson	April 6, 1977	May 18, 1979
Hans Mark (acting)	May 18, 1979	July 26, 1979
Hans Mark	July 26, 1979	Feb. 9, 1981
Verne Orr	Feb. 9, 1981	Nov. 30, 1985
Russell A. Rourke	Dec. 9, 1985	April 7, 1986
Edward C. Aldridge Jr. (acting)	April 8, 1986	June 8, 1986
Edward C. Aldridge Jr.	June 9, 1986	Dec. 16, 1988
James F. McGovern (acting)	Dec. 16, 1988	April 29, 1989
John J. Welch Jr. (acting)	April 29, 1989	May 21, 1989
Donald B. Rice	May 22, 1989	Jan. 20, 1993
Michael B. Donley (acting)	Jan. 20, 1993	July 13, 1993
Gen. Merrill A. McPeak (acting)	July 14, 1993	Aug. 5, 1993
Sheila E. Widnall	Aug. 6, 1993	Oct. 31, 1997
F. Whitten Peters (acting)	Nov. 1, 1997	July 30, 1999
F. Whitten Peters	July 30, 1999	Jan. 20, 2001
Lawrence J. Delaney (acting)	Jan. 20, 2001	June 1, 2001
James G. Roche	June 1, 2001	Jan. 20, 2005
Peter B. Teets (acting)	Jan. 20, 2005	March 25, 2005
Michael L. Dominguez (acting)	March 25, 2005	July 29, 2005
Preston M. Geren (acting)	July 29, 2005	Nov. 3, 2005
Michael W. Wynne	Nov. 3, 2005	

USAF Vice Chiefs of Staff

Gen. Hoyt S. Vandenberg	Oct. 10, 1947	April 28, 1948
Gen. Muir S. Fairchild	May 27, 1948	March 17, 1950
Lt. Gen. Lauris Norstad (acting)	May 22, 1950	Oct. 9, 1950
Gen. Nathan F. Twining	Oct. 10, 1950	June 29, 1953
Gen. Thomas D. White	June 30, 1953	June 30, 1957
Gen. Curtis E. LeMay	July 1, 1957	June 30, 1961
Gen. Frederic H. Smith Jr.	July 1, 1961	June 30, 1962
Gen. Willliam F. McKee	July 1, 1962	July 31, 1964
Gen. John P. McConnell	Aug. 1, 1964	Jan. 31, 1965
Gen. William H. Blanchard	Feb. 19, 1965	May 31, 1966
Lt. Gen. Hewitt T. Wheless (acting)	June 13, 1966	July 31, 1966
Gen. Bruce K. Holloway	Aug. 1, 1966	July 31, 1968
Gen. John D. Ryan	Aug. 1, 1968	July 31, 1969
Gen. John C. Meyer	Aug. 1, 1969	April 30, 1972
Gen. Horace M. Wade	May 1, 1972	Oct. 31, 1973
Gen. Richard H. Ellis	Nov. 1, 1973	Aug. 18, 1975
Gen. William V. McBride	Sept. 1, 1975	March 31, 1978
Gen. Lew Allen Jr.	April 1, 1978	June 30, 1978
Gen. James A. Hill	July 1, 1978	Feb. 29, 1980
Gen. Robert C. Mathis	March 1, 1980	May 31, 1982
Gen. Jerome F. O'Malley	June 1, 1982	Oct. 5, 1983
Gen. Lawrence A. Skantze	Oct. 6, 1983	July 31, 1984
Gen. Larry D. Welch	Aug. 1, 1984	July 31, 1985
Gen. John L. Piotrowski	Aug. 1, 1985	Jan. 31, 1987
Gen. Monroe W. Hatch Jr.	Feb. 1, 1987	May 24, 1990
Gen. John Michael Loh	May 25, 1990	March 25, 1991
Gen. Michael P.C. Carns	May 16, 1991	July 28, 1994
Gen. Thomas S. Moorman Jr.	July 29, 1994	July 11, 1997
Gen. Ralph E. Eberhart	July 11, 1997	May 26, 1999
Gen. Lester L. Lyles	May 27, 1999	April 17, 2000
Gen. John W. Handy	April 17, 2000	Nov. 5, 2001
Gen. Robert H. Foglesong	Nov. 5, 2001	Aug. 11, 2003
Gen. T. Michael Moseley	Aug. 12, 2003	Sept. 2, 2005
Gen. John D.W. Corley	Sept. 2, 2005	

USAF Chiefs of Staff

Gen. Carl A. Spaatz	Sept. 26, 1947	April 29, 1948
Gen. Hoyt S. Vandenberg	April 30, 1948	June 29, 1953
Gen. Nathan F. Twining	June 30, 1953	June 30, 1957
Gen. Thomas D. White	July 1, 1957	June 30, 1961
Gen. Curtis E. LeMay	June 30, 1961	Jan. 31, 1965
Gen. John P. McConnell	Feb. 1, 1965	July 31, 1969
Gen. John D. Ryan	Aug. 1, 1969	July 31, 1973
Gen. George S. Brown	Aug. 1, 1973	June 30, 1974
Gen. David C. Jones	July 1, 1974	June 20, 1978
Gen. Lew Allen Jr.	July 1, 1978	June 30, 1982
Gen. Charles A. Gabriel	July 1, 1982	June 30, 1986
Gen. Larry D. Welch	July 1, 1986	June 30, 1990
Gen. Michael J. Dugan	July 1, 1990	Sept. 17, 1990
Gen. John Michael Loh (acting)	Sept. 18, 1990	Oct. 29, 1990
Gen. Merrill A. McPeak	Oct. 30, 1990	Oct. 25, 1994
Gen. Ronald R. Fogleman	Oct. 26, 1994	Sept. 1, 1997
Gen. Ralph E. Eberhart (acting)	Sept. 2, 1997	Oct. 5, 1997
Gen. Michael E. Ryan	Oct. 6, 1997	Sept. 6, 2001
Gen. John P. Jumper	Sept. 6, 2001	Sept. 2, 2005
Gen. T. Michael Moseley	Sept. 2, 2005	

Chief Master Sergeants of the Air Force

CMSAF Paul W. Airey	April 3, 1967	July 31, 1969
CMSAF Donald L. Harlow	Aug. 1, 1969	Sept. 30, 1971
CMSAF Richard D. Kisling	Oct. 1, 1971	Sept. 30, 1973
CMSAF Thomas N. Barnes	Oct. 1, 1973	July 31, 1977
CMSAF Robert D. Gaylor	Aug. 1, 1977	July 31, 1979
CMSAF James M. McCoy	Aug. 1, 1979	July 31, 1981
CMSAF Arthur L. Andrews	Aug. 1, 1981	July 31, 1983
CMSAF Sam E. Parish	Aug. 1, 1983	June 30, 1986
CMSAF James C. Binnicker	July 1, 1986	July 31, 1990
CMSAF Gary R. Pfingston	Aug. 1, 1990	Oct. 25, 1994
CMSAF David J. Campanale	Oct. 26, 1994	Nov. 4, 1996
CMSAF Eric W. Benken	Nov. 5, 1996	July 30, 1999
CMSAF Frederick J. Finch	July 30, 1999	July 1, 2002
CMSAF Gerald R. Murray	July 1, 2002	June 30, 2006
CMSAF Rodney J. McKinley	June 30, 2006	

Air Combat Command

Gen. John Michael Loh	June 1, 1992	June 22, 1995
Gen. Joseph W. Ralston	June 23, 1995	Feb. 27, 1996
Lt. Gen. Brett M. Dula (acting)	Feb. 28, 1996	April 4, 1996
Gen. Richard E. Hawley	April 5, 1996	June 11, 1999
Gen. Ralph E. Eberhart	June 11, 1999	Feb. 8, 2000
Gen. John P. Jumper	Feb. 8, 2000	Sept. 6, 2001
Lt. Gen. Donald G. Cook (acting)	Sept. 6, 2001	Nov. 14, 2001
Gen. Hal M. Hornburg	Nov. 14, 2001	Nov. 17, 2004
Lt. Gen. Bruce A. Wright (acting)	Nov. 17, 2004	Feb. 6, 2005
Lt. Gen. William M. Fraser III (acting)	Feb. 6, 2005	May 26, 2005
Gen. Ronald E. Keys	May 26, 2005	

Air (Aerospace) Defense Command

Lt. Gen. George E. Stratemeyer	March 27, 1946	Nov. 30, 1948
Maj. Gen. Gordon P. Saville	Dec. 1, 1948	Sept. 1, 1949
Lt. Gen. Ennis C. Whitehead	Jan. 1, 1951	Aug. 24, 1951
Gen. Benjamin W. Chidlaw	Aug. 25, 1951	May 31, 1955
Maj. Gen. Frederic H. Smith Jr. (acting)	June 1, 1955	July 19, 1955
Gen. Earle E. Partridge	July 20, 1955	Sept. 16, 1956
Lt. Gen. Joseph H. Atkinson	Sept. 17, 1956	Feb. 28, 1961
Lt. Gen. Robert M. Lee	March 1, 1961	July 5, 1963
Maj. Gen. Robert H. Terrill (acting)	July 6, 1963	July 31, 1963
Lt. Gen. Herbert B. Thatcher	Aug. 1, 1963	July 31, 1967
Lt. Gen. Arthur C. Agan Jr.	Aug. 1, 1967	Feb. 28, 1970
Lt. Gen. Thomas K. McGehee	March 1, 1970	June 30, 1973
Gen. Seth J. McKee	July 1, 1973	Sept. 30, 1973
Gen. Lucius D. Clay Jr.	Oct. 1, 1973	Aug. 31, 1975
Gen. Daniel James Jr.	Sept. 1, 1975	Dec. 6, 1977
Gen. James E. Hill	Dec. 6, 1977	Dec. 31, 1979
Gen. James V. Hartinger	Jan. 1, 1980	March 31, 1980

Established March 21, 1946. Reassigned to Continental Air Command (1948). Discontinued July 1, 1950. Re-established as a major command and organized Jan. 1, 1951. Redesignated Aerospace Defense Command Jan. 15, 1968. Inactivated March 31, 1980.

Air Education and Training Command

Lt. Gen. John K. Cannon	April 13, 1946	Oct. 13, 1948
Lt. Gen. Robert W. Harper	Oct. 14, 1948	June 30, 1954
Maj. Gen. Glenn O. Barcus (acting)	July 1, 1954	July 25, 1954
Lt. Gen. Charles T. Myers	July 26, 1954	July 31, 1958
Lt. Gen. Frederic H. Smith Jr.	Aug. 1, 1958	July 31, 1959
Lt. Gen. James E. Briggs	Aug. 1, 1959	July 31, 1963
Lt. Gen. Robert W. Burns	Aug. 1, 1963	Aug. 10, 1964
Lt. Gen. William W. Momyer	Aug. 11, 1964	June 30, 1966
Lt. Gen. Sam Maddux Jr.	July 1, 1966	Aug. 30, 1970
Lt. Gen. George B. Simler	Sept. 1, 1970	Sept. 9, 1972
Lt. Gen. William V. McBride	Sept. 9, 1972	Aug. 31, 1974
Lt. Gen. George H. McKee	Sept. 1, 1974	Aug. 28, 1975
Gen. John W. Roberts	Aug. 29, 1975	April 1, 1979
Gen. Bennie L. Davis	April 1, 1979	July 28, 1981
Gen. Thomas M. Ryan Jr.	July 29, 1981	June 22, 1983
Gen. Andrew P. Iosue	June 23, 1983	Aug. 27, 1986
Lt. Gen. John A. Shaud	Aug. 28, 1986	June 5, 1988
Lt. Gen. Robert C. Oaks	June 6, 1988	June 24, 1990
Lt. Gen. Joseph W. Ashy	June 25, 1990	Dec. 9, 1992
Gen. Henry Viccellio Jr.	Dec. 10, 1992	June 19, 1995
Gen. Billy J. Boles	June 20, 1995	March 17, 1997
Gen. Lloyd W. Newton	March 17, 1997	June 22, 2000
Gen. Hal M. Hornburg	June 22, 2000	Nov. 14, 2001
Lt. Gen. John D. Hopper Jr. (acting)	Nov. 14, 2001	Dec. 17, 2001
Gen. Donald G. Cook	Dec. 17, 2001	June 17, 2005
Gen. William R. Looney III	June 17, 2005	

Established as Army Air Corps Flying Training Command Jan. 23, 1942. Redesignated AAF Flying Training Command March 1942, then AAF Training Command July 31, 1943. Redesignated ATC July 1, 1946. Redesignated AETC July 1, 1993.

Air Force Communications Command

Maj. Gen. Harold W. Grant	July 1, 1961	Feb. 15, 1962
Maj. Gen. Kenneth P. Bergquist	Feb. 16, 1962	June 30, 1965
Maj. Gen. J. Francis Taylor (acting)	July 1, 1965	Oct. 18, 1965
Maj. Gen. Richard P. Klocko	Oct. 19, 1965	July 2, 1967
Maj. Gen. Robert W. Paulson	July 15, 1967	Aug. 1, 1969
Maj. Gen. Paul R. Stoney	Aug. 1, 1969	Oct. 31, 1973
Maj. Gen. Donald L. Werbeck	Nov. 1, 1973	Aug. 24, 1975
Maj. Gen. Rupert H. Burris	Aug. 25, 1975	Oct. 31, 1977
Maj. Gen. Robert E. Sadler	Nov. 1, 1977	June 21, 1979
Maj. Gen. Robert T. Herres	June 22, 1979	July 27, 1981
Maj. Gen. Robert F. McCarthy	July 27, 1981	June 1, 1984
Maj. Gen. Gerald L. Prather	June 1, 1984	Aug. 28, 1986
Maj. Gen. John T. Stihl	Aug. 28, 1986	March 29, 1988
Maj. Gen. James S. Cassity Jr.	March 29, 1988	May 16, 1989
Maj. Gen. Robert H. Ludwig	May 16, 1989	Nov. 9, 1990
Maj. Gen. John S. Fairfield	Nov. 9, 1990	July 1, 1991

Formerly Air Force Communications Service. Redesignated Air Force Communications Command Nov. 15, 1979. Redesignated Air Force Command, Control, Communications, and Computer Agency, an FOA, July 1, 1991.

Air Force Intelligence Command

Maj. Gen. Gary W. O'Shaughnessy	Oct. 1, 1991	June 1, 1993
Maj. Gen. Kenneth A. Minihan	June 2, 1993	Oct. 1, 1993

See Electronic Security Command.

Air Force Logistics Command

Lt. Gen. Nathan F. Twining	March 9, 1946	Oct. 13, 1947
Gen. Joseph T. McNarney	Oct. 14, 1947	Aug. 31, 1949
Lt. Gen. Benjamin W. Chidlaw	Sept. 1, 1949	Aug. 20, 1951
Gen. Edwin W. Rawlings	Aug. 21, 1951	Feb. 28, 1959
Lt. Gen. William F. McKee (acting)	March 1, 1959	March 14, 1959
Gen. Samuel E. Anderson	March 15, 1959	July 31, 1961
Gen. William F. McKee	Aug. 1, 1961	June 30, 1962
Gen. Mark E. Bradley Jr.	July 1, 1962	July 31, 1965
Gen. Kenneth B. Hobson	Aug. 1, 1965	July 31, 1967
Gen. Thomas P. Gerrity	Aug. 1, 1967	Feb. 24, 1968
Lt. Gen. Lewis L. Mundell (acting)	Feb. 24, 1968	March 28, 1968
Gen. Jack G. Merrell	March 29, 1968	Sept. 11, 1972
Gen. Jack J. Catton	Sept. 12, 1972	Aug. 31, 1974
Gen. William V. McBride	Sept. 1, 1974	Aug. 31, 1975
Gen. F. Michael Rogers	Sept. 1, 1975	Jan. 31, 1978
Gen. Bryce Poe II	Feb. 1, 1978	July 31, 1981
Gen. James P. Mullins	Aug. 1, 1981	Nov. 1, 1984
Gen. Earl T. O'Loughlin	Nov. 1, 1984	July 31, 1987
Gen. Alfred G. Hansen	July 31, 1987	Oct. 31, 1989
Gen. Charles C. McDonald	Oct. 31, 1989	July 1, 1992

Organized as AAF Materiel and Services July 17, 1944. Redesignated AAF Technical Service Command Aug. 31, 1944. Redesignated Air Technical Service Command July 1, 1945. Redesignated Air Materiel Command March 9, 1946. Redesignated Air Force Logistics Command April 1, 1961. Inactivated July 1, 1992.

Air Force Materiel Command

Gen. Ronald W. Yates	July 1, 1992	June 30, 1995
Gen. Henry Viccellio Jr.	June 30, 1995	May 9, 1997
Lt. Gen. Kenneth E. Eickmann (acting)	May 9, 1997	May 29, 1997
Gen. George T. Babbitt Jr.	May 29, 1997	April 20, 2000
Gen. Lester L. Lyles	April 20, 2000	Aug. 22, 2003
Gen. Gregory S. Martin	Aug. 22, 2003	Aug. 19, 2005
Gen. Bruce Carlson	Aug. 19, 2005	

GLOBAL CONNECTIVITY STARTS WITH A GLOBAL NETWORK.

To fully connect warfighters anytime and anywhere requires a space-based global network. The Transformational Communications Satellite System is integral to satisfying this critical requirement. As the only team to have demonstrated a space-based network (Spaceway), Boeing and its partners are uniquely capable of bringing the full value of TSAT to the warfighter—at the lowest risk.

TEAM TSAT

CISCO, HUGHES, IBM, HARRIS, BALL AEROSPACE
LUCENT, RAYTHEON, GENERAL DYNAMICS, L-3 COM

BOEING

Air Force Reserve Command

Maj. Gen. Rollin B. Moore Jr.	Aug. 1, 1968	Jan. 26, 1972
Brig. Gen. Alfred Verhulst (acting)	Jan. 27, 1972	March 15, 1972
Maj. Gen. Homer I. Lewis	March 16, 1972	April 8, 1975
Maj. Gen. William Lyon	April 16, 1975	April 16, 1979
Maj. Gen. Richard Bodycombe	April 17, 1979	Oct. 31, 1982
Maj. Gen. Sloan R. Gill	Nov. 1, 1982	Oct. 31, 1986
Maj. Gen. Roger P. Scheer	Nov. 1, 1986	Oct. 31, 1990
Maj. Gen. John J. Closner III	Nov. 1, 1990	Oct. 31, 1994
Maj. Gen. Robert A. McIntosh	Nov. 1, 1994	June 9, 1998
Maj. Gen. David R. Smith (acting)	June 9, 1998	Sept. 25, 1998
Lt. Gen. James E. Sherrard III	Sept. 25, 1998	June 1, 2004
Maj. Gen. J.J. Batbie Jr. (acting)	June 1, 2004	June 24, 2004
Lt. Gen. John A. Bradley	June 24, 2004	

Formerly Air Force Reserve, AFRC became a major command Feb. 17, 1997.

Air Force Space Command

Gen. James V. Hartinger	Sept. 1, 1982	July 30, 1984
Gen. Robert T. Herres	July 30, 1984	Oct. 1, 1986
Maj. Gen. Maurice C. Padden	Oct. 1, 1986	Oct. 29, 1987
Lt. Gen. Donald J. Kutyna	Oct. 29, 1987	March 29, 1990
Lt. Gen. Thomas S. Moorman Jr.	March 29, 1990	March 23, 1992
Gen. Donald J. Kutyna	March 23, 1992	June 30, 1992
Gen. Charles A. Horner	June 30, 1992	Sept. 13, 1994
Gen. Joseph W. Ashy	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III	Aug. 26, 1996	Aug. 14, 1998
Gen. Richard B. Myers	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart	Feb. 22, 2000	April 19, 2002
Gen. Lance W. Lord	April 19, 2002	April 1, 2006
Lt. Gen. Frank G. Klotz (acting)	April 1, 2006	June 26, 2006
Gen. Kevin P. Chilton	June 26, 2006	

Air Force Special Operations Command

Maj. Gen. Thomas E. Eggers	May 22, 1990	June 30, 1991
Maj. Gen. Bruce L. Fister	June 30, 1991	July 22, 1994
Maj. Gen. James L. Hobson Jr.	July 22, 1994	July 9, 1997
Maj. Gen. Charles R. Holland	July 9, 1997	Aug. 5, 1999
Lt. Gen. Maxwell C. Bailey	Aug. 5, 1999	Jan. 16, 2002
Lt. Gen. Paul V. Hester	Jan. 16, 2002	July 1, 2004
Lt. Gen. Michael W. Wooley	July 1, 2004	

Air Force Systems Command

Maj. Gen. David M. Schlatter	Feb. 1, 1950	June 24, 1951
Lt. Gen. Earle E. Partridge	June 24, 1951	June 20, 1953
Lt. Gen. Donald L. Putt	June 30, 1953	April 14, 1954
Lt. Gen. Thomas S. Power	April 15, 1954	June 30, 1957
Maj. Gen. John W. Sessums (acting)	July 1, 1957	July 31, 1957
Lt. Gen. Samuel E. Anderson	Aug. 1, 1957	March 9, 1959
Maj. Gen. John W. Sessums (acting)	March 10, 1959	April 24, 1959
Gen. Bernard A. Schriever	April 25, 1959	Aug. 31, 1966
Gen. James Ferguson	Sept. 1, 1966	Aug. 30, 1970
Gen. George S. Brown	Sept. 1, 1970	July 31, 1973
Gen. Samuel C. Phillips	Aug. 1, 1973	Aug. 31, 1975
Gen. William J. Evans	Sept. 1, 1975	July 31, 1977
Gen. Lew Allen Jr.	Aug. 1, 1977	March 13, 1978
Gen. Alton D. Slay	March 14, 1978	Feb. 1, 1981
Gen. Robert T. Marsh	Feb. 1, 1981	Aug. 1, 1984
Gen. Lawrence A. Skantze	Aug. 1, 1984	July 17, 1987
Gen. Bernard P. Randolph	July 17, 1987	April 1, 1990
Gen. Ronald W. Yates	April 1, 1990	July 1, 1992

Formerly Air Research and Development Command. Redesignated Air Force Systems Command April 1, 1961. Inactivated July 1, 1992.

Air Mobility Command

Gen. Hansford T. Johnson	June 1, 1992	Aug. 22, 1992
Gen. Ronald R. Fogleman	Aug. 23, 1992	Oct. 17, 1994
Gen. Robert L. Rutherford	Oct. 18, 1994	July 15, 1996
Gen. Walter Kross	July 15, 1996	Aug. 3, 1998
Gen. Charles T. Robertson Jr.	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy	Nov. 5, 2001	Sept. 7, 2005
Lt. Gen. Christopher A. Kelly (acting)	Sept. 7, 2005	Oct. 14, 2005
Gen. Duncan J. McNabb	Oct. 14, 2005	

Air National Guard

Col. William A.R. Robertson	Nov. 28, 1945	October 1948
Maj. Gen. George G. Finch	October 1948	Sept. 25, 1950
Maj. Gen. Earl T. Ricks	Oct. 13, 1950	Jan. 4, 1954
Maj. Gen. Winston P. Wilson	Jan. 26, 1954	Aug. 5, 1962
Maj. Gen. I.G. Brown	Aug. 6, 1962	April 19, 1974
Maj. Gen. John J. Pesch	April 20, 1974	Jan. 31, 1977
Maj. Gen. John T. Guice	Feb. 1, 1977	April 1, 1981
Maj. Gen. John B. Conaway	April 1, 1981	Nov. 1, 1988
Maj. Gen. Philip G. Killey	Nov. 1, 1988	Jan. 28, 1994
Maj. Gen. Donald W. Shepperd	Jan. 28, 1994	Jan. 28, 1998
Maj. Gen. Paul A. Weaver Jr.	Jan. 28, 1998	Dec. 3, 2001
Brig. Gen. David A. Brubaker (acting)	Dec. 3, 2001	June 3, 2002
Lt. Gen. Daniel James III	June 3, 2002	May 20, 2006
Lt. Gen. Craig R. McKinley	May 20, 2006	

Air Proving Ground Command

Maj. Gen. Carl A. Brandt	October 1946	August 1948
Maj. Gen. William E. Kepner	August 1948	June 1950
Maj. Gen. Bryant L. Boatner	July 1950	July 1952
Maj. Gen. Patrick W. Timberlake	July 1952	April 1955
Maj. Gen. Robert W. Burns	August 1955	July 1957

Designated a center December 1957.

Air University

Maj. Gen. Muir S. Fairchild	March 15, 1946	May 17, 1948
Maj. Gen. Robert W. Harper	May 17, 1948	Oct. 15, 1948
Gen. George C. Kenney	Oct. 16, 1948	July 27, 1951
Lt. Gen. Idwal H. Edwards	July 28, 1951	Feb. 28, 1953
Maj. Gen. John DeF. Barker (acting)	March 1, 1953	April 14, 1953
Lt. Gen. Laurence S. Kuter	April 15, 1953	May 31, 1955
Lt. Gen. Dean C. Strother	June 1, 1955	June 30, 1958
Lt. Gen. Walter E. Todd	July 15, 1958	July 31, 1961
Lt. Gen. Troup Miller Jr.	Aug. 1, 1961	Dec. 31, 1963
Lt. Gen. Ralph P. Swofford Jr.	Jan. 1, 1964	July 31, 1965
Lt. Gen. John W. Carpenter III	Aug. 1, 1965	July 31, 1968
Lt. Gen. Albert P. Clark	Aug. 1, 1968	July 31, 1970
Lt. Gen. Alvan C. Gillem II	Aug. 1, 1970	Oct. 31, 1973
Lt. Gen. F. Michael Rogers	Nov. 1, 1973	Aug. 31, 1975
Lt. Gen. Raymond B. Furlong	Sept. 1, 1975	July 1, 1979
Lt. Gen. Stanley M. Umstead	July 1, 1979	July 24, 1981
Lt. Gen. Charles G. Cleveland	July 24, 1981	Aug. 1, 1984
Lt. Gen. Thomas C. Richards	Aug. 1, 1984	Nov. 6, 1986
Lt. Gen. Truman Spangrud	Nov. 6, 1986	July 12, 1988
Lt. Gen. Ralph E. Havens	July 12, 1988	Oct. 6, 1989
Maj. Gen. David C. Reed	Oct. 6, 1989	Jan. 4, 1990
Lt. Gen. Charles G. Boyd	Jan. 4, 1990	Oct. 26, 1992
Lt. Gen. Jay W. Kelley	Oct. 27, 1992	June 30, 1993

Established as AAF School of Applied Tactics Oct. 16, 1943 (assumed history of Air Services School, dating from 1920). Redesignated AAF School June 1, 1945. Given Majcom status Nov. 29, 1945. Redesignated AU May 12, 1946. Part of ATC between May 1978 and July 1983. Ceased to be a Majcom and was assigned to AETC July 1, 1993.

Alaskan Air Command

Brig. Gen. Joseph H. Atkinson	Oct. 1, 1946	Feb. 25, 1949
Brig. Gen. Frank A. Armstrong Jr.	Feb. 26, 1949	Dec. 27, 1950
Maj. Gen. William D. Old	Dec. 27, 1950	Oct. 14, 1952
Brig. Gen. W.R. Agee	Oct. 27, 1952	Feb. 26, 1953
Maj. Gen. George R. Acheson	Feb. 26, 1953	Feb. 1, 1956
Brig. Gen. T. Alan Bennett (acting)	Feb. 1, 1956	Feb. 24, 1956
Lt. Gen. Joseph H. Atkinson	Feb. 24, 1956	July 16, 1956
Maj. Gen. Frank A. Armstrong Jr.	July 17, 1956	Oct. 23, 1956
Maj. Gen. James H. Davies	Oct. 24, 1956	June 27, 1957
Lt. Gen. Frank A. Armstrong Jr.	June 28, 1957	Aug. 18, 1957
Brig. Gen. Kenneth H. Gibson	Aug. 19, 1957	Aug. 13, 1958
Maj. Gen. C.F. Necrason	Aug. 14, 1958	July 19, 1961
Brig. Gen. Jack A. Gibbs (acting)	July 20, 1961	July 25, 1961
Maj. Gen. Wendell W. Bowman	July 26, 1961	Aug. 8, 1963
Col. Alfred Walton (acting)	Aug. 9, 1963	Aug. 14, 1963
Maj. Gen. James C. Jensen	Aug. 15, 1963	Nov. 14, 1966
Maj. Gen. Thomas E. Moore	Nov. 15, 1966	July 24, 1969
Maj. Gen. Joseph A. Cunningham	July 25, 1969	July 31, 1972
Maj. Gen. Donavon F. Smith	Aug. 1, 1972	June 5, 1973
Maj. Gen. Charles W. Carson Jr.	June 18, 1973	March 2, 1974
Col. David T. Stockman (acting)	March 3, 1974	March 18, 1974
Maj. Gen. Jack K. Gamble	March 19, 1974	June 30, 1975
Lt. Gen. James E. Hill	July 1, 1975	Oct. 14, 1976
Lt. Gen. M.L. Boswell	Oct. 15, 1976	June 30, 1978
Lt. Gen. Winfield W. Scott Jr.	July 1, 1978	April 1, 1981
Lt. Gen. Lynwood E. Clark	April 1, 1981	Aug. 31, 1983
Lt. Gen. Bruce K. Brown	Sept. 1, 1983	Sept. 26, 1985
Lt. Gen. David L. Nichols	Sept. 27, 1985	May 22, 1988
Lt. Gen. Thomas G. McInerney	May 22, 1988	Aug. 9, 1990

Activated as Alaskan Air Force (1942). Redesignated Eleventh Air Force (1942). Redesignated Alaskan Air Command (1945). Redesignated 11th Air Force Aug. 9, 1990, under PACAF.

Continental Air Command

Lt. Gen. George E. Stratemeyer	Dec. 1, 1948	April 15, 1949
Lt. Gen. Ennis C. Whitehead	April 15, 1949	Dec. 14, 1950
Maj. Gen. Willis H. Hale	Dec. 14, 1950	Feb. 18, 1952
Lt. Gen. Leon W. Johnson	Feb. 18, 1952	Dec. 14, 1955
Lt. Gen. Charles B. Stone III	Dec. 15, 1955	June 30, 1957
Lt. Gen. William E. Hall	July 1, 1957	Sept. 30, 1961
Lt. Gen. Gordon A. Blake	Sept. 30, 1961	June 30, 1962
Lt. Gen. Edward J. Timberlake	July 1, 1962	July 1966
Lt. Gen. Henry Viccellio Sr.	Aug. 1, 1966	Aug. 1, 1968

Established Dec. 1, 1948. Inactivated Aug. 1, 1968.

Electronic Security Command

Col. Roy H. Lynn	Oct. 26, 1948	July 5, 1949
Col. Travis M. Hetherington	July 6, 1949	Feb. 21, 1951
Maj. Gen. Roy H. Lynn	Feb. 22, 1951	Feb. 13, 1953
Maj. Gen. Harold H. Bassett	Feb. 14, 1953	Jan. 3, 1957
Maj. Gen. Gordon L. Blake	Jan. 4, 1957	Aug. 5, 1959
Maj. Gen. John B. Ackerman	Aug. 6, 1959	Sept. 20, 1959
Maj. Gen. Millard Lewis	Sept. 21, 1959	Aug. 31, 1962
Maj. Gen. Richard P. Klocko	Sept. 1, 1962	Oct. 15, 1965
Maj. Gen. Louis E. Coira	Oct. 16, 1965	July 18, 1969
Maj. Gen. Carl W. Stapleton	July 19, 1969	Feb. 23, 1973
Maj. Gen. Walter T. Galligan	Feb. 24, 1973	May 16, 1974
Maj. Gen. Howard P. Smith	May 17, 1974	July 31, 1975
Maj. Gen. Kenneth D. Burns	Aug. 1, 1975	Jan. 18, 1979
Maj. Gen. Doyle E. Larson	Jan. 19, 1979	July 31, 1983
Maj. Gen. John B. Marks	Aug. 1, 1983	April 16, 1985
Maj. Gen. Paul H. Martin	April 17, 1985	Aug. 14, 1989
Maj. Gen. Gary W. O'Shaughnessy	Aug. 15, 1989	Oct. 1, 1991

Formerly USAF Security Service. Redesignated: Electronic Security Command Aug. 1, 1979; Air Force Intelligence Command Oct. 1, 1991; Air Intelligence Agency, Oct. 1, 1993.

Headquarters Command

Brig. Gen. Burton M. Hovey	Jan. 3, 1946	Dec. 13, 1948
Brig. Gen. Sydney D. Grubbs	Dec. 14, 1948	Oct. 1, 1950
Brig. Gen. Morris J. Lee	Oct. 2, 1950	June 13, 1952
Brig. Gen. Stoyte O. Ross	June 14, 1952	July 4, 1956
Maj. Gen. Reuben C. Hood Jr.	Aug. 1, 1956	June 30, 1959
Maj. Gen. Brooke E. Allen	Aug. 3, 1959	Dec. 31, 1965
Maj. Gen. Rollen H. Anthis	Jan. 10, 1966	Nov. 30, 1967
Maj. Gen. Milton B. Adams	Dec. 1, 1967	June 30, 1968
Maj. Gen. Nils O. Ohman	July 5, 1968	April 30, 1972
Maj. Gen. John L. Locke	May 1, 1972	Feb. 25, 1974
Maj. Gen. Maurice R. Reilly	Feb. 26, 1974	August 1975
Maj. Gen. William C. Norris	Sept. 1, 1975	June 30, 1976

Established as Bolling Field Command (1946). Redesignated Headquarters Command, USAF, March 17, 1958. Inactivated in 1976.

Military Airlift Command

Maj. Gen. Robert W. Harper	July 1, 1947	June 1, 1948
Lt. Gen. Laurence S. Kuter	June 1, 1948	Oct. 28, 1951
Lt. Gen. Joseph Smith	Nov. 15, 1951	June 30, 1958
Lt. Gen. William H. Tunner	July 1, 1958	May 31, 1960
Gen. Joe W. Kelly Jr.	June 1, 1960	July 18, 1964
Gen. Howell M. Estes Jr.	July 19, 1964	July 31, 1969
Gen. Jack J. Catton	Aug. 1, 1969	Sept. 12, 1972
Lt. Gen. Jay T. Robbins (acting)	Sept. 12, 1972	Sept. 25, 1972
Gen. Paul K. Carlton	Sept. 26, 1972	March 31, 1977
Gen. William G. Moore Jr.	April 1, 1977	June 30, 1979
Gen. Robert E. Huyser	July 1, 1979	June 26, 1981
Gen. James R. Allen	June 26, 1981	June 30, 1983
Gen. Thomas M. Ryan Jr.	July 1, 1983	Sept. 19, 1985
Gen. Duane H. Cassidy	Sept. 20, 1985	Sept. 20, 1989
Gen. Hansford T. Johnson	Sept. 20, 1989	June 1, 1992

Antecedents: AAC Ferrying Command (1941); AAF Ferrying Command (1942); Air Transport Command (1942, inactivated June 1, 1948). Military Air Transport Service established June 1, 1948. Redesignated Military Airlift Command Jan. 1, 1966. In 1982, the inactivated Air Transport Command was consolidated with MAC. Inactivated June 1, 1992.

Northeast Air Command

Maj. Gen. Lyman P. Whitten	Oct. 6, 1950	March 14, 1952
Maj. Gen. Charles T. Myers	March 14, 1952	July 26, 1954
Lt. Gen. Glenn O. Barcus	July 26, 1954	March 31, 1957

Newfoundland Base Command, part of Military Air Transport Service, reorganized and redesignated Northeast Air Command, a new major command, Oct. 1, 1950. Inactivated March 31, 1957.

Pacific Air Command/Seventh Air Force

Maj. Gen. Ralph H. Wooten	April 1947	Aug. 31, 1948
Brig. Gen. Robert F. Travis	Sept. 1, 1948	June 1, 1949

Formerly Seventh Air Force. Redesignated Pacific Air Command Dec. 15, 1947. Discontinued June 1, 1949.

Pacific Air Forces

Lt. Gen. Ennis C. Whitehead	Dec. 30, 1945	April 25, 1949
Lt. Gen. George E. Stratemeyer	April 26, 1949	May 20, 1951
Lt. Gen. Earle E. Partridge (acting)	May 21, 1951	June 9, 1951
Gen. Otto P. Weyland	June 10, 1951	March 25, 1954
Gen. Earle E. Partridge	March 26, 1954	May 31, 1955
Gen. Laurence S. Kuter	June 1, 1955	July 31, 1959
Gen. Emmett O'Donnell Jr.	Aug. 1, 1959	July 31, 1963
Gen. Jacob E. Smart	Aug. 1, 1963	July 31, 1964
Gen. Hunter Harris Jr.	Aug. 1, 1964	Jan. 31, 1967
Gen. John D. Ryan	Feb. 1, 1967	July 31, 1968
Gen. Joseph J. Nazzaro	Aug. 1, 1968	July 31, 1971
Gen. Lucius D. Clay Jr.	Aug. 1, 1971	Sept. 30, 1973
Gen. John W. Vogt	Oct. 1, 1973	June 30, 1974
Gen. Louis L. Wilson Jr.	July 1, 1974	May 31, 1977
Lt. Gen. James A. Hill	June 1, 1977	June 14, 1978
Lt. Gen. James D. Hughes	June 15, 1978	July 1, 1981
Lt. Gen. Arnold W. Braswell	July 1, 1981	Sept. 30, 1983
Gen. Jerome F. O'Malley	Oct. 8, 1983	Nov. 1, 1984
Gen. Robert W. Bazley	Nov. 1, 1984	Dec. 16, 1986
Gen. Jack I. Gregory	Dec. 16, 1986	July 22, 1988
Gen. Merrill A. McPeak	July 22, 1988	Oct. 30, 1990
Lt. Gen. James B. Davis	Nov. 5, 1990	Feb. 19, 1991
Gen. Jimmie V. Adams	Feb. 19, 1991	Jan. 25, 1993
Gen. Robert L. Rutherford	Jan. 26, 1993	Oct. 12, 1994
Gen. John G. Lorber	Oct. 12, 1994	July 7, 1997
Gen. Richard B. Myers	July 7, 1997	July 23, 1998
Gen. Patrick K. Gamble	July 23, 1998	April 9, 2001
Lt. Gen. Lansford E. Trapp (acting)	April 9, 2001	May 4, 2001
Gen. William J. Begert	May 4, 2001	July 2, 2004
Gen. Paul V. Hester	July 2, 2004	

Activated as Far East Air Forces Aug. 3, 1944. Redesignated Pacific Air Command, US Army, Dec. 6, 1945. Redesignated FEAF Jan. 1, 1947. Redesignated Pacific Air Forces July 1, 1957.

Strategic Air Command

Gen. George C. Kenney	March 21, 1946	Oct. 18, 1948
Gen. Curtis E. LeMay	Oct. 19, 1948	June 30, 1957
Gen. Thomas S. Power	July 1, 1957	Nov. 30, 1964
Gen. John D. Ryan	Dec. 1, 1964	Jan. 31, 1967
Gen. Joseph J. Nazzaro	Feb. 1, 1967	July 28, 1968
Gen. Bruce K. Holloway	July 29, 1968	April 30, 1972
Gen. John C. Meyer	May 1, 1972	July 31, 1974
Gen. Russell E. Dougherty	Aug. 1, 1974	July 31, 1977
Gen. Richard H. Ellis	Aug. 1, 1977	July 31, 1981
Gen. Bennie L. Davis	Aug. 1, 1981	July 31, 1985
Gen. Larry D. Welch	Aug. 1, 1985	June 30, 1986
Gen. John T. Chain	July 1, 1986	Jan. 31, 1991
Gen. George L. Butler	Feb. 1, 1991	June 1, 1992

Established as Continental Air Forces Dec. 13, 1944. Redesignated Strategic Air Command March 21, 1946. Inactivated June 1, 1992.

Tactical Air Command

Lt. Gen. Elwood R. Quesada	March 21, 1946	Nov. 23, 1948
Maj. Gen. Robert M. Lee	Dec. 24, 1948	June 20, 1950
Maj. Gen. Glenn O. Barcus	July 17, 1950	Jan. 25, 1951
Gen. John K. Cannon	Jan. 25, 1951	March 31, 1954
Gen. Otto P. Weyland	April 1, 1954	July 31, 1959
Gen. Frank F. Everest	Aug. 1, 1959	Sept. 30, 1961
Gen. Walter C. Sweeney Jr.	Oct. 1, 1961	July 31, 1965
Gen. Gabriel P. Disosway	Aug. 1, 1965	July 31, 1968
Gen. William W. Momyer	Aug. 1, 1968	Sept. 30, 1973
Gen. Robert J. Dixon	Oct. 1, 1973	April 30, 1978
Gen. W.L. Creech	May 1, 1978	Nov. 1, 1984
Gen. Jerome F. O'Malley	Nov. 1, 1984	April 20, 1985
Gen. Robert D. Russ	May 22, 1985	March 26, 1991
Gen. John Michael Loh	March 27, 1991	June 1, 1992

Established March 21, 1946. Reassigned to Continental Air Command (1948). Removed from CAC and returned to major command status Dec. 1, 1950. Inactivated June 1, 1992.

US Air Forces in Europe

Brig. Gen. John F. McBlain (acting)	Aug. 14, 1947	Oct. 20, 1947
Lt. Gen. Curtis E. LeMay	Oct. 20, 1947	Oct. 15, 1948
Lt. Gen. John K. Cannon	Oct. 16, 1948	Jan. 20, 1951
Gen. Lauris Norstad	Jan. 21, 1951	July 26, 1953
Lt. Gen. William H. Tunner	July 27, 1953	June 30, 1957
Gen. Frank F. Everest	July 1, 1957	July 31, 1959
Gen. Frederic H. Smith Jr.	Aug. 1, 1959	June 30, 1961
Gen. Truman H. Landon	July 1, 1961	July 31, 1963
Gen. Gabriel P. Disosway	Aug. 1, 1963	July 31, 1965
Gen. Bruce K. Holloway	Aug. 1, 1965	July 31, 1966
Gen. Maurice A. Preston	Aug. 1, 1966	July 31, 1968
Gen. Horace M. Wade	Aug. 1, 1968	Jan. 31, 1969
Gen. Joseph R. Holzapple	Feb. 1, 1969	Aug. 31, 1971
Gen. David C. Jones	Sept. 1, 1971	June 30, 1974
Gen. John W. Vogt	July 1, 1974	Aug. 31, 1975
Gen. Richard H. Ellis	Sept. 1, 1975	July 31, 1977
Gen. William J. Evans	Aug. 1, 1977	Aug. 1, 1978
Gen. John W. Pauly	Aug. 1, 1978	Aug. 1, 1980
Gen. Charles A. Gabriel	Aug. 1, 1980	June 30, 1982
Gen. Billy M. Minter	July 1, 1982	Nov. 1, 1984
Gen. Charles L. Donnelly Jr.	Nov. 1, 1984	May 1, 1987
Gen. William L. Kirk	May 1, 1987	April 12, 1989
Gen. Michael J. Dugan	April 12, 1989	June 26, 1990
Gen. Robert C. Oaks	June 26, 1990	July 29, 1994
Gen. James L. Jamerson	July 29, 1994	July 16, 1995
Gen. Richard E. Hawley	July 17, 1995	April 4, 1996
Gen. Michael E. Ryan	April 4, 1996	Oct. 5, 1997
Lt. Gen. William J. Begert (acting)	Oct. 6, 1997	Dec. 5, 1997
Gen. John P. Jumper	Dec. 5, 1997	Jan. 13, 2000
Gen. Gregory S. Martin	Jan. 13, 2000	Aug. 12, 2003
Gen. Robert H. Foglesong	Aug. 12, 2003	Dec. 6, 2005
Gen. William T. Hobbins	Dec. 6, 2005	

Activated as 8th Air Force (1942). Redesignated Eighth Air Force Sept. 18, 1942. Redesignated US Strategic Air Forces in Europe (1944). Redesignated USAFE Aug. 7, 1945.

US Air Forces Southern Command/Caribbean

Maj. Gen. Hubert R. Harmon	July 31, 1946	Oct. 3, 1947
Brig. Gen. Glen C. Jamison (acting)	Oct. 4, 1947	Nov. 12, 1947
Maj. Gen. Willis H. Hale	Nov. 13, 1947	Oct. 19, 1949
Brig. Gen. Rosenham Beam	Oct. 20, 1949	Nov. 5, 1950
Brig. Gen. Emil C. Kiel	Nov. 6, 1950	June 10, 1953
Maj. Gen. Reuben C. Hood Jr.	June 11, 1953	June 16, 1956
Maj. Gen. Truman H. Landon	June 20, 1956	June 1, 1959
Maj. Gen. Leland S. Stranathan	Aug. 3, 1959	Sept. 8, 1963
Maj. Gen. Robert A. Breitweiser	Sept. 11, 1963	July 9, 1966
Maj. Gen. Reginald J. Clizbe	Aug. 6, 1966	June 14, 1968
Maj. Gen. Kenneth O. Sanborn	June 14, 1968	April 7, 1972
Maj. Gen. Arthur G. Salisbury	April 7, 1972	October 1974
Maj. Gen. James M. Breedlove	October 1974	Jan. 1, 1976

Activated as Panama Canal Air Force (1940). Redesignated Caribbean Air Force (1941). Redesignated 6th Air Force Feb. 5, 1942, then Sixth Air Force Sept. 18, 1942. Redesignated Caribbean Air Command July 31, 1946. Redesignated US Air Forces Southern Command July 8, 1963. Inactivated Jan. 1, 1976.

USAF Academy Superintendents

Lt. Gen. Hubert R. Harmon	July 27, 1954	July 27, 1956
Maj. Gen. James E. Briggs	July 28, 1956	Aug. 16, 1959
Maj. Gen. William S. Stone	Aug. 17, 1959	June 30, 1962
Maj. Gen. Robert H. Warren	July 1, 1962	June 30, 1965
Lt. Gen. Thomas S. Moorman Sr.	July 1, 1965	July 31, 1970
Lt. Gen. Albert P. Clark	Aug. 1, 1970	July 31, 1974
Lt. Gen. James R. Allen	Aug. 1, 1974	June 27, 1977
Lt. Gen. Kenneth L. Tallman	June 28, 1977	June 15, 1981
Maj. Gen. Robert E. Kelley	June 16, 1981	June 15, 1983
Lt. Gen. Winfield W. Scott Jr.	June 16, 1983	June 25, 1987
Lt. Gen. Charles R. Hamm	June 26, 1987	July 1, 1991
Lt. Gen. Bracley C. Hosmer	July 1, 1991	July 7, 1994
Lt. Gen. Paul E. Stein	July 8, 1994	July 31, 1997
Lt. Gen. Tad J. Oelstrom	Aug. 1, 1997	June 9, 2000
Lt. Gen. John R. Dallager	June 9, 2000	June 1, 2003
Lt. Gen. John W. Rosa Jr.	June 1, 2003	Oct. 24, 2005
Lt. Gen. John F. Regni	Oct. 24, 2005	

persistent awareness.

Remotely operated aircraft systems produced by General Atomics Aeronautical Systems are routinely operated over world trouble spots. With the precision capability to detect, identify, track, and even strike time-sensitive targets instantly, the USAF Predator and Predator B fly missions beyond the capabilities of manned aircraft. The multi-mission Predator B, equipped with electro-optical/infrared (EO/IR) streaming day and night video and Lynx Synthetic Aperture Radar (SAR), provides unparalleled surveillance support to ground forces.

A cost-effective force multiplier in every sense. Not only operational, but indispensable.

GENERAL ATOMICS
AERONAUTICAL SYSTEMS

 www.ga-asi.com Leading The Situational Awareness Revolution

DOD Leaders Through the Years

Secretaries of Defense

James V. Forrestal	Sept. 17, 1947	March 28, 1949
Louis A. Johnson	March 28, 1949	Sept. 19, 1950
George C. Marshall	Sept. 21, 1950	Sept. 12, 1951
Robert A. Lovett	Sept. 17, 1951	Jan. 20, 1953
Charles E. Wilson	Jan. 28, 1953	Oct. 8, 1957
Neil H. McElroy	Oct. 9, 1957	Dec. 1, 1959
Thomas S. Gates	Dec. 2, 1959	Jan. 20, 1961
Robert S. McNamara	Jan. 21, 1961	Feb. 29, 1968
Clark M. Clifford	March 1, 1968	Jan. 20, 1969
Melvin R. Laird	Jan. 22, 1969	Jan. 29, 1973
Elliot L. Richardson	Jan. 30, 1973	May 24, 1973
James R. Schlesinger	July 2, 1973	Nov. 19, 1975
Donald H. Rumsfeld	Nov. 20, 1975	Jan. 20, 1977
Harold Brown	Jan. 21, 1977	Jan. 20, 1981
Caspar W. Weinberger	Jan. 21, 1981	Nov. 23, 1987
Frank C. Carlucci	Nov. 23, 1987	Jan. 20, 1989
Richard B. Cheney	March 21, 1989	Jan. 20, 1993
Les Aspin	Jan. 21, 1993	Feb. 3, 1994
William J. Perry	Feb. 3, 1994	Jan. 23, 1997
William S. Cohen	Jan. 24, 1997	Jan. 20, 2001
Donald H. Rumsfeld	Jan. 20, 2001	Dec. 18, 2006
Robert M. Gates	Dec. 18, 2006	

Chairmen of the Joint Chiefs of Staff

Gen. of the Army Omar N. Bradley	Aug. 16, 1949	Aug. 15, 1953
Adm. Arthur W. Radford, USN	Aug. 15, 1953	Aug. 15, 1957
Gen. Nathan F. Twining, USAF	Aug. 15, 1957	Sept. 30, 1960
Gen. Lyman L. Lemnitzer, USA	Oct. 1, 1960	Sept. 30, 1962
Gen. Maxwell D. Taylor, USA	Oct. 1, 1962	July 1, 1964
Gen. Earle G. Wheeler, USA	July 3, 1964	July 2, 1970
Adm. Thomas H. Moorer, USN	July 2, 1970	July 1, 1974
Gen. George S. Brown, USAF	July 1, 1974	June 20, 1978
Gen. David C. Jones, USAF	June 21, 1978	June 18, 1982
Gen. John W. Vessey Jr., USA	June 18, 1982	Sept. 30, 1985
Adm. William J. Crowe Jr., USN	Oct. 1, 1985	Sept. 30, 1989
Gen. Colin L. Powell, USA	Oct. 1, 1989	Sept. 30, 1993
Adm. David Jeremiah, USN (acting)	Oct. 1, 1993	Oct. 24, 1993
Gen. John M. Shalikashvili, USA	Oct. 25, 1993	Sept. 30, 1997
Gen. Henry H. Shelton, USA	Oct. 1, 1997	Oct. 1, 2001
Gen. Richard B. Myers, USAF	Oct. 1, 2001	Sept. 30, 2005
Gen. Peter Pace, USMC	Sept. 30, 2005	

Vice Chairmen of the Joint Chiefs of Staff

Gen. Robert T. Herres, USAF	Feb. 6, 1987	Feb. 28, 1990
Adm. David E. Jeremiah, USN	March 1, 1990	Feb. 28, 1994
Adm. William A. Owens, USN	March 1, 1994	Feb. 27, 1996
Gen. Joseph W. Ralston, USAF	March 1, 1996	Feb. 29, 2000
Gen. Richard B. Myers, USAF	March 1, 2000	Oct. 1, 2001
Gen. Peter Pace, USMC	Oct. 1, 2001	Aug. 12, 2005
Adm. Edmund P. Giambastiani Jr., USN	Aug. 12, 2005	

US Central Command

Gen. Robert C. Kingston, USA	Jan. 1, 1983	Nov. 27, 1985
Gen. George B. Crist, USMC	Nov. 27, 1985	Nov. 23, 1988
Gen. H. Norman Schwarzkopf, USA	Nov. 23, 1988	Aug. 9, 1991
Gen. Joseph P. Hoar, USMC	Aug. 9, 1991	Aug. 5, 1994
Gen. J.H. Binford Peay III, USA	Aug. 5, 1994	Aug. 13, 1997
Gen. Anthony C. Zinni, USMC	Aug. 13, 1997	July 6, 2000
Gen. Tommy R. Franks, USA	July 6, 2000	July 7, 2003
Gen. John Abizaid, USA	July 7, 2003	March 16, 2007
Adm. William J. Fallon, USN	March 16, 2007	

US European Command

Gen. Matthew B. Ridgway, USA	Aug. 1, 1952	July 11, 1953
Gen. Alfred M. Gruenther, USA	July 11, 1953	Nov. 20, 1956
Gen. Lauris Norstad, USAF	Nov. 20, 1956	Nov. 1, 1962
Gen. Lyman L. Lemnitzer, USA	Nov. 1, 1962	May 5, 1969
Gen. Andrew J. Goodpaster, USA	May 5, 1969	Nov. 1, 1974
Gen. Alexander M. Haig Jr., USA	Nov. 1, 1974	June 27, 1979
Gen. Bernard W. Rogers, USA	June 27, 1979	June 25, 1987
Gen. John R. Galvin, USA	June 25, 1987	June 23, 1992
Gen. John M. Shalikashvili, USA	June 23, 1992	Oct. 21, 1993
Gen. George A. Joulwan, USA	Oct. 21, 1993	July 10, 1997
Gen. Wesley K. Clark, USA	July 10, 1997	May 2, 2000
Gen. Joseph W. Ralston, USAF	May 2, 2000	Jan. 16, 2003
Gen. James L. Jones, USMC	Jan. 16, 2003	Dec. 4, 2006
Gen. Bantz J. Craddock, USA	Dec. 4, 2006	

US Joint Forces Command

Adm. William H.P. Blandy, USN	Feb. 3, 1947	Feb. 1, 1950
Adm. William M. Fechteler, USN	Feb. 1, 1950	Aug. 15, 1951
Adm. Lynde D. McCormick, USN	Aug. 15, 1951	April 12, 1954
Adm. Jerauld Wright, USN	April 12, 1954	Feb. 28, 1960
Adm. Robert L. Dennison, USN	Feb. 28, 1960	April 30, 1963
Adm. Harold P. Smith, USN	April 30, 1963	April 30, 1965
Adm. Thomas H. Moorer, USN	April 30, 1965	June 17, 1967
Adm. Ephraim P. Holmes, USN	June 17, 1967	Sept. 30, 1970
Adm. Charles K. Duncan, USN	Sept. 30, 1970	Oct. 31, 1972
Adm. Ralph W. Cousins, USN	Oct. 31, 1972	May 30, 1975
Adm. Isaac C. Kidd Jr., USN	May 30, 1975	Sept. 30, 1978
Adm. Harry D. Train II, USN	Sept. 30, 1978	Sept. 30, 1982
Adm. Wesley D. McDonald, USN	Sept. 30, 1982	Nov. 27, 1985
Adm. Lee Baggett Jr., USN	Nov. 27, 1985	Nov. 22, 1988
Adm. Frank B. Kelso II, USN	Nov. 22, 1988	May 18, 1990
Adm. Leon A. Edney, USN	May 18, 1990	July 13, 1992
Adm. Paul D. Miller, USN	July 13, 1992	Oct. 31, 1994
Gen. John J. Sheehan, USMC	Oct. 31, 1994	Sept. 24, 1997
Adm. Harold W. Gehman Jr., USN	Sept. 24, 1997	Sept. 5, 2000
Gen. William F. Kernan, USA	Sept. 5, 2000	Oct. 2, 2002
Adm. Edmund P. Giambastiani Jr., USN	Oct. 2, 2002	Aug. 1, 2005
Lt. Gen. Robert W. Wagner, USA (acting)	Aug. 1, 2005	Nov. 10, 2005
Gen. Lance L. Smith, USAF	Nov. 10, 2005	

Formerly US Atlantic Command, established Dec. 1, 1947, redesignated Oct. 7, 1999.

US Northern Command

Gen. Ralph E. Eberhart, USAF	Oct. 1, 2002	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	March 23, 2007
Gen. Victor E. Renuart Jr., USAF	March 23, 2007	

US Pacific Command

Adm. John H. Towers, USN	Jan. 1, 1947	Feb. 28, 1947
Adm. Louis E. Denfeld, USN	Feb. 28, 1947	Dec. 3, 1947
Adm. Dewitt C. Ramsey, USN	Dec. 3, 1947	April 30, 1949
Adm. Arthur W. Radford, USN	April 30, 1949	July 10, 1953
Adm. Felix B. Stump, USN	July 10, 1953	July 31, 1958
Adm. Harry D. Felt, USN	July 31, 1958	June 30, 1964
Adm. U.S. Grant Sharp, USN	June 30, 1964	July 31, 1968
Adm. John S. McCain Jr., USN	July 31, 1968	Sept. 1, 1972
Adm. Noel A.M. Gayler, USN	Sept. 1, 1972	Aug. 30, 1976
Adm. Maurice E. Weisner, USN	Aug. 30, 1976	Oct. 31, 1979
Adm. Robert L.J. Long, USN	Oct. 31, 1979	July 1, 1983
Adm. William J. Crowe Jr., USN	July 1, 1983	Sept. 18, 1985
Adm. Ronald J. Hays Jr., USN	Sept. 18, 1985	Sept. 30, 1988
Adm. Huntington Hardisty, USN	Sept. 30, 1988	March 1, 1991
Adm. Charles R. Larson, USN	March 1, 1991	July 11, 1994
Lt. Gen. Harold T. Fields, USA (acting)	July 11, 1994	July 19, 1994
Adm. Richard C. Macke, USN	July 19, 1994	Jan. 31, 1996
Adm. Joseph W. Prueher, USN	Jan. 31, 1996	Feb. 20, 1999
Adm. Dennis C. Blair, USN	Feb. 20, 1999	May 2, 2002
Adm. Thomas B. Fargo, USN	May 2, 2002	Feb. 26, 2005
Adm. William J. Fallon, USN	Feb. 26, 2005	March 12, 2007
Lt. Gen. Daniel P. Leaf, USAF (acting)	March 12, 2007	March 26, 2007
Adm. Timothy J. Keating, USN	March 26, 2007	

US Southern Command

Lt. Gen. Willis Crittenberger, USA	November 1947	June 1948
Lt. Gen. Matthew B. Ridgway, USA	June 1948	October 1949
Lt. Gen. William H.H. Morris, USA	October 1949	April 1952
Lt. Gen. Horace L. McBride, USA	April 1952	June 1954
Lt. Gen. William K. Harrison, USA	June 1954	January 1957
Lt. Gen. Robert M. Montague, USA	January 1957	February 1958
Lt. Gen. Ridgely Gaither, USA	April 1958	July 1960
Lt. Gen. Robert F. Sink, USA	July 1960	January 1961
Lt. Gen. Andrew P. O'Meara, USA	January 1961	June 1963
Gen. Andrew P. O'Meara, USA	June 1963	February 1965
Gen. Robert W. Porter, USA	February 1965	February 1969
Gen. George R. Mather, USA	February 1969	September 1971
Gen. George V. Underwood, USA	September 1971	January 1973
Gen. William B. Rosson, USA	January 1973	July 1975
Lt. Gen. Dennis P. McAuliffe, USA	August 1975	September 1979
Lt. Gen. Wallace H. Nutting, USA	October 1979	May 1983
Gen. Paul F. Gorman, USA	May 1983	March 1985
Gen. John R. Galvin, USA	March 1985	June 1987
Gen. Fred F. Woerner, USA	June 1987	July 1989
Gen. Maxwell R. Thurman, USA	September 1989	November 1990
Gen. George A. Joulwan, USA	November 1990	November 1993
Maj. Gen. W.A. Worthington, USA	December 1993	January 1994
Gen. Barry McCaffrey, USA	February 1994	February 1996
RAdm. James Perkins, USN	March 1996	June 1996
Gen. Wesley K. Clark, USA	July 1996	July 1997
Gen. Charles E. Wilhelm, USMC	August 1997	Sept. 8, 2000
Gen. Peter Pace, USMC	Sept. 8, 2000	Sept. 30, 2001
Maj. Gen. G.D. Speer, USA (acting)	Sept. 30, 2001	Aug. 18, 2002
Gen. James T. Hill, USA	Aug. 18, 2002	Nov. 9, 2004
Gen. B. John Craddock, USA	Nov. 9, 2004	Oct. 19, 2006
Adm. James G. Stavridis	Oct. 19, 2006	

Formerly US Caribbean Command (1947). Activated in 1963.

US Space Command

Gen. Robert T. Herres, USAF	Sept. 23, 1985	Feb. 5, 1987
Gen. John L. Piotrowski, USAF	Feb. 6, 1987	March 30, 1990
Gen. Donald J. Kutyna, USAF	April 1, 1990	June 30, 1992
Gen. Charles A. Horner, USAF	June 30, 1992	Sept. 12, 1994
Gen. Joseph W. Ashy, USAF	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III, USAF	Aug. 27, 1996	Aug. 13, 1998
Gen. Richard B. Myers, USAF	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart, USAF	Feb. 22, 2000	Oct. 1, 2002

Deactivated Oct. 1, 2002, when its functions merged with US Strategic Command.

US Special Operations Command

Gen. James J. Lindsay, USA	April 16, 1987	June 27, 1990
Gen. Carl W. Stiner, USA	June 27, 1990	May 20, 1993
Gen. Wayne A. Downing, USA	May 20, 1993	Feb. 29, 1996
Gen. Henry H. Shelton, USA	Feb. 29, 1996	Sept. 25, 1997
Gen. Peter J. Schoomaker, USA	Nov. 5, 1997	Oct. 27, 2000
Gen. Charles R. Holland, USAF	Oct. 27, 2000	Sept. 2, 2003
Gen. Bryan D. Brown, USA	Sept. 2, 2003	

US Strategic Command

Gen. G. Lee Butler, USAF	June 1, 1992	Feb. 13, 1994
Adm. Henry G. Chiles Jr., USN Gen.	Feb. 14, 1994	Feb. 21, 1996
Gen. Eugene E. Habiger, USAF	Feb. 22, 1996	June 25, 1998
Adm. Richard W. Mies, USN	June 26, 1998	Nov. 30, 2001
Adm. James O. Ellis Jr., USN	Nov. 30, 2001	July 9, 2004
Gen. James E. Cartwright, USMC	July 9, 2004	

Merged the functions of US Space Command into STRATCOM Oct. 1, 2002.

US Transportation Command

Gen. Duane H. Cassidy, USAF	July 1, 1987	Sept. 21, 1989
Gen. H.T. Johnson, USAF	Sept. 22, 1989	Aug. 24, 1992
Gen. Ronald R. Fogleman, USAF	Aug. 25, 1992	Oct. 17, 1994
Gen. Robert L. Rutherford, USAF	Oct. 18, 1994	July 14, 1996
Gen. Walter Kross, USAF	July 15, 1996	Aug. 2, 1998
Gen. Charles T. Robertson Jr., USAF	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy, USAF	Nov. 5, 2001	Sept. 7, 2005
Gen. Norton A. Schwartz, USAF	Sept. 7, 2005	

NORAD Leaders Through the Years

North American Aerospace Defense Command

Gen. Earle E. Partridge, USAF	Sept. 12, 1957	July 30, 1959
Gen. Laurence S. Kuter, USAF	Aug. 1, 1959	July 30, 1962
Gen. John K. Gerhart, USAF	Aug. 1, 1962	March 30, 1965
Gen. Dean C. Strother, USAF	April 1, 1965	July 29, 1966
Gen. Raymond J. Reeves, USAF	Aug. 1, 1966	July 31, 1969
Gen. Seth J. McKee, USAF	Aug. 1, 1969	Sept. 30, 1973
Gen. Lucius D. Clay Jr., USAF	Oct. 1, 1973	Aug. 29, 1975
Gen. Daniel James Jr., USAF	Sept. 1, 1975	Dec. 5, 1977
Gen. James E. Hill, USAF	Dec. 6, 1977	Dec. 31, 1979
Gen. James V. Hartinger, USAF	Jan. 1, 1980	July 30, 1984
Gen. Robert T. Herres, USAF	July 30, 1984	Feb. 5, 1987
Gen. John L. Piotrowski, USAF	Feb. 6, 1987	March 30, 1990
Gen. Donald J. Kutyna, USAF	April 1, 1990	June 30, 1992
Gen. Charles A. Horner, USAF	June 30, 1992	Sept. 12, 1994
Gen. Joseph W. Ashy, USAF	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III, USAF	Aug. 27, 1996	Aug. 13, 1998
Gen. Richard B. Myers, USAF	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart, USAF	Feb. 22, 2000	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	March 23, 2007
Gen. Victor E. Renuart Jr., USAF	March 23, 2007	

People

2007 USAF Almanac

USAF Total Force

(As of Sept. 30, 2006)

	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Air Force active duty							
Officers	68,862	72,032	73,758	74,109	73,252	70,539	65,776
Enlisted	280,410	292,061	297,219	298,314	276,117	273,990	264,424
Cadets	4,299	4,158	4,085	4,193	4,327	4,424	4,000
Total Air Force active duty	**353,571**	**368,251**	**375,062**	**376,616**	**353,696**	**348,953**	**334,200**
Career re-enlistments (second term)	30,380	34,093	31,026	27,266	23,338	22,431	23,201
Rate	84%	88%*	90%*	91%	84%	89%	87%
First-term re-enlistments	10,485	10,666	8,232	9,232	10,128	11,192	9,678
Rate	56%	72%*	61%*	63%	54%	56%	46%
Civilian personnel							
Direct hire (excluding technicians)	122,474	123,439	122,419	124,959	125,809	130,572	128,122
ANG technicians	22,987	21,246	20,718	22,416	22,322	21,997	23,605
AFRC technicians	9,959	8,825	8,159	9,204	9,445	9,435	10,214
Indirect hire—foreign nationals	6,450	6,296	6,410	6,146	6,589	6,935	6,617
Total civilian personnel	**161,870**	**159,806**	**157,706**	**162,725**	**164,165**	**168,939**	**168,558**
Guard and Reserve							
Air National Guard, Selected Reserve	108,485	112,075	108,137	106,715	106,430	105,660	107,000
AFRC, Selected Reserve	74,869	76,632	74,754	75,322	75,802	74,075	74,900
AFRC, Individual Ready Reserve	47,940	41,095	36,665	37,015	48,750	44,904	45,469
Total Ready Reserve	**231,294**	**229,802**	**219,556**	**219,052**	**230,982**	**224,639**	**227,369**
Standby	17,826	17,430	17,587	17,340	15,241	10,932	10,675
Total Guard and Reserve	**249,120**	**247,232**	**237,143**	**236,392**	**246,223**	**235,571**	**238,044**

FYs 2001-06 are actual figures; FY 2007 is an estimate. *Stop-Loss imposed in FY02 and FY03.

Armed Forces Manpower Trends, End Strength in Thousands

(As of Sept. 30, 2006)

	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Active duty military							
Air Force	354	368	375	377	354	349	334
Army	481	487	499	500	493	505	518
Marine Corps	173	174	178	178	180	180	184
Navy	378	383	382	373	363	350	338
Total	**1,386**	**1,412**	**1,434**	**1,427**	**1,390**	**1,385**	**1,374**
Selected Guard and Reserve							
Air National Guard	109	112	108	107	106	106	107
AFRC	75	77	75	75	76	74	75
Army National Guard	352	351	351	343	333	346	350
Army Reserve	206	207	212	204	189	190	200
Marine Corps Reserve	40	40	41	40	40	40	40
Naval Reserve	88	88	88	83	76	71	71
Total	**870**	**875**	**875**	**851**	**821**	**826**	**843**
Direct-hire civilian (full-time equivalents)							
Air Force	155	154	149	154	155	158	159
Army	229	231	226	209	221	220	220
Navy/Marine Corps	183	185	182	183	179	178	179
Defense agencies	104	101	86	105	108	104	108
Total	**671**	**671**	**643**	**651**	**663**	**660**	**666**

FY07 numbers are estimates.

USAF Educational Levels

(As of Sept. 30, 2006)

	Number	Percent
Enlisted		
High school	14,830	5.4
Some college (< 2 years)	199,743	72.9
AA/AS degree or equivalent hours	44,415	16.2
Bachelor's degree	13,016	4.8
Master's degree	1,962	0.7
Professional or doctoral degree	24	0.0
Total	**273,990**	**100**
Officers		
Bachelor's degree	36,202	51.3
Master's degree	27,744	39.3
Doctoral degree	900	1.3
Professional degree	5,693	8.1
Total	**70,539**	**100**

Does not include 4,424 cadets.

USAF Marital Status

(As of Sept. 30, 2006)

Total percent married	60.6
Percent of enlisted	57.8
Percent of officers	71.4
Number of USAF couples	18,217
Number married to members of other services	1,363

Exclusive AFAVBA Program ...

A no-nonsense approach to earning higher savings yields.

Earn up to 5X the national average through AFAVBA's Banking Center ...

it's that simple.

When it comes to investing your hard-earned money, three things are important: safety, simplicity, and earning high yields. That's why AFA members choose the AFAVBA Banking Center for their banking needs.

Not familiar with the AFAVBA Banking Center?

Let's get you briefed. As an AFA member, you have exclusive access to:

- High-Yield Savings — **4.05% APY***
- Jumbo Savings — **4.25% APY***
- FREE Checking
- Interest Checking
- **FREE** Direct Deposit
- **FREE** Online Bill Payment
- **FREE** ATM/Debit Card**

In addition, accounts feature no monthly fees, and deposits are FDIC insured up to $100,000 in aggregate per customer. It all adds up to one thing: The AFAVBA Banking Center offers AFA members one of the best banking experiences in the nation. Visit our website, or call today to open your account.

AIR FORCE ASSOCIATION
VBA
AFA VETERAN BENEFITS ASSOCIATION

High-Yield Money Market Savings

Open your account online at www.afavbabankingcenter.com
Or give us a call at 1-800-229-9505

** National savings average courtesy of Bankrate.com as of 3/27/07. All deposit products and deposit processing services will be opened through Sky Bank. All products are FDIC insured up to $100,000 per customer through one of the participating financial institutions. ** Receive up to $6.00 in ATM fee reimbursements per statement cycle. † An initial deposit of $200 ($8,000 for a CD) is required to receive the $25 incentive. The incentive will be automatically deposited into your account within 30 days of account funding.*

Each Depositor Insured to $100,000
FDIC
FEDERAL DEPOSIT INSURANCE CORPORATION

$25 BONUS DEPOSIT.

Open an account with a minimum $200 deposit ($8,000 for a CD), and receive a $25 Bonus Deposit.† Simply provide promotional code **AF067** when you open your account. Hurry, this offer expires on June 30, 2007.

Air Force Personnel Strength

(As of Sept. 30, 2006)

Year	Strength	Year	Strength	Year	Strength
1907	3	1941	152,125	1975	612,551
1908	13	1942	764,415	1976	585,207
1909	27	1943	2,197,114	1977	570,479
1910	11	1944	2,372,292	1978	569,491
1911	23	1945	2,282,259	1979	559,450
1912	51	1946	455,515	1980	557,969
1913	114	1947	305,827	1981	570,302
1914	122	1948	387,730	1982	582,845
1915	208	1949	419,347	1983	592,044
1916	311	1950	411,277	1984	597,125
1917	1,218	1951	788,381	1985	601,515
1918	195,023	1952	973,474	1986	608,199
1919	25,603	1953	977,593	1987	607,035
1920	9,050	1954	947,918	1988	576,446
1921	11,649	1955	959,946	1989	570,880
1922	9,642	1956	909,958	1990	535,233
1923	9,441	1957	919,835	1991	510,432
1924	10,547	1958	871,156	1992	470,315
1925	9,670	1959	840,028	1993	444,351
1926	9,674	1960	814,213	1994	426,327
1927	10,078	1961	820,490	1995	400,409
1928	10,549	1962	883,330	1996	389,001
1929	12,131	1963	868,644	1997	377,385
1930	13,531	1964	855,802	1998	367,470
1931	14,780	1965	823,633	1999	360,590
1932	15,028	1966	886,350	2000	355,654
1933	15,099	1967	897,426	2001	353,571
1934	15,861	1968	904,759	2002	368,251
1935	16,247	1969	862,062	2003	375,062
1936	17,233	1970	791,078	2004	376,616
1937	19,147	1971	755,107	2005	353,696
1938	21,089	1972	725,635	2006	348,953
1939	23,455	1973	690,999	2007	334,200
1940	51,165	1974	643,795		

2007 number is an estimate.

Active Duty Force Demographics

(As of Sept. 30, 2006)

Rank	Men	Women	Total
Officers			
General	12	0	12
Lieutenant General	36	1	37
Major General	89	4	93
Brigadier General	126	19	145
Colonel	3,146	430	3,576
Lieutenant Colonel	8,896	1,333	10,229
Major	13,433	2,477	15,910
Captain	19,140	4,979	24,119
First Lieutenant	6,858	1,908	8,766
Second Lieutenant	5,967	1,685	7,652
Total	**57,703**	**12,836**	**70,539**
Enlisted			
Chief Master Sergeant of the Air Force	1	0	1
Chief Master Sergeant	2,405	299	2,704
Senior Master Sergeant	4,887	627	5,514
Master Sergeant	24,810	3,647	28,457
Technical Sergeant	37,279	7,686	44,965
Staff Sergeant	55,138	16,070	71,208
Sergeant/Senior Airman	46,208	13,067	59,275
Airman First Class	32,268	8,439	40,707
Airman	7,368	2,819	10,187
Airman Basic	8,669	2,303	10,972
Total	**219,033**	**54,957**	**273,990**
Academy Cadets	3,617	807	4,424
Total personnel	**280,353**	**68,600**	**348,953**

Average ages of military personnel : Officers **35,** Enlisted **29**

The Civilian Force

(As of Sept. 30, 2006)

General Schedule/ Other		Wage Grade		Wage Grade Leader		Wage Grade Supervisory	
Grade	**Force**	**Grade**	**Force**	**Grade**	**Force**	**Grade**	**Force**
1	10	1	2	1	0	1	0
2	732	2	116	2	5	2	16
3	1,484	3	322	3	5	3	16
4	2,292	4	106	4	5	4	26
5	6,794	5	735	5	15	5	54
6	4,509	6	975	6	27	6	83
7	9,153	7	1,280	7	48	7	111
8	1,594	8	2,741	8	111	8	195
9	12,118	9	2,653	9	253	9	759
10	942	10	13,026	10	916	10	1,060
11	16,764	11	3,147	11	229	11	425
12	18,270	12	1,517	12	92	12	213
13	11,156	13	248	13	21	13	150
14	3,908	14	36	14	0	14	182
15	1,336	15	2	15	1	15	92
16	0	16	0	16	0	16	50
17	0	17	0	17	0	17	28
18	0	18	0	18	0	18	15
ST[a]	0						
SES[b]	274						
Other	65						
Total	**91,401**	**Total**	**26,906**	**Total**	**1,728**	**Total**	**3,475**

Air Force Civilian Personnel: Average Age and Length of Service

General schedule	**47**
Federal wage system	**44**
Average age	**47**
Average length of service (overall)	**16.2 years**

Includes active Title 5 civilians with permanent appointments, US citizens only.

Excludes Title 32 technicians, temporary employees, and foreign/local nationals.

Does not include 2,421 personnel in pay band demonstration projects.

Does not include 3,142 personnel in National Security Personnel System pay bands.

[a]Scientific and Technical.

[b]Senior Executive Service (Includes ES, IE, and IP).

USAF Personnel Strength by Commands, FOAs, and DRUs

(As of Sept. 30, 2006)

	Military	Civilian	Total
Major commands			
Air Combat Command (ACC)	86,809	10,288	97,097
Air Education and Training Command (AETC)	63,939	14,927	78,866
Air Force Materiel Command (AFMC)	20,740	58,289	79,029
Air Force Reserve Command (AFRC)	345	13,749	14,094
Air Force Space Command (AFSPC)	18,345	6,534	24,879
Air Force Special Operations Command (AFSOC)	9,316	1,139	10,455
Air Mobility Command (AMC)	46,679	9,086	55,765
Pacific Air Forces (PACAF)	32,866	7,930	40,796
United States Air Forces in Europe (USAFE)	27,144	5,591	32,735
Total major commands	**306,183**	**127,533**	**433,716**
Field Operating Agencies (FOAs)			
Air Force Agency for Modeling and Simulation	16	15	31
Air Force Audit Agency	0	760	760
Air Force Center for Environmental Excellence	31	375	406
Air Force Civil Engineer Support Agency	95	117	212
Air Force C2ISR Center*	226	66	292
Air Force Communications Agency	203	319	522
Air Force Cost Analysis Agency	23	40	63
Air Force Flight Standards Agency	107	26	133
Air Force Frequency Management Agency	9	19	28
Air Force Historical Research Agency	1	39	40
Air Force Inspection Agency	97	27	124
Air Force Legal Services Agency	389	99	488
Air Force Logistics Management Agency	63	18	81
Air Force Manpower Agency	161	191	352
Air Force Medical Operations Agency	19	8	27
Air Force Medical Support Agency	236	117	353
AFNSEPA*	14	4	18
Air Force News Agency	305	95	400
AFNWCA*	14	18	32
Air Force Office of Special Investigations	1,627	671	2,298
Air Force Operations Group	67	0	67
Air Force Personnel Center	861	988	1,849
Air Force Personnel Operations Agency	28	80	108
Air Force Real Property Agency	0	129	129
Air Force Review Boards Agency	7	48	55
Air Force Safety Center	66	47	113
Air Force Security Forces Center	392	24	416
Air Force Services Agency	72	180	252
Air Force Technical Applications Center	523	0	523
Air Force Weather Agency	1,255	195	1,450
Air National Guard Readiness Center	124	469	593
Total FOA	**7,031**	**5,184**	**12,215**
Direct Reporting Units (DRUs)			
Air Force District of Washington	3,940	813	4,753
Air Force Doctrine Center	47	17	64
Air Force Operational Test and Evaluation Center	548	198	746
United States Air Force Academy (not cadets)	2,290	1,327	3,617
Total DRUs	**6,825**	**2,355**	**9,180**
Other			
Other units	24,490	31,466	55,956
USAFA cadets	4,424	0	4,424
Total for all categories	**348,953**	**166,538**	**515,491**

*AFC2ISR Center is Air Force Command & Control, Intelligence, Surveillance, and Reconnaissance Center; AFNSEPA is Air Force National Security Emergency Preparedness Agency; AFNWCA is Air Force Nuclear Weapons & Counter-proliferation Agency.

USAF Personnel by Geographic Area

(As of Sept. 30, 2006)

Total military personnel	**348,953**
US territory and special locations	**288,090**
Total in foreign countries	**60,863**
Western and southern Europe	**32,625**
Germany	15,185
UK	9,280
Italy	1,719
Turkey	4,257
Spain	321
All other countries	1,863
East Asia and Pacific	**22,291**
Japan/Okinawa	13,322
South Korea	8,815
All other countries	154
Africa, Near East, South Asia	**808**
Kuwait	290
Saudi Arabia	191
Egypt	42
All other countries	285
Western hemisphere	**361**
Canada	81
Panama	1
All other countries	279
Other areas	**4,778**

Specialties in the Enlisted Force

(As of Sept. 30, 2006)

Code	Career Field	Assigned	Percent
1A	Aircrew Operations	9,309	3.4
1C	Command Control Systems Operations	10,907	4.0
1N	Intelligence	11,411	4.2
1S	Safety	364	0.1
1T	Aircrew Protection	2,659	1.0
1W	Weather	2,295	0.8
2A	Manned Aerospace Maintenance	57,164	20.9
2E	Communications-Electronics Systems	11,055	4.0
2F	Fuels	4,215	1.5
2G	Logistics Plans	775	0.3
2M	Missile & Space Systems Maintenance	2,155	0.8
2P	Precision Measurement	791	0.3
2R	Maintenance Management Systems	1,515	0.6
2S	Supply	8,037	2.9
2T	Transportation & Vehicle Maintenance	12,445	4.5
2W	Munitions & Weapons	15,349	5.6
3A	Information Management	8,482	3.1
3C	Communications-Computer Systems	12,876	4.7
3E	Civil Engineering	16,685	6.1
3H	Historian	46	0.0
3M	Morale, Welfare, Recreation, & Services	4,272	1.6
3N	Public Affairs	1,434	0.5
3P	Security Forces	23,993	8.8
3S	Mission Support	7,993	2.9
3V	Visual Information	1,272	0.5
4A-V	Medical	19,139	7.0
4Y	Dental	2,496	0.9
5J	Paralegal	972	0.4
5R	Chapel Services Support	449	0.2
6C	Contracting	1,291	0.5
6F	Financial	2,779	1.0
7S	Special Investigation	943	0.3
8	Special Duty Identifiers	7,009	2.6
9	Reporting Identifiers	10,192	3.7
	Unassigned	1,221	0.4
	Total	**273,990**	**100**

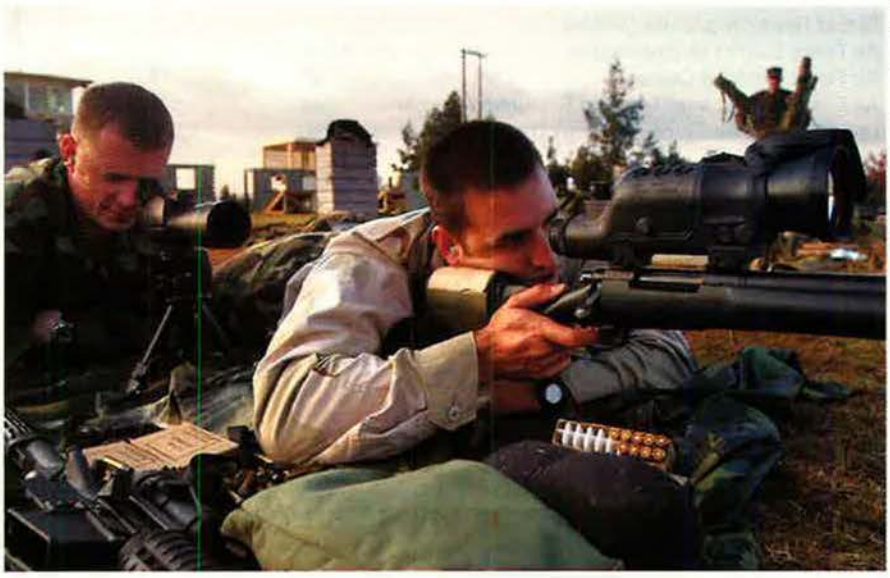
Percentages have been rounded.

Specialties in the Officer Force

(As of Sept. 30, 2006)

Code	Utilization Field Title	Assigned	Percent
XO	Commander & Director	1,305	1.9
11	Pilot	12,509	17.7
12	Navigator	3,752	5.3
13	Space, Missile, Command & Control	4,940	7.0
14	Intelligence	3,054	4.3
15	Weather	652	0.9
16	Operations Support	1,259	1.8
21	Logistics	3,870	5.5
31	Security Forces	764	1.1
32	Civil Engineering	1,408	2.0
33	Communications-Computer Systems	4,012	5.7
34	MWR & Services	472	0.7
35	Public Affairs	388	0.6
37	Manpower & Personnel	1,723	2.4
4X	Medical	10,995	15.6
51	Law	1,249	1.8
52	Chaplain	604	0.9
61	Scientific/Research	937	1.3
62	Developmental Engineering	2,868	4.1
63	Acquisition	2,574	3.6
64	Contracting	879	1.2
65	Financial	797	1.1
71	Special Investigations	383	0.5
8X	Special Duty Identifiers	1,369	1.9
9X	Reporting Identifiers	6,328	9.0
	Other	1,448	2.1
	Total	**70,539**	**100**

Total does not include 4,424 cadets. Percentages have been rounded.



USMC photo by Cpl. Kamran Sadaghiani

SSgt. Samuel Howell (l) and SSgt. Patrick Pendergest train at the Urban Sniper School at Kadena AB, Japan. Both are from the 736th Security Forces Squadron based at Andersen AFB, Guam.

Introducing new

AT&T Global PrePaid Cards

AT&T Global PrePaid Cards offer great rates for our valued servicemen and women deployed around the world.

Card Features:

- The 550-minute Card offers the best value when calling from OEF/OIF to the U.S. — just 19¢ per minute*.
- You can easily recharge an **AT&T Global PrePaid Card** just by using almost any major credit card. Each Card can be repeatedly recharged from $20 up to $100. Anyone can do it, making it a great way for a parent, spouse or friend to recharge the Card so their loved ones can stay in touch.
- Check the Card balance by dialing the toll free 800 # on the back of your Card or go online at att.com/prepaidcard
- Low international and U.S. state-to-state rates
- Minutes never expire
- Toll free Customer Care 24/7

Visit Headquarters

To learn more about AT&T products and services for those in the military, visit att.com/military. You'll also find information on calling from forward-deployed areas and other overseas locations in the Camp AT&T section.

Where to Buy

Buy yours at your local Exchange or online at aafes.com today.
Friends and family are also invited to purchase Cards at this Web site.

*A surcharge not to exceed 15 minutes applies to U.S. pay phone calls, a portion of which compensates pay phone providers. Minutes are based on U.S. state-to-state calling. International rates are higher than U.S. state-to-state rates, differ according to area called and can change. In-state calls and calls made to/from mobile phones may be higher. See Card for details.

at&t

Budgets

2007 USAF Almanac

Terms Explained

Funding levels can be expressed in several ways. **Budget authority** is the value of new obligations that the federal government is authorized to incur. These include some obligations to be met in later years. Figures can also be expressed in **outlays** (actual expenditures, some of which are covered by amounts that were authorized in previous years).

Another difference concerns the value of money. When funding is in **current** or **then-year** dollars, no adjustment for inflation has taken place. This is the actual amount of dollars that has been or is to be spent, budgeted, or forecast. When funding is expressed in **constant dollars,** or **real dollars,** the effect of inflation has been factored out to make direct comparisons between budget years possible. A specific year, often the present one, is chosen as a baseline for constant dollars.

Normally, Congress first authorizes payment, then appropriates it. **Authorization** is an act of Congress that establishes or continues a federal program or agency and sets forth guidelines to which it must adhere. **Appropriation** is an act of Congress that enables federal agencies to spend money for specific purposes.

Air Force Budget—A 10-Year Perspective

(Budget authority in millions of current and constant FY08 dollars; excludes costs of the Global War on Terror.)

Current dollars	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**	**FY07**
Military personnel	$19,111	$19,357	$20,217	$20,956	$24,751	$28,732	$29,681	$30,344	$29,838	$29,649
Operation & maintenance	25,174	27,107	27,254	29,328	34,364	43,254	39,252	39,752	40,184	39,826
Procurement	15,258	18,434	18,755	22,054	23,229	31,380	32,460	35,117	32,734	32,165
RDT&E	14,265	13,807	14,511	14,297	14,519	18,825	20,290	20,551	21,608	24,397
Military construction	1,537	862	1,174	1,410	1,806	1,634	1,831	1,499	2,049	2,368
Family housing	1,114	1,082	1,158	1,084	1,374	1,536	1,441	1,680	2,132	1,938
Rev. & mgmt. funds	234	1,510	434	515	292	31	690	-667	45	44
Trust & receipts	-409	-246	-453	-95	-108	-147	-110	-359	-125	-127
Total	**$76,284**	**$81,913**	**$83,050**	**$89,549**	**$100,227**	**$125,245**	**$125,535**	**$127,918**	**$128,465**	**$130,259**
Constant FY08 dollars										
Military personnel	$24,699	$24,478	$24,725	$24,931	$28,982	$32,887	$33,080	$32,707	$31,104	$30,331
Operation & maintenance	32,535	34,279	33,331	34,891	40,238	49,509	43,747	42,848	41,889	40,742
Procurement	19,719	23,311	22,937	26,237	27,200	35,918	36,178	37,852	34,123	32,905
RDT&E	18,436	17,460	17,747	17,009	17,001	21,547	22,614	22,152	22,525	24,958
Military construction	1,986	1,090	1,436	1,677	2,115	1,870	2,041	1,616	2,136	2,422
Family housing	1,440	1,368	1,416	1,290	1,609	1,758	1,606	1,811	2,222	1,983
Rev. & mgmt. funds	302	1,910	531	613	342	35	769	-719	47	45
Trust & receipts	-529	-311	-554	-113	-126	-168	-123	-387	-130	-130
Total	**$98,589**	**$103,585**	**$101,570**	**$106,535**	**$117,360**	**$143,358**	**$139,912**	**$137,880**	**$133,917**	**$133,255**
Percentage real growth										
Military personnel	-2.0	-0.9	1.0	0.8	16.2	13.5	0.6	-1.1	-4.9	-2.5
Operation & maintenance	9.0	5.4	-2.8	4.7	15.3	23.0	-11.6	-2.1	-2.2	-2.7
Procurement	5.4	18.2	-1.6	14.4	3.7	32.1	0.7	4.6	-9.9	-3.6
RDT&E	0.2	-5.3	1.6	-4.2	0.0	26.7	4.9	-2.0	1.7	10.8
Military construction	-3.5	-45.1	31.7	16.8	26.1	-11.6	9.1	-20.8	32.2	13.4
Family housing	-3.4	-5.0	3.5	-8.9	24.8	9.3	-8.7	12.8	22.7	-10.8
Total	**2.5**	**5.1**	**-1.9**	**4.9**	**10.2**	**22.2**	**-2.4**	**-1.5**	**-2.9**	**-0.5**

Numbers do not add due to rounding.

Air Force Major Force Programs

(Total obligation authority in billions of constant FY08 dollars)

	FY98	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**	**FY07**
Forces										
Strategic Forces	$5.4	$5.3	$4.9	$4.6	$5.4	$6.0	$6.1	$4.3	$5.9	$5.6
General-Purpose Forces	21.2	22.6	23.2	26.4	31.3	40.3	36.6	54.8	38.5	35.8
Airlift Forces	11.4	13.0	12.7	12.4	14.3	17.3	15.2	13.0	17.4	16.1
Guard and Reserve Forces	9.3	9.6	9.7	10.1	10.5	11.3	11.8	12.0	12.9	12.9
Special Operations Forces	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.0	0.6	0.7
Total	**$47.8**	**$51.1**	**$51.0**	**$54.0**	**$62.1**	**$75.5**	**$70.3**	**$84.2**	**$75.4**	**$71.1**
Support										
Intelligence & Communications	$23.7	$24.3	$23.5	$25.5	$26.8	$34.9	$35.6	$35.1	$39.6	$38.1
Research & Development	10.1	9.0	9.3	8.4	8.1	10.0	10.9	9.2	10.3	10.4
Central Supply & Maintenance	4.9	5.3	5.5	5.8	5.9	6.9	6.1	5.0	5.4	5.0
Training, Medical, & Personnel	10.3	10.4	10.5	10.8	12.1	13.5	13.7	6.1	13.1	12.0
Administration & Other	1.8	1.9	2.0	2.0	2.1	2.5	2.8	2.3	2.7	2.1
Total	**$50.8**	**$51.0**	**$50.8**	**$52.6**	**$54.9**	**$67.6**	**$69.1**	**$57.7**	**$71.2**	**$67.6**

Defense Department Budget Topline

(In billions of current and constant FY08 dollars)

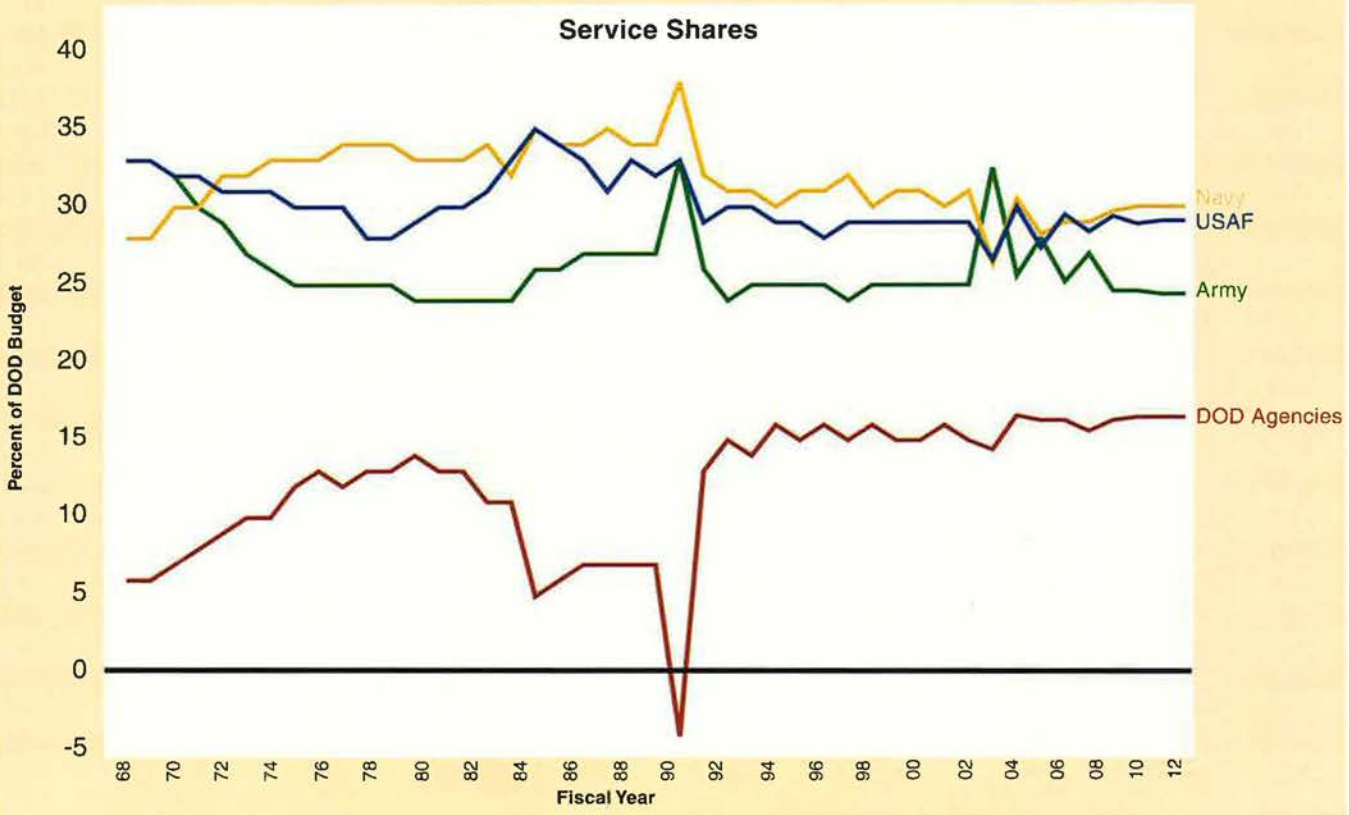
	FY06	FY07	FY08	FY09	FY10	FY11	FY12
Budget authority (current $)	$410.7	$432.4	$481.4	$483.8	$493.9	$504.2	$538.5
Budget authority (constant FY08 $)	$428.1	$442.3	$481.4	$472.6	$471.9	$471.2	$492.1
Outlays (current $)	$382.8	$383.3	$442.3	$466.3	$484.0	$499.9	$527.4
Outlays (constant FY08 $)	$399.0	$392.1	$442.3	$455.5	$462.5	$467.2	$482.0

Numbers have been rounded.
Does not include supplemental appropriations to cover costs of the Global War on Terror.

Service Shares

(In billions of constant FY08 dollars)

Budget authority	**FY06**	**FY07**	**FY08**	**FY09**	**FY10**	**FY11**	**FY12**
Air Force	$117.5	$130.4	$136.6	$138.7	$136.5	$137.0	$143.0
Army	120.0	111.4	130.1	116.5	116.0	115.1	120.3
Navy	120.7	128.5	139.8	140.3	141.3	141.6	147.9
Defense agencies, DOD-wide	69.9	72.0	74.9	77.2	78.1	77.6	81.0
Total	**$428.1**	**$442.3**	**$481.4**	**$472.7**	**$472.0**	**$471.2**	**$492.2**
Percent of budget authority							
Air Force	27.4%	29.5%	28.4%	29.4%	28.9%	29.1%	29.1%
Army	28.0%	25.2%	27.0%	24.6%	24.6%	24.4%	24.4%
Navy	28.2%	29.0%	29.0%	29.7%	30.0%	30.0%	30.0%
Defense agencies, DOD-wide	16.3%	16.3%	15.6%	16.3%	16.5%	16.5%	16.5%



Historical Federal Budget Data

Explanatory Note
Data for 1962-2005 are historical. Data for 2006 are projections. These four tables are based on "The Budget and Economic Outlook: Fiscal Years 2008-17," published by the Congressional Budget Office, January 2007; Budget of the United States Government Historical Tables, Fiscal Year 2008. Constant dollar figures are derived. Defense data are National Defense, which includes Department of Energy nuclear weapons costs.

Federal Budget Categories
Current $ billions

Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	$106.8	$5.9	$34.7	$52.6
1963	111.3	4.0	36.2	53.7
1964	118.5	6.5	38.9	55.0
1965	118.2	1.6	39.7	51.0
1966	134.5	3.1	43.4	59.0
1967	157.5	12.6	50.9	72.0
1968	178.1	27.7	59.7	82.2
1969	183.6	0.5	64.6	82.7
1970	195.6	8.7	72.5	81.9
1971	210.2	26.1	86.9	79.0
1972	230.7	26.1	100.8	79.3
1973	245.7	15.2	116.0	77.1
1974	269.4	7.2	130.9	80.7
1975	332.3	54.1	169.4	87.6
1976	371.8	69.4	189.1	89.9
1977	409.2	49.9	203.7	97.5
1978	458.7	55.4	227.4	104.6
1979	504.0	39.6	247.0	116.8
1980	590.9	73.1	291.2	134.6
1981	678.2	73.9	339.4	158.0
1982	745.7	120.6	370.8	185.9
1983	808.4	207.7	410.6	209.9
1984	851.9	185.3	405.6	228.0
1985	946.4	221.5	448.2	253.1
1986	990.4	237.9	461.8	273.8
1987	1,004.1	168.4	474.2	282.5
1988	1,064.5	192.3	505.1	290.9
1989	1,143.8	205.4	549.8	304.0
1990	1,253.1	277.6	626.9	300.1
1991	1,324.3	321.4	702.3	319.7
1992	1,381.6	340.4	716.8	302.6
1993	1,409.5	300.4	738.0	292.4
1994	1,461.9	258.8	786.1	282.3
1995	1,515.9	226.4	818.6	273.6
1996	1,560.6	174.0	858.8	266.0
1997	1,601.3	103.2	896.4	271.7
1998	1,652.7	29.9	938.7	270.2
1999	1,702.0	**1.9**	976.9	275.5
2000	1,789.2	**86.4**	1,030.0	295.0
2001	1,863.2	32.4	1,094.5	292.1
2002	2,011.2	317.4	1,196.9	331.0
2003	2,160.1	538.4	1,281.8	325.0
2004	2,293.0	568.0	1,346.0	365.1
2005	2,472.2	493.6	1,445.6	415.6
2006	2,654.3	434.0	1,552.1	404.0

Federal Budget Categories
Constant FY08 $ billions

Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	$745.1	$41.2	$242.1	$367.0
1963	766.6	27.5	249.3	369.9
1964	805.7	44.2	264.5	373.9
1965	791.0	10.7	265.7	341.3
1966	874.7	20.2	282.2	383.7
1967	993.5	79.5	321.1	454.2
1968	1,078.1	167.7	361.4	497.6
1969	1,035.5	2.9	370.7	474.5
1970	1,061.8	47.2	393.6	444.6
1971	1,093.0	135.7	451.9	410.8
1972	1,162.4	131.5	507.9	399.6
1973	1,165.7	72.1	550.4	365.8
1974	1,151.5	30.8	559.5	344.9
1975	1,301.9	211.9	663.7	343.2
1976	1,376.8	257.0	700.2	332.9
1977	1,422.8	173.5	708.3	339.0
1978	1,482.2	179.0	734.8	338.0
1979	1,463.3	115.0	717.1	339.1
1980	1,511.5	187.0	744.9	344.3
1981	1,572.8	171.4	787.1	366.4
1982	1,628.4	263.4	809.7	406.0
1983	1,710.6	439.5	868.8	444.1
1984	1,728.3	375.9	822.9	462.6
1985	1,853.3	433.8	877.7	495.6
1986	1,903.3	457.2	887.5	526.2
1987	1,862.6	312.4	879.6	524.0
1988	1,896.8	342.7	900.0	518.4
1989	1,944.8	349.2	934.8	516.9
1990	2,021.5	447.8	1,011.3	484.1
1991	2,050.2	497.6	1,087.3	494.9
1992	2,076.6	511.6	1,077.4	454.8
1993	2,056.9	438.4	1,077.0	426.7
1994	2,079.3	368.1	1,118.1	401.5
1995	2,097.4	313.2	1,132.6	378.5
1996	2,096.3	233.7	1,153.6	357.3
1997	2,102.6	135.5	1,177.0	356.8
1998	2,135.9	38.6	1,213.2	349.2
1999	2,152.3	**2.4**	1,235.4	348.4
2000	2,188.2	**105.7**	1,259.7	360.8
2001	2,216.6	38.5	1,302.1	347.5
2002	2,355.0	371.7	1,401.5	387.6
2003	2,472.5	616.3	1,467.2	372.0
2004	2,555.6	633.1	1,500.2	406.9
2005	2,664.7	532.0	1,558.2	448.0
2006	2,766.9	452.4	1,618.0	421.1

Note: Defense data do not include costs of the Global War on Terror.

If you have to fight — Make sure your equipment is the very best!

Armor Holdings' integrated armoring solutions for personal and vehicle protection allow the warfighter to succeed on the battlefield of today while advancing survivability for the operational area of tomorrow. Our continued dedication to developing new cutting-edge survivability systems re-enforces why we are the global leader in armoring and survivability solutions.

ARMOR HOLDINGS
AEROSPACE & DEFENSE GROUP

adg.armorholdings.com

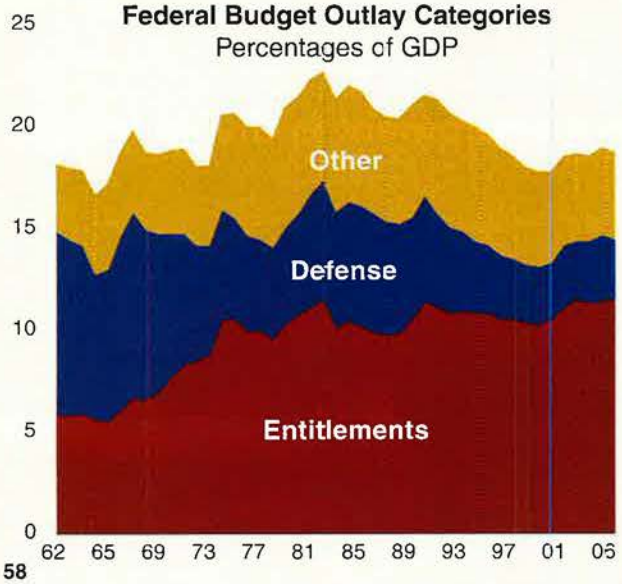
Tactical Vehicles Vehicle Armor Body Armor Helmets Aircraft Armor Restraint Systems Air Bag Systems Seating Systems Individual Equipment

Percentages of GDP

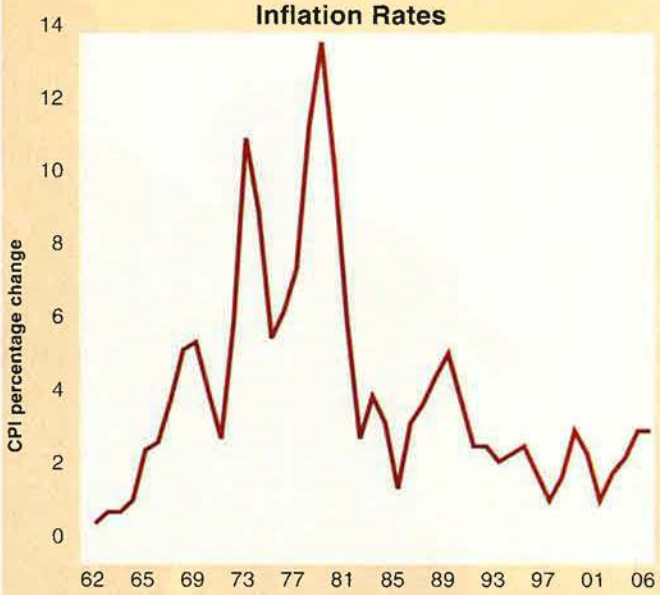
Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	18.8	1.0	6.1	9.3
1963	18.6	0.7	6.0	9.0
1964	18.5	1.0	6.1	8.6
1965	17.2	0.2	5.8	7.4
1966	17.8	0.4	5.7	7.8
1967	19.4	1.6	6.3	8.9
1968	20.5	3.2	6.9	9.5
1969	19.4	0.1	6.8	8.7
1970	19.3	0.9	7.2	8.1
1971	19.5	2.4	8.0	7.3
1972	19.6	2.2	8.6	6.7
1973	18.7	1.2	8.8	5.9
1974	18.7	0.5	9.1	5.6
1975	21.3	3.5	10.9	5.6
1976	21.4	4.0	10.9	5.2
1977	20.7	2.5	10.3	4.9
1978	20.7	2.5	10.3	4.7
1979	20.1	1.6	9.9	4.7
1980	21.7	2.7	10.7	4.9
1981	22.2	2.4	11.1	5.2
1982	23.1	3.7	11.5	5.8
1983	23.5	6.0	11.9	6.1
1984	22.1	4.8	10.5	5.9
1985	22.8	5.3	10.8	6.1
1986	22.5	5.4	10.5	6.2
1987	21.6	3.6	10.2	6.1
1988	21.2	3.8	10.1	5.8
1989	21.2	3.8	10.2	5.6
1990	21.8	4.8	10.9	5.2
1991	22.3	5.4	11.8	5.4
1992	22.1	5.5	11.5	4.8
1993	21.4	4.6	11.2	4.4
1994	21.0	3.7	11.3	4.1
1995	20.7	3.1	11.2	3.7
1996	20.3	2.3	11.2	3.5
1997	19.6	1.3	10.9	3.3
1998	19.2	0.3	10.9	3.1
1999	18.6	**0.0**	10.7	3.0
2000	18.4	**0.9**	10.6	3.0
2001	18.5	0.3	10.9	2.9
2002	19.4	3.1	11.5	3.2
2003	20.0	5.0	11.9	3.0
2004	19.9	4.9	11.7	3.2
2005	20.2	4.0	11.8	3.4
2006	20.3	3.3	11.9	3.1

Federal Budget Outlay Categories

Percentages of GDP



Inflation Rates



CPI=Consumer Price Index

Year	% change
1962	1.0
1963	1.3
1964	1.3
1965	1.6
1966	2.9
1967	3.1
1968	4.2
1969	5.5
1970	5.7
1971	4.4
1972	3.2
1973	6.2
1974	11.0
1975	9.1
1976	5.8
1977	6.5
1978	7.6
1979	11.3
1980	13.5
1981	10.3
1982	6.2
1983	3.2
1984	4.3
1985	3.6
1986	1.9
1987	3.6
1988	4.1
1989	4.8
1990	5.4
1991	4.2
1992	3.0
1993	3.0
1994	2.6
1995	2.8
1996	3.0
1997	2.3
1998	1.6
1999	2.2
2000	3.4
2001	2.8
2002	1.6
2003	2.3
2004	2.7
2005	3.4
2006	3.4

Monthly Military Basic Rates of Pay in Dollars

(Effective Jan. 1, 2007)

Commissioned Officers

Pay Grade	Years of Service														
	<2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
O-10[a]												13,659	13,726	14,011	14,509
O-9[a]												11,947	12,119	12,367	12,801
O-8[a]	8,453	8,730	8,914	8,965	9,194	9,577	9,666	10,030	10,134	10,448	10,901	11,319	11,598		
O-7[a]	7,024	7,350	7,501	7,621	7,838	8,053	8,301	8,549	8,797	9,577	10,236	10,236	10,236	10,236	10,288
O-6	5,206	5,719	6,095	6,095	6,118	6,380	6,415	6,415	6,779	7,424	7,802	8,180	8,395	8,613	9,036
O-5	4,340	4,889	5,228	5,291	5,502	5,629	5,906	6,110	6,373	6,776	6,968	7,158	7,373		
O-4	3,745	4,335	4,624	4,688	4,957	5,245	5,603	5,882	6,076	6,188	6,252				
O-3	3,292	3,732	4,028	4,392	4,602	4,833	4,983	5,228	5,356						
O-2	2,844	3,240	3,731	3,857	3,937										
O-1	2,469	2,570	3,107												
O-3E[b]				4,392	4,602	4,833	4,983	5,228	5,435	5,554	5,716				
O-2E[b]				3,857	3,937	4,062	4,274	4,437	4,559						
O-1E[b]				3,107	3,318	3,440	3,566	3,689	3,857						

Enlisted Members

E-9							4,111	4,204	4,321	4,460	4,598	4,822	5,010	5,209	5,513
E-8						3,365	3,514	3,606	3,716	3,836	4,052	4,161	4,347	4,451	4,705
E-7	2,339	2,553	2,651	2,781	2,882	3,055	3,153	3,250	3,424	3,511	3,594	3,644	3,815	3,925	4,204
E-6	2,023	2,226	2,324	2,420	2,519	2,744	2,831	2,928	3,014	3,044	3,065				
E-5	1,854	1,978	2,073	2,171	2,324	2,455	2,552	2,582							
E-4	1,700	1,787	1,883	1,979	2,063										
E-3	1,534	1,631	1,729												
E-2	1,459														
E-1 4 mos.+	1,301														
E-1<4 mos.	1,204														

Amounts have been rounded to the nearest dollar.
[a]Basic pay for pay grades O-7 through O-10 is limited to $14,000.10. Basic pay for O-6 and below is limited to $11,349.90.
[b]Commissioned officers with more than four years' active service as enlisted members.
While serving as Chairman of the Joint Chiefs of Staff or Chief of Staff of the Air Force, basic pay is $15,959.40.
For the Chief Master Sergeant of the Air Force, basic pay is $6,642.60.

Aviation Career Incentive Pay

(Effective Jan. 1, 2007)

Monthly Rate	Years of Aviation Service as an Officer	Monthly Rate	Years of Aviation Service as an Officer
$125	2 or fewer	$585	more than 22
156	more than 2	495	more than 23
188	more than 3	385	more than 24
206	more than 4	250	more than 25
650	more than 6		
840	more than 14		

Provided to qualified rated officers.
Continuous pay ends following the 25th year of service.

Hazardous Duty Pay

(Effective Jan. 1, 2007)

Pay Grade	Monthly Rate
O-10	$150
O-9	150
O-8	150
O-7	150
O-6	250
O-5	250
O-4	225
O-3	175
O-2	150
O-1	150
E-9	240
E-8	240
E-7	240
E-6	215
E-5	190
E-4	165
E-3	150
E-2	150
E-1	150

Annual Pay for Federal Civilians

(Effective Jan. 1, 2007)

General Schedule

Grade	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
GS-1	$16,630	$17,185	$17,739	$18,289	$18,842	$19,167	$19,713	$20,264	$20,286	$20,798
GS-2	18,698	19,142	19,761	20,286	20,512	21,115	21,718	22,321	22,924	23,527
GS-3	20,401	21,081	21,761	22,441	23,121	23,801	24,481	25,161	25,841	26,521
GS-4	22,902	23,665	24,428	25,191	25,954	26,717	27,480	28,243	29,006	29,769
GS-5	25,623	26,477	27,331	28,185	29,039	29,893	30,747	31,601	32,455	33,309
GS-6	28,562	29,514	30,466	31,418	32,370	33,322	34,274	35,226	36,178	37,130
GS-7	31,740	32,798	33,856	34,914	35,972	37,030	38,088	39,146	40,204	41,262
GS-8	35,151	36,323	37,495	38,667	39,839	41,011	42,183	43,355	44,527	45,699
GS-9	38,824	40,118	41,412	42,706	44,000	45,294	46,588	47,882	49,176	50,470
GS-10	42,755	44,180	45,605	47,030	48,445	49,880	51,305	52,730	54,155	55,580
GS-11	46,974	48,540	50,106	51,672	53,238	54,804	56,370	57,936	59,502	61,068
GS-12	56,301	58,178	60,055	61,932	63,809	65,686	67,563	69,440	71,317	73,194
GS-13	66,951	69,183	71,415	73,647	75,879	78,111	80,343	82,575	84,807	87,039
GS-14	79,115	81,752	84,389	87,026	89,663	92,300	94,937	97,574	100,211	102,848
GS-15	93,063	96,165	99,267	102,369	105,471	108,573	111,675	114,777	117,879	120,981

Senior Executive Service

As part of the 2004 defense budget, Congress authorized DOD to implement a new performance-based pay system for SES members. On Jan. 1, 2004, a new SES pay scale reflecting only the minimum and maximum levels of pay replaced the old fixed SES pay levels (ES-1 through ES-6). The pay scale does not include locality pay.

SES Pay System Structure	Minimum	Maximum
Certified SES performance appraisal system	$111,676	$168,000
Noncertified SES performance appraisal system	$111,676	$154,600

Housing Allowance

(Effective Jan. 1, 2007)

Pay Grade	With Dependents	Without Dependents
O-10	$1,479.30	$1,202.40
O-9	1,479.30	1,202.40
O-8	1,479.30	1,202.40
O-7	1,479.30	1,202.40
O-6	1,331.70	1,102.80
O-5	1,283.70	1,062.00
O-4	1,131.60	984.00
O-3	936.30	789.00
O-2	798.90	625.20
O-1	715.20	527.10
O-3E	1,006.20	851.70
O-2E	907.80	723.90
O-1E	839.40	622.80
E-9	960.90	729.00
E-8	886.50	669.30
E-7	822.90	571.50
E-6	760.20	517.20
E-5	684.00	477.30
E-4	594.30	414.90
E-3	552.90	407.10
E-2	527.10	330.60
E-1	527.10	295.20

Subsistence Allowance

(Effective Jan. 1, 2007)

Officers	$192.74/month
Enlisted Members	$279.88/month

Secure Communications...
We Bring You What's Next

General Dynamics provides proven solutions for Type 1 Secure Communications, whether your needs are to secure a network, desktop or an individual's voice and data communications.

Secure Voice and Data Encryption Solutions

Our products are:

- Certified to Secure Information Classified Top Secret and Below
- High-Speed, Compact and Portable
- Cost-Effective
- Easy-to-Use
- Flexible
- Compliant with Standards (HAIPE® IS, SCIP, Crypto Modernization)
- Reprogrammable and Upgradeable
- Deployed Worldwide
- Supported 24/7 by a Technical Help Desk

For more information, call 781-455-2800 or toll free at 888-Type1-4-U (888-897-3148), or email secure.communications@gdc4s.com.
www.gdc4s.com/secureproducts

SUPPORT • 877-230-0236 • SUPPORT • 410-850-4893 • 24·7

GENERAL DYNAMICS
C4 Systems

* The following products are expected to be submitted to NSA for certification: TACLANE-Router (1Q 2007), TACLANE-Micro (2Q 2007), Sectera vIPer (2Q 2007), Sectera Edge (Summer 2007).

Equipment
2007 USAF Almanac

Total active inventory (TAI): aircraft assigned to operating forces for mission, training, test, or maintenance. Includes primary, backup, and attrition reserve aircraft.
Primary aircraft inventory (PAI): aircraft assigned to meet primary aircraft authorization (PAA).

Active Duty Inventory

(As of Sept. 30, 2006)

Type	TAI	PAI
Bomber		
B-1	67	51
B-2	20	16
B-52	85	54
Total	**172**	**121**
Fighter/Attack		
A-10	128	120
OA-10	75	54
F-15	567	464
F-16	724	636
F-22A	73	69
F-117	52	39
Total	**1,619**	**1,382**
Helicopter		
HH-60	68	57
UH-1	92	68
Total	**160**	**125**
Reconnaissance/BM/C3I		
E-3	32	28
E-4	4	3
EC-130	16	10
MQ-9	8	0
M/RQ-1	5	0
NC-135	1	0
OC-135	2	2
RC-135	22	17
RQ-4	11	5
U-2	34	30
WC-135	2	1
Total	**137**	**96**
Special Ops Forces		
AC-130	23	19
CV-22	4	0
MC-130	44	40
MH-53	32	26
Total	**103**	**85**

Type	TAI	PAI
Tanker		
HC-130	19	19
KC-10	59	54
KC-135	200	158
Total	**278**	**231**
Trainer		
T-1	179	138
T-3	110	0
T-6	272	190
T-37	171	134
T-38	489	356
T-41	4	4
T-43	8	7
T-51	3	0
TC-135	3	2
Glider	42	40
UV-18	3	2
Total	**1,284**	**873**
Transport		
C-5	52	47
C-12	28	27
C-17	141	106
C-20	10	10
C-21	74	72
C-32	4	4
C-37	9	7
C-40	4	2
C-130	205	160
VC-25	2	2
Total	**529**	**437**
Total Active	**4,282**	**3,350**

Air National Guard Inventory

(As of Sept. 30, 2006)

Type	TAI	PAI
Fighter/Attack		
A-10	76	72
OA-10	26	18
F-15	141	94
F-16	522	447
Total	**765**	**631**
Helicopter		
HH-60G	18	15
Reconnaissance/BM/C3I		
E-8	18	12
EC-130	8	4
W/C-130	3	0
Total	**29**	**16**
Special Ops Forces		
MC-130	4	4
Tanker		
HC-130	9	7
KC-135	251	189
Total	**260**	**196**
Transport		
C-5	17	16
C-17	8	8
C-21	2	2
C-26	11	0
C-32	2	0
C-38	2	2
C-40	3	0
C-130	190	179
LC-130	10	10
Total	**245**	**217**
Total ANG	**1,321**	**1,079**

Air Force Reserve Command Inventory

(As of Sept. 30, 2006)

Type	TAI	PAI
Bomber		
B-52	9	8
Fighter/Attack		
A-10	44	39
OA-10	7	6
F-16	69	60
Total	**120**	**105**
Helicopter		
HH-60	15	13
Reconnaissance/ BM/C3I		
WC-130	17	10
Special Ops Forces		
MC-130	14	12
Tanker		
HC-130	5	5
KC-135	84	64
Total	**89**	**69**
Transport		
C-5	42	36
C-9	3	0
C-17	8	8
C-130	93	89
Total	**146**	**133**
Total AFRC	**410**	**350**

Total Number of USAF Aircraft in Service Over Time

(As of Sept. 30, 2006)

Type of aircraft	FY00	FY01	FY02	FY03	FY04	FY05	FY06
Bomber	181	181	183	173	172	173	172
Fighter/attack	1,658	1,619	1,631	1,628	1,627	1,622	1,619
Helicopter	130	126	126	129	160	169	160
Reconnaissance/BM/C3I	141	140	143	135	132	134	137
Special Ops Forces	107	107	102	101	99	98	103
Tanker	328	330	322	325	301	285	278
Trainer	1,289	1,289	1,342	1,308	1,277	1,267	1,284
Transport	567	546	538	529	516	525	529
Total active duty	**4,401**	**4,338**	**4,387**	**4,328**	**4,284**	**4,273**	**4,282**
Air National Guard	1,362	1,361	1,350	1,312	1,326	1,313	1,321
AFRC	442	445	446	433	408	400	410
Total active duty, ANG, and AFRC	**6,205**	**6,144**	**6,183**	**6,073**	**6,018**	**5,986**	**6,013**
Total aircraft, including foreign-government-owned	6,304	6,245	6,286	6,167	6,107	6,057	6,072

Age of the Active Duty Fleet

(As of Sept. 30, 2006)

	Age in Years										
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+	Total	Average
A-10								48	155	203	24.8
B-1B							67			67	19.1
B-2			1	11	5	3				20	12.0
B-52									85	85	44.8
C-5						9	32		11	52	22.1
C-10						1	23	24	11	59	21.7
C-12							4	8	16	28	26.3
C-17	32	42	31	20	15	1				141	6.1
C-20				1	1		8			10	17.7
C-21							4	70		74	21.7
C-25						2				2	15.9
C-32			4							4	8.0
C-37		6	3							9	5.7
C-40	2	2								4	2.6
C-130	7			3	15	20	16	1	245	307	33.4
C-135									230	230	44.5
CV-22	4									4	0.7
E-3								5	27	32	26.8
E-4									4	4	32.3
F-15	4	6	16		72	129	92	96	152	567	19.7
F-16	1	21	8	37	228	295	91	42	1	724	15.3
F-22	60	12	1							73	1.7
F-117						9	17	23	3	52	20.6
H-1									92	92	35.4
H-53									32	32	36.2
H-60			6		14	31	8	9		68	16.4
Q-1		2	3							5	5.9
Q-4	6	3	1	1						11	3.3
Q-9	7	1								8	2.0
T-1			1	90	88					179	11.9
T-3				78	32					110	11.6
T-6	163	97	12							272	2.7
T-37									171	171	42.1
T-38									489	489	39.5
T-41									4	4	37.1
T-43									8	8	32.4
T-51	3									3	1.1
U-2						2	11	14	7	34	23.2
UV-18				1					2	3	22.5
Glider	5	35	1	1						42	4.2
Total	**294**	**227**	**88**	**243**	**470**	**502**	**373**	**340**	**1,745**	**4,282**	**23.0**
Percent	7%	5%	2%	6%	11%	12%	9%	8%	41%		

Age of the Air National Guard Fleet

(As of Sept. 30, 2006)

	Age in Years										
	0-3	**3-6**	**6-9**	**9-12**	**12-15**	**15-18**	**18-21**	**21-24**	**24+**	**Total**	**Average**
A-10								11	91	102	25.8
C-5									17	17	34.9
C-17	8									8	2.5
C-21							2			2	19
C-26				6	5					11	12.3
C-32	1	1								2	3.2
C-38			2							2	8.5
C-40	1	2								3	3.3
C-130	7	7	16	29	34	26	23	17	65	224	20.3
C-135									251	251	46.2
E-8	2	7	6	2		1				18	6.5
F-15								8	133	141	27.5
F-16				12	12	133	278	84	3	522	18.8
H-60					7	11				18	15.8
Total	**19**	**17**	**24**	**49**	**58**	**171**	**303**	**120**	**560**	**1,321**	**25.5**
Percent	1%	1%	2%	4%	4%	13%	23%	9%	42%		

Age of the Air Force Reserve Command Fleet

(As of Sept. 30, 2006)

	Age in Years										
	0-3	**3-6**	**6-9**	**9-12**	**12-15**	**15-18**	**18-21**	**21-24**	**24+**	**Total**	**Average**
A-10								1	50	51	26.0
B-52									9	9	44.5
C-5						2	6		34	42	31.9
C-9									3	3	31.5
C-17	8									8	0.9
C-130	7	7	4	14	17	15	23	7	35	129	21.1
C-135									84	84	45.4
F-16						17	51	1		69	18.7
H-60						15				15	15.7
Total	**15**	**7**	**4**	**14**	**17**	**49**	**80**	**9**	**215**	**410**	**27.4**
Percent	4%	2%	1%	3%	4%	12%	20%	2%	52%		

ICBMs and Spacecraft in Service

(As of Sept. 30, 2006)

Type of system	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**
Minuteman III ICBM	500	500	500	500	500	500	500
Peacekeeper ICBM	50	50	50	23	6	0	0
Total ICBMs	**550**	**550**	**550**	**523**	**506**	**500**	**500**
DMSP satellite	2	2	2	2	2	2	2
DSCS satellite	5	5	5	10	11	9	9
DSP satellite (data classified)	—	—	—	—	—	—	—
GPS satellite	24	27	28	28	30	29	30
Milstar satellite	2	3	4	5	5	5	5
Total satellites	**33**	**37**	**39**	**45**	**48**	**45**	**46**

DMSP: Defense Meteorological Satellite Program **DSCS:** Defense Satellite Communications System **DSP:** Defense Support Program **GPS:** Global Positioning System
As of FY02, satellite data show the number of satellites that are primary mission capable.

The C-130J.

There when you need it.
Just ask the Air Force, Guard, Reserve, Marines and Coast Guard.

The C-130J will be there when you need it, bringing time-sensitive and mission-critical cargo to virtually any location, under any condition. If it's a 95° day at 6,000 feet elevation, in a combat zone or natural disaster area, in a dirt clearing or on a paved runway, the C-130J gets down and dirty supporting deployed troops, carrying more cargo, more efficiently and in less time than a twin-engine aircraft. The C-130J is ready today to meet those defining moments that just won't wait. The C-130J – any mission, anywhere, any time.

www.lockheedmartin.com

LOCKHEED MARTIN

We never forget who we're working for®

USAF Aircraft Flying Hours*

(In thousands, as of Sept. 30, 2006)

	FY00	FY01	FY02	FY03	FY04	FY05	FY06
Active duty	1,555	1,579	1,768	1,700	1,708	1,615	1,611
ANG	342	341	410	426	393	368	351
AFRC	139	146	186	193	177	160	202
Total	**2,036**	**2,066**	**2,364**	**2,319**	**2,278**	**2,143**	**2,164**

*Includes contingency support hours but not AFSOC or RDT&E flying hours.

USAF Squadrons by Mission Type

(As of Sept. 30, 2006)

	FY02	FY03	FY04	FY05	FY06
Active forces					
Bomber	9	9	9	9	9
Air refueling	26	26	17	16	16
Strategic command & control	2	2	2	2	4
Fighter	46	46	45	43	31
Reconnaissance	4	9	10	10	12
Electronic warfare	2	2	2	2	2
Special operations	21	21	21	22	23
Ground theater air control	2	2	2	2	5
Airborne theater air control	8	8	8	8	5
Rescue	6	8	8	8	8
Theater airlift	12	12	6	6	6
Long-range airlift	18	18	13	13	13
Aeromedical airlift	3	0	0	0	0
ICBM	14	11	11	10	10
Space operations	8	8	9	8	8
Space communications	0	0	6	7	7
Space warning	8	8	6	6	6
Space surveillance	3	3	3	0	0
Space launch	3	4	4	3	3
Range	2	2	2	2	2
Space control & tactics	3	3	3	5	6
Space aggressor	0	1	1	1	1
Total	**200**	**203**	**188**	**183**	**177**
Reserve forces					
ANG Selected Reserve					
Flying	101	101	102	101	101
Space operations	1	3	3	3	3
Space warning	1	1	1	1	1
AFRC					
Flying	60	61	61	68	67
Space operations	4	4	4	4	4
Space warning	1	1	1	1	1
Space aggressor	0	1	1	1	1
Total	**168**	**172**	**173**	**179**	**178**
Grand total	**368**	**392**	**361**	**362**	**355**

Aircraft per Active Duty USAF Squadron

(As of Sept. 30, 2006)

Aircraft	Number
A/OA-10	18/24
AC-130H	8
AC-130U	13
B-1B	12
B-2	8
B-52	12
C-5	7
C-17	10
C-130	14
E-3	2/5
E-8	8
EC-130	6/10
F-15	18/24
F-15E	18/24
F-16	18/24
F-22	24
F-117A	18
HC-130	3/4
HH-60	12/14
KC-10	13
KC-135	9/10
MC-130E	14
MC-130H/P/W	10/12/12
MH-53	16/17
U-2	29

Air National Guard Air Defense Unit Fin Flashes

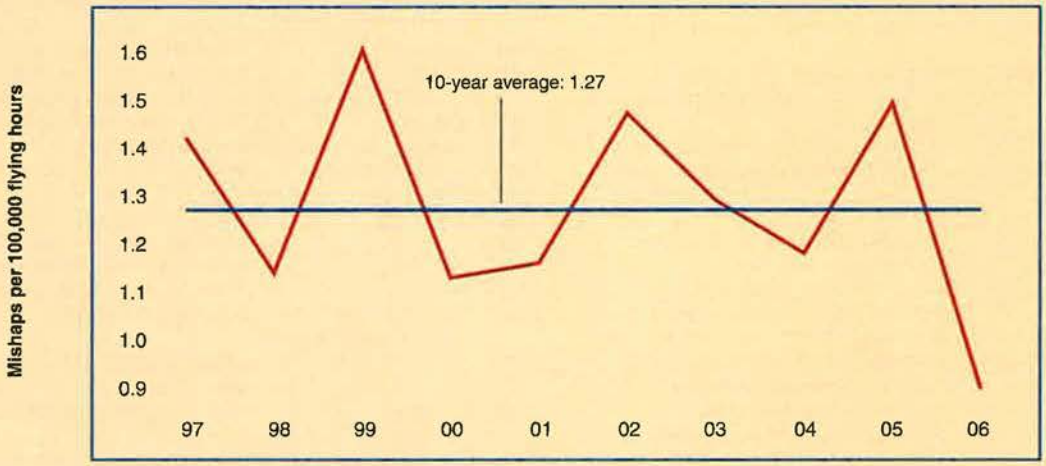
Description	Aircraft	Unit and Location
Minuteman over Massachusetts	F-15A/B	102nd FW, Otis ANGB, Mass.
Subdued eagle and "Oregon" logo	F-15A/B	114th FS (173rd FW), Klamath Falls Arpt., Ore.[a]
Dark gray bison's skull against prairie/mountain profile	F-16C/D	120th FW, Great Falls Arpt., Mont.[b]
Subdued hawk with banner in talons	F-15A/B	123rd FS (142nd FW), Portland Arpt., Ore.
Blue lightning bolt, blue stripe with "Florida" logo	F-15A/B	125th FW, Jacksonville Arpt., Fla.
Black falcon with talons extended and "California" logo	F-16C/D	144th FW, Fresno Yosemite Arpt., Calif.
Texas star on subdued jagged stripes with "Houston" logo	F-16C/D	147th FW, Ellington Field, Tex.[b]
Blue stripe and "Duluth" logo	F-16C	148th FW, Duluth Arpt., Minn.
Green stripe with "Vermont" on top of tail with figure of Ethan Allen	F-16C/D	158th FW, Burlington Arpt., Vt[b]
Starburst state flag and AZ	F-16A/B/C/D	162nd FW, Tucson Arpt., Ariz.[a]
Red stripe with "New Jersey" logo and AC above it	F-16C/D	177th FW, Atlantic City Arpt., N.J.[b]

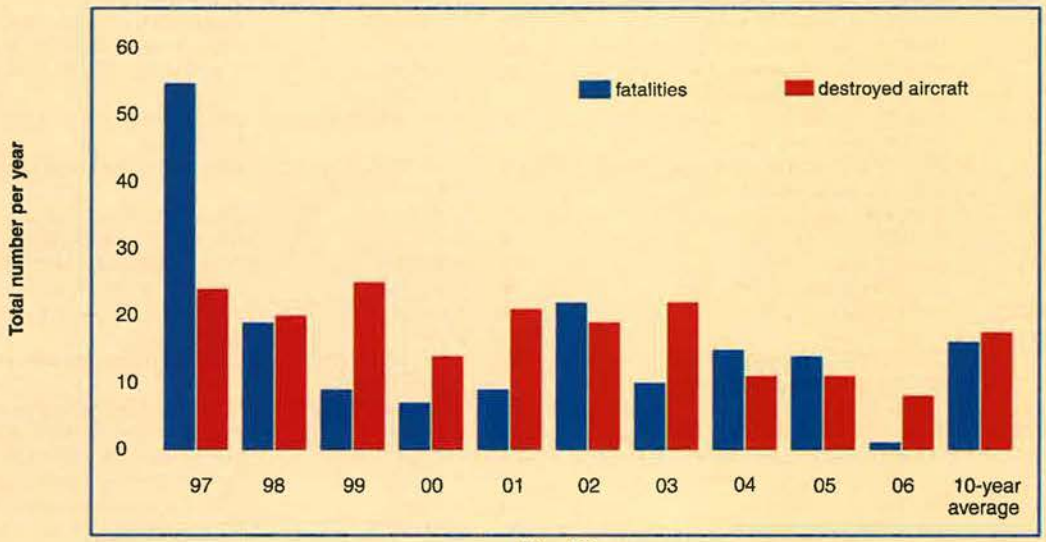
[a] ANG training units.
[b] General-purpose units (no longer air defense only).

Class A Aircraft Mishaps

(As of Sept. 30, 2006)

(Loss of life, permanent total disability, destroyed aircraft, or more than $1 million in property damage)





Data provided by USAF

USAF photo

A B-1B deployed for Operation Iraqi Freedom performs a low-level fly-by.

USAF Aircraft Tail Markings

Code	Aircraft	Unit and Location
AC	F-16C/D	177th FW (ANG), Atlantic City Arpt., N.J.
AF	gliders, T-41, T-51, UV-18	USAF Academy, Colo.
AK	C-12, C-130H, E-3, F-15C/D/E, F-22	3rd Wing, Elmendorf AFB, Alaska
AK	A/OA-10A, F-16C/D	354th FW, Eielson AFB, Alaska
AL	F-16C/D	187th FW (ANG), Montgomery Regional Arpt., Ala.
AL	KC-135	117th ARW (ANG), Birmingham Arpt., Ala.
AN	C-130H, HC-130N, HH-60G	176th Wing (ANG), Kulis ANGB, Alaska
AV	F-16C/D	31st FW, Aviano AB, Italy
AZ	F-16A/B/C/D	162nd FW (ANG), Tucson Arpt., Ariz.
BB	T-38A, RQ-4, U-2	9th RW, Beale AFB, Calif.
BB	RQ-4, U-2	Det. 2, 53rd Wing, Beale AFB, Calif.
BC	A/OA-10A	110th FW (ANG), W.K. Kellogg Arpt., Mich.
BD	B-52H, A/OA-10A	917th Wing (AFRC), Barksdale AFB, La.
CA	HC-130P, HH-60G	129th RQW (ANG), Moffett Field, Calif.
CB	T-1, T-6, T-37, T-38	14th FTW, Columbus AFB, Miss.
CC	F-16C/D	27th FW, Cannon AFB, N.M.
CI	C-130E	146th AW, Channel Islands ANGS, Calif.
CO	F-16C/D	140th Wing (ANG), Buckley AFB, Colo.
CR	C-130H	302nd AW (AFRC), Peterson AFB, Colo.
CT	A/OA-10A	103rd FW (ANG), Bradley Arpt., Conn.
DC	F-16C/D	113th Wing (ANG), Andrews AFB, Md.
DE	C-130H	166th AW (ANG), New Castle Co. Arpt., Del.
DM	A/OA-10A	355th Wing, Davis-Monthan AFB, Ariz.
DM	EC-130E/H	55th Wing, Davis-Monthan AFB, Ariz.
DR	HH-60G	305th RQS (AFRC), Davis-Monthan AFB, Ariz.
DY	B-1B	7th BW, Dyess AFB, Tex.
DY	B-1B	337th TES, 53rd Wing, Dyess AFB, Tex.
ED	Various	412th TW, Edwards AFB, Calif.
EF	F-16C/D	147th FW (ANG), Ellington Fld., Tex.
EG	F-15C/D	33rd FW, Eglin AFB, Fla.
EL	B-1B	28th BW, Ellsworth AFB, S.D.
EN	T-37B, T-38A/C	80th FTW, Sheppard AFB, Tex.
ET	A-10A, F-15A/B/C/D/E, F-16A/B/C/D, UH-1N	46th TW, Eglin AFB, Fla.
FC	UH-1N	336th TRG, Fairchild AFB, Wash.
FE	UH-1N	90th SW, F.E. Warren AFB, Wyo.
FF	F-15C/D, F-22	1st FW, Langley AFB, Va.
FL	HC-130N/P, HH-60G	920th RQG (AFRC), Patrick AFB, Fla.
FM	F-16C/D	482nd FW (AFRC), Homestead ARB, Fla.
FS	F-16C/D	188th FW (ANG), Fort Smith Arpt., Ark.
FT	A/OA-10A	23rd FG, Pope AFB, N.C.
FW	F-16C/D	122nd FW (ANG), Fort Wayne Arpt., Ind.
GA	E-8C	116th ACW (ACC, ANG), Robins AFB, Ga.
GA	C-130H	165th AW (ANG), Savannah Hilton Head Arpt., Ga.
HA	KC-135	185th ARW (ANG), Sioux Gateway Arpt./Col. Bud Day Field, Iowa
HD	QF-4	Det. 1, 53rd Wing, Holloman AFB, N.M.
HH	C-17, C-37, C-40	15th AW (PACAF), Hickam AFB, Hawaii
HH	C-17, C-130H, F-15A/B, KC-135R	154th Wing (ANG), Hickam AFB, Hawaii
HI	F-16C/D	419th FW (AFRC), Hill AFB, Utah
HL	F-16C/D	388th FW, Hill AFB, Utah
HO	F-117, T-38A	49th FW, Holloman AFB, N.M.
HV	UH-1N	30th SW, Vandenberg AFB, Calif.
IA	F-16C/D	132nd FW (ANG), Des Moines Arpt., Iowa
ID	A/OA-10A, C-130E	124th Wing (ANG), Boise Air Term., Idaho
IL	C-130E	182nd AW (ANG), Greater Peoria Arpt., Ill.
IS	HH-60G	85th Group, NAS Keflavik, Iceland
JZ	F-15A/B	159th FW (ANG), NAS JRB New Orleans
KC	A/OA-10	442nd FW (AFRC), Whiteman AFB, Mo.
KS	C-21	45th AS, Keesler AFB, Miss.
LA	B-52H	2nd BW, Barksdale AFB, La.
LF	F-16C/D	56th FW, Luke AFB, Ariz.
LI	HC-130P, HH-60G	106th RQW (ANG), F.S. Gabreski Arpt., N.Y.
LN	F-15C/E, HH-60G	48th FW, RAF Lakenheath, UK
LR	F-16C/D	944th FW (AFRC), Luke AFB, Ariz.
MA	F-15A/B	102nd FW (ANG), Otis ANGB, Mass.
MA	A/OA-10A	104th FW (ANG), Barnes Arpt., Mass.
MD	A/OA-10A, C-130J	175th Wing (ANG), Martin State Arpt., Md.
MI	F-16C/D, C-130E	127th Wing (ANG), Selfridge ANGB, Mich.
MI	KC-135R	927th ARW (AFRC), Selfridge ANGB, Mich.
MM	UH-1N	341st SW, Malmstrom AFB, Mont.
MN	C-130H	133rd AW (ANG), Minn.-St. Paul Arpt./ARS
MN	F-16C	148th FW (ANG), Duluth Arpt., Minn.
MO	F-15C/D/E, F-16CJ/D	366th FW, Mountain Home AFB, Idaho
MT	B-52H	5th BW, Minot AFB, N.D.
MT	UH-1N	91st SW, Minot AFB, N.D.
MY	HC-130P, HH-60G	347th Rescue Wing, Moody AFB, Ga.
MY	T-6A, T-38C	479th FTG, Moody AFB, Ga.
NC	C-130H	145th AW, Charlotte Arpt., N.C.
NM	F-16C/D	150th FW (ANG), Kirtland AFB, N.M.
NV	C-130E	152nd AW (ANG), Reno/Tahoe Arpt., Nev.
NY	F-16C/D	174th FW (ANG), Hancock Fld., N.Y.
OF	RC-135S/U/V/W, TC-135, OC-135B, WC-135	55th Wing, Offutt AFB, Neb.
OH	F-16C/D	178th FW (ANG), Springfield-Beckley Arpt., Ohio
OH	C-130H	179th AW (ANG), Mansfield Lahm Arpt., Ohio
OH	F-16C/D	180th FW (ANG), Toledo Exp. Arpt., Ohio
OK	C-130H	137th AW (ANG), Will Rogers World Arpt., Okla.
OK	F-16C/D	138th FW (ANG), Tulsa Arpt., Okla.
OK	E-3B/C	552nd ACW, Tinker AFB, Okla.
OS	A/OA-10A, C-12, F-16C/D	51st FW, Osan AB, South Korea
OT	F-15C/D/E, F-16C/D	85th TES, 53rd Wing (ACC), Eglin AFB, Fla.
OT	A-10, F-15, F-16A/C, F-22	422nd TES, 53rd Wing, Nellis AFB, Nev.
OT	F-117	Det. 1, 53rd Wing, Holloman AFB, N.M.
OT	B-52	49th TES, 53rd Wing, Barksdale AFB, La.
OT	MQ/RQ-1	Det. 4, 53rd Wing, Creech AFB, Nev.
PA	A/OA-10A	111th FW (ANG), Willow Grove ARS, Pa.
PR	C-130E	156th AW (ANG), Luis Munoz Marin Arpt., Puerto Rico
RA	T-1A, T-6A, T-37B, T-38C, T-43A	12th FTW, Randolph AFB, Tex.
RI	C-130E, C-130J-30	143rd AW (ANG), Quonset State Arpt., R.I.
RS	C-130E	86th AW, Ramstein AB, Germany
SA	F-16C/D	149th FW (ANG), Lackland AFB, Tex.
SC	F-16C/D	169th FW (ANG), McEntire ANGS, S.C.
SD	F-16C/D	114th FW (ANG), Joe Foss Fld., S.D.
SI	F-16C/D	183rd FW (ANG), Abraham Lincoln Capital Arpt., Ill.
SJ	F-15E	4th FW, Seymour Johnson AFB, N.C.
SL	F-15A/B	131st FW (ANG), Lambert-St. Louis Arpt., Mo.
SP	A/OA-10A, F-16CJ	52nd FW, Spangdahlem AB, Germany
SW	F-16C/CJ/D	20th FW, Shaw AFB, S.C.
TD	QF-4	53rd Wing, Tyndall AFB, Fla.
TH	F-16C/D	181st FW (ANG), Hulman Arpt., Ind.
TX	C-130H	136th AW (ANG), NAS JRB F.W., Tex.
TX	F-16C/D	301st FW (AFRC), NAS JRB F.W., Tex.
TY	F-15C/D, F-22	325th FW, Tyndall AFB, Fla.
VA	F-16C/D	192nd FW (ANG), Richmond Arpt., Va.
VN	T-1, T-6, T-37B, T-38C	71st FTW, Vance AFB, Okla.
WA	Various	57th Wing, Nellis AFB, Nev.
WI	F-16C/D	115th FW (ANG), Truax Fld., Wis.
WM	B-2	72nd TES, 53rd Wing, Whiteman AFB, Mo.
WM	B-2A, T-38A	509th BW, Whiteman AFB, Mo.
WP	F-16C/D	8th FW, Kunsan AB, South Korea
WV	C-130H	130th AW (ANG), Yeager Arpt., W.Va.
WV	C-130E	167th AW (ANG), East. W.Va. Arpt., W.Va.
WW	F-16C/D	35th FW, Misawa AB, Japan
WY	C-130H	153rd AW (ANG), Cheyenne Arpt., Wyo.
XL	T-1, T-6, T-38C	47th FTW, Laughlin AFB, Tex.
XP	C-130H	139th AW (ANG), Rosecrans Arpt., Mo.
YJ	C-21, C-130E/H, UH-1N	374th AW, Yokota AB, Japan
ZZ	E-3B/C, F-15C/D, KC-135R, HH-60G	18th Wing, Kadena AB, Japan

USAF Grades and Insignia

Officer

Second Lieutenant
(O-1)

Brigadier General
(O-7)

First Lieutenant
(O-2)

Major General
(O-8)

Captain
(O-3)

Lieutenant General
(O-9)

Major
(O-4)

General
(O-10)

Lieutenant Colonel
(O-5)

Colonel
(O-6)

Enlisted

Airman Basic
(E-1)
No insignia

Airman
(E-2)

Airman First Class
(E-3)

Senior Airman
(E-4)

Staff Sergeant
(E-5)

Technical Sergeant
(E-6)

Master Sergeant
(E-7)

Senior Master Sergeant
(E-8)

Chief Master Sergeant
(E-9)

Chief Master Sergeant of
the Air Force

First Sergeant
The diamond device, shown here on senior master sergeant stripes, denotes an E-7 through E-9 who advises and assists a squadron commander in managing unit activities.

Command Chief Master Sergeant
The star device shown here denotes an E-9 who serves in a 9E000 position, formerly known as a senior enlisted advisor.

Awards and Decorations—Currently Awarded Ribbons


Medal of Honor


Air Force Cross


Defense Distinguished Service Medal


Distinguished Service Medal (AF)


Silver Star


Defense Superior Service Medal


Legion of Merit


Distinguished Flying Cross


Airman's Medal


Bronze Star Medal


Purple Heart


Defense Meritorious Service Medal


Meritorious Service Medal (AF)


Air Medal


Aerial Achievement Medal


Joint Service Commendation Medal


Air Force Commendation Medal


Joint Service Achievement Medal


Air Force Achievement Medal


Presidential Unit Citation


Air Force Gallant Unit Award


Joint Meritorious Unit Citation


Air Force Meritorious Unit Award


Air Force Outstanding Unit Award


Air Force Organizational Excellence Award


Prisoner of War Medal


Combat Readiness Medal


Air Force Good Conduct Medal


Good Conduct Medal


Air Reserve Forces Meritorious Service Medal


Outstanding Airman of the Year Ribbon


Air Force Recognition Ribbon


National Defense Service Medal


Antarctica Service Medal


Armed Forces Expeditionary Medal


Vietnam Service Medal


Southwest Asia Service Medal


Kosovo Campaign Medal


Afghanistan Campaign Medal


Iraq Campaign Medal


Global War on Terrorism Expeditionary Medal


Global War on Terrorism Service Medal


Korea Defense Service Medal


Armed Forces Service Medal


Humanitarian Service Medal


Military Outstanding Volunteer Service Medal


Air & Space Campaign Medal


Air Force Overseas Ribbon-Short


Air Force Overseas Ribbon-Long


Air Force Expeditionary Service Ribbon


Air Force Longevity Service Award Ribbon


USAF Basic Military Training Instructor Ribbon


Air Force Recruiter Ribbon


Armed Forces Reserve Medal


USAF NCO PME Graduate Ribbon


USAF Basic Military Training Honor Graduate Ribbon


Small Arms Expert Marksmanship Ribbon


Air Force Training Ribbon


RVN Gallantry Cross with Palm*


United Nations Medal


NATO Medal Yugoslavia


NATO Medal Kosovo


Republic of Vietnam Campaign Medal


Kuwait Liberation Medal, Kingdom of Saudi Arabia


Kuwait Liberation Medal, Government of Kuwait

*Also awarded with gold, silver, or bronze devices. The gold frame on the ribbon denotes a unit citation; without, an individual citation.

Awards and Decorations—Previously Awarded Ribbons

Pre-World War I

Mexican Service Medal

World War I

Victory Medal

World War II Through Korean War (in order of precedence)

American Defense Service Medal

Women's Army Corps Service Medal

American Campaign Medal

Asiatic–Pacific Campaign Medal

European–African–Middle Eastern Campaign Medal

World War II Victory Medal

Army of Occupation Medal

Medal for Humane Action

Korean Service Medal

Philippine Defense Ribbon

Philippine Liberation Ribbon

Philippine Independence Ribbon

Philippine Presidential Unit Citation

ROK Presidential Unit Citation

United Nations Service Medal

Republic of Korea Korean War Service Medal

Currently Awarded Devices

Bronze Star
represents participation in campaigns or operations, multiple qualifications, or an additional award to any of the various ribbons on which it is authorized.

Silver Star
is worn in the same manner as the bronze star, but each is worn in lieu of five bronze service stars.

Silver and Bronze Stars
When worn together on a single ribbon, silver stars will be worn to the wearer's right of any bronze star.

Bronze Oak Leaf Cluster
represents second and subsequent entitlements of awards.

Silver Oak Leaf Cluster
represents the sixth, 11th, etc., entitlements or is worn in lieu of five bronze OLCs.

Silver/Bronze Oak Leaf Clusters
Silver OLCs are worn to the wearer's right of the bronze OLCs on the same ribbon.

Valor Device
represents valor and does not denote an additional award. Only one may be earned on any ribbon. It is worn to the wearer's right of any clusters on the same ribbon.

A Device
is worn with the Overseas Ribbon Short to denote service north of the Arctic Circle. Only one is worn on the ribbon. It is worn to the wearer's right of any clusters on the same ribbon.

Mobility Device
is worn with the Armed Forces Reserve Medal to denote active duty for at least one day during a contingency. A number to the right of the device denotes the total number of mobilizations.

Hourglass Device
is issued for the Armed Forces Reserve Medal in bronze for 10 years of service, silver for 20, and gold for 30 years.

Previously Awarded Devices

Berlin Airlift Device
is worn with the Army of Occupation Medal to denote service of 90 consecutive days in direct support of the Berlin Airlift, June 26, 1948, to Sept. 30, 1949.

Arrowhead Device
is worn with Army and Air Force campaign medals to denote participation in combat parachute, glider, or amphibious assault landing.

Disk "Wintered Over" Device
is worn with the Antarctica Service Medal to denote multiple "winters over"—bronze for one winter; gold, two; silver, three.

Berets

Seven USAF specialties are authorized to wear a colored beret along with the crest of that particular field.

Combat Control

Tactical Air Command and Control

Pararescue

Tactical Airlift Liaison Officer/ALO

Security Forces

Weather Parachutist

Survival Evasion

USAF Badges

Shown here are current wings and badges as seen in AFI 36-2923. The basic level of wings or badges is illustrated. Most wings and badges have two other categories of accomplishment—senior and either commander, master, or chief. A star centered above the badge indicates the senior level, while a star surrounded by a wreath above the badge represents the master level.


Pilot


Navigator/Observer


Enlisted Aircrew


Astronaut


Flight Surgeon


Flight Nurse


Officer Aircrew Member


Air Battle Manager


Air Force Space


Parachutist


Transportation


Missile


Missile With Operations Designator


Space/Missile


Civil Engineer


Force Protection


Command and Control


Communications and Information


Paralegal


Intelligence


Services


Chaplain Service Support


Operations Support


Manpower and Personnel


Acquisition and Financial Management


Maintenance


Public Affairs


Meteorologist


Supply/Fuels


Band


Explosive Ordnance Disposal


Logistics


Historian


Information Management


Judge Advocate


Air Traffic Control


Weapons Director


Nurse Corps


Biomedical Science Corps


Dental Corps


Medical Corps


Enlisted Medical


Medical Service Corps


Christian


Jewish


Buddhist


Muslim

USAF Recipients of the Medal of Honor

*Living Medal of Honor recipient

Names and Rank at Time of Action	Place of Birth	Date of Action	Place of Action
World War I			
Bleckley, 2nd Lt. Erwin R.	Wichita, Kan.	Oct. 6, 1918	Binarville, France
Goettler, 1st Lt. Harold E.	Chicago	Oct. 6, 1918	Binarville, France
Luke, 2nd Lt. Frank Jr.	Phoenix	Sept. 29, 1918	Murvaux, France
Rickenbacker, 1st Lt. Edward V.	Columbus, Ohio	Sept. 25, 1918	Billy, France
World War II			
Baker, Lt. Col. Addison E.	Chicago	Aug. 1, 1943	Ploesti, Romania
Bong, Maj. Richard I.	Superior, Wis.	Oct. 10-Nov. 15, 1944	Southwest Pacific
Carswell, Maj. Horace S. Jr.	Fort Worth, Tex.	Oct. 26, 1944	South China Sea
Castle, Brig. Gen. Frederick W.	Manila, Philippines	Dec. 24, 1944	Liège, Belgium
Cheli, Maj. Ralph	San Francisco	Aug. 18, 1943	Wewak, New Guinea
Craw, Col. Demas T.	Traverse City, Mich.	Nov. 8, 1942	Port Lyautey, French Morocco
Doolittle, Lt. Col. James H.	Alameda, Calif.	April 18, 1942	Tokyo
Erwin, SSgt. Henry E.	Adamsville, Ala.	April 12, 1945	Koriyama, Japan
Femoyer, 2nd Lt. Robert E.	Huntington, W.Va.	Nov. 2, 1944	Merseburg, Germany
Gott, 1st Lt. Donald J.	Arnett, Okla.	Nov. 9, 1944	Saarbrücken, Germany
Hamilton, Maj. Pierpont M.	Tuxedo Park, N.Y.	Nov. 8, 1942	Port Lyautey, French Morocco
Howard, Lt. Col. James H.	Canton, China	Jan. 11, 1944	Oschersleben, Germany
Hughes, 2nd Lt. Lloyd H.	Alexandria, La.	Aug. 1, 1943	Ploesti, Romania
Jerstad, Maj. John L.	Racine, Wis.	Aug. 1, 1943	Ploesti, Romania
Johnson, Col. Leon W.	Columbia, Mo.	Aug. 1, 1943	Ploesti, Romania
Kane, Col. John R.	McGregor, Tex.	Aug. 1, 1943	Ploesti, Romania

2nd Lt. Erwin Bleckley

Maj. Horace Carswell Jr.

Col. John Kane

Col. Neel Kearby

Maj. Louis Sebille

Maj. George Day, pictured as a colonel

World War II (cont.)

Kearby, Col. Neel E.	Wichita Falls, Tex.	Oct. 11, 1943	Wewak, New Guinea
Kingsley, 2nd Lt. David R.	Portland, Ore.	June 23, 1944	Ploesti, Romania
Knight, 1st Lt. Raymond L.	Houston	April 25, 1945	Po Valley, Italy
Lawley, 1st Lt. William R. Jr.	Leeds, Ala.	Feb. 20, 1944	Leipzig, Germany
Lindsey, Capt. Darrell R.	Jefferson, Iowa	Aug. 9, 1944	Pontoise, France
Mathies, Sgt. Archibald	Scotland	Feb. 20, 1944	Leipzig, Germany
Mathis, 1st Lt. Jack W.	San Angelo, Tex.	March 18, 1943	Vegesack, Germany
McGuire, Maj. Thomas B. Jr.	Ridgewood, N.J.	Dec. 25-26, 1944	Luzon, Philippines
Metzger, 2nd Lt. William E. Jr.	Lima, Ohio	Nov. 9, 1944	Saarbrücken, Germany
Michael, 1st Lt. Edward S.	Chicago	April 11, 1944	Brunswick, Germany
Morgan, 2nd Lt. John C.	Vernon, Tex.	July 28, 1943	Kiel, Germany
Pease, Capt. Harl Jr.	Plymouth, N.H.	Aug. 7, 1942	Rabaul, New Britain
Pucket, 1st Lt. Donald D.	Longmont, Colo.	July 9, 1944	Ploesti, Romania
Sarnoski, 2nd Lt. Joseph R.	Simpson, Pa.	June 16, 1943	Buka, Solomon Islands
Shomo, Maj. William A.	Jeannette, Pa.	Jan. 11, 1945	Luzon, Philippines
Smith, Sgt. Maynard H.	Caro, Mich.	May 1, 1943	St. Nazaire, France
Truemper, 2nd Lt. Walter E.	Aurora, Ill.	Feb. 20, 1944	Leipzig, Germany
Vance, Lt. Col. Leon R. Jr.	Enid, Okla.	June 5, 1944	Wimereaux, France
Vosler, TSgt. Forrest L.	Lyndonville, N.Y.	Dec. 20, 1943	Bremen, Germany
Walker, Brig. Gen. Kenneth N.	Cerrillos, N.M.	Jan. 5, 1943	Rabaul, New Britain
Wilkins, Maj. Raymond H.	Portsmouth, Va.	Nov. 2, 1943	Rabaul, New Britain
Zeamer, Maj. Jay Jr.	Carlisle, Pa.	June 16, 1943	Buka, Solomon Islands

Korea

Davis, Maj. George A. Jr.	Dublin, Tex.	Feb. 10, 1952	Sinuiju,Yalu River, N. Korea
Loring, Maj. Charles J. Jr.	Portland, Maine	Nov. 22, 1952	Sniper Ridge, N. Korea
Sebille, Maj. Louis J.	Harbor Beach, Mich.	Aug. 5, 1950	Hamch'ang, S. Korea
Walmsley, Capt. John S. Jr.	Baltimore	Sept. 14, 1951	Yangdok, N. Korea

Vietnam

Bennett, Capt. Steven L.	Palestine, Tex.	June 29, 1972	Quang Tri, S. Vietnam
Day, Maj. George E.*	Sioux City, Iowa	Conspicuous gallantry while POW	
Dethlefsen, Maj. Merlyn H.	Greenville, Iowa	March 10, 1967	Thai Nguyen, N. Vietnam
Fisher, Maj. Bernard F.*	San Bernardino, Calif.	March 10, 1966	A Shau Valley, S. Vietnam
Fleming, 1st Lt. James P.*	Sedalia, Mo.	Nov. 26, 1968	Duc Co, S. Vietnam
Jackson, Lt. Col. Joe M.*	Newnan, Ga.	May 12, 1968	Kham Duc, S. Vietnam
Jones, Col. William A. III	Norfolk, Va.	Sept. 1, 1968	Dong Hoi, N. Vietnam
Levitow, A1C John L.	Hartford, Conn.	Feb. 24, 1969	Long Binh, S. Vietnam
Pitsenbarger, A1C William H.	Piqua, Ohio	April 11, 1966	Cam My, S. Vietnam
Sijan, Capt. Lance P.	Milwaukee	Conspicuous gallantry while POW	
Thorsness, Maj. Leo K.*	Walnut Grove, Minn.	April 19, 1967	N. Vietnam
Wilbanks, Capt. Hilliard A.	Cornelia, Ga.	Feb. 24, 1967	Dalat, S. Vietnam
Young, Capt. Gerald O.	Anacortes, Wash.	Nov. 9, 1967	Khesahn, S. Vietnam

Peacetime

Lindbergh, Col. Charles A.	Detroit	May 20-21, 1927	New York City-Paris flight
Mitchell, Maj. Gen. William	Milwaukee	Lifetime achievement	Foresight in military aviation

Guide to Aces and Heroes

Some Famous US Fighter Firsts

May 28, 1918	First AEF-trained AEF ace: Capt. Edward V. Rickenbacker
Dec. 7, 1941	First AAF victories (WW II at Pearl Harbor): Lts. Harry W. Brown, Philip M. Rasmussen, Lewis M. Sanders, Gordon H. Sterling Jr., Kenneth M. Taylor, George S. Welch
Dec. 16, 1941	First AAF ace of WW II: 1st Lt. Boyd D. Wagner
Nov. 8, 1950	First jet-to-jet victory (Korean War): 1st Lt. Russell J. Brown
May 20, 1951	First USAF ace of the Korean War: Capt. James Jabara
Nov. 30, 1951	First USAF ace of two wars (WW II and Korea): Maj. George A. Davis Jr. (7 in WW II and 14 in Korea)
Jan. 2, 1967	First (and only) USAF ace with victories in WW II and Vietnam: Col. Robin Olds (12 in WW II and 4 in Vietnam)
Aug. 28, 1972	First USAF ace of Vietnam: Capt. Richard S. Ritchie

At left is Capt. James Jabara, the first USAF ace of the Korean War. Jabara counted 15 victories before the end of the war.

Col. Robin Olds is the first and only USAF ace with aerial victories in both World War II and the Vietnam War.

By tradition, anyone with five official aerial victory credits is an ace. In compiling this list of aces who flew with the US Air Force and predecessor organizations (the Air Service, Air Corps, and Army Air Forces), *Air Force* Magazine relies on USAF's official accounting of aerial victory credits, which is the responsibility of the Air Force Historical Research Agency, Maxwell AFB, Ala.

Air Force historians have kept the official records of aerial victories by USAF pilots and crew members since 1957. The Office of the Air Force Historian initially published four separate listings—for World War I, World War II, the Korean War, and the Vietnam War. The four volumes were corrected, updated, and combined into one comprehensive volume. AFHRA continues to correct records and updates its online listing (www.maxwell.af.mil/au/afhra).

The criteria that the Air Force established for awarding aerial victory credits varied from war to war, and therefore one cannot make direct comparisons of aces across all wars.

In many cases during World War I, several aviators worked together to down a single aircraft. The Air Service awarded one whole credit to each aviator who contributed to the victory. A single victory could—and often did—result in three or four victory credits.

In World War II and Korea, the criteria were changed. The service divided one credit among all aviators who contributed to destruction of an enemy airplane. With the awarding of fractional credits, a single victory could result in no more than one credit.

The rules were changed again in the Vietnam War. When an F-4 downed an enemy aircraft, USAF would award two full aerial victory credits—one to the frontseater and one to the backseater. As in World War I, a single victory resulted in multiple victory credits.

Thus, the standards for World War II and Korea were more restrictive than those for World War I and Vietnam.

American Aces of World War I

Capt. Eddie Rickenbacker (26)

In World War I, pilots who shared victories were each given one credit. This list uses the World War I counting rule.

Rickenbacker, Capt. Edward V.	26
Luke, 2nd Lt. Frank Jr.	18
Vaughn, 1st Lt. George A.	13
Kindley, 1st Lt. Field E.	12
Springs, 1st Lt. Elliott W.	12
Landis, 1st Lt. Reed G.	10
Swaab, 1st Lt. Jacques M.	10
Baer, 1st Lt. Paul P.	9
Cassady, 1st Lt. Thomas G.	9
Hamilton, 1st Lt. Lloyd A.	9
Wright, 1st Lt. Chester E.	9
Clay, 1st Lt. Henry R. Jr.	8
Coolidge, Capt. Hamilton	8
Donaldson, 2nd Lt. John O.	8
Erwin, 1st Lt. William P.	8
Hunter, 1st Lt. Frank O'D.	8
Jones, 2nd Lt. Clinton	8
Meissner, Capt. James A.	8
Stenseth, 1st Lt. Martinus	8
White, 2nd Lt. Wilbert W.	8
Burdick, 2nd Lt. Howard	7
Chambers, 1st Lt. Reed M.	7
Cook, 1st Lt. Harvey W.	7
Creech, 1st Lt. Jesse O.	7
Holden, 1st Lt. Lansing C.	7
Robertson, 1st Lt. Wendel A.	7
Rummell, 1st Lt. Leslie J.	7
Schoen, 1st Lt. Karl J.	7
Sewall, 1st Lt. Sumner	7
Beane, 1st Lt. James D.	6
Biddle, Capt. Charles J.	6
Brooks, 2nd Lt. Arthur R.	6
Campbell, 1st Lt. Douglas	6
Curtis, 1st Lt. Edward P.	6
Easterbrook, 1st Lt. Arthur E.	6
Guthrie, 1st Lt. Murray K.	6
Hammond, 1st Lt. Leonard C.	6
Hays, 2nd Lt. Frank K.	6
Hudson, 1st Lt. Donald	6
Knotts, 2nd Lt. Howard C.	6
Lindsay, 1st Lt. Robert O.	6
MacArthur, 2nd Lt. John K.	6
Ponder, 2nd Lt. William T.	6
Putnam, 1st Lt. David E.	6
Stovall, 1st Lt. William H.	6
Tobin, 1st Lt. Edgar G.	6
Vasconcells, 1st Lt. Jerry C.	6
Badham, 2nd Lt. William T.	5
Bair, 1st Lt. Hilbert L.	5
Bissell, 1st Lt. Clayton L.	5
Buckley, 1st Lt. Harold R.	5
Cook, 1st Lt. Everett R.	5
D'Olive, 1st Lt. Charles R.	5
Furlow, 1st Lt. George W.	5
George, 1st Lt. Harold H.	5
Grey, 1st Lt. Charles G.	5
Haight, 1st Lt. Edward M.	5
Healy, 1st Lt. James A.	5
Keating, 1st Lt. James A.	5
Knowles, 1st Lt. James Jr.	5
Larner, 1st Lt. G. DeFreest	5
Luff, 1st Lt. Frederick E.	5
O'Neill, 2nd Lt. Ralph A.	5
Owens, 2nd Lt. John S.	5
Porter, 2nd Lt. Kenneth L.	5
Ralston, 1st Lt. Orville A.	5
Seerley, 1st Lt. John J.	5
Strahm, Capt. Victor H.	5
Todd, 2nd Lt. Robert M.	5
Vernam, 1st Lt. Remington D.	5
Wehner, 1st Lt. Joseph F.	5

2nd Lt. Frank Luke Jr. (18)

Army Air Forces Aces of World War II

Maj. Richard Bong (40)

Ranks are as of last victory in World War II.

Bong, Maj. Richard I.	40
McGuire, Maj. Thomas B. Jr.	38
Gabreski, Lt. Col. Francis S.	28
Johnson, Capt. Robert S.	27
MacDonald, Col. Charles H.	27
Preddy, Maj. George E.	26.83
Meyer, Lt. Col. John C.	24
Schilling, Col. David C.	22.50
Johnson, Lt. Col. Gerald R.	22
Kearby, Col. Neel E.	22
Robbins, Maj. Jay T.	22
Christensen, Capt. Fred J.	21.50
Wetmore, Capt. Ray S.	21.25
Voll, Capt. John J.	21
Mahurin, Maj. Walker M.	20.75
Lynch, Lt. Col. Thomas J.	20
Westbrook, Lt. Col. Robert B.	20
Gentile, Capt. Don S.	19.83
Duncan, Col. Glenn E.	19.50
Carson, Capt. Leonard K.	18.50
Eagleston, Maj. Glenn T.	18.50
Beckham, Maj. Walter C.	18
Green, Maj. Herschel H.	18
Herbst, Lt. Col. John C.	18
Zemke, Col. Hubert	17.75
England, Maj. John B.	17.50
Beeson, Capt. Duane W.	17.33
Thornell, 1st Lt. John F. Jr.	17.25
Varnell, Capt. James S. Jr.	17
Johnson, Maj. Gerald W.	16.50

Maj. Thomas McGuire Jr. (38)

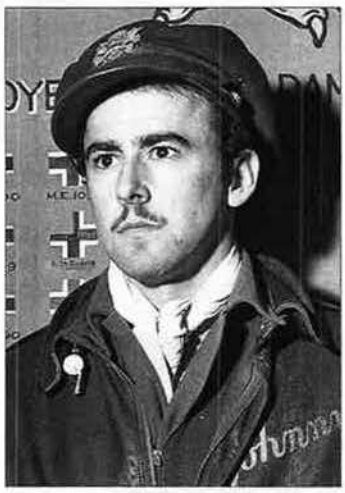
Godfrey, Capt. John T.	16.33
Anderson, Capt. Clarence E. Jr.	16.25
Dunham, Lt. Col. William D.	16
Harris, Lt. Col. Bill	16
Welch, Capt. George S.	16
Beerbower, Capt. Don M.	15.50
Brown, Maj. Samuel J.	15.50
Peterson, Capt. Richard A.	15.50
Whisner, Capt. William T. Jr.	15.50
Bradley, Lt. Col. Jack T.	15
Cragg, Maj. Edward	15
Foy, Maj. Robert W.	15
Hofer, 2nd Lt. Ralph K.	15
Homer, Capt. Cyril F.	15
Landers, Lt. Col. John D.	14.50
Powers, Capt. Joe H.	14.50
Brown, Capt. Henry W.	14.20
Carr, 1st Lt. Bruce W.	14
Curtis, Maj. Robert C.	14
Dahlberg, Capt. Kenneth H.	14
DeHaven, Capt. Robert M.	14
Emmer, Capt. Wallace N.	14
Goodson, Maj. James A.	14
Jeffrey, Lt. Col. Arthur F.	14
McComas, Lt. Col. Edward O.	14
Roberts, Capt. Daniel T. Jr.	14
West, Capt. Richard L.	14
Bochkay, Maj. Donald H.	13.83
Strait, Maj. Donald J.	13.50
Bryan, Capt. Donald S.	13.33
Carpenter, Maj. George	13.33
Brooks, 1st Lt. James L.	13
Hampshire, Capt. John F. Jr.	13
Head, Capt. Cotesworth B. Jr.	13
Holloway, Col. Bruce K.	13
Millikan, Capt. Willard W.	13
Moore, Maj. Robert W.	12
Olds, Maj. Robin	12
Schreiber, Capt. Leroy A.	12
Skogstad, 1st Lt. Norman C.	12
Sloan, 1st Lt. William J.	12
Watkins, Capt. James A.	12
Megura, Capt. Nicholas	11.83
Blakeslee, Col. Donald J.M.	11.50
Conger, Maj. Paul A.	11.50
Kirla, 1st Lt. John A.	11.50
McDonald, Maj. Norman L.	11.50

Capt. Robert Johnson (27) **and Lt. Col. Francis Gabreski** (28)

Moran, 1st Lt. Glennon T.	13
Parker, Capt. Harry A.	13
Stephens, Maj. Robert W.	13
Williamson, Capt. Felix D.	13
Brueland, Maj. Lowell K.	12.50
Brown, Maj. Quince L.	12.33
Brezas, 1st Lt. Michael	12
Chase, Lt. Col. Levi R.	12
East, Capt. Clyde B.	12
Gleason, Capt. George W.	12
Hively, Maj. Howard D.	12
Ladd, Capt. Kenneth G.	12
Stewart, Maj. James C.	11.50
Yeager, Capt. Charles E.	11.50
Norley, Maj. Louis H.	11.33
Frantz, 1st Lt. Carl M.	11
Goebel, Capt. Robert J.	11
Lawler, Capt. John B.	11
Lent, 1st Lt. Francis J.	11
Leverette, Lt. Col. William L.	11
Loisel, Maj. John S.	11
Lowry, 1st Lt. Wayne L.	11
McCorkle, Col. Charles M.	11
McKennon, Maj. Pierce W.	11
Mitchell, Lt. Col. John W.	11
Molland, Capt. Leland P.	11
Quirk, Capt. Michael J.	11
Riddle, 1st Lt. Robert E.	11
Shubin, 1st Lt. Murray J.	11
Smith, Capt. Cornelius M. Jr.	11
Sparks, 1st Lt. Kenneth C.	11
Turner, Maj. Richard E.	11
O'Connor, Capt. Frank Q.	10.75
Ceuleers, Lt. Col. George F.	10.50
Clark, Lt. Col. James A. Jr.	10.50
Doersch, Capt. George A.	10.50
Halton, Maj. William T.	10.50
Hovde, Maj. William J.	10.50
Littge, Capt. Raymond H.	10.50
Storch, Lt. Col. John A.	10.50
Glover, Maj. Fred W.	10.33
Anderson, 1st Lt. Charles F.	10
Aschenbrener, Capt. Robert W.	10
Blickenstaff, Lt. Col. Wayne K.	10
England, Maj. James J.	10

Col. Hubert Zemke (17.75)

Maj. Richard E. Turner (11)



Capt. John Godfrey (16.33)

Giroux, Capt. William K.	10
Gladych,* SL Michael	10
Gcehausen, Capt. Walter J. Jr.	10
Harris, Capt. Ernest A.	10
Lires, 1st Lt. Ted E.	10
Rankin, 1st Lt. Robert J.	10
Reynolds, 1st Lt. Andrew J.	10
Scott, Col. Robert L. Jr.	10
Stanch, Capt. Paul M.	10
Summer, Capt. Elliot	10
Bankey, Capt. Ernest E. Jr.	9.5
Spencer, 1st Lt. Dale F.	9.5
Adams, Capt. Fletcher E.	9
Andrew, Maj. Stephen W.	9
Banks, Maj. William M.	9
Beyer, Capt. William R.	9
Boggs, Capt. Hampton E.	9
Champlin, Capt. Frederic F.	9
Collins, Maj. Frank J.	9
Curdes, 1st Lt. Louis E.	9
Dahl, Capt. Perry J.	9
Dalglish, Maj. James B.	9
Dunkin, Capt. Richard W.	9
Emmons, 1st Lt. Eugene H.	9
Fanning, 1st Lt. Grover E.	9
Feld, 1st Lt. Sylvan	9
Fiebelkorn, 1st Lt. Ernest C.	9
Forster, 1st Lt. Joseph M.	9
Gallup, Lt. Col. Kenneth W.	9
Hill, Capt. Allen E.	9
Hurlbut, Flight Officer Frank D.	9
Juchheim, Capt. Alwin M.	9
Kiser, Capt. George E.	9
Lesicka, 1st Lt. Joseph J.	9
Meroney, Capt. Virgil K.	9
Morrill, 1st Lt. Stanley B.	9
Overfield, 1st Lt. Loyd J.	9
Paris, Capt. Joel B. III	9
Roberts, Lt. Col. Eugene P.	9
Smith, Lt. Col. Meryl M.	9
Stewart, Capt. John S.	9
White, Capt. Robert H.	9
Wolfe, Capt. Judge E.	9
Bennett, Capt. Joseph H.	8.5
Cesky, Capt. Charles J.	8.5
Dorsch, Capt. Frederick J. Jr.	8.5
Hayes, Lt. Col. Thomas L. Jr.	8.5
Hoefker, Capt. John H.	8.5
Jenkins, 2nd Lt. Otto D.	8.5
Johnson, 1st Lt. Arthur G. Jr.	8.5
Luksic, 1st Lt. Carl J.	8.5
McDowell, 1st Lt. Don	8.5
McGrattan, Capt. Bernard L.	8.5
Moats, 1st Lt. Sanford K.	8.5
Schlegel, Capt. Albert L.	8.5
Ainlay, 1st Lt. John M.	8
Allen, 1st Lt. David W.	8
Benz, Maj. Walter G. Jr.	8
Booth, 1st Lt. Robert J.	8
Bostwick, Maj. George E.	8
Broadhead, Maj. Joseph E.	8
Carroll, 1st Lt. Walter J. Jr.	8
Cruikshank, Maj. Arthur W. Jr.	8
Damstrom, 1st Lt. Fernley H.	8
Douglas, Lt. Col. Paul P. Jr.	8
Elder, Maj. John L. Jr.	8
Fiedler, Capt. Arthur C. Jr.	8
Fowle, 1st Lt. James M.	8
Gardner, Capt. William A.	8
Gaunt, Capt. Frank L.	8
Gerard, Capt. Francis R.	8
Grosshuesch, Capt. Leroy V.	8
Harris, Capt. Frederick A.	8
Hart, 1st Lt. Kenneth F.	8
Ilfrey, Capt. Jack M.	8
Jackson, Maj. Michael J.	8
Jones, Capt. John L.	8
Kinnard, Lt. Col. Claiborne H. Jr.	8
Maloney, Capt. Thomas E.	8
Momyer, Col. William W.	8
Morehead, 1st Lt. James B.	8
Novotny, 1st Lt. George P.	8
O'Neill, 1st Lt. John G.	8
Paisley, 1st Lt. Melvyn R.	8
Richardson, Maj. Elmer W.	8
Roddy, Capt. Edward F.	8
Rowland, Col. Robert R.	8
Sangermano, 1st Lt. Philip	8

Lt. Col. Boyd Wagner (8)

Schiltz, 1st Lt. Glen D. Jr.	8
Shaw, 1st Lt. Robert M.	8
Shomo, Capt. William A.	8
Smith, Maj. Carroll C.	8
Stanton, Maj. Arland	8
Sublett, Capt. John L.	8
Tapp, Maj. James B.	8
Tovrea, 1st Lt. Philip E. Jr.	8
Tyler, Maj. James O.	8
Vogt, Maj. John W. Jr.	8
Wagner, Lt. Col. Boyd D.	8
Warford, Maj. Victor E.	8
Weaver, Capt. Charles E.	8
Lang, Capt. Joseph L.	7.83
Stewart, Lt. Col. Everett W.	7.83
Bryan, Maj. William E. Jr.	7.5
Cutler, Capt. Frank A.	7.5
Davis, Capt. Glendon V.	7.5
Glenn, Maj. Maxwell H.	7.5
Karger, 1st Lt. Dale E.	7.5
Lamb, Maj. George M.	7.5
Lasko, Capt. Charles W.	7.5
Lowell, Lt. Col. John H.	7.5
Miklajcyk, Capt. Henry J.	7.5
Righetti, Lt. Col. Elwyn G.	7.5

Capt. William Shomo (8)

*Squadron Leader Gladych was Polish and flew in service with American units, but because the Polish government in exile was headquartered in London, Polish pilots had British designations.

Garrison, 1st Lt. Vermont	7.33
Morris, Capt. James M.	7.33
Goodnight, 1st Lt. Robert E.	7.25
Adams, Capt. Burnell W.	7
Allen, 1st Lt. Calvin D. Jr.	7
Anderson, 1st Lt. William Y.	7
Becker, Capt. Robert H.	7
Blair, Capt. Samuel V.	7
Browning, Capt. James W.	7
Carder, 1st Lt. John B.	7
Chapman, Maj. Philip G.	7
Cramer, Maj. Darrell S.	7
Crenshaw, 1st Lt. Claude J.	7
Davis, 1st Lt. George A. Jr.	7
Dean, 1st Lt. Zach W.	7
Duke, Capt. Walter F.	7
Dunaway, 1st Lt. John S.	7
Edens, 2nd Lt. Billy G.	7
Elliott, 1st Lt. Vincent T.	7
Fisher, Capt. Edwin O.	7
Fisk, Capt. Jack A.	7
Franklin, 1st Lt. Dwaine R.	7
Graham, Lt. Col. Gordon M.	7
Grant, 1st Lt. Marvin E.	7
Gregg, 1st Lt. Lee O.	7
Griffin, Maj. Joseph H.	7
Hennon, Capt. William J.	7
Hill, Maj. Frank A.	7
Hockery, Capt. John J.	7
Howard, Col. James H.	7
Jackson, Lt. Col. Willie O. Jr.	7
Jamison, Capt. Gilbert L.	7
Jett, Capt. Verl E.	7
Johnson, Capt. Clarence O.	7
Keen, 1st Lt. Robert J.	7
King, Capt. Benjamin H.	7
Kinsey, 2nd Lt. Claude R. Jr.	7
Klibbe, 2nd Lt. Frank W.	7
Kuentzel, 2nd Lt. Ward A.	7
Lamb, Capt. Robert A.	7
Lewis, Maj. Warren R.	7
Lewis, Lt. Col. William H.	7
Liebers, 2nd Lt. Lawrence P.	7
Little, 1st Lt. James W.	7
Lombard, Maj. John D.	7
Maguire, Capt. William J.	7
Marshall, Maj. Bert W. Jr.	7
McLaughlin, Capt. Murray D.	7
Moore, Maj. John T.	7
O'Brien, 1st Lt. Gilbert M.	7
Older, Lt. Col. Charles H.	7
Pierce, 1st Lt. Joseph F.	7
Pierce, 1st Lt. Sammy A.	7
Poindexter, Capt. James N.	7
Popek, Maj. Edward S.	7
Purdy, 1st Lt. John E.	7
Reynolds, 1st Lt. Robert	7
Rogers, Capt. Felix M.	7
Ross, Maj. Herbert E.	7
Sears, 1st Lt. Meldrum L.	7
Shafer, Lt. Col. Dale E. Jr.	7
Shipman, 1st Lt. Ernest	7
Shuler, 1st Lt. Lucien B.	7
Simmons, 1st Lt. John M.	7
Smith, Maj. Leslie C.	7
Smith, 1st Lt. Richard E.	7
Stone, 2nd Lt. Robert J.	7
Strand, Capt. William H.	7
Truluck, 1st Lt. John H.	7
Turner, Lt. Col. William L.	7
Tyler, 1st Lt. Gerald E.	7
Vaughn, Maj. Harley C.	7
Waters, 1st Lt. Edward T.	7
Wheadon, Capt. Elmer M.	7
Whittaker, Capt. Roy E.	7
Wicker, Maj. Samuel J.	7
Wilkinson, Capt. James W.	7
Wire, 1st Lt. Calvin C.	7
Woods, Lt. Col. Sidney S.	7
Woody, Capt. Robert E.	7
Zoerb, Capt. Daniel J.	7
Murphy, Lt. Col. John B.	6.75
Cummings, Capt. Donald M.	6.5
Gray, Maj. Rockford V.	6.5
Hoffman, 1st Lt. James E. Jr.	6.5
Hubbard, Lt. Col. Mark E.	6.5
Hunt, 1st Lt. Edward E.	6.5
Koenig, 1st Lt. Charles W.	6.5
Kruzel, Lt. Col. Joseph J.	6.5
Moseley, Capt. Mark L.	6.5
Rader, 1st Lt. Valentine S.	6.5
Riley, 1st Lt. Paul S.	6.5
Welden, 1st Lt. Robert D.	6.25
Adams, 1st Lt. Charles E. Jr.	6
Alison, Lt. Col. John R.	6
Anderson, 1st Lt. Wyman D.	6
Andrews, 1st Lt. Stanley O.	6
Baker, 1st Lt. Ellis C. Jr.	6
Baseler, Lt. Col. Robert L.	6
Bille, Maj. Henry S.	6
Blumer, Capt. Laurence E.	6
Brown, 1st Lt. Harley L.	6
Brown, Capt. Harry W.	6
Brown, Capt. Meade M.	6
Buck, Capt. George T. Jr.	6
Callaway, Maj. Raymond H.	6
Campbell, 1st Lt. Richard A.	6
Candelaria, 1st Lt. Richard G.	6
Care, Capt. Raymond C.	6
Carlson, Capt. Kendall E.	6
Carter, Capt. James R.	6
Chick, Lt. Col. Lewis W. Jr.	6
Coffey, Lt. Col. Robert L. Jr.	6
Collinsworth, Capt. J.D.	6
Cook, Capt. Walter V.	6
Crawford, 2nd Lt. Ray	6
Crim, Maj. Harry C. Jr.	6
Cundy, 1st Lt. Arthur C.	6
Czarnecki, 1st Lt. Edward J.	6

Col. James Howard (7)

1st Lt. Urban Drew (6)

Davis, 1st Lt. Barrie S.	6
Dean, 2nd Lt. Cecil O.	6
Degraffenreid, 2nd Lt. Edwin L.	6
Dent, Capt. Elliott E. Jr.	6
Dillard, Capt. William J.	6
Drew, 1st Lt. Urban L.	6
Drier, Capt. William C.	6
Eason, 1st Lt. Hoyt A.	6
Emerson, Capt. Warren S.	6
Emmert, 1st Lt. Benjamin H. Jr.	6
Evans, Lt. Col. Andrew J. Jr.	6
Evans, Maj. Roy W.	6
Everhart, Capt. Lee R.	6
Fleischer, Capt. Richard H.	6
Foulis, Capt. William B. Jr.	6
Froning, 1st Lt. Alfred C.	6
Gallup, Capt. Charles S.	6
Goss, Maj. Edmund R.	6
Gresham, 1st Lt. Billy M.	6
Gumm, 1st Lt. Charles F. Jr.	6
Hagerstrom, 1st Lt. James P.	6
Hall, 1st Lt. George F.	6
Hanes, 1st Lt. William F. Jr.	6
Harmeyer, 1st Lt. Raymond F.	6
Hart, Capt. Cameron M.	6
Haviland, Capt. Fred R. Jr.	6
Hill, Col. David L.	6
Hogg, Capt. Roy B.	6
Holloway, 1st Lt. James D.	6
Howard, 1st Lt. Robert L.	6
Howes, 1st Lt. Bernard H.	6
Hurd, 1st Lt. Richard F.	6
Ince, 1st Lt. James C.	6
Johnston, Lt. Col. Robert D.	6
Jones, 1st Lt. Cyril W. Jr.	6
Jordan, Maj. Wallace R.	6
Karr, Capt. Robert A.	6
Kemp, 2nd Lt. William T.	6
Kienholz, 1st Lt. Donald D.	6
Lane, 1st Lt. John H.	6
Larson, Maj. Donald A.	6
Larson, 2nd Lt. Leland A.	6
Lubner, Capt. Martin W.	6
Lucas, Capt. Paul W.	6
Lustic, 1st Lt. Stanley J.	6
McDaniel, 1st Lt. Gordon H.	6
McGee, Capt. Donald C.	6
McKeon, Capt. Joseph T.	6
Meigs, 1st Lt. Henry II	6

Maj. John Alison (6), **Maj. David Hill** (6), **and Capt. Albert Baumler** (5)

Meuten, 1st Lt. Donald W.	6
Miller, Capt. Armour C.	6
Mills, Maj. Henry L.	6
Mugavero, 1st Lt. James D.	6
Murphey, Capt. Paul C. Jr.	6
Murphy, Capt. Alva C.	6
Ohr, Capt. Fred F.	6
Olson, Capt. Norman E.	6
Pietz, 1st Lt. John Jr.	6
Pissanos, 1st Lt. Spiros N.	6
Pugh, Capt. John F.	6
Reed, Capt. William N.	6
Reeves, 1st Lt. Horace B.	6
Reeves, 1st Lt. Leonard R.	6
Roberson, 1st Lt. Arval J.	6
Scheible, Capt. Wilbur R.	6
Schildt, 1st Lt. William J.	6
Schimanski, Capt. Robert G.	6
Simmons, 1st Lt. William J.	6
Smith, 1st Lt. John C.	6
Starck, Capt. Walter E.	6
Starnes, Capt. James R.	6
Taylor, Capt. Ralph G. Jr.	6
Thwaites, Capt. David F.	6
Turley, 2nd Lt. Grant M.	6
Vincent, Col. Clinton D.	6
Wainwright, 2nd Lt. John H. Jr.	6
Walker, 1st Lt. Thomas H.	6
Wandrey, Capt. Ralph H.	6
Welch, Capt. Robert E.	6
Wenige, 1st Lt. Arthur E.	6
Whalen, 1st Lt. William E.	6
White, 2nd Lt. Thomas A.	6
Williams, 1st Lt. James M.	6
Witt, Capt. Lynn E. Jr.	6
Wright, Capt. Ellis W. Jr.	6
Zubarik, 1st Lt. Charles J.	6
Fortier, Capt. Norman J.	5.83
Koraleski, Capt. Walter J. Jr.	5.53
Amoss, 1st Lt. Dudley M.	5.5
Bickel, 1st Lt. Carl G.	5.5
Burdick, 1st Lt. Clinton D.	5.5
Buttke, Capt. Robert L.	5.5
Compton, Capt. Gordon B.	5.5
Edwards, 1st Lt. Edward B. Jr.	5.5
Gailer, 1st Lt. Frank L.	5.5
Graham, Capt. Lindol F.	5.5
Hatala, Capt. Paul R.	5.5
Heller, Capt. Edwin L.	5.5
Holmes, 1st Lt. Besby F.	5.5
Horne, 1st Lt. Francis W.	5.5
King, 1st Lt. William B.	5.5
Lampe, 1st Lt. Richard C.	5.5
Lenfest, Capt. Charles W.	5.5
Long, Capt. Maurice G.	5.5
McCauley, 1st Lt. Frank E.	5.5
Minchew, Capt. Leslie D.	5.5
O'Brien, Capt. William R.	5.5
Pascoe, 1st Lt. James J.	5.5
Pompetti, 1st Lt. Peter E.	5.5
Ruder, 1st Lt. Leroy A.	5.5
Shoup, 1st Lt. Robert L.	5.5
Smith, 1st Lt. Donovan F.	5.5
Tanner, Capt. William F.	5.5
Vanden Heuvel, 1st Lt. George R.	5.5
Waits, 1st Lt. Joe W.	5.5
Wang, 1st Lt. Kuang Fu	5.5
Winks, 1st Lt. Robert P.	5.5
Biel, 1st Lt. Hipolitus T.	5.33
Vinson, Capt. Arnold E.	5.33
Dorris, Maj. Harry W.	5.25

Col. Clinton Vincent (6)

Miller, 2nd Lt. Thomas F.	5.25
Thompson, 1st Lt. Robert D.	5.25
Duffy, Capt. James E. Jr.	5.2
Abernathy, Capt. Robert W.	5
Adams, 1st Lt. Robert H.	5
Allen, 1st Lt. William H.	5
Ambort, 2nd Lt. Ernest J.	5
Ammon, 1st Lt. Robert H.	5
Andersen, 1st Lt. Leslie E.	5
Anderson, 1st Lt. Richard H.	5
Arasmith, 1st Lt. Lester L.	5
Archibald, 1st Lt. David B.	5
Aron, 1st Lt. William E.	5
Aust, Capt. Abner M. Jr.	5
Axtell, 1st Lt. Eugene D.	5
Baccus, Lt. Col. Donald A.	5
Bade, 1st Lt. Jack A.	5
Bank, 1st Lt. Raymond M.	5
Barber, 1st Lt. Rex T.	5
Barkey, 1st Lt. Robert M.	5
Barnes, 1st Lt. Truman S.	5
Baumler, Capt. Albert J.	5
Bearden, 2nd Lt. Aaron L.	5
Beavers, Capt. Edward H. Jr.	5
Benne, 1st Lt. Louis	5
Bolyard, Capt. John W.	5
Bonner, 1st Lt. Stephen J.	5
Bostrom, 1st Lt. Ernest O.	5
Bradley, Maj. John L.	5
Brown, Capt. Gerald	5
Byrne, 1st Lt. Robert J.	5
Byrnes, Capt. Robert C.	5
Castle, 2nd Lt. Nial K.	5
Chandler, Capt. George T.	5
Chandler, 1st Lt. Van E.	5
Cleaveland, 2nd Lt. Arthur B.	5
Clinger, Capt. Dallas A.	5
Cloud, Capt. Vivian A.	5
Cochran, 2nd Lt. Paul R.	5
Colman, 1st Lt. Philip E.	5
Comstock, Maj. Harold E.	5
Condon, Capt. Henry L. II	5
Coons, Capt. Merle M.	5
Cox, Capt. Ralph L.	5
Cranfill, Maj. Niven K.	5
Cullerton, 1st Lt. William J.	5
Curton, 1st Lt. Warren D.	5
Daniel, Col. William A.	5
Daniell, 1st Lt. J.S.	5
Davis, Capt. Clayton E.	5
Day, 1st Lt. William C. Jr.	5
Deakins, 1st Lt. Richard S.	5
Della, 1st Lt. George	5
Dick, Capt. Frederick E.	5
Dikovitsky, 1st Lt. Michael	5
Donaldson, 2nd Lt. I.B. Jack	5
Dregne, Lt. Col. Irwin H.	5
Dubisher, Maj. Francis E.	5
Dubois, 1st Lt. Charles H.	5
Duffy, 2nd Lt. Richard E.	5
Egan, 1st Lt. Joseph L. Jr.	5
Elder, Maj. Robert A.	5
Empey, 1st Lt. James W.	5
Ernst, 1st Lt. Herman E.	5
Faxon, 1st Lt. Richard D.	5
Felts, 1st Lt. Marion C.	5
Fenex, Capt. James E. Jr.	5

Capt. Edwin Heller (5.5)

Fiedler, 1st Lt. William F. Jr. 5
Fields, Capt. Virgil C. Jr. 5
Fischette, 1st Lt. Charles R. 5
Fisher, 1st Lt. Rodney W. 5
Fisk, Capt. Harry E. 5
Flack, Capt. Nelson D. Jr. 5
Ford, Maj. Claude E. 5
Gardner, Maj. Warner F. 5
Gerick, 2nd Lt. Steven 5
Gholson, Capt. Grover D. 5
Gibb, 1st Lt. Robert D. 5
Gladen, 1st Lt. Cyrus R. 5
Goodrich, 1st Lt. Burdett C. 5
Gordon, Capt. Mathew M. Jr. 5
Graham, 2nd Lt. Robert F. 5
Griffith, 1st Lt. Robert C. 5
Gross, Capt. Clayton K. 5
Grosvenor, Capt. William Jr. 5
Gupton, 1st Lt. Cheatham W. 5
Hammer, 1st Lt. Samuel E. 5
Hanna, 2nd Lt. Harry T. 5
Hanseman, 1st Lt. Chris J. 5
Harrington, 1st Lt. Archibald A. 5
Harris, Capt. Thomas L. 5
Hartley, Capt. Raymond E. Jr. 5
Hatch, 2nd Lt. Herbert B. Jr. 5
Hauver, 1st Lt. Charles D. 5
Haworth, 1st Lt. Russell C. 5
Hendricks, Maj. Randall W. 5
Hill, Maj. James E. 5
Hiro, Maj. Edwin W. 5
Hnatio, 1st Lt. Myron M. 5
Hodges, Capt. William R. 5
Hoffman, 1st Lt. Cullen J. 5
House, 1st Lt. A.T. Jr. 5
Howe, 1st Lt. David W. 5
Hoyt, Capt. Edward R. 5
Hunter, Capt. Alvaro J. 5
Icard, 2nd Lt. Joe W. 5
Johnson, Capt. Evan M.V. 5
Jones, Capt. Curran L. 5
Jones, Capt. Frank C. 5
Jones, Capt. Lynn F. 5
Jones, 2nd Lt. Warren L. 5
Julian, Maj. William H. 5
Kennedy, 1st Lt. Daniel 5
King, Maj. Charles W. 5
King, 1st Lt. David L. 5
Kirby, 1st Lt. Marion F. 5
Kirkland, 1st Lt. Lenton F. Jr. 5
Knapp, Capt. Robert H. 5
Knott, 1st Lt. Carroll S. 5
Kopsel, 1st Lt. Edward H. 5
Lathrope, 2nd Lt. Franklin C. 5
Lazear, 1st Lt. Earl R. Jr. 5
Lee, 1st Lt. Richard J. 5
Leikness, Capt. Marlow J. 5
Lenox, 2nd Lt. Jack Jr. 5
Liles, Maj. Robert L. 5
London, Capt. Charles P. 5
Loving, Capt. George G. Jr. 5
Lutton, 1st Lt. Lowell C. 5
Mackay, 2nd Lt. John A. 5
Magoffin, Col. Morton D. 5
Mahon, Capt. Keith 5
Mahony, Lt. Col. Grant 5
Mankin, Capt. Jack C. 5
Markham, Capt. Gene E. 5
Marsh, 1st Lt. Lester C. 5
Martin, Col. Kenneth R. 5
Mason, Col. Joe L. 5
Mathis, 1st Lt. William H. 5
Mathre, 2nd Lt. Milden E. 5
Matte, 1st Lt. Joseph Z. 5
Maxwell, Capt. Chester K. 5
McArthur, 1st Lt. Paul G. 5
McArthur, Capt. T.H. 5
McDonough, Maj. William F. 5
McElroy, Capt. James N. 5
McGinn, Lt. Col. John L. 5
McGuyrt, 1st Lt. John W. Jr. 5
McMinn, Flight Officer Evan D. 5
Merritt, Maj. George L. Jr. 5
Miller, 1st Lt. Everett 5
Miller, Capt. Joseph E. Jr. 5
Milliken, 1st Lt. Robert C. 5
Monk, 1st Lt. Franklin H. 5
Mooney, 2nd Lt. Raymond P. 5
Morriss, Capt. Paul V. 5
Mulhollem, 1st Lt. Robert F. 5
Myers, 1st Lt. Jennings L. 5
Myers, Lt. Col. Raymond B. 5
Nichols, Maj. Franklin A. 5
Nollmeyer, Maj. Edward M. 5
Oberhansly, Maj. Jack J. 5
Olson, 1st Lt. Paul E. 5
O'Neill, Capt. Eugene W. Jr. 5
O'Neill, 1st Lt. Lawrence F. 5

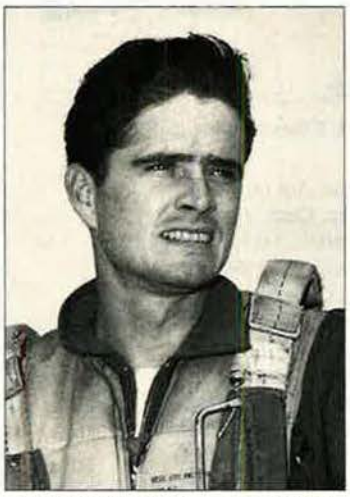
Lt. Col. Harrison Thyng (5)

Osher, Capt. Ernest K. 5
Overcash, 1st Lt. Robert J. 5
Owens, Maj. Joel A. Jr. 5
Parham, Capt. Forrest F. 5
Paulk, 2nd Lt. Edsel 5
Payne, Capt. Carl W. 5
Perdomo, 1st Lt. Oscar F. 5
Pool, 1st Lt. Kenneth R. 5
Porter, 1st Lt. Philip B. 5
Powers, 2nd Lt. Macarthur 5
Price, Maj. Jack C. 5
Priest, 1st Lt. Royce W. 5
Pryor, Capt. Roger C. 5
Quigley, Maj. Donald L. 5
Ray, 1st Lt. C.B. 5
Reese, 1st Lt. William C. 5
Ritchey, 1st Lt. Andrew J. 5
Roberts, Capt. Newell O. 5
Rose, 1st Lt. Franklin Jr. 5
Rounds, 1st Lt. Gerald L. 5
Rudolph, 1st Lt. Henry S. 5
Rynne, Capt. William A. 5
Schank, 1st Lt. Thomas D. 5
Schriber, Capt. Louis 5
Schuh, 1st Lt. Duerr H. 5
Schultz (Shoals), Capt. Robert B. 5
Sears, 1st Lt. Alexander F. 5
Seidman, 1st Lt. Robert K. 5
Smith, Capt. Jack R. 5
Smith, Capt. Kenneth G. 5
Smith, 1st Lt. Paul A. 5
Smith, 1st Lt. Virgil H. 5
Stangel, Capt. William J. 5
Stanley, 1st Lt. Morris A. 5
Suehr, 1st Lt. Richard C. 5
Sullivan, Capt. Charles P. 5
Sutcliffe, 1st Lt. Robert C. 5
Sykes, 1st Lt. William J. 5
Talbot, Maj. Gilbert F. 5
Taylor, Col. Oliver B. 5
Thyng, Lt. Col. Harrison R. 5
Tierney, 1st Lt. Robert E. 5
Tilley, 1st Lt. John A. 5
Tordoff, Capt. Harrison B. 5
Trafton, 1st Lt. Frederick O. Jr. 5
Troxell, Capt. Clifton H. 5
Vaught, Capt. Robert H. 5
Visscher, 1st Lt. Herman W. 5
Vogt, Capt. John E. 5
Waggoner, 1st Lt. Horace Q. 5
Walker, 1st Lt. Walter B. Jr. 5
Warner, Capt. Jack A. 5
Warren, Capt. Jack R. 5
Watson, Maj. Ralph J. 5
Watts, Capt. Oran S. 5
Weatherford, 1st Lt. Sidney W. 5
Webb, Maj. Willard J. 5
Welch, Capt. Darrell G. 5
Wesson, 1st Lt. Warren M. 5
White, 1st Lt. John H. 5
Wilhelm, Capt. David C. 5
Wilkins, 2nd Lt. Paul H. 5
Williams, 1st Lt. Russell D. 5
Wilson, Capt. William F. 5
Wire, Maj. Ralph L. 5
Wiseman, Capt. Lee V. 5
Wolford, 1st Lt. John L. 5
Wright, Capt. Max J. 5
Yaeger, Capt. Robert R. Jr. 5
York, 1st Lt. Robert M. 5

USAF Aces of the Korean War

Capt. Joseph McConnell Jr. (16)

McConnell, Capt. Joseph C. Jr.	16
Jabara, Maj. James	15
Fernandez, Capt. Manuel J. Jr.	14.50
Davis, Maj. George A. Jr.	14
Baker, Col. Royal N.	13
Blesse, Maj. Frederick C.	10
Fischer, Capt. Harold E.	10
Garrison, Lt. Col. Vermont	10
Johnson, Col. James K.	10
Moore, Capt. Lonnie R.	10
Parr, Capt. Ralph S. Jr.	10
Foster, Capt. Cecil G.	9
Low, 1st Lt. James F.	9
Hagerstrom, Maj. James P.	8.50
Risner, Capt. Robinson	8
Ruddell, Lt. Col. George I.	8
Buttelmann, 1st Lt. Henry	7
Jolley, Capt. Clifford D.	7
Lilley, Capt. Leonard W.	7
Adams, Maj. Donald E.	6.50
Gabreski, Col. Francis S.	6.50
Jones, Lt. Col. George L.	6.50
Marshall, Maj. Winton W.	6.50
Bolt, Maj. John F.	6
Kasler, 1st Lt. James H.	6
Love, Capt. Robert J.	6
Whisner, Maj. William T. Jr.	5.50
Baldwin, Col. Robert P.	5
Becker, Capt. Richard S.	5
Bettinger, Maj. Stephen L.	5
Creighton, Maj. Richard D.	5
Curtin, Capt. Clyde A.	5
Gibson, Capt. Ralph D.	5
Kincheloe, Capt. Iven C. Jr.	5
Latshaw, Capt. Robert T. Jr.	5
Moore, Capt. Robert H.	5
Overton, Capt. Dolphin D. III	5
Thyng, Col. Harrison R.	5
Wescott, Maj. William H.	5



Maj. William Whisner Jr. (5.50)

USAF Aces of the Vietnam War

DeBellevue, Capt. Charles B.	6
Feinstein, Capt. Jeffrey S.	5
Ritchie, Capt. Richard S.	5

Capt. Jeffrey Feinstein (5)

Capt. Charles DeBellevue (6) **and Capt. Richard Ritchie** (5)

AAF/USAF Aces With Victories in Both World War II and a Later War

	WW II	Korean/Other	Total
Gabreski, Col. Francis S.	28	6.50	34.50
Meyer, Col. John C.	24	2	26
Mahurin, Col. Walker M.	20.75	3.50	24.25
Davis, Maj. George A. Jr.	7	14	21
Whisner, Maj. William T. Jr.	15.50	5.50	21
Eagleston, Col. Glenn T.	18.50	2	20.50
Garrison, Lt. Col. Vermont	7.33	10	17.33
Baker, Col. Royal N.	3.50	13	16.50
Jabara, Maj. James	1.50	15	16.50
Olds, Col. Robin	12	4[a]	16
Mitchell, Col. John W.	11	4	15
Brueland, Maj. Lowell K.	12.50	2	14.50
Hagerstrom, Maj. James P.	6	8.50	14.50
Hovde, Lt. Col. William J.	10.50	1	11.50
Johnson, Col. James K.	1	10	11
Ruddell, Lt. Col. George I.	2.50	8	10.50
Thyng, Col. Harrison R.	5	5	10
Colman, Capt. Philip E.	5	4	9
Heller, Lt. Col. Edwin L.	5.50	3.50	9
Chandler, Maj. Van E.	5	3	8
Hockery, Maj. John J.	7	1	8
Creighton, Maj. Richard D.	2	5	7
Emmert, Lt. Col. Benjamin H.	6	1	7
Bettinger, Maj. Stephen L.	1	5	6
Visscher, Maj. Herman W.	5	1	6
Liles, Capt. Brooks J.	1	4	5
Mattson, Capt. Conrad E.	1	4	5
Shaeffer, Maj. William F.	2	3	5

[a]Olds' four additional victories came during the Vietnam War.

Lt. Col. John Meyer (26)

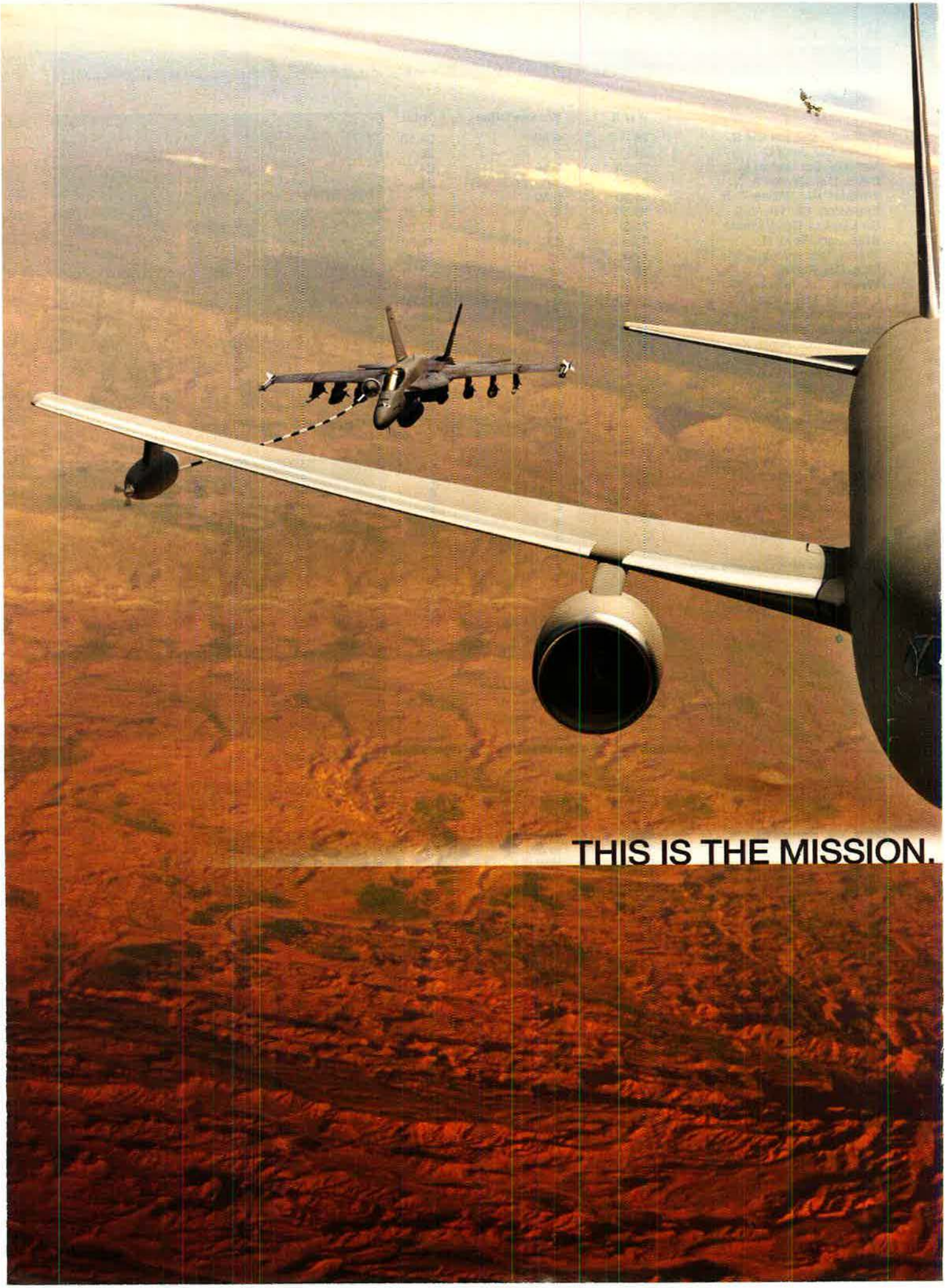
Maj. George Davis Jr. (21)

Leading Air Service/AAF/USAF Aces of All Wars

Bong, Maj. Richard I.	40	WW II
McGuire, Maj. Thomas B. Jr.	38	WW II
Gabreski, Col. Francis S.	34.50	WW II, Korea
Johnson, Capt. Robert S.	27	WW II
MacDonald, Col. Charles H.	27	WW II
Preddy, Maj. George E.	26.83	WW II
Meyer, Col. John C.	26	WW II, Korea
Rickenbacker, Capt. Edward V.	26[b]	WW I
Mahurin, Col. Walker M.	24.25	WW II, Korea
Schilling, Col. David C.	22.50	WW II
Johnson, Lt. Col. Gerald R.	22	WW II
Kearby, Col. Neel E.	22	WW II
Robbins, Maj. Jay T.	22	WW II
Christensen, Capt. Fred J.	21.50	WW II
Wetmore, Capt. Ray S.	21.25	WW II
Davis, Maj. George A. Jr.	21	WW II, Korea
Voll, Capt. John J.	21	WW II
Whisner, Capt. William T. Jr.	21	WW II, Korea
Eagleston, Col. Glenn T.	20.50	WW II, Korea
Lynch, Lt. Col. Thomas J.	20	WW II
Westbrook, Lt. Col. Robert B.	20	WW II
Gentile, Capt. Don S.	19.83	WW II

[b]Under World War II and Korean War counting rules, Rickenbacker would have been credited with 24.33 victories. The change would not alter his position on this list.

Capt. Walker Mahurin (24.25) **and Maj. Walter Beckham** (18)


THIS IS THE MISSION.


www.globaltanker.com
THIS IS THE TANKER.
THE KC-767 ADVANCED TANKER. THE WORLD'S MOST CAPABLE, MOST EFFICIENT, MOST DEPLOYABLE TANKER.
The mission is aerial refueling. Our warfighters require the one tanker that delivers the most fuel in real combat environments: the KC-767 Advanced. With its optimum size and superior capability, the KC-767 Advanced does what no other tanker can. It raises the standard and lowers the risk for those who buy it, those who fly it and those who depend upon it.
BOEING

Hq. Air Force

2007 USAF Almanac

The Department of the Air Force incorporates all elements of the Air Force and is administered by a civilian Secretary and supervised by a military Chief of Staff. The Secretariat and the Air Staff help the Secretary and the Chief of Staff direct the Air Force mission.

Headquarters Air Force

HAF

Headquarters Pentagon, Washington, D.C.

Established Sept. 18, 1947

Secretary Michael W. Wynne

Chief of Staff Gen. T. Michael Moseley

ROLE

Organize, train, and equip air and space forces

MISSION

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

FORCE STRUCTURE—SECRETARIAT

One Secretary
One undersecretary
Four assistant secretaries
Two deputy undersecretaries
Five directors
Five offices

FORCE STRUCTURE—AIR STAFF

One Chief of Staff
One vice chief of staff
One Chief Master Sergeant of the Air Force
Eight deputy chiefs of staff
Three directors
Eight offices

PERSONNEL

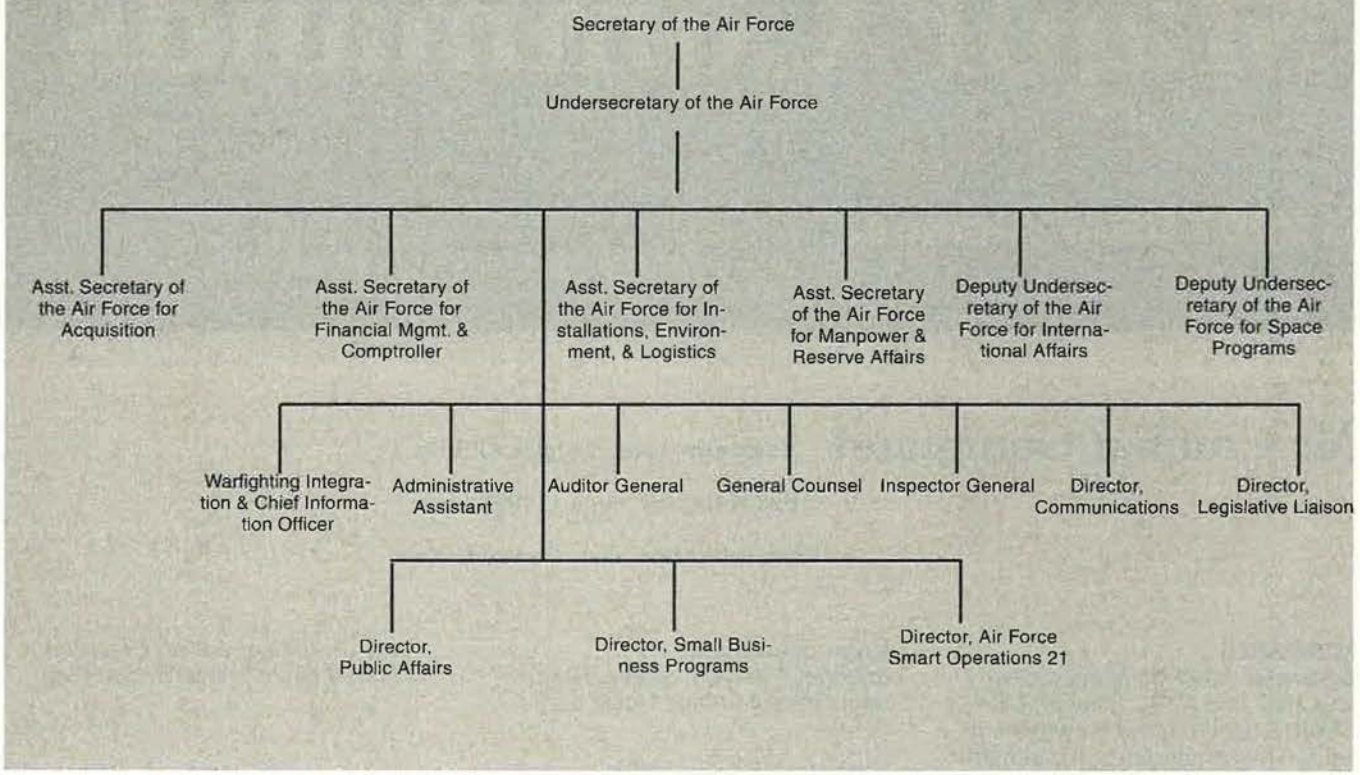
(as of Sept. 30, 2006)

Active duty		1,713
Officers	1,456	
Enlisted	257	
Reserve components		479
ANG	0	
AFRC	479	
Civilian		871
Total		**3,063**

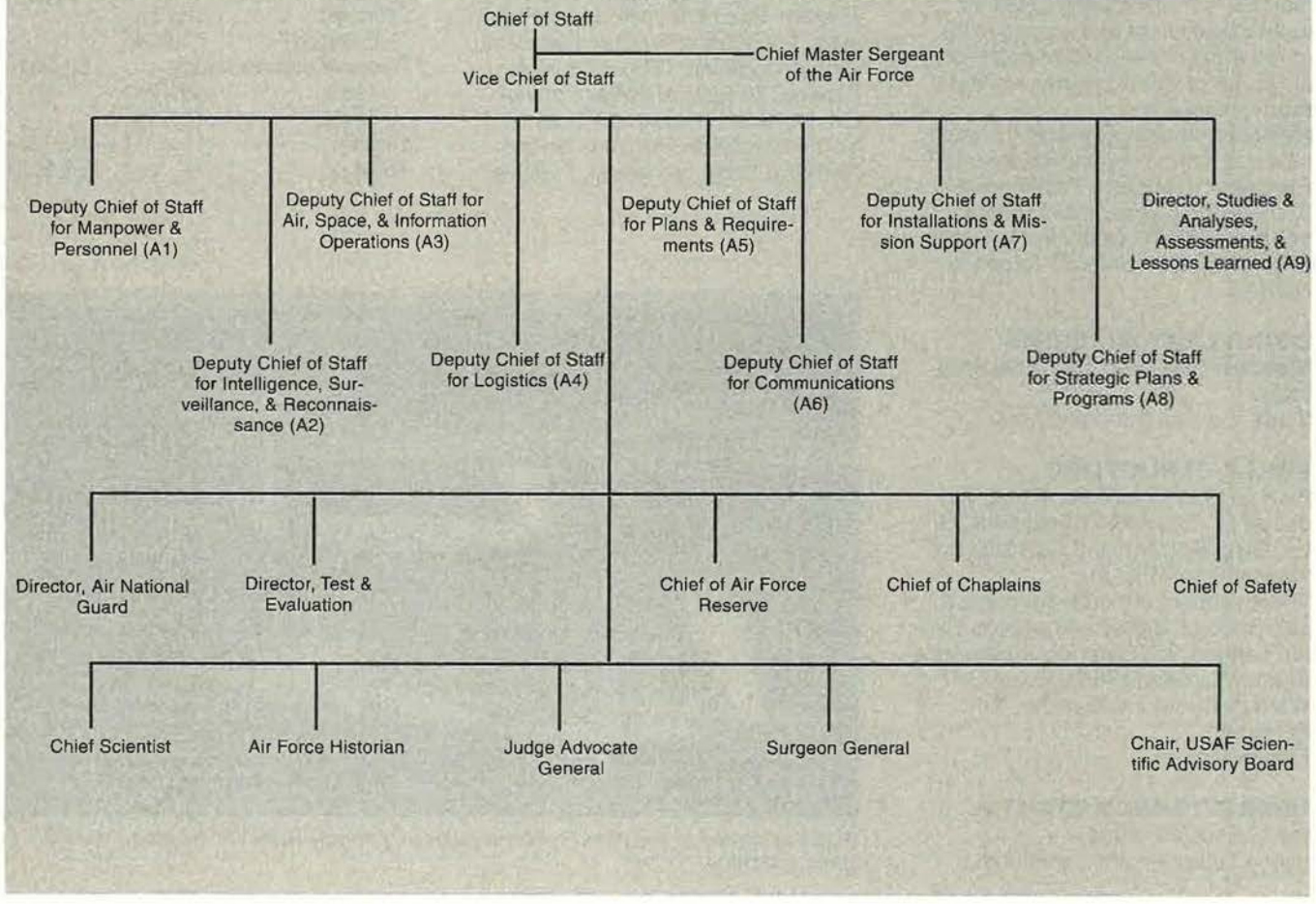
USAF photo by A1C Marleah L. Miller

The US Air Force Honor Guard Drill Team performs during a USAF open house at the Pentagon.

SECRETARIAT, PENTAGON, WASHINGTON, D.C.



AIR STAFF, PENTAGON, WASHINGTON, D.C.



Major Commands

2007 USAF Almanac

A major command is a subdivision of the Air Force assigned a major part of the Air Force mission and directly subordinate to Hq. USAF. In general, there are two types of major commands: functional and geographical.

ACC Air Combat Command

Headquarters Langley AFB, Va.

Established June 1, 1992

Commander Gen. Ronald E. Keys

MISSIONS

Operate USAF bombers (active and ANG and AFRC gained); USAF's CONUS-based (active and gained) fighter, reconnaissance, battle management, and command and control aircraft and intelligence and surveillance systems

Organize, train, equip, and maintain combat-ready forces for rapid deployment and employment to meet the challenges of peacetime air sovereignty and wartime combat requirements

Provide combat airpower to America's warfighting commands (Central, European, Northern, Pacific, and Southern); nuclear, conventional, and information operations forces to STRATCOM; air defense forces to NORAD

COROLLARY MISSIONS

Monitor and intercept illegal drug traffic

Test new combat equipment

FORCE STRUCTURE

Four numbered air forces: **1st,** Tyndall AFB, Fla.; **8th,** Barksdale AFB, La.; **9th,** Shaw AFB, S.C.; **12th,** Davis-Monthan AFB, Ariz.

Three primary subordinate units: Air and Space Expeditionary Force Center, Langley AFB, Va.; Air Intelligence Agency, Lackland AFB, Tex.; USAF Warfare Center, Nellis AFB, Nev.

27 wings

Five groups

OPERATIONAL ACTIVITY

(as of Sept. 30, 2006)

Flying hours: 30,330 per month

Major operations

Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US)

Major training exercises

Amalgam Dart Series; Amalgam Phantom; Ardent Century; Blue Advance; Blue Flag; Bright Star; Clean Hunter; Eager Tiger; Eagle Resolve; Eastern Falcon; Ellipse Echo; Falcon Nest; Foal Eagle; Fuertas Defensas; Global Lightning; Global Thunder; Green Flag East and West; Initial Link; Internal Look; Iron Falcon; Maple Flag; New Horizons Series; Northern Edge; Panamax; Positive Force; Red Flag; Unified Endeavor; Unitas; Vigilant Shield; Virtual Flag

PERSONNEL

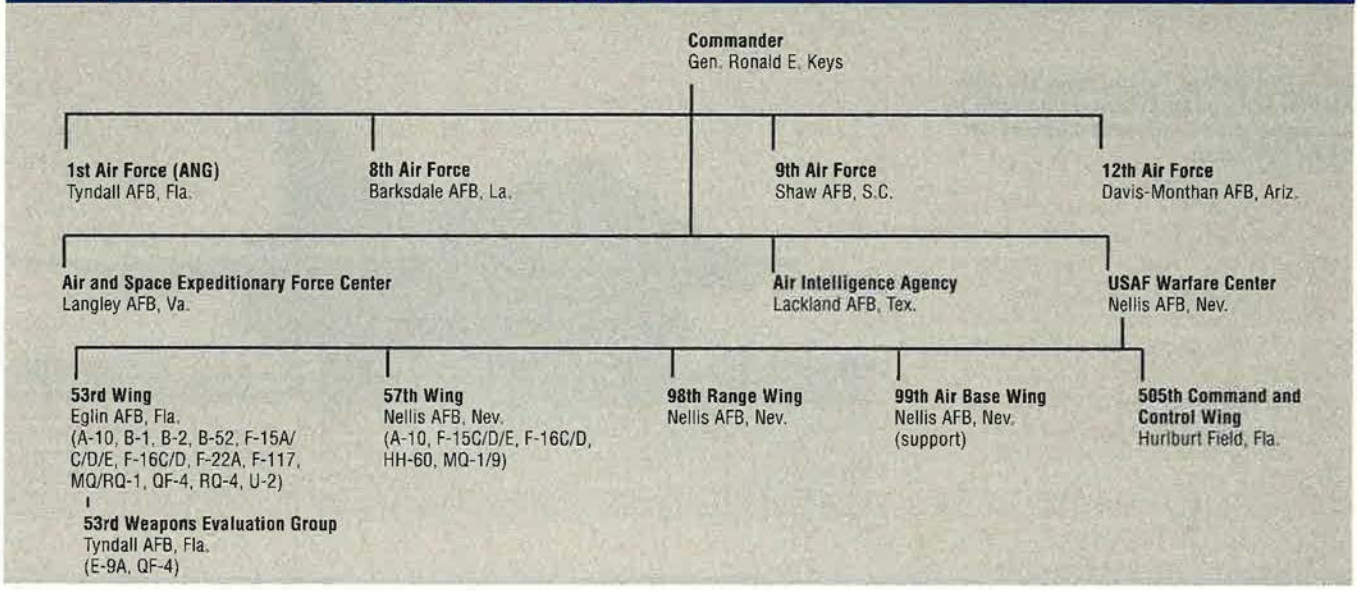
(as of Sept. 30, 2006)

Active duty		86,809
Officers	12,854	
Enlisted	73,955	
Reserve components		57,001
ANG	46,476	
AFRC	10,525	
Civilian		10,288
Total		**154,098**

USAF photo by TSgt. Ben Bloker

F-22s assigned to the 94th Fighter Squadron, Langley AFB, Va., fly along the Virginia coastline.

AIR COMBAT COMMAND, LANGLEY AFB, VA.



EQUIPMENT

(Primary aircraft inventory as of Sept. 30, 2006)

Bomber	118	Recon/BM/C3I	92
Fighter/Attack	663	Trainer	36

UNIT	BASE	WEAPONS
1st Fighter Wing	Langley AFB, Va.	F-15C/D, F-22A
2nd Bomb Wing	Barksdale AFB, La.	B-52H
3rd Air Support Operations Group	Ft. Hood, Tex.	
4th Fighter Wing	Seymour Johnson AFB, N.C.	F-15E
5th Bomb Wing	Minot AFB, N.D.	B-52H
7th Bomb Wing	Dyess AFB, Tex.	B-1B
9th Reconnaissance Wing	Beale AFB, Calif.	RQ-4, T-38, U-2R/S
18th Air Support Operations Group	Pope AFB, N.C.	
20th Fighter Wing	Shaw AFB, S.C.	F-16C/CJ/D
23rd Wing	Moody AFB, Ga.	A/OA-10 (Pope AFB, N.C.), HC-130, HH-60
27th Fighter Wing	Cannon AFB, N.M.	F-16C/D
28th Bomb Wing	Ellsworth AFB, S.D.	B-1B
33rd Fighter Wing	Eglin AFB, Fla.	F-15C/D
49th Fighter Wing	Holloman AFB, N.M.	F-117A, QF-4, T-38B
53rd Wing	Eglin AFB, Fla.	A-10, B-1, B-2, B-52, F-15A/C/D/E, F-16C/D, F-22A, F-117, MQ/RQ-1, QF-4, RQ-4, U-2
53rd Weapons Evaluation Group[a]	Tyndall AFB, Fla.	E-9A, QF-4
55th Electronic Combat Group	Davis-Monthan AFB, Ariz.	EC-130H
55th Wing	Offutt AFB, Neb.	E-4B, OC-135B, RC-135S/U/V/W, TC-135S/W, WC-135
57th Wing	Nellis AFB, Nev.	A-10, F-15C/D/E, F-16C/D, HH-60, MQ-1/9
67th Network Warfare Wing	Lackland AFB, Tex.	
70th Intelligence Wing	Ft. Meade, Md.	
98th Range Wing	Nellis AFB, Nev.	
99th Air Base Wing	Nellis AFB, Nev.	
116th Air Control Wing[b]	Robins AFB, Ga.	E-8C
355th Wing	Davis-Monthan AFB, Ariz.	A/OA-10
366th Fighter Wing	Mountain Home AFB, Idaho	F-15C/D/E, F-16CJ/D
388th Fighter Wing	Hill AFB, Utah	F-16C/D
480th Intelligence Wing	Langley AFB, Va.	
505th Command and Control Wing	Hurlburt Field, Fla.	
509th Bomb Wing	Whiteman AFB, Mo.	B-2, T-38
552nd Air Control Wing	Tinker AFB, Okla.	E-3B/C
820th Security Forces Group	Moody AFB, Ga.	

[a]Part of 53rd Wing. [b]Blended wing with active duty and ANG personnel.

An F-16 Fighting Falcon from the 20th Fighter Wing prepares to launch during an operational readiness exercise at Shaw AFB, S.C.

USAF photo by SSgt. Nathan Bevier

8th AIR FORCE (ACC), BARKSDALE AFB, LA.

Commander
Lt. Gen. Robert J. Elder Jr.

- **2nd Bomb Wing**
  Barksdale AFB, La.
  (B-52H)
- **5th Bomb Wing**
  Minot AFB, N.D.
  (B-52H)
- **9th Reconnaissance Wing**
  Beale AFB, Calif
  (RQ-4, T-38, U-2R/S)
- **55th Wing**
  Offutt AFB, Neb.
  (E-4B, OC-135B, RC-135S/U/V/W, TC-135S/W, WC-135)
  - **55th Electronic Combat Group**
    Davis-Monthan AFB, Ariz.
    (EC-130H)
- **67th Network Warfare Wing**
  Lackland AFB, Tex.
- **70th Intelligence Wing**
  Ft. Meade, Md.
- **116th Air Control Wing**
  Robins AFB, Ga.
  (E-8C)
- **480th Intelligence Wing**
  Langley AFB, Va.
- **509th Bomb Wing**
  Whiteman AFB, Mo.
  (B-2, T-38)
- **552nd Air Control Wing**
  Tinker AFB, Okla.
  (E-3B/C)
- **3rd Air Support Operations Group**
  Ft. Hood, Tex.

9th AIR FORCE (ACC), SHAW AFB, S.C.

Commander
Lt. Gen. Gary L. North

- **1st Fighter Wing**
  Langley AFB, Va.
  (F-15C/D, F-22A)
- **4th Fighter Wing**
  Seymour Johnson AFB, N.C.
  (F-15E)
- **20th Fighter Wing**
  Shaw AFB, S.C.
  (F-16C/CJ/D)
- **23rd Wing**
  Moody AFB, Ga.
  (A/OA-10*, HC-130, HH-60)
  - **820th Security Forces Group**
    Moody AFB, Ga.
- **33rd Fighter Wing**
  Eglin AFB, Fla.
  (F-15C/D)
- **18th Air Support Operations Group**
  Pope AFB, N.C.

* currently at Pope AFB, N.C.

12th AIR FORCE (ACC), DAVIS-MONTHAN AFB, ARIZ.

Commander
Lt. Gen. Norman R. Seip

- **7th Bomb Wing**, Dyess AFB, Tex. (B-1B)
- **27th Fighter Wing**, Cannon AFB, N.M. (F-16C/D)
- **28th Bomb Wing**, Ellsworth AFB, S.D. (B-1B)
- **49th Fighter Wing**, Holloman AFB, N.M. (F-117A, QF-4, T-38B)
- **355th Wing**, Davis-Monthan AFB, Ariz. (A/OA-10)
- **366th Fighter Wing**, Mountain Home AFB, Idaho (F-15C/D/E, F-16CJ/D)
- **388th Fighter Wing**, Hill AFB, Utah (F-16C/D)

AETC Air Education and Training Command

Headquarters Randolph AFB, Tex.

Established July 1, 1993

Commander Gen. William R. Looney III

MISSIONS

Recruit, train, and educate professional, expeditionary-minded airmen to sustain the combat capability of America's Air Force

Provide basic military training, initial and advanced technical training, flying training, and professional military and degree-granting professional education

Conduct joint, readiness, and Air Force security assistance training

FORCE STRUCTURE

Two numbered air forces and an educational headquarters: **2nd,** Keesler AFB, Miss.; **19th,** Randolph AFB, Tex.; **Air University,** Maxwell AFB, Ala.

Three DRUs: Air Force Recruiting Service and Air Force Security Assistance Training Squadron, Randolph AFB, Tex., and 59th Medical Wing, Lackland AFB, Tex.

16 wings

Four groups

Two squadrons

OPERATIONAL ACTIVITY

(as of Sept. 30, 2006)

Flying hours: 44,217 per month

PERSONNEL

(as of Sept. 30, 2006)

Active duty		63,939
Officers	14,712	
Enlisted	49,227	
Reserve components		8,053
ANG	4,608	
AFRC	3,445	
Civilian		14,927
Total		**86,919**

EQUIPMENT

(PAI as of Sept. 30, 2006)

Fighter/Attack	233
Helicopter	39
Special operations forces	17
Tanker	24
Trainer	824
Transport	63

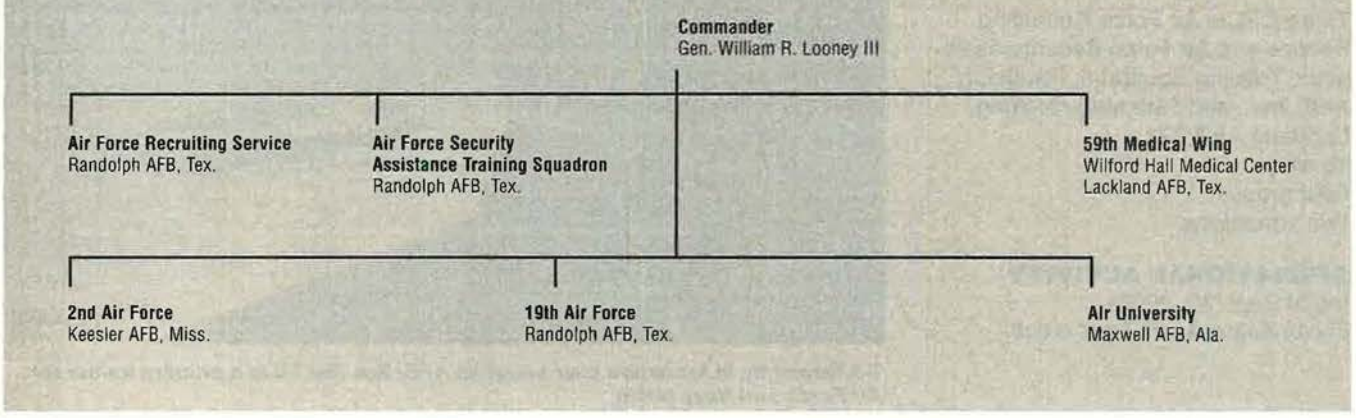
USAF photo by TSgt. Jeffrey Allen

T-6 Texans fly in formation over Laughlin AFB, Tex. The T-6 is a primary trainer for Air Force and Navy pilots.

UNIT	BASE	WEAPONS
Flying/Aircrew Training Units (Active)		
12th Flying Training Wing	Randolph AFB, Tex.	T-1A, T-6A, T-37B, T-38C, T-43A
14th Flying Training Wing	Columbus AFB, Miss.	T-1A, T-6A, T-37B, T-38C
23rd Flying Training Squadron[a]	Ft. Rucker, Ala.	UH-1H, UH-1V
45th Airlift Squadron[b]	Keesler AFB, Miss.	C-21A
47th Flying Training Wing	Laughlin AFB, Tex.	T-1A, T-6A, T-38C
56th Fighter Wing	Luke AFB, Ariz.	F-16C/D
58th Special Operations Wing	Kirtland AFB, N.M.	HC-130N/P, MC-130H, MC-130P, HH-60G, MH-53J, UH-1N
71st Flying Training Wing	Vance AFB, Okla.	T-1A, T-6A, T-38C
80th Flying Training Wing	Sheppard AFB, Tex.	T-37B, T-38A/C
97th Air Mobility Wing	Altus AFB, Okla.	C-5A, C-17A, KC-135R
306th Flying Training Group	USAF Academy, Colo.	T-41D, T-51A, TG-10B/C/D, TG-14A, TG-15A/B, UV-18B
314th Airlift Wing	Little Rock AFB, Ark.	C-130E/J
325th Fighter Wing	Tyndall AFB, Fla.	F-15C/D, F-22A
336th Training Group	Fairchild AFB, Wash.	UH-1N
479th Flying Training Group	Moody AFB, Ga.	T-6A, T-38C
Technical Training Units		
17th Training Wing	Goodfellow AFB, Tex.	
37th Training Wing	Lackland AFB, Tex.	
81st Training Wing	Keesler AFB, Miss.	
82nd Training Wing	Sheppard AFB, Tex.	
381st Training Group	Vandenberg AFB, Calif.	
Other Major Units		
Air University	Maxwell AFB, Ala.	
Air Force Recruiting Service	Randolph AFB, Tex.	
42nd Air Base Wing	Maxwell AFB, Ala.	
59th Medical Wing	Lackland AFB, Tex.	

[a]Part of 58th Special Operations Wing
[b]Part of 314th Airlift Wing.

AIR EDUCATION AND TRAINING COMMAND, RANDOLPH AFB, TEX.



2nd AIR FORCE (AETC), KEESLER AFB, MISS.

Commander
Maj. Gen. Michael C. Gould

- **17th Training Wing** — Goodfellow AFB, Tex.
- **37th Training Wing** — Lackland AFB, Tex.
- **381st Training Group** — Vandenberg AFB, Calif.
- **81st Training Wing** — Keesler AFB, Miss.
- **82nd Training Wing** — Sheppard AFB, Tex.

19th AIR FORCE (AETC), RANDOLPH AFB, TEX.

Commander
Maj. Gen. Irving L. Halter Jr.

- **12th Flying Training Wing** — Randolph AFB, Tex. (T-1A, T-6A, T-37B, T-38C, T-43A)
- **14th Flying Training Wing** — Columbus AFB, Miss. (T-1A, T-6A, T-37B, T-38C)
- **47th Flying Training Wing** — Laughlin AFB, Tex. (T-1A, T-6A, T-38C)
- **56th Fighter Wing** — Luke AFB, Ariz. (F-16C/D)
- **58th Special Operations Wing** — Kirtland AFB, N.M. (HC-130N/P, MC-130H, MC-130P, HH-60G, MH-53J, UH-1N)
  - **23rd Flying Training Squadron** — Ft. Rucker, Ala. (UH-1H, UH-1V)
- **71st Flying Training Wing** — Vance AFB, Okla. (T-1A, T-6A, T-38C)
- **80th Flying Training Wing** — Sheppard AFB, Tex. (T-37B, T-38A/C)
- **97th Air Mobility Wing** — Altus AFB, Okla. (C-5A, C-17A, KC-135R)
- **306th Flying Training Group** — USAF Academy, Colo. (T-41D, T-51A, TG-10B/C/D, TG-14A, TG-15A/B, UV-18B)
- **314th Airlift Wing** — Little Rock AFB, Ark. (C-130E/J)
  - **45th Airlift Squadron** — Keesler AFB, Miss. (C-21A)
- **325th Fighter Wing** — Tyndall AFB, Fla. (F-15C/D, F-22A)
- **336th Training Group** — Fairchild AFB, Wash. (UH-1N)
- **479th Flying Training Group** — Moody AFB, Ga. (T-6A, T-38C)

AIR UNIVERSITY (AETC), MAXWELL AFB, ALA.

Commander
Lt. Gen. Stephen R. Lorenz

- **Civil Air Patrol-USAF** — Maxwell AFB, Ala.
  - **Civil Air Patrol** — Maxwell AFB, Ala.
- **Air Command and Staff College** — Maxwell AFB, Ala.
- **Air Force Institute for Advanced Distributed Learning** — Maxwell AFB, Ala.
- **Air Force Institute of Technology** — Wright-Patterson AFB, Ohio
- **Air Force Officer Accession and Training Schools** — Maxwell AFB, Ala.
- **Air University Library** — Maxwell AFB, Ala.
- **Air War College** — Maxwell AFB, Ala.
- **College of Aerospace Doctrine, Research, and Education** — Maxwell AFB, Ala.
- **College for Enlisted Professional Military Education** — Maxwell AFB, Gunter Annex, Ala.
- **Community College of the Air Force** — Maxwell AFB, Ala.
- **Ira C. Eaker College for Professional Development** — Maxwell AFB, Ala.
- **School of Advanced Airpower Studies** — Maxwell AFB, Ala.
- **Squadron Officer College** — Maxwell AFB, Ala.
- **42nd Air Base Wing** — Maxwell AFB, Ala.

Air Force Materiel Command

Headquarters Wright-Patterson AFB, Ohio

Established July 1, 1992

Commander Gen. Bruce Carlson

MISSIONS

Deliver war-winning expeditionary capabilities to the warfighter through development and transition of technology, professional acquisition management, exacting test and evaluation, and world-class sustainment of all Air Force weapon systems

FORCE STRUCTURE

Three major product centers
Two test centers
Three air logistics centers
Four specialized centers
One laboratory with 10 technology directorates at nine CONUS locations
34 wings

OPERATIONAL ACTIVITY

(as of Sept. 30, 2006)
Flying hours: 2,500 per month

PERSONNEL

(as of Sept. 30, 2006)

Active duty		20,740
Officers	6,561	
Enlisted	14,179	
Reserve components		2,745
ANG	0	
AFRC	2,745	
Civilian		58,289
Total		**81,774**

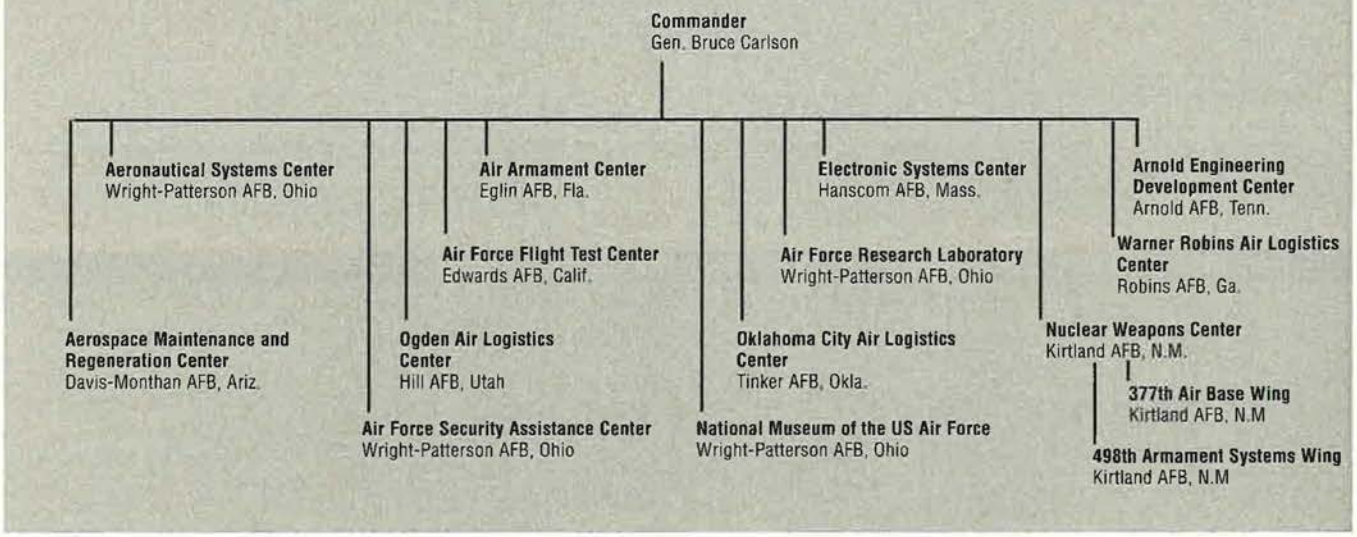
EQUIPMENT

(PAI as of Sept. 30, 2006)

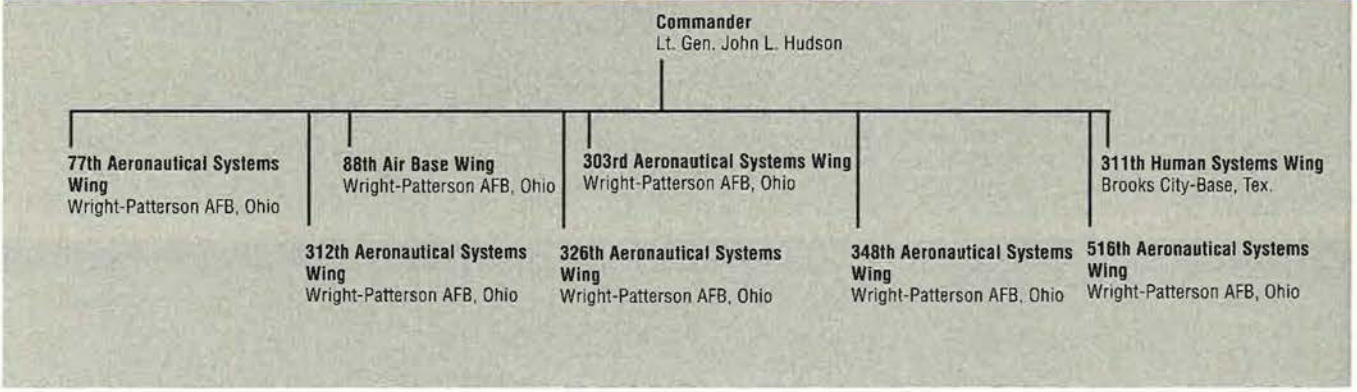
Bomber	3
Fighter/Attack	48
Helicopter	4
Tanker	3
Trainer	13
Transport	24

UNIT	BASE
Aeronautical Systems Center	Wright-Patterson AFB, Ohio
Aerospace Maintenance & Regeneration Center	Davis-Monthan AFB, Ariz.
Air Armament Center	Eglin AFB, Fla.
Air Force Flight Test Center	Edwards AFB, Calif.
Air Force Research Laboratory	Wright-Patterson AFB, Ohio
Air Force Security Assistance Center	Wright-Patterson AFB, Ohio
Arnold Engineering Development Center	Arnold AFB, Tenn.
Electronic Systems Center	Hanscom AFB, Mass.
National Museum of the US Air Force	Wright-Patterson AFB, Ohio
Nuclear Weapons Center	Kirtland AFB, N.M.
Ogden Air Logistics Center	Hill AFB, Utah
Oklahoma City Air Logistics Center	Tinker AFB, Okla.
Warner Robins Air Logistics Center	Robins AFB, Ga.
46th Test Wing	Eglin AFB, Fla.
66th Air Base Wing	Hanscom AFB, Mass.
72nd Air Base Wing	Tinker AFB, Okla.
75th Air Base Wing	Hill AFB, Utah
76th Maintenance Wing	Tinker AFB, Okla.
77th Aeronautical Systems Wing	Wright-Patterson AFB, Ohio
78th Air Base Wing	Robins AFB, Ga.
84th Combat Sustainment Wing	Hill AFB, Utah
88th Air Base Wing	Wright-Patterson AFB, Ohio
95th Air Base Wing	Edwards AFB, Calif.
96th Air Base Wing	Eglin AFB, Fla.
303rd Aeronautical Systems Wing	Wright-Patterson AFB, Ohio
308th Armament Systems Wing	Eglin AFB, Fla.
309th Maintenance Wing	Hill AFB, Utah
311th Human Systems Wing	Brooks City-Base, Tex.
312th Aeronautical Systems Wing	Wright-Patterson AFB, Ohio
326th Aeronautical Systems Wing	Wright-Patterson AFB, Ohio
327th Aircraft Sustainment Wing	Tinker AFB, Okla.
328th Armament Systems Wing	Eglin AFB, Fla.
330th Aircraft Sustainment Wing	Robins AFB, Ga.
348th Aeronautical Systems Wing	Wright-Patterson AFB, Ohio
350th Electronic Systems Wing	Hanscom AFB, Mass.
377th Air Base Wing	Kirtland AFB, N.M.
402nd Maintenance Wing	Robins AFB, Ga.
412th Test Wing	Edwards AFB, Calif.
448th Combat Sustainment Wing	Tinker AFB, Okla.
498th Armament Systems Wing	Kirtland AFB, N.M.
508th Aircraft Sustainment Wing	Hill AFB, Utah
516th Aeronautical Systems Wing	Wright-Patterson AFB, Ohio
526th ICBM Systems Wing	Hill AFB, Utah
542nd Combat Sustainment Wing	Robins AFB, Ga.
551st Electronic Systems Wing	Hanscom AFB, Mass.
554th Electronic Systems Wing	Hanscom AFB, Mass.
653rd Electronic Systems Wing	Hanscom AFB, Mass.

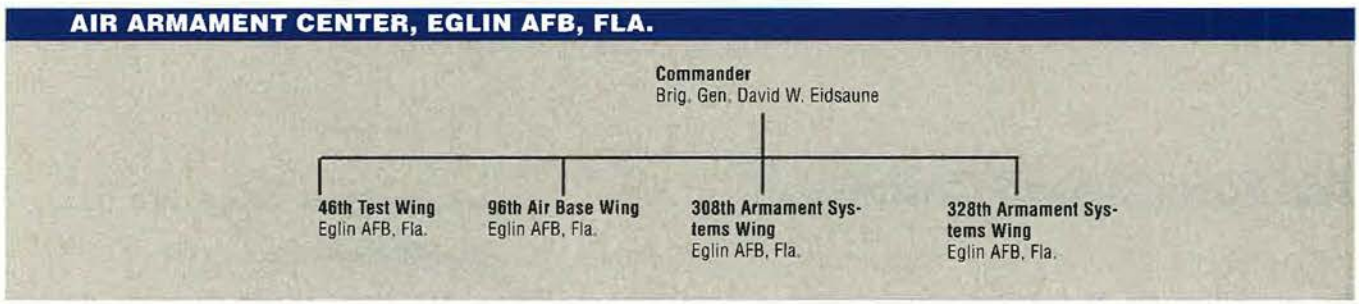
AIR FORCE MATERIEL COMMAND, WRIGHT-PATTERSON AFB, OHIO



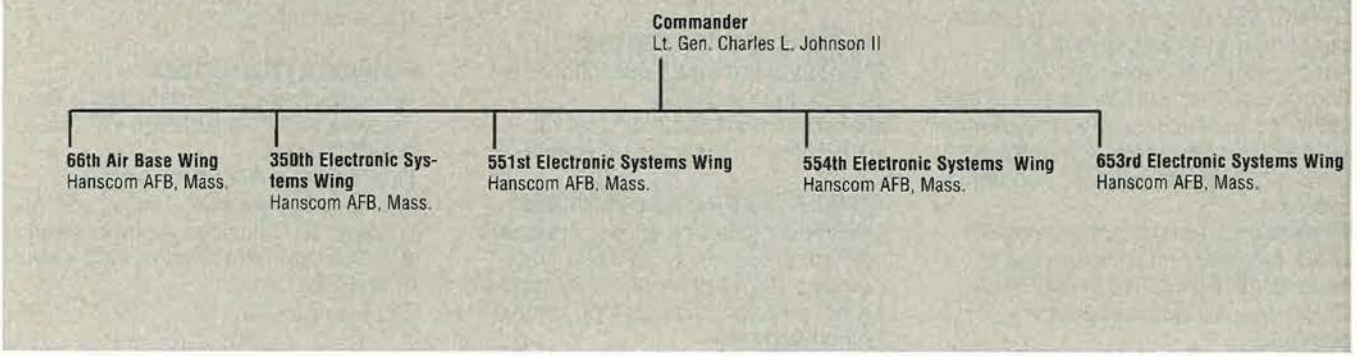
AERONAUTICAL SYSTEMS CENTER, WRIGHT-PATTERSON AFB, OHIO



AIR ARMAMENT CENTER, EGLIN AFB, FLA.



ELECTRONIC SYSTEMS CENTER, HANSCOM AFB, MASS.



OGDEN AIR LOGISTICS CENTER, HILL AFB, UTAH

Commander
Maj. Gen. Kevin J. Sullivan

- **75th Air Base Wing** — Hill AFB, Utah
- **84th Combat Sustainment Wing** — Hill AFB, Utah
- **309th Maintenance Wing** — Hill AFB, Utah
- **508th Aircraft Sustainment Wing** — Hill AFB, Utah
- **526th ICBM Systems Wing** — Hill AFB, Utah

OKLAHOMA CITY AIR LOGISTICS CENTER, TINKER AFB, OKLA.

Director
Robert J. Conner

- **72nd Air Base Wing** — Tinker AFB, Okla.
- **76th Maintenance Wing** — Tinker AFB, Okla.
- **327th Aircraft Sustainment Wing** — Tinker AFB, Okla.
- **448th Combat Sustainment Wing** — Tinker AFB, Okla.

WARNER ROBINS AIR LOGISTICS CENTER, ROBINS AFB, GA.

Commander
Maj. Gen. Thomas J. Owen

- **78th Air Base Wing** — Robins AFB, Ga.
- **330th Aircraft Sustainment Wing** — Robins AFB, Ga.
- **402nd Maintenance Wing** — Robins AFB, Ga.
- **542nd Combat Sustainment Wing** — Robins AFB, Ga.

AIR FORCE FLIGHT TEST CENTER, EDWARDS AFB, CALIF.

Commander
Maj. Gen. Curtis M. Bedke

- **95th Air Base Wing** — Edwards AFB, Calif.
- **412th Test Wing** — Edwards AFB, Calif.

Air Force Space Command

AFSPC

Headquarters Peterson AFB, Colo.

Established Sept. 1, 1982

Commander Gen. Kevin P. Chilton

MISSIONS

Operate and test ICBM forces for STRATCOM; missile warning radars, sensors, and satellites; national space-launch facilities and operational boosters; worldwide space surveillance radars and optical systems; worldwide space environmental systems; position, navigation, and timing systems

Provide command and control for DOD satellites; missile warning to NORAD/NORTHCOM and STRATCOM; space weather support to entire DOD

Produce and acquire advanced space systems

COROLLARY MISSIONS

Develop and integrate space support for the warfighter

Serve as lead command for all USAF UH-1 helicopter programs

OTHER RESPONSIBILITIES

Provide communications, computer, and base support to NORAD; technology safeguard monitors to support launches of US satellites on foreign launch vehicles

Supply range and launch facilities for military, civil, and commercial space launch

FORCE STRUCTURE

Two numbered air forces: **14th,** Vandenberg AFB, Calif.; **20th,** F.E. Warren AFB, Wyo.

Two major product centers: Space and Missile Systems Center, Los Angeles AFB, Calif.; Space Innovation and Development Center, Schriever AFB, Colo.

Eight wings

PERSONNEL

(as of Sept. 30, 2006)

Active duty		18,345
Officers	5,018	
Enlisted	13,327	
Reserve components		2,042
ANG	663	
AFRC	1,379	
Civilian		6,534
Total		**26,921**

EQUIPMENT

(as of Sept. 30, 2006)

Missile warning systems: DSP satellites, Ballistic Missile Early Warning System, Pave PAWS radars, Perimeter Acquisition Radar Attack Characterization System, Space Based Infrared System, and conventional radars

Helicopters: 18

ICBMs: Minuteman III 500

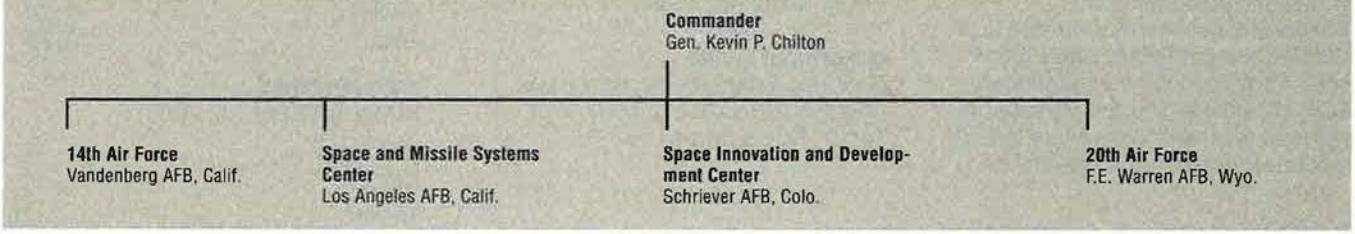
Satellite command and control system: Air Force Satellite Control Network

Satellite systems (as of Jan. 1, 2007):

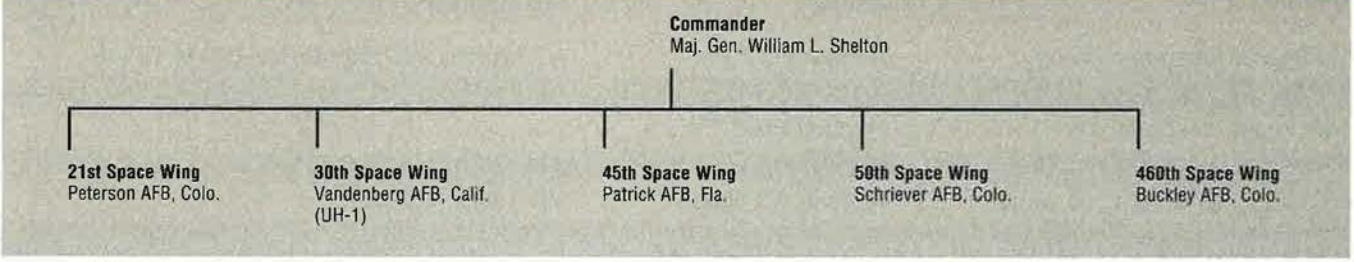
GPS: Block II/IIA/IIR	30
DMSP	2
DSCS III	9
Milstar	5
Interim Polar System	2

Space surveillance systems: Electro-Optical Deep Space Surveillance System and phased-array, mechanical tracking, and passive surveillance radars

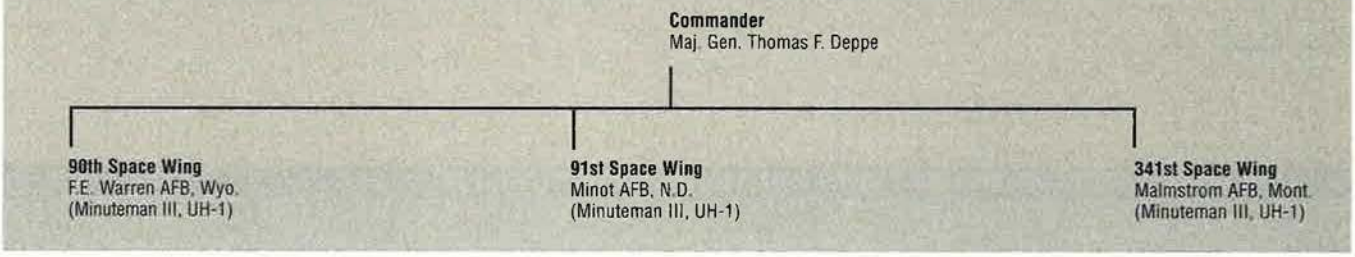
AIR FORCE SPACE COMMAND, PETERSON AFB, COLO.



14th AIR FORCE (AFSPC), VANDENBERG AFB, CALIF.



20th AIR FORCE (AFSPC), F.E. WARREN AFB, WYO.



UNIT	BASE	WEAPONS/FUNCTIONS
21st Space Wing	Peterson AFB, Colo.	Missile warning and space control
30th Space Wing	Vandenberg AFB, Calif.	Launch, range operations, support for space and ICBM test, UH-1
45th Space Wing	Patrick AFB, Fla., and Cape Canaveral AFS, Fla.	Launch, range operations, support for shuttle program, and US Navy Trident test
50th Space Wing	Schriever AFB, Colo.	Satellite command and control
90th Space Wing	F.E. Warren AFB, Wyo.	Minuteman III ICBM, UH-1
91st Space Wing	Minot AFB, N.D.	Minuteman III ICBM, UH-1
341st Space Wing	Malmstrom AFB, Mont.	Minuteman III ICBM, UH-1
460th Space Wing	Buckley AFB, Colo.	Missile warning and global surveillance
Space & Missile Systems Center	Los Angeles AFB, Calif.	R&D, purchase of military space systems
Space Innovation & Development Center	Schriever AFB, Colo.	Testing, training, tactics development

Air Force Special Operations Command

AFSOC

Headquarters Hurlburt Field, Fla.

Established May 22, 1990

Commander Lt. Gen. Michael W. Wooley

MISSIONS

Serve as America's specialized airpower, providing combat search and rescue and delivering special operations power anytime, anywhere

Provide Air Force special operations and CSAR forces for worldwide deployment and assignment to regional unified commands

Tasked for seven mission areas: shaping the battlefield; information operations; precision engagement; SOF mobility; agile combat support; aerospace interface; and intelligence, reconnaissance, and surveillance

FORCE STRUCTURE

One wing
Three groups
Two squadrons
USAF Special Operations School

OPERATIONAL ACTIVITY

(as of Sept. 30, 2006)
Flying hours: 2,225 per month

Major operations
Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Global War on Terror; Noble Eagle (US)

PERSONNEL

(as of Sept. 30, 2006)

Active duty		9,316
Officers	1,744	
Enlisted	7,572	
Reserve components		2,806
ANG	1,347	
AFRC	1,459	
Civilian		1,139
Total		**13,261**

EQUIPMENT

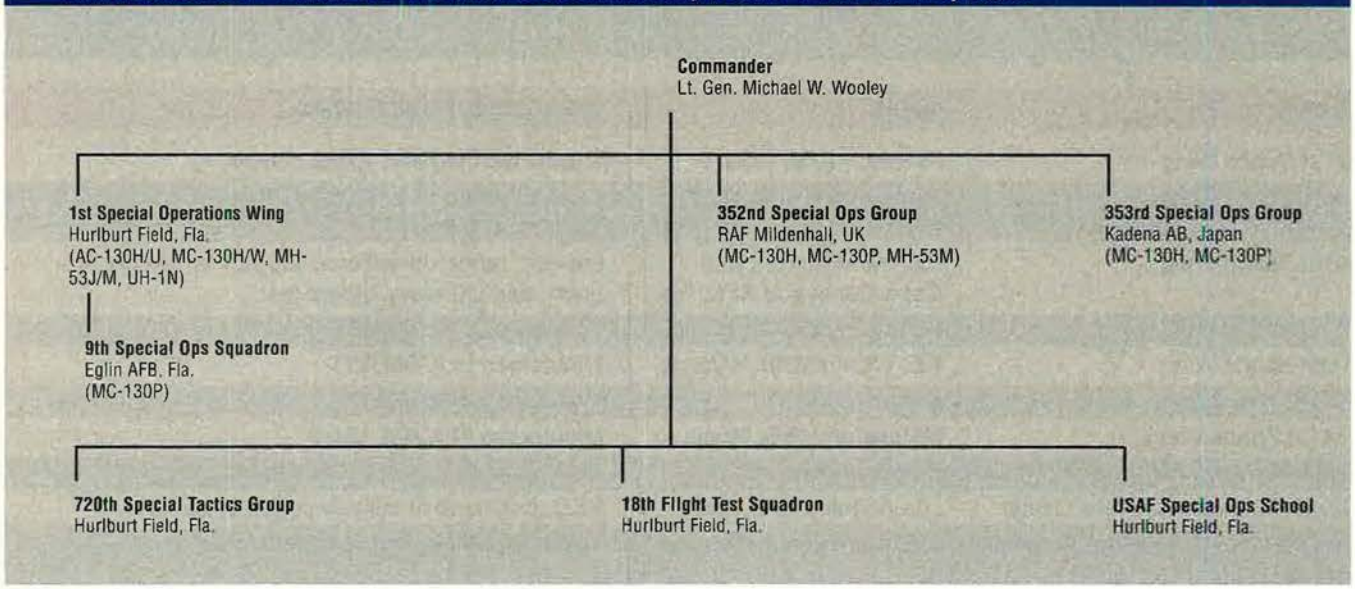
(PAI as of Sept. 30, 2006)

Helicopter	72
SOF	72
Tanker	15

UNIT	BASE	WEAPONS
1st Special Operations Wing	Hurlburt Field, Fla.	AC-130H/U, MC-130H/W, MH-53J/M, UH-1N
9th Special Operations Squadron[a]	Eglin AFB, Fla.	MC-130P
18th Flight Test Squadron	Hurlburt Field, Fla.	
352nd Special Operations Group	RAF Mildenhall, UK	MC-130H, MC-130P, MH-53M
353rd Special Operations Group	Kadena AB, Japan	MC-130H, MC-130P
720th Special Tactics Group	Hurlburt Field, Fla.	
USAF Special Operations School	Hurlburt Field, Fla.	

[a]Part of 1st SOW.

AIR FORCE SPECIAL OPERATIONS COMMAND, HURLBURT FIELD, FLA.



AMC Air Mobility Command

Headquarters Scott AFB, Ill.

Established June 1, 1992

Commander Gen. Duncan J. McNabb

MISSIONS

Provide rapid global mobility and sustainment through tactical and strategic airlift and aerial refueling for US armed forces

COROLLARY MISSIONS

Provide special duty and operational support aircraft and global humanitarian support

Perform peacetime and wartime aeromedical evacuation missions

FORCE STRUCTURE

One numbered air force: **18th,** Scott AFB, Ill.
Two expeditionary mobility task forces: 15th, Travis AFB, Calif.; 21st, McGuire AFB, N.J.
Two DRUs: Air Force Expeditionary Center, Ft. Dix, N.J.; Tanker Airlift Control Center, Scott AFB, Ill.
14 wings
Five groups

OPERATIONAL ACTIVITY

(as of Sept. 30, 2006)
Flying hours: 36,478 per month

Major operations
Earthquake relief; Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US); SOUTHCOM

Major training exercises
Ardent Sentry; Global Thunder; Reception, Staging, Onward Movement, & Integration; Terminal Fury; Ulchi Focus Lens

PERSONNEL

(as of Sept. 30, 2006)

Active duty		46,679
Officers	7,965	
Enlisted	38,714	
Reserve components		84,796
ANG	38,082	
AFRC	46,714	
Civilian		9,086
Total		**140,561**

EQUIPMENT

(PAI as of Sept. 30, 2006)

Helicopter	15
Tanker	157
Transport	280

USAF photo by Judson Brohmer

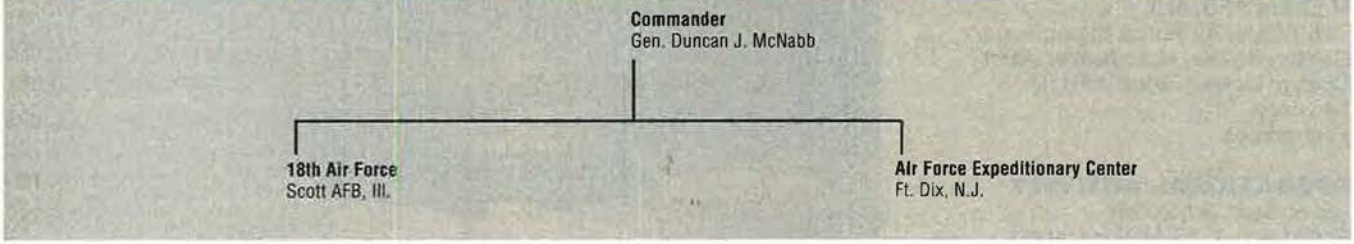
A KC-10 Extender from Travis AFB, Calif., refuels an F-22 Raptor.

USAF photo by Brian Dyjak

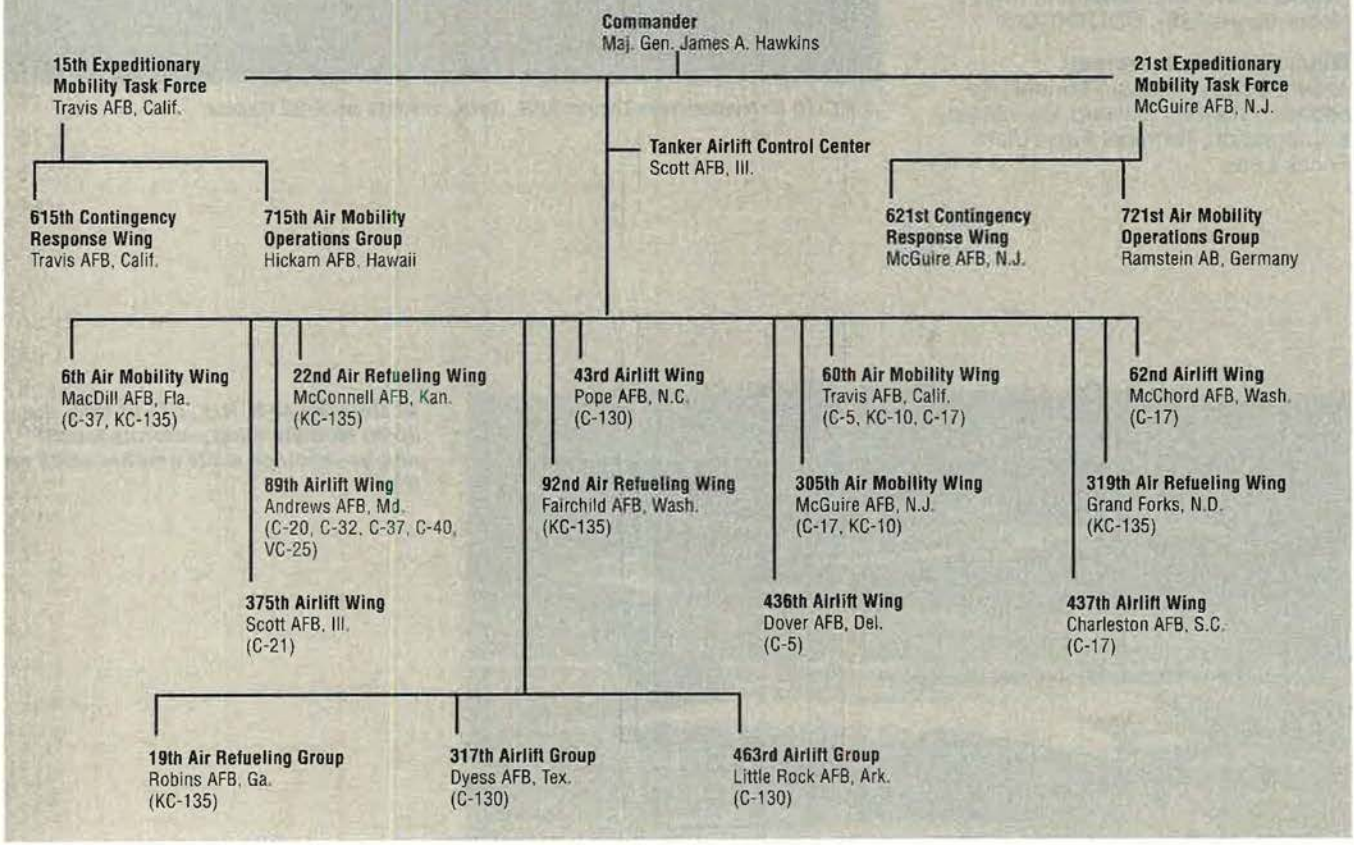
At McGuire AFB, N.J., a C-17 from the 305th Mobility Wing performs touch-and-go landings while another waits on the tarmac.

UNIT	BASE	WEAPONS
6th Air Mobility Wing	MacDill AFB, Fla.	C-37, KC-135
19th Air Refueling Group	Robins AFB, Ga.	KC-135
22nd Air Refueling Wing	McConnell AFB, Kan.	KC-135
43rd Airlift Wing	Pope AFB, N.C.	C-130
60th Air Mobility Wing	Travis AFB, Calif.	C-5, KC-10, C-17
62nd Airlift Wing	McChord AFB, Wash.	C-17
89th Airlift Wing	Andrews AFB, Md.	C-20, C-32, C-37, C-40, VC-25
92nd Air Refueling Wing	Fairchild AFB, Wash.	KC-135
305th Air Mobility Wing	McGuire AFB, N.J.	C-17, KC-10
317th Airlift Group	Dyess AFB, Tex.	C-130
319th Air Refueling Wing	Grand Forks AFB, N.D.	KC-135
375th Airlift Wing	Scott AFB, Ill.	C-21
436th Airlift Wing	Dover AFB, Del.	C-5
437th Airlift Wing	Charleston AFB, S.C.	C-17
463rd Airlift Group	Little Rock AFB, Ark.	C-130
615th Contingency Response Wing	Travis AFB, Calif.	
621st CRW	McGuire AFB, N.J.	
715th Air Mobility Operations Group	Hickam AFB, Hawaii	
721st AMOG	Ramstein AB, Germany	

AIR MOBILITY COMMAND, SCOTT AFB, ILL.



18TH AIR FORCE (AMC), SCOTT AFB, ILL.



PACAF
Pacific Air Forces

Headquarters Hickam AFB, Hawaii

Established July 1, 1957

Commander Gen. Paul V. Hester

MISSIONS
Provide ready air and space power to promote US interests in the Asia-Pacific region during peacetime, crisis, and war

FORCE STRUCTURE
Four numbered air forces: **5th,** Yokota AB, Japan; **7th,** Osan AB, South Korea; **11th,** Elmendorf AFB, Alaska; **13th,** Hickam AFB, Hawaii
Nine wings
One squadron

OPERATIONAL ACTIVITY
(as of Sept. 30, 2006)
Flying hours: 10,027 per month

Major operations
Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq)

Major training exercises
Balikatan; Cobra Gold; Commando Sling; Cope India; Cope North; Cope Thunder; Cope Tiger; Foal Eagle; Geronimo Thrust; Keen Sword; Positive Force; Reception, Staging, Onward Movement, & Integration; Tandem Thrust; Ulchi Focus Lens

USAF photo by MSgt. Richard Freeland

F-16s from the 8th Fighter Wing fly over Kunsan AB, South Korea.

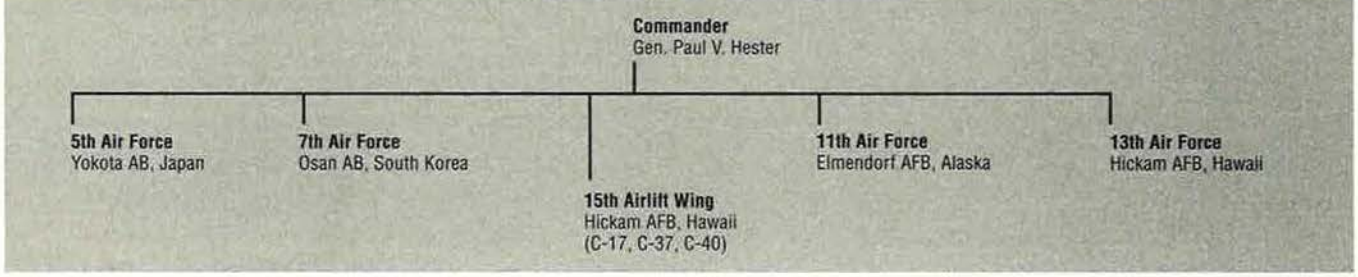
PERSONNEL
(as of Sept. 30, 2006)

Active duty		32,866
Officers	4,319	
Enlisted	28,547	
Reserve components		5,092
ANG	4,422	
AFRC	670	
Civilian		7,930
Total		**45,888**

UNIT	BASE	WEAPONS
3rd Wing	Elmendorf AFB, Alaska	C-12, C-130H, E-3B/C, F-15C/D, F-15E
8th Fighter Wing	Kunsan AB, South Korea	F-16C/D
15th Airlift Wing	Hickam AFB, Hawaii	C-17, C-37, C-40
18th Wing	Kadena AB, Japan	E-3B/C, F-15C/D, KC-135R, HH-60G
35th Fighter Wing	Misawa AB, Japan	F-16C/D
36th Wing	Andersen AFB, Guam	
51st Fighter Wing	Osan AB, South Korea	A/OA-10A, C-12, F-16C/D
354th Fighter Wing	Eielson AFB, Alaska	A/OA-10A, F-16C/D
374th Airlift Wing	Yokota AB, Japan	C-21A, C-130E/H, UH-1N
497th Fighter Training Squadron	Paya Lebar Airfield, Singapore[a]	Rotational fighter aircraft

[a]Base owned by Singapore government.

PACIFIC AIR FORCES, HICKAM AFB, HAWAII



5th AIR FORCE (PACAF), YOKOTA AB, JAPAN

Commander
Lt. Gen. Bruce A. Wright

- **18th Wing**
  Kadena AB, Japan
  (E-3B/C, F-15C/D, KC-135R, HH-60G)
- **35th Fighter Wing**
  Misawa AB, Japan
  (F-16C/D)
- **374th Airlift Wing**
  Yokota AB, Japan
  (C-21A, C-130E/H, UH-1N)

7th AIR FORCE (PACAF), OSAN AB, SOUTH KOREA

Commander
Lt. Gen. Steven G. Wood

- **8th Fighter Wing**
  Kunsan AB, South Korea
  (F-16C/D)
- **51st Fighter Wing**
  Osan AB, South Korea
  (A/OA-10A, C-12, F-16C/D)

11th AIR FORCE (PACAF), ELMENDORF AFB, ALASKA

Commander
Lt. Gen. Douglas M. Fraser

- **3rd Wing**
  Elmendorf AFB, Alaska
  (C-12, C-130H, E-3B/C, F-15C/D, F-15E)
- **354th Fighter Wing**
  Eielson AFB, Alaska
  (A/OA-10A, F-16C/D)

EQUIPMENT

(PAI as of Sept. 30, 2006)

Fighter/Attack	264
Helicopter	11
Recon	4
Tanker	13
Transport	38

USAF photo by MSgt. Robert Wieland

Capt. Jeremy Wimer flies an F-16 as it enters final approach after returning from a Red Flag mission over Eielson AFB, Alaska. Red Flag-Alaska is a Pacific Air Forces-directed field training exercise flown under simulated air combat conditions.

13th AIR FORCE (PACAF), HICKAM AFB, HAWAII

Commander
Lt. Gen. Loyd S. Utterback

- **36th Wing**
  Andersen AFB, Guam
- **497th Fighter Training Squadron**
  Paya Lebar Airfield, Singapore[a]
  (Rotational fighter aircraft)

[a]Base owned by Singapore government.

USAFE
US Air Forces in Europe

Headquarters Ramstein AB, Germany

Established Aug. 7, 1945

Commander Gen. William T. Hobbins

MISSIONS
Provide the joint force commander rapidly deployable expeditionary aerospace forces

COROLLARY MISSIONS
Plan, conduct, coordinate, and support air and space operations to achieve US national and NATO objectives based on EUCOM taskings
Develop and maintain light, lean, lethal, and rapid expeditionary aerospace forces
Establish and maintain expeditionary bases
Support US military plans and operations in Europe, the Mediterranean, the Middle East, and Africa

FORCE STRUCTURE
One numbered air force: **3rd,** Ramstein AB, Germany
10 wings

OPERATIONAL ACTIVITY
(as of Sept. 30, 2006)
Flying hours: 7,515 per month

Major operations
Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Joint Forge (Bosnia); Joint Guardian (Kosovo)

USAF photo by A1C Teresa Pumphrey

A KC-135 Stratotanker from the 100th Air Refueling Wing, RAF Mildenhall, Britain, prepares to refuel an F-15 from the 48th Fighter Wing at RAF Lakenheath, Britain.

Major training exercises
Able Ally; Able Gain; African Eagle; African Lion; Agile Leader; Agile Response; Anatolian Eagle; Atlas Drop; Baltops; Blue Game; Cannon Cloud; Clean Hunter; Combined Endeavor; Cooperative Key; Destined Glory; Dimming Sun; Flintlock; Immediate Response; Juniper Stallion; Medflag; Positive Force; Rescuer/Medceur; Senior Commander Warfighting Seminar; Sentry White Eagle; Union Flash; Victory Strike

US AIR FORCES IN EUROPE, RAMSTEIN AB, GERMANY

Commander
Gen. William T. Hobbins

3rd Air Force
Ramstein AB, Germany

The USAFE organizational chart above shows peacetime lines of command. The chart below shows the NATO wartime command lines.

Allied Command Operations (ACO)

JFC Hq. Naples
Naples, Italy

CC Air Hq. Izmir
Izmir, Turkey

501st CS Wing
RAF Mildenhall, UK

JFC Hq. Brunssum
Brunssum, Netherlands

CC Air Hq. Ramstein
Ramstein AB, Germany

5th Combined Air Operations Center
Vicenza, Italy

6th Combined Air Operations Center
Eskisehir, Turkey

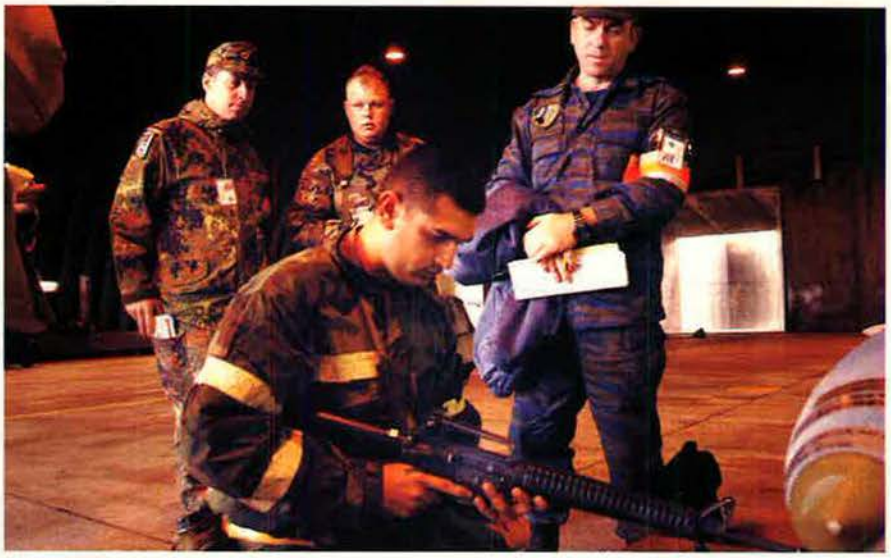
Interim Deployable CAOC
Ramstein AB, Germany

PERSONNEL
(as of Sept. 30, 2006)

Active duty		27,144
Officers	3,532	
Enlisted	23,612	
Reserve components		566
ANG	195	
AFRC	371	
Civilian		5,591
Total		**33,301**

EQUIPMENT
(PAI as of Sept. 30, 2006)

Fighter/Attack	174
Helicopter	4
Tanker	15
Transport	32

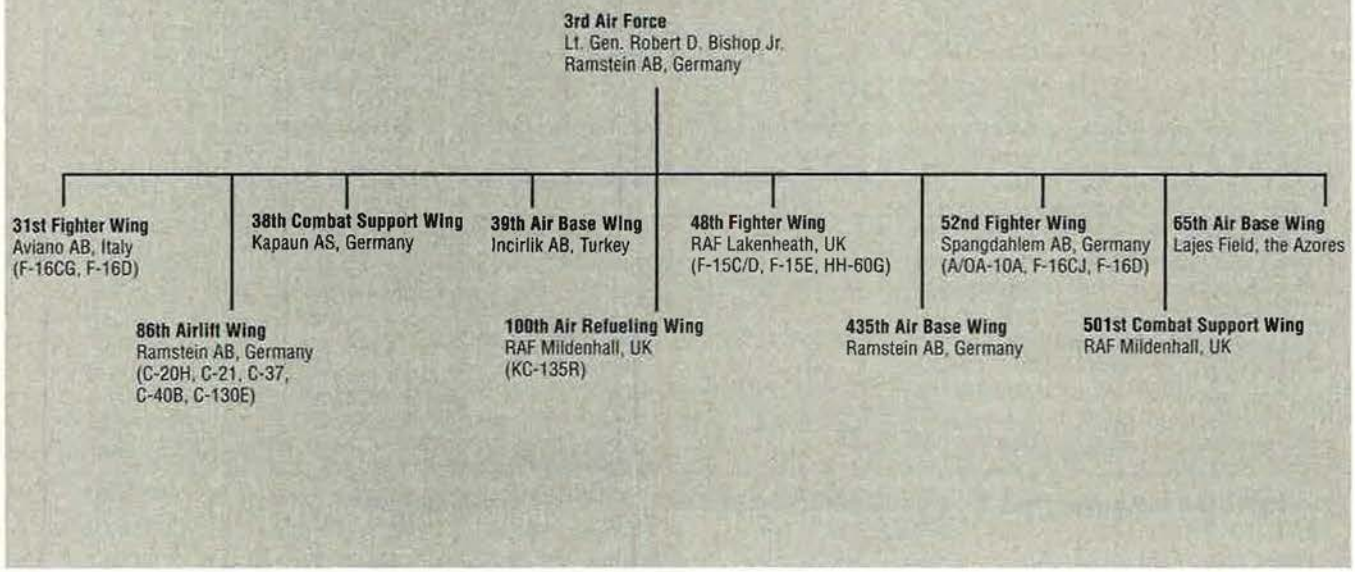


USAF photo by A1C Liliana Moreno

SSgt. Zachery Smith, 31st Aircraft Maintenance Squadron, disassembles and reassembles an M-16 for a NATO evaluator at Aviano AB, Italy.

UNIT	BASE	WEAPONS
31st Fighter Wing	Aviano AB, Italy	F-16CG, F-16D
38th Combat Support Wing	Kapaun AS, Germany	
39th Air Base Wing	Incirlik AB, Turkey	Tactical range and contingency support, rotational aircraft
48th Fighter Wing	RAF Lakenheath, UK	F-15C/D, F-15E, HH-60G
52nd Fighter Wing	Spangdahlem AB, Germany	A/OA-10A, F-16CJ, F-16D
65th Air Base Wing	Lajes Field, the Azores	
86th Airlift Wing	Ramstein AB, Germany	C-20H, C-21, C-37, C-40B, C-130E
100th Air Refueling Wing	RAF Mildenhall, UK	KC-135R
435th Air Base Wing	Ramstein AB, Germany	
501st Combat Support Wing	RAF Mildenhall, UK	

3RD AIR FORCE (USAFE), RAMSTEIN AB, GERMANY



Air Reserve Components

2007 USAF Almanac

The Air Reserve Components for USAF are the Air National Guard and Air Force Reserve Command. Air Force Reserve Command stood up as a major command Feb. 17, 1997. The change in status, authorized by Congress in the Fiscal 1997 National Defense Authorization Act, was based on the experience gained from the Air Force Reserve component mobilization for Operations Desert Shield and Desert Storm.

Air Force Reserve Command

Headquarters Robins AFB, Ga.

Established Feb. 17, 1997

Commander Lt. Gen. John A. Bradley

MISSIONS

Support the active duty force
Serve in such missions as fighter, bomber, airlift, aerial port operations, aerial refueling, rescue, special operations, aeromedical evacuation, aerial fire fighting, weather reconnaissance, space operations, airborne air control, flying training, flight testing, and aerial spraying
Provide support and disaster relief in the US
Support national counterdrug efforts
Handle administration of USAF's individual mobilization augmentees

FORCE STRUCTURE

Air Force Reserve Recruiting Service
Air Reserve Personnel Center, Denver
Three numbered air forces: **4th,** March ARB, Calif.; **10th,** NAS JRB Fort Worth, Tex.; **22nd,** Dobbins ARB, Ga.
35 wings
Five groups

USAF photo by MSgt. Scott Reed

Patients are boarded on a C-17 Globemaster III from March ARB, Calif.

OPERATIONAL ACTIVITY

Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US)

PERSONNEL

(as of Sept. 30, 2006)

Total (selected reserve)		*74,075
Officers	16,678	
Enlisted	57,397	
Civilian		4,328
Total		**78,403**

*Numbers for AFRC personnel assigned to Majcoms, FOAs, and DRUs are included here.

EQUIPMENT

(PAI as of Sept. 30, 2006)

Bomber	8
Fighter/Attack	105
Helicopter	13
Recon/BM/C3I	10
SOF	12
Tanker	69
Transport	133

AIR FORCE RESERVE COMMAND, ROBINS AFB, GA.

Commander
Lt. Gen. John A. Bradley

- **4th Air Force**
  March ARB, Calif.
- **10th Air Force**
  NAS JRB Fort Worth, Tex.
- **22nd Air Force**
  Dobbins ARB, Ga.
- **AFRC Recruiting Service**
  Col. Francis M. Mungavin
  Robins AFB, Ga.
- **Air Reserve Personnel Center**
  Col. Ann C. Shippy
  Denver

4th AIR FORCE (AMC), MARCH ARB, CALIF.

Commander
Maj. Gen. Robert E. Duignan

- **349th Air Mobility Wing**
  Travis AFB, Calif.
  (C-5A/B, C-17, KC-10[a])
- **452nd Air Mobility Wing**
  March ARB, Calif.
  (C-17, KC-135R)
- **932nd Airlift Wing**
  Scott AFB, Ill.
  (C-9A, C-40)
- **433rd Airlift Wing**
  Lackland AFB, Tex.
  (C-5A)
- **459th Air Refueling Wing**
  Andrews AFB, Md.
  (KC-135R)
- **939th Air Refueling Wing**
  Portland Arpt., Ore.
- **434th Air Refueling Wing**
  Grissom ARB, Ind.
  (KC-135R)
- **507th Air Refueling Wing**
  Tinker AFB, Okla.
  (KC-135R)
- **940th Air Refueling Wing**
  Beale AFB, Calif.
  (KC-135E/R)
- **445th Airlift Wing**
  Wright-Patterson AFB, Ohio (C-5A)
- **916th Air Refueling Wing**
  Seymour Johnson AFB, N.C.
  (KC-135R)
- **931st Air Refueling Group**
  McConnell AFB, Kan.
  (KC-135R[a])
- **446th Airlift Wing**
  McChord AFB, Wash.
  (C-17A[a])
- **927th Air Refueling Wing**
  Selfridge ANGB, Mich.
  (KC-135R)

10th AIR FORCE (ACC), NAS JRB FORT WORTH, TEX.

Commander
Maj. Gen. Richard C. Collins

- **301st Fighter Wing**
  NAS JRB Fort Worth, Tex.
  (F-16C/D)
- **919th Special Ops Wing**
  Duke Field, Fla.
  (MC-130E[b]/P[a])
- **310th Space Group**
  Schriever AFB, Colo.
- **419th Fighter Wing**
  Hill AFB, Utah
  (F-16C/D[a])
- **920th Rescue Wing**
  Patrick AFB, Fla.
  (HC-130P/N, HH-60G)
- **340th Flying Training Group**
  Randolph AFB, Tex.
  (AT/T-38, T-1, T-37, T-38)[a]
- **442nd Fighter Wing**
  Whiteman AFB, Mo.
  (A/OA-10A)
- **513th Air Control Group**
  Tinker AFB, Okla.
  (E-3[a])
- **482nd Fighter Wing**
  Homestead ARB, Fla.
  (F-16C/D)
- **944th Fighter Wing**
  Luke AFB, Ariz.
  (F-16C/D)[c]
- **943rd Rescue Group**
  Davis-Monthan AFB, Ariz.
  (HH-60G)
- **917th Wing**
  Barksdale AFB, La.
  (B-52H, A/OA-10A)
- **307th Fighter Squadron**
  Langley AFB, Va.
  (A-10, F-15, F-16C/D)[a]

22nd AIR FORCE (AMC), DOBBINS ARB, GA.

Commander
Maj. Gen. Martin M. Mazick

- **94th Airlift Wing**
  Dobbins ARB, Ga.
  (C-130H)
- **440th Airlift Wing**
  General Mitchell Arpt./ ARS, Wis. (C-130H)
- **911th Airlift Wing**
  Pittsburgh Arpt./ARS
  (C-130H)
- **302nd Airlift Wing**
  Peterson AFB, Colo.
  (C-130H)
- **512th Airlift Wing**
  Dover AFB, Del.
  (C-5A/B[a])
- **913th Airlift Wing**
  Willow Grove ARS, Pa.
  (C-130E)
- **315th Airlift Wing**
  Charleston AFB, S.C.
  (C-17[a])
- **514th Air Mobility Wing**
  McGuire AFB, N.J.
  (C-17, KC-10A)[a]
- **914th Airlift Wing**
  Niagara Falls Arpt./ARS, N.Y.
  (C-130H)
- **403rd Wing**
  Keesler AFB, Miss.
  (C-130J, WC-130H/J)
- **908th Airlift Wing**
  Maxwell AFB, Ala.
  (C-130H)
- **934th Airlift Wing**
  Minneapolis-St. Paul Arpt./ ARS, Minn. (C-130H)
- **439th Airlift Wing**
  Westover ARB, Mass.
  (C-5A)
- **910th Airlift Wing**
  Youngstown-Warren Arpt./ARS, Ohio (C-130H)

[a]Associate aircraft.
[b]Active-associate (owned by AFRC, flown by active).
[c]AFRC-owned and associate aircraft.

ANGB	Air National Guard Base
ARB	Air Reserve Base
Arpt.	Airport
ARS	Air Reserve Station
JRB	Joint Reserve Base
NAS	Naval Air Station

Air National Guard

Headquarters Washington, D.C.

Established Sept. 18, 1947

Director Lt. Gen. Craig R. McKinley

MISSONS

Provide combat capability to the warfighter and security for the homeland
Provide ready units to support national security objectives
Protect life and property and preserve peace, order, and public safety

FORCE STRUCTURE

One numbered air force: **1st,** Tyndall AFB, Fla.
87 wings
Two squadrons

OPERATIONAL ACTIVITY

Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US)

PERSONNEL

(as of Sept. 30, 2006)

Total ANG military*		105,660
Officers	13,785	
Enlisted	91,875	
Civilian		1,125
Total		**106,785**

*Includes ANG personnel assigned to MAJCOMS, FOAs, and DRUs.

EQUIPMENT

(PAI as of Sept. 30, 2006)

Fighter/Attack	631
Helicopter	15
Recon/BM/C3I	16
SOF	4
Tanker	196
Transport	217

USAF photo by TSgt. Erik Gudmundson

USAF photo by Joe Piccorossi

A C-130 from the Minnesota ANG's 133rd Airlift Wing returns from a deployment to Afghanistan. Below is an F-15 from the Florida ANG's 125th Fighter Wing, based at Jacksonville Arpt., Fla.

1st AIR FORCE (ACC), TYNDALL AFB, FLA.

Commander
Maj. Gen. M. Scott Mayes

- **Southeast Air Defense Sector (ANG)** Tyndall AFB, Fla.
- **Northeast Air Defense Sector (ANG)** Rome, N.Y.
- **Western Air Defense Sector (ANG)** McChord AFB, Wash.

The Air National Guard by Major Command Assignment

(As of April 1, 2007)

Air Combat Command

A/OA-10A	
103rd Fighter Wing	Bradley Arpt., Conn.
104th Fighter Wing	Barnes Arpt., Mass.
110th Fighter Wing	W.K. Kellogg Arpt., Mich.
111th Fighter Wing	Willow Grove ARS, Pa.
124th Wing[a]	Boise Air Terminal, Idaho
175th Wing[a]	Martin State Arpt., Md.
C-130	
156th Airlift Wing	Luis Munoz Marin Arpt., Puerto Rico
E-8C	
116th Air Control Wing[b]	Robins AFB, Ga.
F-15	
131st Fighter Wing	Lambert-St. Louis Arpt., Mo.
159th Fighter Wing	NAS JRB New Orleans, La.
F-15—air defense	
102nd Fighter Wing	Otis ANGB, Mass.
125th Fighter Wing	Jacksonville Arpt., Fla.
142nd Fighter Wing	Portland Arpt., Ore.
F-16	
113th Wing	Andrews AFB, Md.
114th Fighter Wing	Joe Foss Field, S.D.
115th Fighter Wing	Truax Field, Wis.
120th Fighter Wing	Great Falls Arpt., Mont.
122nd Fighter Wing	Fort Wayne Arpt., Ind.
127th Wing[a]	Selfridge ANGB, Mich.
132nd Fighter Wing	Des Moines Arpt., Iowa
138th Fighter Wing	Tulsa Arpt., Okla.
140th Wing	Buckley AFB, Colo.
147th Fighter Wing	Ellington Field, Tex.
148th Fighter Wing	Duluth Arpt., Minn.
150th Fighter Wing	Kirtland AFB, N.M.
158th Fighter Wing	Burlington Arpt., Vt.
169th Fighter Wing	McEntire ANGS, S.C.
174th Fighter Wing	Hancock Field, N.Y.
177th Fighter Wing	Atlantic City Arpt., N.J.
180th Fighter Wing	Toledo Express Arpt., Ohio
181st Fighter Wing	Hulman Arpt., Ind.
183rd Fighter Wing	Abraham Lincoln Capital Arpt., Ill.
187th Fighter Wing	Montgomery Regional Arpt., Ala.
188th Fighter Wing	Fort Smith Arpt., Ark.
192nd Fighter Wing	Richmond Arpt., Va.
F-16—air defense	
144th Fighter Wing	Fresno Yosemite Arpt., Calif.

Air Education and Training Command

F-15	
173rd Fighter Wing	Klamath Falls Arpt., Ore.
F-16	
149th Fighter Wing	Kelly Field, Tex.
162nd Fighter Wing	Tucson Arpt., Ariz.
178th Fighter Wing	Springfield-Beckley Arpt., Ohio
C-130 (training)	
189th Airlift Wing	Little Rock AFB, Ark.

Air Force Space Command

137th Space Warning Sq.	Greeley ANGB, Colo.
148th Space Ops Sq.	Vandenberg AFB, Calif.

Air Force Special Operations Command

EC-130E	
193rd Special Ops Wing	Harrisburg Arpt., Pa.
HC-130/HH-60	
106th Rescue Wing	Francis S. Gabreski Arpt., N.Y.
MC-130/HH-60	
129th Rescue Wing	Moffett Field, Calif.

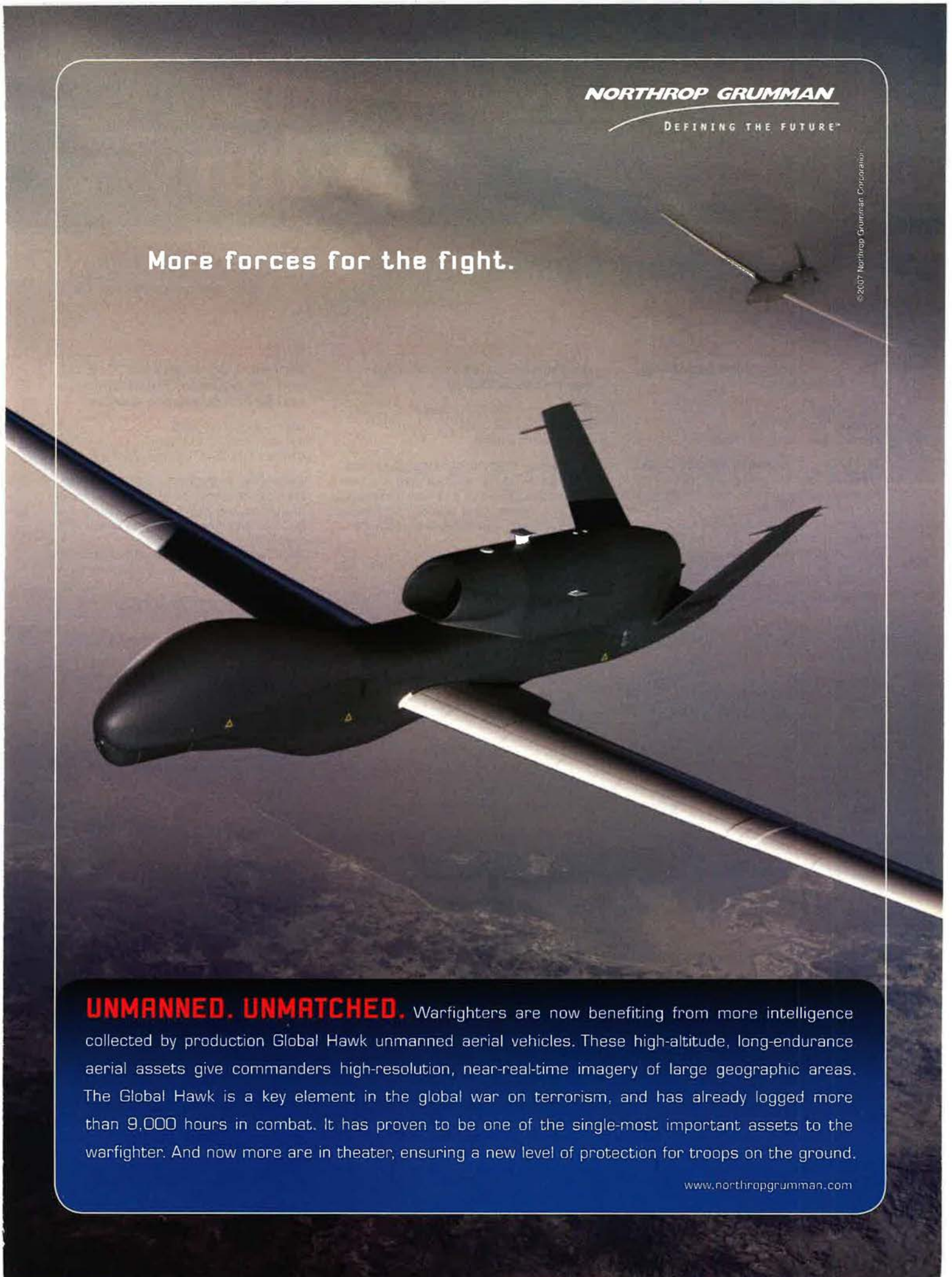
Air Mobility Command

C-5A	
105th Airlift Wing	Stewart ANGB, N.Y.
164th Airlift Wing	Memphis Arpt., Tenn.
C-17	
172nd Airlift Wing	Allen C. Thompson Field, Miss.
C-130	
109th Airlift Wing	Schenectady County Arpt., N.Y.
118th Airlift Wing	Nashville Arpt., Tenn.
123rd Airlift Wing	Louisville Arpt./AGS, Ky.
130th Airlift Wing	Yeager Arpt., W.Va.
133rd Airlift Wing	Minneapolis-St. Paul Arpt./ARS, Minn.
136th Airlift Wing	NAS JRB Fort Worth, Tex.
137th Airlift Wing	Will Rogers World Arpt., Okla.
139th Airlift Wing	Rosecrans Memorial Arpt., Mo.
143rd Airlift Wing	Quonset State Arpt., R.I.
145th Airlift Wing	Charlotte/Douglas Arpt., N.C.
146th Airlift Wing	Channel Islands ANGS, Calif.
152nd Airlift Wing	Reno/Tahoe Arpt., Nev.
153rd Airlift Wing	Cheyenne Arpt., Wyo.
165th Airlift Wing	Savannah Hilton Head Arpt., Ga.
166th Airlift Wing	New Castle County Arpt., Del.
167th Airlift Wing	Eastern West Virginia Arpt., W.Va.
179th Airlift Wing	Mansfield Lahm Arpt., Ohio
182nd Airlift Wing	Greater Peoria Arpt., Ill.
KC-135	
101st Air Refueling Wing	Bangor Arpt., Maine
107th Air Refueling Wing	Niagara Falls Arpt./ARS, N.Y.
108th Air Refueling Wing	McGuire AFB, N.J.
117th Air Refueling Wing	Birmingham Arpt., Ala.
121st Air Refueling Wing	Rickenbacker ANGB, Ohio
126th Air Refueling Wing	Scott AFB, Ill.
128th Air Refueling Wing	General Mitchell Arpt./ARS, Wis.
134th Air Refueling Wing	McGhee Tyson Arpt., Tenn.
141st Air Refueling Wing	Fairchild AFB, Wash.
151st Air Refueling Wing	Salt Lake City Arpt.
155th Air Refueling Wing	Lincoln Arpt., Neb.
157th Air Refueling Wing	Pease Intl. Tradeport ANGS, N.H.
161st Air Refueling Wing	Sky Harbor Arpt., Ariz.
163rd Air Refueling Wing	March ARB, Calif.
171st Air Refueling Wing	Pittsburgh Arpt./ARS
184th Air Refueling Wing	McConnell AFB, Kan.
185th Air Refueling Wing	Sioux Gateway Arpt./Col. Bud Day Field, Iowa
186th Air Refueling Wing	Key Field, Miss.
190th Air Refueling Wing	Forbes Field, Kan.

Pacific Air Forces

C-17	
154th Wing (assoc.)	Hickam AFB, Hawaii
C-130	
154th Wing (204th Airlift Sq.)	Hickam AFB, Hawaii
176th Wing[c]	Kulis ANGB, Alaska
F-15	
154th Wing[d] (199th FS)	Hickam AFB, Hawaii
HC-130/HH-60	
176th Wing (210th RQS)	Kulis ANGB, Alaska
KC-135	
154th Wing (203rd ARS)	Hickam AFB, Hawaii
168th Air Refueling Wing	Eielson AFB, Alaska

[a] Also flies C-130s.
[b] Blended wing with active duty and ANG personnel.
[c] Includes 210th Rescue Squadron with HC-130 and HH-60G aircraft.
[d] Includes 203rd Air Refueling Squadron with KC-135 aircraft.


NORTHROP GRUMMAN
DEFINING THE FUTURE™
©2007 Northrop Grumman Corporation
More forces for the fight.
UNMANNED. UNMATCHED. Warfighters are now benefiting from more intelligence collected by production Global Hawk unmanned aerial vehicles. These high-altitude, long-endurance aerial assets give commanders high-resolution, near-real-time imagery of large geographic areas. The Global Hawk is a key element in the global war on terrorism, and has already logged more than 9,000 hours in combat. It has proven to be one of the single-most important assets to the warfighter. And now more are in theater, ensuring a new level of protection for troops on the ground.
www.northropgrumman.com

FOAs, DRUs, and Auxiliary

2007 USAF Almanac

Field Operating Agencies

A field operating agency (FOA) is a subdivision of the Air Force that carries out field activities under the operational control of an Hq. USAF functional manager. FOAs have the same administrative and organizational responsibilities as major commands.

Air Force Agency for Modeling and Simulation

Hq.: Orlando, Fla.
Estab.: June 3, 1996
Cmdr.: Col. Louis W. Olinto

MISSION, PURPOSE, OPERATIONS

Responsible for supporting development and use of the realistic global battlespace for training, acquisition, analysis, test and evaluation, and operations

Implement Air Force, joint, and DOD modeling and simulation (M&S) policies and standards

Manage, coordinate, and integrate major USAF and joint M&S programs and initiatives

Support corporate USAF M&S operations while promoting and supporting technology improvements

STRUCTURE

Three divisions in Orlando, Fla.
C4ISR Visualization Center, Pentagon

PERSONNEL

Active duty		16
Officers	13	
Enlisted	3	
Civilians		15
Total		**31**

Air Force Audit Agency

Hq.: Washington, D.C.
Estab.: July 1, 1948
Dir.: Robert E. Dawes

MISSION, PURPOSE, OPERATIONS

Provide all levels of Air Force management with independent and quality internal audit service

Produce audit products that evaluate the efficiency, effectiveness, and economy of Air Force programs and activities

STRUCTURE

Four directorates at Arlington, Va., Brooks City-Base, Tex., March ARB, Calif., and Wright-Patterson AFB, Ohio
Three regional offices
16 field offices

PERSONNEL

Civilians	760

The director of AFAA is the USAF auditor general.

Air Force Center for Environmental Excellence

Hq.: Brooks City-Base, Tex.
Estab.: July 23, 1991
Dir.: Paul A. Parker

MISSION, PURPOSE, OPERATIONS

Provide Air Force leaders with the comprehensive expertise to protect, preserve, restore, develop, and sustain the nation's environmental and installation resources

STRUCTURE

10 directorates at Brooks City-Base with regional environmental offices in Atlanta, Dallas, and San Francisco

PERSONNEL

Active duty		31
Officers	29	
Enlisted	2	
Reserve components		17
ANG	0	
AFRC	17	
Civilians		375
Total		**423**

Air Force Civil Engineer Support Agency

Hq.: Tyndall AFB, Fla.
Estab.: Aug. 1, 1991
Cmdr.: Col. Gus G. Elliott Jr.

MISSION, PURPOSE, OPERATIONS

Provide the best tools, practices, and professional support to maximize Air Force civil engineer capabilities in base and contingency operations

STRUCTURE

Six directorates

PERSONNEL

Active duty		95
Officers	18	
Enlisted	77	
Reserve components		26
ANG	0	
AFRC	26	
Civilians		117
Total		**238**

Air Force Command and Control and Intelligence, Surveillance, and Reconnaissance Center

Hq.: Langley AFB, Va.
Estab.: Aug. 1, 1997
Cmdr.: Maj. Gen. Kevin J. Kennedy

MISSION, PURPOSE, OPERATIONS

Develop the science of control to enable the art of command by influencing, integrating, and improving Air Force C4ISR capabilities

Represent all major commands and provide operational warfighter perspective to Air Force C4ISR spiral development and system acquisition commands and processes

Deliver interoperability and combat capability to the joint warfighter

STRUCTURE

One major field unit
11 subordinate organizations

PERSONNEL

Active duty		226
Officers	160	
Enlisted	66	
Reserve Components		18
ANG	0	
AFRC	18	
Civilians		66
Total		**310**

USAF photo by SrA. Ricky Bost

Maj. Sean Godfrey tests his oxygen mask before an E-8C Joint STARS mission over Iraq.

Air Force Communications Agency

Hq.: Scott AFB, Ill.
Estab.: June 13, 1996
Cmdr.: Col. Robert J. Steele

MISSION, PURPOSE, OPERATIONS

Provide C4ISR capabilities to the warfighter through architecture and lead command management of the Air Force ground, air, and space network—the ConstellationNet
Direct integration of systems into the network, assuring decision superiority; drive innovative information technology solutions for Air Force warfighters by generating progressive standards, architectures, and force structure policies and guidance
Deploy engineering and network operations strike teams worldwide for assured Air Force network combat power

STRUCTURE

Five functional areas

PERSONNEL

Active duty		203
Officers	101	
Enlisted	102	
Reserve Components		7
ANG	0	
AFRC	7	
Civilians		319
Total		**529**

Air Force Cost Analysis Agency

Hq.: Arlington, Va.
Estab.: Aug. 1, 1992
Exec. Dir.: Richard K. Hartley

MISSION, PURPOSE, OPERATIONS

Develop independent life-cycle cost estimates of major weapon and information systems; estimates and cost factors for modernization planning, long-range planning, divestiture, and flying hour program; cost-estimation tools, techniques, methodologies, and databases
Conduct special cost reviews for the Air Force Secretariat and for other organizations as directed
Research emerging changes in technologies, acquisition priorities, and industry

STRUCTURE

Five divisions
7 operating locations

PERSONNEL

Active duty		23
Officers	20	
Enlisted	3	
Civilians		40
Total		**63**

Air Force Flight Standards Agency

Hq.: Oklahoma City, Okla.
Estab.: Oct. 1, 1991
Cmdr.: Col. Christopher S. Ceplecha

MISSION, PURPOSE, OPERATIONS

Develop, standardize, evaluate, and certify USAF policy, procedures, and equipment for flight operations and centrally manage USAF air traffic control and landing systems
Represent USAF in FAA airspace management and ATC issues and DOD in international airspace and ATC issues
Provide procedures for ATC, airfield, operational evaluation of ATC systems, airspace management, and terminal instrument procedures

STRUCTURE

Three directorates

PERSONNEL

Active duty		107
Officers	56	
Enlisted	51	
Reserve components		3
ANG	0	
AFRC	3	
Civilians		26
Total		**136**

Air Force Frequency Management Agency

Hq.: Alexandria, Va.
Estab.: Oct. 1, 1991
Cmdr.: Col. Gary W. Klabunde

MISSION, PURPOSE, OPERATIONS

Plan, provide, and preserve access to the electromagnetic spectrum for Air Force and selected DOD activities in support of national policy objectives, systems development, and global operations
Develop and implement spectrum guidelines and instructions to support the Air Force mission
Coordinate actions to resolve spectrum interference incidents involving DOD, private sector, federal, and international users; formulate and articulate US positions at World Radio Conference
Coordinate orbital locations and spectrum needs for DOD satellites at the international level
Provide functional management for the spectrum management career field

STRUCTURE

Two directorates
Technical director

PERSONNEL

Active duty		9
Officers	3	
Enlisted	6	
Civilians		19
Total		**28**

Air Force Historical Research Agency

Hq.: Maxwell AFB, Ala.
Estab.: May 25, 1979
Dir.: Charles F. O'Connell Jr.

MISSION, PURPOSE, OPERATIONS

Collect, preserve, and manage historical document collection and oral history program
Research, write, and publish books and other studies on USAF history
Provide historical support to USAF, DOD, other government agencies, and the public
Record and disseminate USAF history, including the role of airpower in national security
Operate research facilities and automated historical data system
Determine the lineage and honors of USAF units; maintain official emblem records
Verify Air Force aerial victory credits

STRUCTURE

Three divisions

PERSONNEL

Active duty		1
Officers	0	
Enlisted	1	
Civilians		39
Total		**40**

Air Force Inspection Agency

Hq.: Kirtland AFB, N.M.
Estab.: Aug. 1, 1991
Cmdr.: Col. Thomas F. Berardinelli

MISSION, PURPOSE, OPERATIONS

Provide independent and timely assessments of acquisition, nuclear surety, operations, logistics, support, and health care to SECAF, CSAF, SAF/IG, and commanders of major commands
Serve as primary action arm of SECAF inspection system
Identify critical deficiencies and recommend improvements for accomplishing peacetime/wartime missions; evaluate USAF activities and policies
Provide by-law and compliance oversight of all USAF-level FOAs and DRUs
Publish *TIG Brief* magazine

STRUCTURE

Four directorates

PERSONNEL

Active duty		97
Officers	76	
Enlisted	21	
Reserve components		3
ANG	0	
AFRC	3	
Civilians		27
Total		**127**

Air Force Legal Operations Agency

Hq.: Bolling AFB, D.C.
Estab.: March 2, 2006
Cmdr.: Brig. Gen. Richard C. Harding

MISSION, PURPOSE, OPERATIONS

Administer Air Force's civil litigation and military justice programs and provide legal research technology to all Air Force Judge Advocate Corps members
Advise in military justice and civil law matters encompassing courts-martial, environmental, acquisition, claims, litigation, employment and patent actions, and legal assistance
Command the Air Force Judge Advocate General's School, which is the hub of legal training for Air Force counsel, paralegals, and support staff
Support the Department of Justice with regard to all phases of litigation, civil or criminal, pertaining to the Air Force, and share training responsibilities for Air Force and other DOD attorneys and paralegals

STRUCTURE

Four directorates

PERSONNEL

Active duty		389
Officers	260	
Enlisted	129	

Reserve Components		97
ANG	0	
AFRC	97	
Civilians		99
Total		**585**

Air Force Logistics Management Agency

Hq.: Maxwell AFB, Gunter Annex, Ala.
Estab.: Sept. 30, 1975
Cmdr.: Col. Karen W. Currie

MISSION, PURPOSE, OPERATIONS

Develop, analyze, test, evaluate, and recommend new or improved concepts, methods, systems, policies, and procedures to enhance logistics efficiency and effectiveness
Publish the *Air Force Journal of Logistics*

STRUCTURE

Six divisions

PERSONNEL

Active duty		63
Officers	32	
Enlisted	31	
Civilians		18
Total		**81**

Air Force Manpower Agency

Hq.: Randolph AFB, Tex.
Estab.: November 1975
Cmdr.: Col. Kenneth Keskel

MISSION, PURPOSE, OPERATIONS

Provide Air Force leaders with the tools to identify essential manpower required to support Air Force concepts of operations
Determine manpower requirements
Develop programming factors
Manage Air Force performance management programs
Assist with execution of competitive sourcing initiatives
Conduct special studies

STRUCTURE

Five squadrons at Randolph AFB, Tex., NASA-Langley Research Center, Va., Scott AFB, Ill., Denver, and Tinker AFB, Okla.
Five divisions
Operating location at Pentagon

PERSONNEL

Active duty		161
Officers	36	
Enlisted	125	
Civilians		191
Total		**352**

Air Force Medical Operations Agency

Hq.: Pentagon
Estab.: July 1, 1992
Cmdr.: Col. Lawrence M. Riddles

MISSION, PURPOSE, OPERATIONS

Support the Air Force assistant surgeon general, health care operations, and the Air Force surgeon general in the planning and execution of operational policies
Coordinate and track worldwide Air Force Medical Service expeditionary operations working with the services, unified commands, and Joint Staff
Create and operate statistical tools to collect and analyze data to shape the delivery of health care
Directly support health care professionals at military treatment facilities and special duty assignments worldwide

STRUCTURE

Two divisions
Two offices

PERSONNEL

Active duty		19
Officers	16	
Enlisted	3	
Reserve Components		9
ANG	0	
AFRC	9	
Civilians		8
Total		**36**

Air Force Medical Support Agency

Hq.: Bolling AFB, D.C.
Estab.: July 1, 1978
Cmdr.: Col. Alton Powell

MISSION, PURPOSE, OPERATIONS

Oversee execution of Air Force surgeon general policies and programs in support of USAF global capability and national security strategies
Provide expert consultative leadership for entire Air Force Medical Service

STRUCTURE

Six directorates
28 divisions
11 geographically separated units

PERSONNEL

Active duty		236
Officers	176	
Enlisted	60	
Reserve Components		11
ANG	0	
AFRC	11	
Civilians		117
Total		**364**

Air Force National Security Emergency Preparedness Agency

Hq.: Arlington, Va.
Estab.: Sept. 1, 1988
Cmdr.: Col. Gary A. Brand

MISSION, PURPOSE, OPERATIONS

Facilitate Air Force support to civil authorities for natural or man-made disasters/emergencies

STRUCTURE

Two divisions
Three offices in Arlington, Va., Ft. McPherson, Ga., and Tyndall AFB, Fla.
Reserve personnel assigned to each state and emergency action agencies

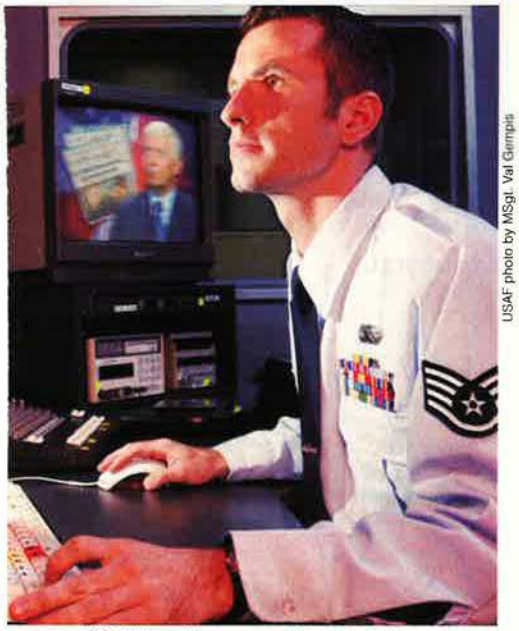
PERSONNEL

Active duty		14
Officers	7	
Enlisted	7	
Civilians		4
Total		**18**

As of Oct. 1, 2006, AFNSEPA ceased to be a FOA.

USAF photo

An airman with the 386th Expeditionary Logistics Readiness Squadron rushes to refuel a C-130 on an airlift mission.



USAF photo by MSgt. Val Gempis

SSgt. Lee Hoover edits video for a newscast from Yokota AB, Japan.

Air Force News Agency

Hq.: San Antonio
Estab.: June 1, 1978
Exec. Dir.: Robin K. Crumm

MISSION, PURPOSE, OPERATIONS

Create, print, and broadcast Web-based products that support Air Force and DOD communication goals
Provide news, information, and entertainment programs through American Forces Radio and Television Service
Provide senior Air Force leaders with the means of communicating news and information to the Air Force community and the public
Organize, train, and equip AFNEWS to accomplish its mission
Create an IT environment that ensures the efficient and secure production and delivery of information

STRUCTURE

Directorate of News Operations
Air Force Broadcasting Service
Army and Air Force Hometown News Service
Directorate of Staff

PERSONNEL

Active duty		305
Officers	14	
Enlisted	291	
Reserve components		30
ANG	0	
AFRC	30	
Civilians		95
Total		**430**

Air Force Nuclear Weapons and Counterproliferation Agency

Hq.: Pentagon
Estab.: August 1998
Cmdr.: Lt. Col. Kris G. Rongone

MISSION, PURPOSE, OPERATIONS

Provide the warfighter with chemical, biological, radiological, nuclear, and high explosive science and technology to ensure effective nuclear stockpile stewardship and operational and technological options for countering CBRNE threats
Provide technical S&T advice on nuclear weapons and counterproliferation issues to OSD, combatant commanders, major commands, and Air Staff

STRUCTURE

Two divisions

PERSONNEL

Active duty		14
Officers	10	
Enlisted	4	
Civilians		18
Total		**32**

Air Force Office of Special Investigations

Hq.: Andrews AFB, Md.
Estab.: Aug. 1, 1948
Cmdr.: Brig. Gen. Dana A. Simmons

MISSION, PURPOSE, OPERATIONS

Deliver special investigations and services to protect Air Force and DOD people, operations, and interests
Identify and resolve crime that threatens Air Force readiness or good order and discipline
Detect and provide early warning of worldwide threats to the Air Force
Combat threats to Air Force information systems and technologies
Detect and defeat fraud impacting Air Force acquisitions and base level capabilities
Serve as DOD's executive agent for Defense Cyber Crime Center

STRUCTURE

Eight regional offices
Seven squadrons
220 detachments and operating locations
USAF Special Investigations Academy
located at the Federal Law Enforcement Training Center

PERSONNEL

Active duty		1,627
Officers	385	
Enlisted	1,242	
Reserve components		345
ANG	0	
AFRC	345	
Civilians		671
Total		**2,643**

Air Force Operations Group

Hq.: Pentagon
Estab.: July 26, 1977
Cmdr.: Col. Steven Pennington

MISSION, PURPOSE, OPERATIONS

Support USAF Chief of Staff and DCS for Operations, Plans, and Requirements on current operational issues, including a 24-hour watch on all current operations and processing emergency messages
Provide facilities, policy, procedures, training, and staffing for Crisis Action Team during crises, contingencies, and exercises
Coordinate actions among major USAF organizations for JCS and USAF taskings
Prepare and provide weather data to the President, Secretary of Defense, JCS, National Military Command Center, Army Operations Center, and other federal agencies

STRUCTURE

Five divisions

PERSONNEL

Active duty		67
Officers	30	
Enlisted	37	
Reserve components		9
ANG	0	
AFRC	9	
Total		**76**

Air Force Personnel Center

Hq.: Randolph AFB, Tex.
Estab.: Oct. 1, 1995
Cmdr.: Maj. Gen. Anthony F. Przybyslawski

MISSION, PURPOSE, OPERATIONS

Provide personnel services to develop and deliver Air Force capabilities for America
Execute policy and programs for assignments, retirements, promotions, civilian personnel operations, individual career development, awards, and decorations

STRUCTURE

Eight directorates
One direct reporting unit

PERSONNEL

Active duty		861
Officers	276	
Enlisted	585	
Reserve components		26
ANG	0	
AFRC	26	
Civilians		988
Total		**1,875**

AFPC was formerly the Air Force Military Personnel Center and the Air Force Civilian Personnel Management Center.

Air Force Personnel Operations Agency

Hq.: Pentagon
Estab.: Aug. 15, 1993
Dir.: Timothy A. Beyland

MISSION, PURPOSE, OPERATIONS

Provide in-depth analytical insight across the personnel life cycle to DCS for Personnel decision-makers
Provide information technology applications as they relate to the personnel system
Develop and operate officer, enlisted, and civilian models
Support DCS for Personnel

STRUCTURE

One division

PERSONNEL

Active duty		28
Officers	15	
Enlisted	13	
Civilians		80
Total		**108**

Air Force Real Property Agency

Hq.: Arlington, Va.
Estab.: Nov. 1, 2002
Dir.: Kathryn M. Halvorson

MISSION, PURPOSE, OPERATIONS
Acquire, dispose, and manage all Air Force-controlled real property worldwide

STRUCTURE
Regional divisions
Base-level operating locations

PERSONNEL

Civilians		129

Air Force Review Boards Agency

Hq.: Andrews AFB, Md.
Estab.: June 1, 1980
Dir.: Joe G. Lineberger

MISSION, PURPOSE, OPERATIONS
Manage military and civilian appellate processes for the Secretary of the Air Force
Develop overall policy of the organization and oversee the activities and operations of the agency

STRUCTURE
Air Force Board for Correction of Military Records
Air Force Civilian Appellate Review Office
Secretary of the Air Force Personnel Council
Review Boards Support Office, Randolph AFB, Tex.

PERSONNEL

Active duty		7
Officers	3	
Enlisted	4	
Reserve components		7
ANG	0	
AFRC	7	
Civilians		48
Total		**62**

Air Force Safety Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1996
Cmdr.: Maj. Gen. Stanley Gorenc

MISSION, PURPOSE, OPERATIONS
Manage USAF mishap prevention, risk management, and nuclear surety programs
Develop regulatory guidance
Provide technical assistance in flight, ground, weapons, and space safety disciplines
Maintain USAF database for all safety mishaps
Oversee all major command mishap investigations and evaluate corrective actions for applicability and implementation USAF-wide
Direct safety education programs for all safety disciplines

STRUCTURE
10 divisions

PERSONNEL

Active duty		56
Officers	50	
Enlisted	16	
Reserve components		4
ANG	0	
AFRC	4	
Civilians		47
Total		**117**

The commander is also the Air Force chief of safety. AFSC publishes *Flying Safety, Road and Rec* and *Weapons Journal.*

Air Force Security Forces Center

Hq.: Lackland AFB, Tex.
Estab.: March 17, 1997
Cmdr.: Col. Robert W. Tirevold

MISSION, PURPOSE, OPERATIONS
Develop USAF security forces guidance, policy, and training requirements to safeguard and protect personnel and resources
Prepare guidance on air base defense operations and security forces continuation training; mission-related security and law enforcement operations; resource protection; anti-terrorism; conduct USAF-level installation vulnerability assessments
Develop and implement base-level and combat arms training and ground combat weapons maintenance programs
Manage USAF corrections program and activities; DOD military working dog activities; contingency taskings

STRUCTURE
Three divisions
Three detachments at Ft. Leavenworth, Kan., NAS Miramar, Calif., and Charleston NWC, S.C.

PERSONNEL

Active duty		392
Officers	45	
Enlisted	347	
Reserve components		8
ANG	0	
AFRC	8	
Civilians		24
Total		**424**

Air Force Services Agency

Hq.: San Antonio
Estab.: Feb. 5, 1991
Cmdr.: Col. Timothy J. Hanson

MISSION, PURPOSE, OPERATIONS
Provide combat support to commanders directly in support of the Air Force mission
Provide community service programs that enhance the quality of life for Air Force members and their families
Manage Air Force nonappropriated central funds and operate central systems such as banking, investments, purchasing, data flow, insurance, and benefit programs

STRUCTURE
Eight directorates

PERSONNEL

Active duty		72
Officers	25	
Enlisted	47	
Reserve components		9
ANG	0	
AFRC	9	
Civilians		180
Total		**261**

Air Force Technical Applications Center

Hq.: Patrick AFB, Fla.
Estab.: July 7, 1959
Cmdr.: Col. Mark W. Westergren

MISSION, PURPOSE, OPERATIONS
Monitor compliance with several international treaties, including the 1974 Threshold Test Ban Treaty and 1976 Peaceful Nuclear Explosions Treaty
Operate the US Atomic Energy Detection System, a global network of subsurface, surface, airborne, and space-based sensors that detect nuclear explosions

STRUCTURE
Analysis Center, Patrick AFB, Fla.
Operational sites/detachments worldwide

USAF photo by SrA. Candace Romano

A1C Jeremy Roberts and SrA. Julia Branch oversee foreign nationals working on a flight line. Both are assigned to the 332nd Expeditionary Security Forces Squadron.

PERSONNEL

Active duty		523
Officers	128	
Enlisted	395	
Total		**523**

EQUIPMENT

Multiple seismic arrays and single-instrument locations consisting of seismometers and associated data acquisition systems and workstations
Several hydroacoustic recording locations
More than 100 sensors and 35 support satellites, with associated ground systems instrumentation and data-processing equipment

USAF photo

TSgt. Bill Hosey conducts Defense Meteorological Satellite Program support during a training activity for the 6th Space Operations Squadron.

Air Force Weather Agency

Hq.: Offutt AFB, Neb.
Estab.: Oct. 15, 1997
Cmdr.: Col. Patrick M. Condray

MISSION, PURPOSE, OPERATIONS

Maximize the nation's aerospace and ground combat effectiveness by providing accurate, relevant, and timely air and space weather information to DOD, coalition, and national users and by providing standardized training and equipment to Air Force weather forces

STRUCTURE

Air Force Combat Climatology Center, Asheville, N.C.
Air Force Combat Weather Center, Hurlburt Field, Fla.
Solar observatories, operating locations, and detachments around the world

PERSONNEL

Active duty		1,255
Officers	214	
Enlisted	1,041	
Reserve components		24
ANG	0	
AFRC	24	
Civilians		195
Total		**1,474**

Formerly Air Weather Service, established July 1, 1937.

ANG Readiness Center

Hq.: Andrews AFB, Md.
Estab.: August 1997
Cmdr.: Col. Joseph L. Lengyel

MISSION, PURPOSE, OPERATIONS

Provide combat capability to the warfighter and security to the homeland

STRUCTURE

201st Mission Support Squadron
13 directorates

PERSONNEL

Active duty		124
Officers	76	
Enlisted	48	
Reserve Components		870
ANG	867	
AFRC	3	
Civilians		469
Total		**1,463**

Direct Reporting Units

A direct reporting unit (DRU) is a subdivision directly subordinate to Hq. USAF, separate from any major command or FOA because of a unique mission, legal requirements, or other factors. DRUs have the same administrative and organizational responsibilities as major commands.

Air Force District of Washington

Hq.: Bolling AFB, D.C.
Estab.: July 15, 1994
Cmdr.: Maj. Gen. Robert L. Smolen

MISSION, PURPOSE, OPERATIONS

Provide Air Force component to the Joint Force Hq.-National Capital Region; USAF voice for planning and implementing cross-service solutions throughout the National Capital Region
Organize, train, equip, and deploy forces for AEFs and homeland defense, civil support, national special security events; flagship ceremonial and musical capability in support of NCR and global interests
Ensure 40,000 USAF members assigned worldwide have operating and UCMJ support
Perform MAJCOM-level responsibilities

STRUCTURE

Headquarters staff
Three groups: Mission Support Group, Medical Group, and Operations Group
One wing

PERSONNEL

Active duty		3,940
Officers	604	
Enlisted	3,336	
Reserve components		128
ANG	0	
AFRC	128	
Civilians		813
Total		**4,881**

Air Force Doctrine Center

Hq.: Maxwell AFB, Ala.
Estab.: Feb. 24, 1997
Cmdr.: Maj. Gen. Allen G. Peck

MISSION, PURPOSE, OPERATIONS

Develop basic and operational doctrine and represent these positions in service, joint, and multinational doctrine development
Review the application of air and space doctrine in the education of USAF personnel
Collect and coordinate doctrinal inputs from USAF's lessons learned process
Advocate doctrinally correct representation and execution at the operational level of war in service, joint, and multinational operations, exercises, and other events
Participate in the investigation of future operational concepts and strategies to capture emerging doctrine

STRUCTURE

Four operating locations
Joint and Air Staff Liaison, Pentagon

PERSONNEL

Active duty		47
Officers	40	
Enlisted	7	
Reserve components		14
ANG	0	
AFRC	14	
Civilians		17
Total		**78**

Air Force Operational Test and Evaluation Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1974
Cmdr.: Maj. Gen. Robin E. Scott

MISSION, PURPOSE, OPERATIONS

Test and evaluate new weapon systems in realistic battlespace environments to provide decision-makers accurate, balanced, and complete assessments of mission capability

Maintain an operational focus, from concept development to system fielding, to ensure warfighters have the right tools to win tomorrow's battles

STRUCTURE

Six detachments at Edwards AFB, Calif., Eglin AFB, Fla., Nellis AFB, Nev., Peterson AFB, Colo., and Kirtland AFB, N.M.
More than 20 operating locations

PERSONNEL

Active duty		548
Officers	382	
Enlisted	166	
Reserve components		1
ANG	0	
AFRC	1	
Civilians		198
Total		**747**

US Air Force Academy

Hq.: Colorado Springs, Colo.
Estab.: April 1, 1954
Supt.: Lt. Gen. John F. Regni

MISSION, PURPOSE, OPERATIONS

Develop and inspire young men and women to become Air Force officers with knowledge, character, and discipline

Produce dedicated Air Force officers and leaders

Instill leadership through academics, military training, athletic conditioning, and character development

STRUCTURE

The cadet student body is designated the Cadet Wing. The wing is composed of four groups consisting of 10 squadrons each, with about 110 cadets assigned to a squadron. Each squadron consists of members of all four classes.

PERSONNEL

Active duty		2,290
Officers	956	
Enlisted	1,334	
Reserve components		135
ANG	0	
AFRC	135	
Civilians		1,327
Total		**3,752**

EQUIPMENT

73 aircraft

Cadets complete four years of study for a bachelor of science degree, choosing from 32 different academic majors. Four primary areas of development are stressed in military art and science, theoretical and applied leadership experiences, aviation science and airmanship programs, and military training.

USAF photo by John Van Winkle

Brandon Martinez, a cadet at the US Air Force Academy in Colorado Springs, Colo., transfers bacteria from jet fuel into culture tubes in an experiment.

Auxiliary

An Air Force auxiliary is an organization created by statute which the Secretary of the Air Force may use to fulfill the Air Force's noncombat programs and missions. The Civil Air Patrol (CAP) is the only USAF auxiliary to date.

Civil Air Patrol

Hq.: Maxwell AFB, Ala.
Estab.: Dec. 1, 1941
Natl. Cmdr.: Maj. Gen. Antonio J. Pineda, CAP
Exec. Dir.: Don Rowland

MISSION, PURPOSE, OPERATIONS

Provide vital operational capabilities in support of aerial and ground search and rescue (SAR), disaster relief, a nationwide communications network, and counterdrug and homeland security missions

Conduct 95 percent of all inland SAR missions as tasked by the Air Force Rescue Coordination Center, Tyndall AFB, Fla.

Build strong citizens for the future by providing leadership training, technical education, scholarships, and career education to young men and women, ages 12 to 21, in the CAP Cadet Program

Promote and support aerospace education, both for its own members and the general public, and conduct a national school enrichment programat the middle- and high-school levels

STRUCTURE

CAP is a nonprofit, 501 (c) (3) corporation with a national headquarters that oversees:
Eight regions
52 wings (each state, Puerto Rico, and Washington, D.C.)
1,500 squadrons

PERSONNEL

Hq. staff		100
Volunteers		55,339
Senior members	33,667	
Cadets	21,672	
Total		**55,439**

EQUIPMENT

530 single-engine, piston aircraft
60 gliders
1,000 vehicles
Communications equipment

CAP photo

Civil Air Patrol members use an emergency locator transmitter homing device.

WWW.GULFSTREAM.COM

World record altitude, speed and range performance, award-winning reliability and product support, the best warranty in special mission aviation and a long heritage of proven experience have made Gulfstream the special missions aircraft of choice for world leaders since the 1960's.

To learn more, call Buddy Sams, Senior Vice President, Government Programs and Sales at 703-276-9500 or visit us at www.gulfstream.com.

Gulfstream®
A GENERAL DYNAMICS COMPANY

Guide to Air Force Installations Worldwide

2007 USAF Almanac

Major Active Duty Installations

Altus AFB, Okla. 73523-5000; 120 mi. SW of Oklahoma City. **Phone:** 580-482-8100; DSN 866-1110. **Majcom:** AETC. **Host:** 97th Air Mobility Wing. **Mission:** trains aircrew members for C-5, C-17, and KC-135 aircraft. **History:** activated January 1943; inactivated May 1945; reactivated January 1953. **Area:** 7,746 acres. **Runways:** 13,440 ft., 9,000-ft. parallel runway, and 3,515-ft. assault strip. **Altitude:** 1,381 ft. **Personnel:** permanent party military, 2,220; DOD civilians, 2,384. **Housing:** single family, 726; visiting, VOQ/VAQ, 315; TLF, 30. **Clinic.**

Andersen AFB, Guam, APO AP 96543-5000; 2 mi. N of Yigo. **Phone:** (cmcl, from CONUS) 671-366-1110; DSN 315-366-1110. **Majcom:** PACAF. **Host:** 36th Wing. **Mission:** Pacific center for power projection, regional cooperation, and multinational training; serves as a logistic support and staging base for aircraft operating in the Pacific and Indian Oceans. **Major tenants:** Det. 5, 22nd Space Operations Sq. (AFSPC); 613th Contingency Response Gp. (AMC); 734th Air Mobility Sq. (AMC); Helicopter Combat Support Sq. 5 (US Navy). **History:** activated 1945. Named for Gen. James Roy Andersen, who was chief of staff, Hq. AAF, Pacific Ocean Areas, and lost at sea in February 1945. **Area:** 20,270 acres. **Runways:** 11,182 ft. and 10,555 ft. **Altitude:** 612 ft. **Personnel:** permanent party military, 2,108; DOD civilians, 1,561. **Housing:** single family, officer, 236, enlisted, 1,153; unaccompanied, UOQ, 74, UAQ/UEQ, 1,018; visiting, VOQ, 23, VAQ/VEQ, 519, TLF, 232. **Clinic.**

Andrews AFB, Md. 20762-5000; 10 mi. SE of Washington, D.C. **Phone:** 301-981-1110; DSN 858-1110. **Host:** 316th Wing. **Mission:** provides contingency response capability critical to national security. This capability includes emergency reaction rotary-wing airlift for the National Capital Region, combat-ready airmen for air and space expeditionary forces, and a secure installation and robust infrastructure to support base organizations. **Major tenants:** Hq. AFOSI; Air National Guard Readiness Center; 89th AW (AMC); 113th Wing (ANG), F-16; 459th ARW (AFRC), KC-135; Naval Air Facility; Marine Aircraft Gp. 49, Det. A; Air Force Review Boards Agency. **History:** activated May 1943. Named for Lt. Gen. Frank M. Andrews, military air pioneer and WWII commander of the European Theater, killed in aircraft accident May 3, 1943 in Iceland. **Area:** 6,853 acres. **Runways:** 9,755 ft. and 9,300 ft. **Altitude:** 281 ft. **Personnel:** permanent party military 5,502; DOD civilians, 3,247. **Housing:** single family, officer, 138 (including 96 govt.-leased), enlisted, 1,342 (including 318 govt.-leased); visiting, VOQ, 64, VAQ/VEQ, 35, TLF, 20. **Hospital.**

Arnold AFB, Tenn. 37389; approx. 7 mi. SE of Manchester. **Phone:** 931-454-1110; DSN 340-1110. **Majcom:** AFMC. **Host:** Arnold Engineering Development Center. **Mission:** supports acquisition and sustainment of aerospace systems by conducting flight simulation research, development, and evaluation testing for DOD, other government agencies, and commercial aerospace firms with the world's largest complex of wind tunnels, jet and rocket engine test cells, space simulation chambers, and hyperballistic ranges. **History:** base dedicated June 25, 1951. Named for Gen. of the Army H.H. "Hap" Arnold, wartime Chief of the Army Air Forces. **Area:** 39,081 acres. **Runway:** 6,000 ft. **Altitude:** 1,100 ft. **Personnel:** permanent party military, 79; DOD civilians, 255. **Housing:** single family, officer, 19, enlisted, 21; visiting, 40. **Medical aid station and small VA clinic.**

Aviano AB, Italy, APO AE 09604; adjacent to Aviano, 50 mi. N of Venice. **Phone:** (cmcl, from CONUS) 011-39-0434-30-1110/1113; DSN 314-632-1110. **Majcom:** USAFE. **Host:** 31st Fighter Wing. **Mission:** maintains two LANTIRN-equipped F-16 fighter squadrons, the 510th and the 555th, and 603rd Air Control Sq. **Major tenants:** Hq. 401st Air Expeditionary Wing (USAFE). **Geographically Separated Units (GSUs):** Det. 2, 401st AEW Pristina (Kosovo) Serbia; Det. 1, 401st AEW, Sarajevo, Bosnia; 774th Expeditionary Air Base Gp., Istres AB, France; 31st RED HORSE Flt. and 31st Munitions Sq., Camp Darby, Italy; 31st Munitions Support Sq., Ghedi AB, Italy; 99th Ex. Recon. Sq., RAF Akrotiri, Cyprus; 496th Air Base Sq., Morón AB, Spain. **History:** one of the oldest Italian air bases, dating to 1911. USAF began operations 1954. **Area:** 1,331 acres. **Runway:** 8,596 ft. **Altitude:** 413 ft. **Personnel:** permanent party military, 3,500; DOD civilians, 260. **Housing:** 681 govt.-leased (189 officer, 592 enlisted); unaccompanied, UAQ/UEQ, 812; visiting, 74, DV, 6. **Clinic** (contracted with local hospital).

Barksdale AFB, La. 71110-5000; in Bossier City. **Phone:** 318-456-1110; DSN 781-1110. **Majcom:** ACC. **Host:** 2nd Bomb Wing. **Mission:** B-52H operations and training. **Major tenants:** 8th Air Force (ACC); 917th Wing (AFRC), A-10, B-52H; 8th Air Force Museum. **History:** activated Feb. 2, 1933. Named for Lt. Eugene H. Barksdale, WWI airman killed in an August 1926 crash. **Area:** 22,000 acres (18,000 acres reserved for recreation). **Runway:** 11,756 ft. **Altitude:** 166 ft. **Personnel:** permanent party military, 7,442; DOD civilians, 1,122. **Housing:** single family, officer, 135, enlisted, 594; unaccompanied, 876; visiting, VOQ, 118, VAQ, 102, TLF, 24. **Superclinic.**

Beale AFB, Calif. 95903-5000; 13 mi. E of Marysville. **Phone:** 530-634-3000; DSN 368-1110. **Majcom:** ACC. **Host:** 9th Reconnaissance Wing. **Mission:** U-2, KC-135, and Global Hawk missions. **Major tenants:** 940th ARW (AFRC), KC-135; 7th Space Warning Sq. (AFSPC), PAVE PAWS; 548th Intelligence Gp. (ACC). **History:** originally US Army's Camp Beale; transferred to Air Force in 1948; became Air Force base in April 1951. Named for Brig. Gen. E.F. Beale, Indian agent in California prior to Civil War. **Area:** 22,944 acres. **Runway:** 12,000 ft. **Altitude:** 113 ft. **Personnel:** permanent party military, 3,742; DOD civilians, 718. **Housing:** single family, officer, 159, enlisted, 1,294; unaccompanied, 545; visiting, VOQ, 53, VAQ/VEQ, 125, TLF, 46. **Clinic.**

Bolling AFB, D.C. 20032-5000; 3 mi. S of US Capitol. **Phone:** 703-545-6700; DSN 227-0101. **Host:** 11th Wing, which includes the USAF Band and USAF Honor Guard. **Mission:** Provides support responsibilities for Hq. USAF and 40,000 USAF members worldwide. **Major tenants:** Air Force Chief of Chaplains; Air Force District of Washington; Air Force Surgeon General; Air Force Medical Operations Agency; Defense Intelligence Agency; Air Force Legal Operations Agency; 497th Intelligence Gp. (ACC). **History:** activated October 1917. Named for Col. Raynal C. Bolling, first high-ranking Army Air Service officer killed in WWI. **Area:** 607 acres. **Runway:** Helipad only. **Altitude:** 20 ft. **Personnel:** permanent party mili-

tary, 1,566; DOD civilians, 848. **Housing:** single family, officer, 361, enlisted, 860; unaccompanied, UAQ/UEQ, 262; visiting, VOQ, 80, VAQ/VEQ, 87, TLF, 100. **Clinic.**

Buckley AFB, Colo. 80011-9524; 8 mi. E of Denver. **Phone:** 720-847-9011 DSN 847-9011. **Majcom:** AFSPC. **Host:** 460th Space Wing. **Mission:** provides to combatant commanders superior global surveillance, worldwide missile warning, homeland defense, and expeditionary forces. Focal point for transition to Space Based Infrared System. **Major tenants:** 140th Wing (ANG); Aerospace Data Facility; Navy/Marine Reserve Center; Army Aviation Support Facility. **History:** activated April 1, 1942 as a gunnery training facility. Named for 1st Lt. John H. Buckley, a WW I flier, killed Sept. 17, 1918. ANG assumed control from US Navy in 1959. Became active duty Air Force base Oct. 2, 2000. **Area:** 3,832 acres. **Runway:** 11,000 ft. **Altitude:** 5,663 ft. **Personnel:** permanent party military, 3,626; DOD civilians, 3,337. **Housing:** two dorms and 351 units under construction. **Clinic.**

Cannon AFB, N.M. 88103-5000; 7 mi. W of Clovis. **Phone:** 505-784-1110; DSN 681-1110. **Majcom:** ACC. **Host:** 27th FW. **Mission:** F-16 operations. **History:** activated August 1942. Named for Gen. John K. Cannon, WWII commander of all Allied air forces in the Mediterranean Theater and former commander, Tactical Air Command. **Area:** 3,789 acres, excluding range. **Runways:** 10,000 ft. and 8,200 ft. **Altitude:** 4,295 ft. **Personnel:** permanent party military, 3,471; DOD civilians, 622. **Housing:** single family, officer, 143, enlisted, 1,501; unaccompanied, 835; visiting, 57, TLF, 36. **Ambulatory care clinic.**

Charleston AFB, S.C. 29404-5000; 10 mi. from downtown Charleston. **Phone:** 843-963-2100; DSN 673-8400. **Majcom:** AMC. **Host:** 437th AW. **Mission:** C-17 operations. **Major tenant:** 315th AW (AFRC assoc.), C-17. **History:** activated October 1942; inactivated March 1946; reactivated August 1953. **Area:** 6,033 acres (including auxiliary airfield). **Runway:** 9,000 ft.; joint-use airfield. **Altitude:** 46 ft. **Personnel:** permanent party military, 4,169; DOD civilians, 1,450. **Housing:** single family, officer, 148, enlisted, 1,178; unaccompanied, UAQ/UEQ, 587; visiting, VOQ, 156, VAQ/VEQ, 40, TLF, 40. **Clinic.**

Columbus AFB, Miss. 39710-1000; 7.5 mi. NW of Columbus. **Phone:** 662-434-7322; DSN 742-1110. **Majcom:** AETC. **Host:** 14th Flying Training Wing. **Mission:** Specialized Undergraduate Pilot Training (T-1, T-6, T-37, T-38). **History:** activated 1942 for pilot training. **Area:** 5,325 acres. **Runways:** 12,000 ft., 8,000 ft., and 6,300 ft. **Altitude:** 219 ft. **Personnel:** permanent party military, 1,165; DOD civilians, 570. **Housing:** single family, 517; unaccompanied, UOQ, 234, UAQ/UEQ, 166; visiting, 73, DV, 4, TLF, 20. **Clinic.**

Davis-Monthan AFB, Ariz. 85707-5000; within Tucson. **Phone:** 520-228-1110; DSN 228-1110. **Majcom:** ACC. **Host:** 355th Wing. **Mission:** A-10 combat crew training; OA-10 and FAC HC-130 training and operations; EC-130H; HH-60 Pavehawk; and CSAR operations. **Major tenants:** 12th Air Force (ACC); Aerospace Maintenance and Regeneration Center (AFMC), DOD's single location for regeneration, maintenance, parts reclamation, preservation, storage, and disposal of excess DOD and government aerospace vehicles; 943rd Rescue Gp. (AFRC), HH-60; 55th ECG (ACC); 563rd RQG (AFSOC); US Customs and Border Protection. **History:** activated 1927. Named for two local aviators: 2nd Lt. Samuel H. Davis, killed Dec. 28, 1921, and 2nd Lt. Oscar Monthan, killed March 27, 1924. **Area:** 10,633 acres. **Runway:** 13,643 ft. **Altitude:** 2,404 ft. **Personnel:** permanent party military, 6,900; DOD civilians, 1,970. **Housing:** single family, officer, 125, enlisted, 1,129; unaccompanied, 756; visiting, VOQ, 20, VAQ/VEQ, 61, DV, 165, TLF, 50. **Clinic.**

Dover AFB, Del. 19902-7209; 6 mi. SE of Dover. **Phone:** 302-677-3000; DSN 445-3000. **Majcom:** AMC. **Host:** 436th AW. **Mission:** C-5 operations; operates largest DOD aerial port facility; houses military's East Coast mortuary. **Major tenant:** 512th AW (AFRC assoc.). **History:** activated December 1941; inactivated 1946; reactivated February 1951. **Area:** 3,400 acres. **Runways:** 12,900 ft. and 9,600 ft. **Altitude:** 28 ft. **Personnel:** permanent party military, 3,300; DOD civilians, 1,100. **Housing:** single family, officer, 62, enlisted, 599; unaccompanied, UAQ/UEQ, 507; visiting, VQ, 251, TLF, 0. **Clinic.**

Dyess AFB, Tex. 79607-1980; WSW border of Abilene. **Phone:** 325-696-1110; DSN 461-1110. **Majcom:** ACC. **Host:** 7th BW. **Mission:** B-1 operations. **Major tenant:** 317th Airlift Gp. (AMC), C-130. **History:** activated April 1942; deactivated December 1945; reactivated as Abilene AFB September 1955. In December 1956, renamed for Lt. Col. William E. Dyess, WWII fighter pilot who escaped from a Japanese prison camp, killed in P-38 crash in December 1943. **Area:** 6,342 acres (including off-base sites). **Runway:** 13,500 ft. **Altitude:** 1,789 ft. **Personnel:** permanent party military, 5,354; DOD civilians, 346. **Housing:** single family, officer, 153, enlisted, 258; unaccompanied, 808; visiting, 147, TLF, 39. **Clinic.**

Edwards AFB, Calif. 93524; adjacent to Rosamond. **Phone:** 661-227-1110; DSN 527-1110. **Majcom:** AFMC. **Host:** 95th Air Base Wing. **Mission:** The Air Force Flight Test Center is AFMC's center of excellence for conducting and supporting research, development, test, and evaluation of aerospace systems from concept to combat. It operates the US Air Force Test Pilot School and is home to NASA's Dryden Research Center and considerable test activity conducted by America's commercial aerospace industry. **Major tenants:** AFRL's Propulsion Directorate (AFMC); Dryden Flight Research Center (NASA); Air Force Operational Test and Evaluation Center, Det. 5; 31st Test and Evaluation Squadron (ACC); Marine Aircraft Group 46, Det. Bravo. **History:** activities began in September 1933 when the Muroc Bombing and Gunnery Range was established. In 1942, it was designated Muroc Army Air Base. Renamed in 1949 for Capt. Glen W. Edwards, killed June 5, 1948 in crash of a YB-49 "Flying Wing." **Area:** 301,000 acres. **Runways:** 21, from 4,000 to 39,000 ft. **Altitude:** 2,302 ft. **Personnel:** permanent party military, 2,665; DOD civilians, 3,360. **Housing:** Family housing is limited due to downsizing and ongoing construction through FY07. After project is complete: officer, 194; enlisted, 603; unaccompanied, UOQ, 80; UEQ; 670. **Medical and dental clinics.**

Eglin AFB, Fla. 32542; 2 mi. SW of the twin cities of Niceville and Valparaiso; 7 mi. NE of Fort Walton Beach. **Phone:** 850-882-1110; DSN 872-1110. **Majcom:** AFMC. **Host:** 96th ABW. **Mission:** supporting the Eglin Air Armament Center and associate units with traditional military services as well as civil engineering, personnel, logistics, communications, computer, medical, security, and all other host services. **Major tenants:** AFRL's Munitions Directorate (AFMC); 33rd FW (ACC), F-15; 53rd Wing (ACC); 919th Special Operations Wing (AFRC) at Duke Field, MC-130; Air Force Armament Museum; Army 6th Ranger Training Battalion; Naval School Explosive Ordnance Disposal. **History:** activated 1935. Named for Lt. Col. Frederick I. Eglin, WWI flier killed in aircraft accident Jan. 1, 1937. **Area:** 463,452 acres. Eglin is the nation's largest Air Force base in terms of acreage, covering an area roughly two-thirds the size of Rhode Island. **Runways:** 12,000 ft. and 10,000 ft. **Altitude:** 85 ft. **Personnel:** permanent party military, 7,127; DOD civilians, 3,884 (excluding Hurlburt Field). **Housing:** single family, officer, 285, enlisted, 1,767; unaccompanied, UAQ/UEQ, 933; visiting, VOQ, 169, VAQ/VEQ, 156, TLF, 87. **Hospital.**

Eielson AFB, Alaska 99702-5000; 26 mi. SE of Fairbanks. **Phone:** 907-377-1110; DSN 317-377-1110. **Majcom:** PACAF. **Host:** 354th FW. **Mission:** F-16C/D and A/OA-10 operations. **Major tenants:** Arctic Survival School (AETC); 168th Air Refueling Wing (ANG), KC-135; 353rd Combat Training Sq. **History:** activated October 1944. Named for Carl Ben Eielson, Arctic aviation pioneer who died in an Arctic rescue mission in November 1929. **Area:** 19,790 acres (including 16 remote sites, 63,195 acres). **Runway:** 14,500 ft. **Altitude:** 534 ft. **Personnel:** permanent party military, 2,953; DOD civilians, 641. **Housing:** single family, officer, 181, enlisted, 1,243; unaccompanied, UOQ, 8, UAQ, 522, UEQ, 16; visiting, VOQ, 206, VAQ/VEQ, 328, TLF, 40. **Outpatient clinic.**

Ellsworth AFB, S.D. 57706-5000; 12 mi. ENE of Rapid City. **Phone:** 605-385-5056; DSN 675-5056. **Majcom:** ACC. **Host:** 28th BW. **Mission:** B-1 operations. **Major tenants:** Det. 21, Belle Fourche Electronic Scoring Site; Det. 8, 372nd Training Sq. (AETC); Det. 226, AFOSI. **History:** activated January 1942 as Rapid City AAB; renamed June 13, 1953 for Brig. Gen. Richard E. Ellsworth, killed March 18, 1953 in RB-36 crash. **Area:** 5,411 acres. **Runway:** 13,500 ft. **Altitude:** 3,276 ft. **Personnel:** permanent party military, 3,550; DOD civilians, 421. **Housing:** single family, officer, 307, enlisted, 1,729, unaccompanied, 728; visiting, 80, TLF, 29. **Clinic.**

Elmendorf AFB, Alaska 99506-5000; bordering Anchorage. **Phone:** 907-552-1110; DSN 317-552-1110. **Majcom:** PACAF. **Host:** 3rd Wing. **Mission:** C-12, C-130, E-3B Airborne Warning and Control System, F-15C, and F-15E operations. Hub for air traffic to and from Far East. **Major tenants:** Alaskan Command; 11th Air Force (PACAF); Alaskan NORAD Region. **History:** activated July 1940. Named for Capt. Hugh Elmendorf, killed Jan. 13, 1933. **Area:** 13,100 acres. **Runways:** 10,000 ft. and 7,500 ft. **Altitude:** 213 ft. **Personnel:** permanent party military, 6,485; DOD civilians, 891. **Housing:** single family, officer, 112, enlisted, 1,910; unaccompanied, UAQ/UEQ, 850; visiting, VOQ, 178, VAQ/VEQ, 195, TLF, 86. **Hospital.**

Fairchild AFB, Wash. 99011-9588; 10 mi. WSW of Spokane. **Phone:** 509-247-1110; DSN 657-1110. **Majcom:** AMC. **Host:** 92nd Air Refueling Wing. **Mission:** KC-135R operations. **Major tenants:** 336th Training Gp. (USAF Survival School, AETC); 141st ARW (ANG). **History:** activated January 1942. Named for Gen. Muir S. Fairchild, USAF vice chief of staff at his death in 1950. **Area:** 5,823 acres; 530,205 acres used for survival school. **Runway:** 13,901 ft. **Altitude:** 2,426 ft. **Personnel:** permanent party military, 2,494; DOD civilians, 700. **Housing:** single family, officer, 167, enlisted, 889; unaccompanied, VOQ, 126, VAQ, 200, TLF, 43. **Clinic.**

F.E. Warren AFB, Wyo. 82005-5000; adjacent to Cheyenne. **Phone:** 307-773-1110; DSN 481-1110. **Majcom:** AFSPC. **Host:** 90th SW. **Mission:** Minuteman III ICBMs; UH-1N. **Major tenants:** 20th Air Force (AFSPC); Air Force ICBM Museum. **History:** activated as Ft. D.A. Russell July 4, 1867; under Army jurisdiction until 1949, when reassigned to USAF; renamed in 1930 for Francis Emory Warren, Wyoming Senator and first state governor. **Area:** 5,866 acres. Missile site area covering more than 12,600 sq. mi. in Wyoming, Colorado,

and Nebraska. **Runway:** none. **Altitude:** 6,142 ft. **Personnel:** permanent party military, 3,182; DOD civilians, 974. **Housing:** single family, officer, 156, enlisted, 675; unaccompanied, officer, 12, enlisted, 767; visiting, 30, TLF, 39. **Clinic.**

Goodfellow AFB, Tex. 76908-4410; SE of San Angelo. **Phone:** 325-654-3231; DSN 477-3231. **Majcom:** AETC. **Host:** 17th Training Wing. **Mission:** trains intelligence, fire protection, and special instruments personnel for US military and DOD and international agencies. **Major tenants:** 344th Military Intelligence Battalion (Army); Center for Information Dominance det. (Navy); USMC det.; NCO Academy. **History:** activated January 1941. Named for Lt. John J. Goodfellow Jr., WWI observation airplane pilot killed in combat Sept. 14, 1918. **Area:** 1,136 acres. **Runway:** none. **Altitude:** 1,900 ft. **Personnel:** permanent party military, 1,550; DOD civilians, 851. **Housing:** single family, officer, 2, enlisted, 296; unaccompanied, UOQ, 144, UAQ/UEQ, 236; visiting, VOQ, 114, VAQ/VEQ, 321, TLF, 31. **Clinic.**

Grand Forks AFB, N.D. 58205-5000; 16 mi. W of Grand Forks. **Phone:** 701-747-3000; DSN 362-3000. **Majcom:** AMC. **Host:** 319th ARW. **Mission:** KC-135R operations. **History:** activated 1956. Named after town of Grand Forks, whose citizens bought the property for the Air Force. **Area:** 5,418 acres. **Runway:** 12,351 ft. **Altitude:** 911 ft. **Personnel:** permanent party military, 2,318; DOD civilians, 415. **Housing:** single family, officer, 111, enlisted, 770; unaccompanied, UAQ/UEQ, 377; visiting; VOQ, 5, VAQ/VEQ, 2, TLF, 27. **Hospital.**

Hanscom AFB, Mass. 01731-5000; 17 mi. NW of Boston. **Phone:** 781-377-1110; DSN 478-1110. **Majcom:** AFMC. **Host:** 66th ABW. **Mission:** Electronic Systems Center manages development and acquisition of command and control systems. **Major tenants:** AFRL's Space Vehicles Directorate-Hanscom; AFRL's Sensors Directorate-Hanscom. **History:** activated 1941. Named for Laurence G. Hanscom, a pre-WWII advocate of private aviation, killed in a lightplane accident in 1941. **Area:** 846 acres. **Runway:** no flying mission; transient USAF aircraft use runways of Laurence G. Hanscom Field, state-operated airfield adjoining the base. **Altitude:** 133 ft. **Personnel:** permanent party military, 1,769; DOD civilians, 2,316. **Housing:** single family, officer, 314, enlisted, 470; unaccompanied, UAQ/UEQ, 122; visiting, 148, TLF, 47. **Clinic.**

Hickam AFB, Hawaii 96853-5000; 9 mi. W of Honolulu. **Phone:** 808-449-7110 (Oahu military operator); DSN 315-449-7110. **Majcom:** PACAF. **Host:** 15th AW (C-17, C-37, C-40). **Mission:** provides base and logistical support for 140 associate and tenant units in Hawaii and other Pacific-region locations; airlift for commander, PACOM, and commander, PACAF; and maintenance and refueling support for aircraft transiting between the US mainland and the western Pacific. **Major tenants:** PACAF; 13th AF; 154th Wing (ANG), C-17, C-130, F-15, KC-135R; Joint POW/MIA Accounting Command. **History:** activated September 1938. Named for Lt. Col. Horace M. Hickam, aviation pioneer killed in crash Nov. 5, 1934. **Area:** 2,761 acres. **Runways:** Four joint-use runways shared with Honolulu Arpt.: 12,357 ft., 12,000 ft., 9,000 ft., and 6,952 ft. **Altitude:** 13 ft. **Personnel:** permanent party military, 4,174; DOD civilians, 1,273. **Housing:** single family, officer, 585, enlisted, 698; unaccompanied, UAQ/UEQ, 765; visiting, VOQ, 155, VAQ/VEQ, 68, TLF, 40. **Clinic.**

Hill AFB, Utah 84056-5990; 25 mi. N. of Salt Lake City. **Phone:** 801-777-1110; DSN 777-1110. **Majcom:** AFMC. **Host:** 75th ABW. **Mission:** Ogden Air Logistics Center provides worldwide engineering and logistics management for F-16s; maintains the A-10, C-130, and F-16; handles logistics management and maintenance for Minuteman ICBMs; provides sustainment and logistics support for space and C3I programs; overhauls and repairs landing gear for all USAF (and 70 percent of DOD) aircraft; leading provider of rocket motors, small missiles, air munitions and guided bombs, photonics imaging and reconnaissance equipment, simulators and training devices, avionics, hydraulics and pneudraulics instruments, and software. **Major tenants:** 388th FW (ACC); 419th FW (AFRC), F-16; Hill Aerospace Museum; Defense Enterprise Computing Center (DISA); Defense Distribution Depot Hill Utah; Defense Logistics Agency; 372nd Recruiting Gp. (USAF). **History:** activated 1940. Named for Maj. Ployer P. Hill, killed Oct. 30, 1935 while test flying the first B-17. **Area:** 6,797 acres; manages 962,076 acres (Utah Test and Training Range). **Runway:** 13,500 ft. **Altitude:** 4,789 ft. **Personnel:** permanent party military, 4,700; DOD civilians, 13,000. **Housing:** single family, officer, 109, enlisted, 909; unaccompanied, UAQ/UEQ, 774; visiting, VOQ, 13, VAQ/VEQ, 147, TLF, 61. **Clinic.**

Holloman AFB, N.M. 88310; 8 mi. SW of Alamogordo. **Phone:** 505-572-1110; DSN 572-1110. **Majcom:** ACC. **Host:** 49th FW. **Mission:** F-117A operations; Basic Expeditionary Airfield Resources (BEAR Base Assets) and two air transportable clinics. **Major tenants:** 46th Test Gp. (AFMC); 4th Space Control Sq. (AFSPC); German Air Force Flying Training Center. **History:** activated 1941. Named for Col. George Holloman, guided-missile pioneer. **Area:** 58,000 acres. **Runways:** 12,000 ft., 10,500 ft., and 8,000 ft. **Altitude:** 4,350 ft. **Personnel:** permanent party military, 3,383; DOD civilians, 835. **Housing:** single family, officer, 190, enlisted, 1,223; unaccompanied, 945; visiting, 192, TLF, 49. **Clinic.**

Hurlburt Field, Fla. 32544-5000; 5 mi. W of Fort Walton Beach. **Phone:** 850-884-7464; DSN 579-7464. **Majcom:** AFSOC. **Host:** 1st Special Operations Wing. **Mission:** specialized airpower, equipped with AC-130H/U, MC-130/H/W, MC-130P (located at Eglin), MH-53J/M, U-28A, UH-1N. **Major tenants:** AFSOC; 823rd RED HORSE Sq.; USAF Combat Weather Center; USAF Special Operations School; Joint Special Operations University; 505th Command and Control Wing (ACC); 605th Training Sq.; 25th Information Operations Sq.; 18th Flight Test Sq.; 720th Special Tactics Gp.; Det. 3, 334th Training Sq. **History:** activated 1943. Named for Lt. Donald W. Hurlburt, WWII pilot killed Oct. 1, 1943. **Area:** 6,600 acres. **Runway:** 6,900 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 8,000; DOD civilians, 700. **Housing:** single family, officer, 52, enlisted, 628; unaccompanied, UAQ/UEQ, 1,231; visiting, VOQ, 163, VAQ/VEQ, 51, TLF, 24. **Clinic.**

Incirlik AB, Turkey, APO AE 09824; 6 mi. E of Adana. **Phone:** (cmcl, from CONUS) 011-90-322-316-6060; DSN (from CONUS) 676-6060. **Majcom:** USAFE. **Host:** 39th ABW. **Mission:** provides full spectrum, forward operating base support to expeditionary forces while developing the professional talents of our airmen. **History:** activated May 1954. Present unit began operations March 1966. Incirlik, in Turkish, means fig orchard. **Area:** 3,400 acres. **Runway:** 10,000 ft. **Altitude:** 240 ft. **Personnel:** permanent party military, 1,500; DOD civilians, 65. **Housing:** single family, 750; unaccompanied, UOQ, 105, UEQ, 756; visiting, VOQ, 91, VAQ/VEQ, 192, DV, 18, TLF, 80. **Clinic.**

Kadena AB, Japan, APO AP 96368-5000; 15 mi. N of Naha. **Phone:** (cmcl, from CONUS) 011-81-6117-34-1110; DSN 315-634-1110. **Majcom:** PACAF. **Host:** 18th Wing. **Mission:** E-3, F-15C/D, KC-135R, and HH-60 operations. **Major tenants:** 353rd Special Operations Gp. (AFSOC); 390th Intelligence Sq.; 82nd Reconnaissance Sq. (ACC); 733rd Air Mobility Support Sq. (AMC). **History:** occupied by US forces in April 1945. Named for city of Kadena, Okinawa. **Area:** 11,210 acres. **Runway:** 12,100 ft. **Altitude:** 146 ft. **Personnel:** permanent party military, 7,200; DOD civilians, 466. **Housing:** single family, officer, 1,495 enlisted, 5,296; unaccompanied, UOQ, 35, UAQ/UEQ, 1,629; visiting, VOQ, 226, VAQ/VEQ, 222, TLF, 122. **Clinic.**

Keesler AFB, Miss. 39534-5000; located in Biloxi. **Phone:** 228-377-1110; DSN 597-1110. **Majcom:** AETC. **Host:** 81st TRW. **Mission:** conducts Air Force, joint service, and international training for basic electronics, communications electronic systems, communications computer systems, air traffic control, airfield management, command post, air weapons control, weather, precision measurement, education and training, financial management and comptroller, information management, manpower and personnel, and medical, dental, and nursing specialties. **Major tenants:** 2nd Air Force (AETC); 45th Airlift Sq. (AETC), C-21; 403rd Wing (AFRC), C-130, WC-130. **History:** activated June 12, 1941. Named for 2nd Lt. Samuel R. Keesler Jr., a native of Mississippi and WWI aerial observer killed in action Oct. 9, 1918. **Area:** 3,554 acres, excluding off-base housing. **Runway:** 6,600 ft. **Altitude:** 33 ft. **Personnel:** permanent party military, 4,445; DOD civilians, 1,945. **Housing:** 606 existing for officer and enlisted; post-Katrina construction ongoing; visiting, 1,306, TLF, 79. **Keesler Medical Center.**

Kirtland AFB, N.M. 87117-5606; SE quadrant of Albuquerque. **Phone:** 505-846-1110; DSN 246-

Air Force Installations

Major Installations	FY02	FY03	FY04	FY05	FY06	FY07
US and possessions	72	72	72	72	72	72
Foreign	13	13	13	13	12	12
Worldwide	85	85	85	85	84	84
Minor Installations						
US and possessions	80	80	80	80	80	80
Foreign	2	2	2	2	2	2
Worldwide	82	82	82	82	82	82

Includes Air National Guard and Air Force Reserve Command.


Major Air Force Installations in the US
McChord AFB (AMC)
Fairchild AFB (AMC)
Wash.
Malmstrom AFB (AFSPC)
Minot AFB (ACC)
Grand Forks AFB (AMC)
N.D.
Mont.
Ore.
Idaho
Minn.
Mich.
Maine
Vt.
N.H.
S.D.
Mountain Home AFB (ACC)
Wyo.
Ellsworth AFB (ACC)
Wis.
N.Y.
Hanscom AFB (AFMC)
Otis ANGB (ANG)
Mass.
Conn.
R.I.
Mich.
Hill AFB (AFMC)
Selfridge ANGB (ANG)
Westover ARB (AFRC)
Beale AFB (ACC)
F.E. Warren AFB (AFSPC)
Iowa
Pa.
N.J.
McGuire AFB (AMC)
Nev.
Neb.
Grissom ARB (AFRC)
Ohio
Travis AFB (AMC)
Offutt AFB (ACC)
Del.
Dover AFB (AMC)
Schriever AFB (AFSPC)
Buckley AFB (AFSPC)
Utah
Ill.
Ind.
Wright-Patterson AFB (AFMC)
Md.
Calif.
USAF Academy
Peterson AFB (AFSPC)
W. Va.
Kan.
Whiteman AFB (ACC)
Scott AFB (AMC)
Va.
Colo.
Mo.
Ky.
Langley AFB (ACC)
Nellis AFB (ACC)
McConnell AFB (AMC)
Arnold AFB (AFMC)
Vandenberg AFB (AFSPC)
Seymour Johnson AFB (ACC)
Vance AFB (AETC)
Tenn.
N.C.
Kirtland AFB (AFMC)
Ariz.
Okla.
Pope AFB (AMC)
Edwards AFB (AFMC)
Tinker AFB (AFMC)
Little Rock AFB (AETC)
Dobbins ARB (AFRC)
S.C.
Los Angeles AFB (AFSPC)
N.M.
Shaw AFB (ACC)
Luke AFB (AETC)
Altus AFB (AETC)
Charleston AFB (AMC)
March ARB (AFRC)
Cannon AFB (ACC)
Ark.
Tex.
Columbus AFB (AETC)
Davis-Monthan AFB (ACC)
Holloman AFB (ACC)
Robins AFB (AFMC)
Miss.
Barksdale AFB (ACC)
Maxwell AFB (AETC)
Ga.
Ala.
Moody AFB (ACC)
Goodfellow AFB (AETC)
La.
Dyess AFB (ACC)
Sheppard AFB (AETC)
Keesler AFB (AETC)
Fla.
Laughlin AFB (AETC)
Hurlburt Field (AFSOC)
Eglin AFB (AFMC)
Tyndall AFB (AETC)
Patrick AFB (AFSPC)
MacDill AFB (AMC)
Homestead ARB (AFRC)
Randolph AFB (AETC)
Lackland AFB (AETC)
Washington, D.C.
Md.
Hq. USAF
Bolling AFB
Va.
Andrews AFB
Eielson AFB (PACAF)
Elmendorf AFB (PACAF)
Alaska
Hickam AFB (PACAF)
Oahu
Hawaii

1110. **Majcom:** AFMC. **Host:** 377th ABW. **Mission:** provide world-class nuclear surety, expeditionary forces, and support to base operations. **Major tenants:** 498th Armament Systems Wing (AFMC); GSU 498th Missile Sustainment Gp.; 58th SOW (AETC), HC-130, MC-130, HH-60, MH-53,UH-1, CV-22. Missile Defense Agency's Airborne Laser Program Office; Air Force Distributed Mission Operations Center; Air Force Nuclear Weapons and Counterproliferation Agency; Det. 1, 342nd TRS, Air Force Pararescue and Combat Rescue Officer School; Air Force Office of Aerospace Studies; Air Force Operational Test and Evaluation Center; Air Force Research Laboratory Space Vehicles and Directed Energy Directorates (AFMC); 150th FW (ANG), F-16; Defense Threat Reduction Agency; Nuclear Weapons Center (AFMC); Nuclear Weapons Directorate (AFMC); Sandia National Laboratories; National Nuclear Security Administration (DOE); Det. 12, Space and Missile Systems Center (AFSPC); Defense Nuclear Weapons School; Air Force Inspection Agency; Air Force Safety Center. **History:** activated January 1941. Named for Col. Roy C. Kirtland, aviation pioneer who died May 2, 1941. **Area:** 52,678 acres. **Runways:** two, each 13,000 ft.; 10,000 ft.; and 6,000 ft. **Altitude:** 5,352 ft. **Personnel:** permanent party military, 3,784; DOD civilians, 1,974. **Housing:** single family, officer, 187, enlisted, 891; unaccompanied, UAQ/UEQ, 828; visiting, VOQ, 181, VAQ/VEQ, 216, DV, 38, TLF, 39. **Air Force-VA joint medical center.**

Kunsan AB, South Korea, APO AP 96264-5000; 8 mi. SW of Kunsan City. **Phone:** (cmcl, from CONUS) 011-82-63-470-1110; DSN 782-1110. **Majcom:** PACAF. **Host:** 8th FW. **Mission:** F-16C/D operations; home of the "Wolf Pack" and the first active overseas F-16 wing (September 1981). **Major tenants:** US Army's Charlie and Delta Batteries, 2nd Battalion, 1st Air Defense Artillery; US Army Contracting Command Korea. **History:** built by the Japanese in 1938. **Area:** 2,157 acres. **Runway:** 9,000 ft. **Altitude:** 29 ft. **Personnel:** permanent party military, 2,550; DOD civilians, 25. **Housing:** unaccompanied, UOQ, 245, UAQ/UEQ, 2,475; visiting, VOQ, 26, VAQ/VEQ, 60. **Clinic.**

Lackland AFB, Tex. 78236-5000; 8 mi. SW of downtown San Antonio. **Phone:** 210-671-1110; DSN 473-1110. **Majcom:** AETC. **Host:** 37th TRW. **Mission:** One of the largest USAF training wings. Provides basic military training for civilian recruits entering Air Force, ANG, and AFRC; conducts courses in ground combat (base support) functions, English language training for international and US military students, and specialized maintenance and security training in Spanish to military forces and government agencies from 26 Latin American nations. **Major tenants:** Air Intelligence Agency; 433rd AW (AFRC); 149th FW (ANG); 67th Network Warfare Wing (ACC); National Security Agency/Central Security Service Texas; 59th Medical Wing; Air Force Security Forces Center; Force Protection Battlelab; Cryptologic Systems Gp. **History:** activated 1941. Named for Brig. Gen. Frank D. Lackland, early commandant of Kelly Field flying school, who died in 1943. **Area:** 9,572 acres. **Runway:** 11,550 ft. **Altitude:** 691 ft. **Personnel:** permanent party military, 18,480; DOD civilians, 5,197. **Housing:** single family, officer, 151, enlisted, 1,060; unaccompanied, enlisted, 1,243; visiting, 2,760, TLF, 96. **Wilford Hall Medical Center.**

Lajes Field, Azores, Portugal, APO AE 09720-5000; Terceira Island, 900 mi. W of Portugal. **Phone:** (cmcl, from CONUS) 011-351-295-57-1110; DSN from US 535-1110, from Europe 312-535-1110. **Majcom:** USAFE. **Host:** 65th ABW. **Mission:** provides support to US and allied aircraft and personnel transiting the Atlantic, through US military and host-nation coordination. **Major tenants:** 65th ABW; 729th AMS (AMC). **History:** US operations began at Lajes Field 1943. **Area:** 1,192 acres. **Runway:** 10,865 ft. **Altitude:** 180 ft. **Personnel:** permanent party military, 835; DOD civilians, 197. **Housing:** single family, officer, 74, enlisted, 368; unaccompanied, UOQ, 10, UAQ/UEQ, 240; visiting, 242, TLF, 30. **Clinic.**

Langley AFB, Va. 23665-5000; 3 mi. N of Hampton. **Phone:** 757-764-1110; DSN 574-1110. **Majcom:** ACC. **Host:** 1st FW. **Mission:** F-15 and F-22A air dominance operations. **Major tenants:** Air Combat Command; Air Force Rescue Coordination Center; Aerospace C2ISR Center; USAF Heritage of America Band; 480th Intelligence Wg. (ACC); Air and Space Expeditionary Force Center (ACC). **History:** activated Dec. 30, 1916. Langley is the first military base in the US purchased and built specifically for military aviation. Named for aviation pioneer and scientist Samuel Pierpont Langley, who died in 1906. **Area:** 2,900 acres. **Runway:** 10,000 ft. **Altitude:** 11 ft. **Personnel:** permanent party military, 8,861; DOD civilians, 2,016. **Housing:** single family, officer, 328, enlisted, 1,053; unaccompanied, 1,053; visiting, VOQ, 78, VAQ/VEQ, 153, TLF, 60. **Hospital.**

Laughlin AFB, Tex. 78843-5000; 6 mi. E of Del Rio. **Phone:** 830-298-3511; DSN 732-1110. **Majcom:** AETC. **Host:** 47th FTW. **Mission:** SUPT (T-1, T-6, T-38). **History:** activated July 1942. Named for 1st Lt. Jack Thomas Laughlin, Del Rio native, B-17 pilot, killed Jan. 29, 1942. **Area:** 5,343 acres. **Runways:** 8,852 ft., 8,316 ft., and 6,236 ft. **Altitude:** 1,081 ft. **Personnel:** permanent party military, 883; DOD civilians, 879. **Housing:** single family, officer, 298, enlisted, 218; unaccompanied, UOQ, 320, UEQ, 264; visiting, VQ, 90, DV, 6, TLF, 20. **Clinic.**

Little Rock AFB, Ark. 72099-4940; 17 mi. NE of Little Rock (Jacksonville). **Phone:** 501-987-1110; DSN 731-1110. **Majcom:** AETC. **Host:** 314th AW. **Mission:** largest C-130 training base in the world; trains crew members from all services and 31 nations. **Major tenants:** 463rd Airlift Gp. (AMC), C-130; 189th AW (ANG), C-130; US Air Force Mobility Weapons School (ACC); Hq. Ark. ANG. **History:** activated Oct. 9, 1955. **Area:** 6,600 acres. **Runway:** 12,000 ft. **Altitude:** 310 ft. **Personnel:** permanent party military, 6,000; DOD civilians, 500. **Housing:** single family, officer, 185, enlisted, 1,286; unaccompanied, 840; visiting, VOQ, 102, VAQ/VEQ, 52. **Clinic,** no emergency room.

Los Angeles AFB, Calif. 90245-4657; in El Segundo, 3 mi. SE of Los Angeles Arpt.; base housing and support facilities 18 mi. S of the main base, in San Pedro. **Phone:** 310-653-1110; DSN 633-1110. **Majcom:** AFSPC. **Host:** Space and Missile Systems Center. **Mission:** responsible for research, development, acquisition, on-orbit testing, and sustainment of military space and missile systems. **History:** activated as Air Research and Development Command's Western Development Division July 1, 1954. **Area:** 57 acres at Los Angeles AFB and 156 acres at Ft. MacArthur Military Family Housing Annex. **Runway:** none. **Altitude:** 95 ft. **Personnel:** permanent party military, 1,352; DOD civilians, 1,068. **Housing:** 644 units, TLF, 57. **Clinic.**

Luke AFB, Ariz. 85309-5000; 20 mi. WNW of downtown Phoenix. **Phone:** 623-856-1110; DSN 896-1110. **Majcom:** AETC. **Host:** 56th FW. **Mission:** F-16 operations; conducts USAF and allied F-16 pilot and crew chief training. **Major tenant:** 944th FW (AFRC), F-16. **History:** activated 1941. Named for 2nd Lt. Frank Luke Jr., observation balloon-busting ace of WWI and first American aviator to receive the Medal of Honor, killed in action Sept. 29, 1918. Luke is the largest fighter training base in the world. **Area:** 4,200 acres, plus 1.9 million-acre Barry M. Goldwater Range. **Runways:** 10,000 ft. and 9,910 ft. **Altitude:** 1,090 ft. **Personnel:** permanent party military, 5,600; DOD civilians, 1,400. **Housing:** single family, 724; unaccompanied, UAQ/UEQ, 730; visiting, 186, TLF, 84. **Clinic.**

MacDill AFB, Fla. 33621-5000; on the Interbay Peninsula in southern Tampa. **Phone:** 813-828-1110; DSN 968-1110. **Majcom:** AMC. **Host:** 6th AMW. **Mission:** KC-135 operations; provides worldwide air refueling and combatant commander support. **Major tenants:** SOCOM; CENTCOM; Joint Communications Support Element; NOAA Aircraft Operations Center. **History:** activated April 15, 1941. Named for Col. Leslie MacDill, killed in aircraft accident Nov. 8, 1938. **Area:** 5,767 acres. **Runways:** 11,420 ft. and 7,167 ft. **Altitude:** 6 ft. **Personnel:** permanent party military, 4,182; DOD civilians, 1,271. **Housing:** single family, officer, 45, enlisted, 629; unaccompanied, UAQ/UEQ, 610; visiting, VOQ, 112, VAQ/VEQ, 130, TLF, 5. **Clinic.**

Malmstrom AFB, Mont. 59402-5000; 1.5 mi. E of Great Falls. **Phone:** 406-731-1110; DSN 632-1110. **Majcom:** AFSPC. **Host:** 341st SW. **Mission:** Minuteman III ICBM operations, UH-1N. **Major tenant:** 819th RED HORSE Sq. (ACC). **History:** activated Dec. 15, 1942. Named for Col. Einar A. Malmstrom, WWII fighter commander killed in air accident Aug. 21, 1954. Site of SAC's first Minuteman wing. **Area:** 3,716 acres, plus about 23,500 sq. mi. for missile sites. **Runway:** closed. **Altitude:** 3,460 ft. **Personnel:** permanent party military, 3,600; DOD civilians, 400. **Housing:** single family, officer, 210, enlisted, 974; unaccompanied, UAQ/UEQ, 834; visiting, 53, TLF, 30. **Clinic.**

Maxwell AFB, Ala. 36112-5000; 1 mi. WNW of Montgomery. **Phone:** 334-953-1110; DSN 493-1110. **Majcom:** AETC. **Host:** 42nd ABW. **Mission:** Air University conducts professional military, graduate, and professional continuing education for precommissioned and commissioned officers, enlisted personnel, and civilians. **Major tenants:** Air University; Air War College; Air Command and Staff College; Air University Library; College of Aerospace Doctrine, Research, and Education; School of Advanced Air and Space Studies; Air Force Officer Accession and Training Schools; Ira C. Eaker College for Professional Development; College for Enlisted Professional Military Education; Community College of the Air Force; Air Force Institute for Advanced Distributed Learning; Squadron Officer College; Civil Air Patrol; 908th AW (AFRC), C-130; Air Force Historical Research Agency; Air Force Doctrine Center; 754th Electronic Systems Gp.; USAF Counterproliferation Center. **History:** activated 1918. Named for 2nd Lt. William C. Maxwell, killed in air accident Aug. 12, 1920. **Area:** 3,028 acres (includes Gunter Annex). **Runway:** 8,000 ft. **Altitude:** 172 ft. **Personnel:** permanent party military, 2,463; DOD civilians, 3,888. **Housing:** single family, officer, 364, enlisted, 377; unaccompanied, UAQ/UEQ, 211; visiting, 2,246, TLF, 30. **Clinic.**

McChord AFB, Wash. 98438-1109; 8 mi. S of Tacoma. **Phone:** 253-982-1110; DSN 382-1110. **Majcom:** AMC. **Host:** 62nd AW. **Mission:** C-17 operations. Base is adjacent to Ft. Lewis, its primary customer for strategic airlift worldwide. **Major tenant:** 446th AW (AFRC assoc.). **History:** activated May 5, 1938. Named for Col. William C. McChord, killed Aug. 18, 1937. **Area:** 4,639 acres. **Runway:** 10,100 ft. **Altitude:** 323 ft. **Personnel:** permanent party military, 4,007; DOD civilians, 1,123. **Housing:** single family, officer, 113, enlisted, 867; unaccompanied, UOQ, 2, UAQ/UEQ, 729; visiting, VOQ, 68, VAQ/VEQ, 230, TLF, 20. **Dispensary.** Madigan Army Medical Center is located 4 mi. SE.

McConnell AFB, Kan. 67221-5000; SE corner of Wichita. **Phone:** 316-759-6100; DSN 734-1110.

Major Air Force Installations Overseas

Bases in Gulf Cooperation Council nations do not meet criteria for major installations; however, thousands of USAF personnel are deployed in these locations.

Majcom: AMC. **Host:** 22nd ARW. **Mission:** KC-135 operations. **Major tenants:** 184th ARW (ANG); 931st Air Refueling Gp. (AFRC assoc.). **History:** activated June 5, 1951. Named for the three McConnell brothers, WWII B-24 pilots from Wichita—Lt. Col. Edwin M. McConnell (died Sept. 1, 1997), Capt. Fred J. McConnell (died in a private airplane crash Oct. 25, 1945), and 2nd Lt. Thomas L. McConnell (killed July 10, 1943). **Area:** 3,533 acres. **Runways:** two, 12,000 ft. each. **Altitude:** 1,371 ft. **Personnel:** permanent party military, 2,940; DOD civilians, 403. **Housing:** single family, officer, 83, enlisted, 506; unaccompanied, UAQ/UEQ, 615; visiting, VOQ, 42, VAQ/VEQ, 44, TLF, 45. **Clinic.**

McGuire AFB, N.J. 08641-5000; 18 mi. SE of Trenton. **Phone:** 609-754-1100; DSN 650-1100. **Majcom:** AMC. **Host:** 305th AMW. **Mission:** C-17 and KC-10 operations. **Major tenants:** 21st Expeditionary Mobility Task Force (AMC); Air Force Expeditionary Center, Ft. Dix, N.J.; N.J. Civil Air Patrol; 108th ARW (ANG), KC-135; 514th AMW (AFRC assoc.). **History:** adjoins Army's Ft. Dix. Formerly Ft. Dix AAB; activated as Air Force base 1949. Named for Maj. Thomas B. McGuire Jr., P-38 pilot, second leading US ace of WWII, Medal of Honor recipient, killed in action Jan. 7, 1945. **Area:** 3,598 acres. **Runways:** 10,001 ft. and 7,129 ft. **Altitude:** 133 ft. **Personnel:** permanent party military, 5,184, DOD civilians, 1,313. **Housing:** single family, officer, 275, enlisted, 2,089; unaccompanied, UAQ/UEQ, 767; visiting, VOQ, 40, VAQ/VEQ, 444, TLF, 30. **Clinic.**

Minot AFB, N.D. 58705-5000; 13 mi. N of Minot. **Phone:** 701-723-1110; DSN 453-1110. **Majcom:** ACC. **Host:** 5th BW. **Mission:** B-52 operations. **Major tenant:** 91st SW (AFSPC), Minuteman III, UH-1N. **History:** activated January 1957. Named after the city of Minot, whose citizens donated $50,000 toward purchase of the land for USAF. **Area:** 4,732 acres, plus additional 330 acres for missile sites spread over 8,500 sq. miles. **Runway:** 13,200 ft. **Altitude:** 1,668 ft. **Personnel:** permanent party military, 4,951; DOD civilians, 518. **Housing:** single family, officer, 324, enlisted, 1,521; unaccompanied, 813; visiting, 51, TLF, 15. **Clinic.**

Misawa AB, Japan, APO AP 96319-5000; within Misawa city limits. **Phone:** (cmcl, from CONUS) 011-81-176-53-5181 ext. 226-3075; DSN 315-226-5181. **Majcom:** PACAF. **Host:** 35th FW. **Mission:** F-16C/D operations. **Major tenants:** 301st Intelligence Sq. (ACC); Naval Air Facility; Naval Security Gp. Activity; 750th Military Intelligence Det. (Army); Co. E, US Marine Support Battalion; Northern Air Defense Force (JASDF). **History:** occupied by US forces September 1945. **Area:** 3,865 acres. **Runway:** 10,000 ft. **Altitude:** 119 ft. **Personnel:** permanent party military, 4,564; DOD civilians, 122. **Housing:** single family, officer, 298, enlisted, 1,810; unaccompanied, UOQ, 40, UAQ/UEQ, 951; visiting, VOQ, 82, VAQ/VEQ, 44, TLF, 40. **Hospital.**

Moody AFB, Ga. 31699-5000; 10 mi. NNE of Valdosta. **Phone:** 229-257-1110; DSN 460-1110. **Majcom:** ACC. **Host:** 23rd Wing. **Mission:** HC-130, HH-60, pararescue, and force protection operations. **Major tenants:** 479th Flying Training Gp. (AETC). **History:** activated June 1941. Named for Maj. George P. Moody, killed May 5, 1941. **Area:** 6,050 acres. **Runways:** 9,300 ft. and 8,000 ft. **Altitude:** 235 ft. **Personnel:** permanent party military, 4,278; DOD civilians, 375. **Housing:** single family, officer, 32, enlisted, 271; unaccompanied, 714; visiting, VOQ, 37, VAQ/VEQ, 19, TLF, 32. **Clinic.**

Mountain Home AFB, Idaho 83648-5000; 50 mi. SE of Boise. **Phone:** 208-828-6800; DSN 728-6800. **Majcom:** ACC. **Host:** 366th FW. **Mission:** F-15C/D, F-15E, and F-16CJ/D operations. **Major tenants:** Air Warfare Battlelab; 266th Range Sq. **History:** activated August 1943. **Area:** 9,112 acres. **Runway:** 13,500 ft. **Altitude:** 3,000 ft. **Personnel:** permanent party military, 4,465; DOD civilians, 460. **Housing:** single family, officer, 175, enlisted, 1,170; unaccompanied, 883; visiting, VOQ, 43, VAQ/VEQ, 54, TLF, 15. **Hospital.**

Nellis AFB, Nev. 89191-5000; 8 mi. NE of Las Vegas. **Phone:** 702-652-1110; DSN 682-1110. **Majcom:** ACC. **Host:** 99th ABW. **Mission:** USAF Warfare Center manages advanced pilot training and tactics development and integrates test and evaluation programs. Its 98th Range Wing oversees a 15,000 sq.-mile Nellis Range Complex and two emergency airfields. 57th Wing, A-10A, F-15C/D/E, F-16C/D, HH-60G, Predator MQ-1/9 UAV. 57th Wing missions include Red Flag exercises (414th Combat Training Sq.); graduate-level pilot training (USAF Weapons School); support for Army exercises (549th Combat Training Sq.); training for international personnel in joint firepower procedures and techniques (Hq. USAF Air Ground Operations School); and USAF Air Demonstration Sq. (Thunderbirds). 53rd Wing, at 17 locations nationwide, serves as focal point for combat air forces in electronic warfare, armament and avionics, chemical defense, reconnaissance, and aircrew training devices, and operational testing and evaluation of proposed new equipment and systems. 505th Command and Control Wing builds the predominant air and space command and control ability for combined joint warfighters through training, testing, exercising, and experimentation. **Major tenants:** Aerospace Integration Center; Triservice Reserve Center; 58th and 67th Intelligence Gp. (ACC); 58th and 66th RQS (AFSOC); 820th RED HORSE Sq. (ACC); and 896th Munitions Sq. (AFMC). **History:** activated July 1941 as Las Vegas AAF with Army Air Corps Flexible Gunnery School; closed 1947; reopened 1948. Named for 1st Lt. William H. Nellis, WWII P-47 fighter pilot, killed Dec. 27, 1944. **Area:** Main base is 14,000 acres. NRC occupies 3 million acres of restricted air-land use and an additional 7,000 sq.-mile military operating area shared with civilian aircraft. **Runways:** 10,119 ft. and 10,051 ft. **Altitude:** 1,868 ft. **Personnel:** permanent party military, 8,251; DOD civilians, 2,808. **Housing:** single family, officer, 88, enlisted, 1,190; unaccompanied, 1,190; visiting, VOQ, 340, VAQ/VEQ, 354, TLF, 60. **Air Force-VA joint hospital.**

Offutt AFB, Neb. 68113-5000; 8 mi. S of Omaha. **Phone:** 402-294-1110; DSN 271-1110. **Majcom:** ACC. **Host:** 55th Wing. **Mission:** provides worldwide reconnaissance, intelligence, information warfare, treaty verification, and command and control to warfighting commanders and national leadership. **Major tenants:** STRATCOM; Joint Intelligence Center (STRATCOM); Air Force Weather Agency; National Airborne Operations Center (JCS); USAF Heartland of America Band. **History:** activated 1896 as Army's Ft. Crook. Landing field named for 1st Lt. Jarvis J. Offutt, WWI pilot who died Aug. 13, 1918. **Area:** 4,039 acres. **Runway:** 11,700 ft. **Altitude:** 1,048 ft. **Personnel:** permanent party military, 7,748; DOD civilians, 2,052. **Housing:** single family, officer, 344, enlisted, 2,256; unaccompanied, 793; visiting, 171, TLF, 60. **Clinic.**

Osan AB, South Korea, APO AP 96278-5000; 38 mi. S of Seoul. **Phone:** (cmcl, from CONUS) 011-82-31-661-1110; DSN 315-784-1110. **Majcom:** PACAF. **Host:** 51st FW. **Mission:** A/OA-10, C-12, and F-16C/D operations. **Major tenants:** 7th Air Force (PACAF); 5th RS (ACC); 31st SOS (AFSOC); 33rd Rescue Sq. (PACAF); 303rd Intelligence Sq. (AIA); 731st Air Mobility Sq. (AMC); Charlie and Delta Batteries, 1st Battalion, 43rd Air Defense Artillery (Army). **History:** originally designated K-55; runway opened December 1952. Renamed Osan AB in 1956 for nearby town that was the scene of first fighting between US and North Korean forces in July 1950. **Area:** 1,674 acres. **Runway:** 9,000 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 5,656; DOD civilians, 106. **Housing:** single family, officer, 242, enlisted, 80; unaccompanied, UOQ, 390, UAQ/UEQ, 4,681; visiting, VOQ, 57, VAQ/VEQ, 20, DV, 350, TLF, 15. **Hospital.**

Patrick AFB, Fla. 32925-3237; 2 mi. S of Cocoa Beach. **Phone:** 321-494-1110; DSN 854-1110. **Majcom:** AFSPC. **Host:** 45th SW. **Mission:** supports DOD, NASA, Navy (Trident), and other government agency and commercial missile and space programs. Host responsibilities include Cape Canaveral AFS and tracking stations on Antigua and Ascension islands. **Major tenants:** Defense Equal Opportunity Management Institute; Air Force Technical Applications Center; 920th Rescue Wing (AFRC), HC-130, HH-60; 2nd Brigade, 87th

Minor Active Duty Installations

In addition to the installations listed above, the Air Force has a number of minor installations. These air stations perform various missions, including space operations and missile warning. Here is a listing of such installations with state (or APO), ZIP code, and major command.

Brooks City-Base, San Antonio, Tex. 78235-5115 (AFMC)	DSN 240-1110
Cape Canaveral AFS, Fla. 32925-5000 (AFSPC)	DSN 467-1110
Cape Cod AFS, Mass. 02561-0428 (AFSPC)	DSN 557-2235
Cavalier AFS, N.D. 58220-9314 (AFSPC)	DSN 330-3695
Cheyenne Mountain AFS, Colo. 80914-6066 (AFSPC)	DSN 268-1110
Clear AFS, Alaska, APO AP 99704-0013 (AFSPC)	DSN 317-585-6110
Creech AFB, Nev. 89018-1230 (ACC)	DSN 682-1110
Onizuka AFS, Calif. 94088-3430 (AFSPC)	DSN 561-3000
Thule AB, Greenland, APO AE 09704-5000 (AFSPC) (ask for Thule operator)	DSN 268-3840

Division (Army); Naval Ordnance Test Unit (Navy); Joint Task Force for Joint STARS at Melbourne, Fla. **History:** activated 1940. Named for Maj. Gen. Mason M. Patrick, Chief of AEF's Air Service in WWI and Chief of the Air Service/Air Corps, 1921-27. **Area:** 2,341 acres. **Runway:** 9,000 ft. **Altitude:** 9 ft. **Personnel:** permanent party military, 4,000; DOD civilians, 1,768. **Housing:** single family, enlisted, 524; unaccompanied, UAQ/UEQ, 204; visiting, VOQ, 96, VAQ/VEQ, 163, TLF, 51. **Clinic.**

Peterson AFB, Colo. 80914-5000; at eastern edge of Colorado Springs. **Phone:** 719-556-7321; DSN 834-7321. **Majcom:** AFSPC. **Host:** 21st SW. **Mission:** provides missile warning and space control; detects, tracks, and catalogs objects in space. **Major tenants:** NORAD; AFSPC; NORTHCOM; US Army Space and Missile Defense Command/Army Forces Strategic Command; 302nd AW (AFRC), C-130. **History:** activated 1942. Named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942. **Area:** 1,277 acres. **Runway:** shared with city. **Altitude:** 6,200 ft. **Personnel:** permanent party military, 4,889; DOD civilians, 2,256. **Housing:** single family, officer, 103, enlisted, 384; unaccompanied, UAQ/UEQ, 704; visiting, VOQ, 100, VAQ/VEQ, 54, TLF, 68. **Clinic.**

Pope AFB, N.C. 28308-2391; 12 mi. NNW of Fayetteville. **Phone:** 910-394-1110; DSN 424-1110. **Majcom:** AMC. **Host:** 43rd AW. **Mission:** C-130 operations. Adjoins Army's Ft. Bragg and provides intratheater combat airlift and close air support for airborne forces and other personnel, equipment, and supplies. **Major tenants:** 23rd Fighter Gp. (ACC), A/OA-10; 18th Air Support Operations Gp. (ACC); 440th AW (AFRC); 21st and 24th STSs (AFSOC); USAF Combat Control School. **History:** activated 1919. Named after 1st Lt. Harley H. Pope, WWI pilot, killed Jan. 7, 1919. **Area:** 2,198 acres. **Runway:** 7,500 ft. **Altitude:** 218 ft. **Personnel:** permanent party military, 5,805; DOD civilians, 4,848. **Housing:** single family, officer, 84, enlisted, 543; unaccompanied, UAQ/UEQ, 668; visiting, VOQ, 8, VAQ/VEQ, 159, TLF, 22. **Clinic.**

RAF Lakenheath, UK, APO AE 09461-5000; 70 mi. NE of London; 25 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-52-3000; DSN 226-1110. **Majcom:** USAFE. **Host:** 48th FW (USAFE). **Mission:** F-15C/D and F-15E operations. **History:** activated 1941. US forces arrived August 1948; the 48th FW arrived January 1960. Named after nearby village. **Area:** 2,290 acres. **Runway:** 9,000 ft. **Altitude:** 32 ft. **Personnel:** permanent party military, 4,800; DOD civilians, 260; **Housing:** single family, officer, 196, enlisted, 1,869; unaccompanied, UAQ/UEQ, 984; visiting, VOQ, 88, VAQ/VEQ, 48, TLF, 33. **Regional medical center.**

RAF Mildenhall, UK, APO AE 09459-5000; 20 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-54-3000; DSN 238-3000. **Majcom:** USAFE. **Host:** 100th ARW. **Mission:** KC-135R operations. **Major tenants:** 352nd SOG (AFSOC), MC-130, MH-53; 95th RS (ACC); 488th Intelligence Sq. (ACC); Naval Air Facility. **History:** activated 1934; US presence began July 1950. Named after nearby town. **Area:** 1,144 acres. **Runway:** 9,227 ft. **Altitude:** 33 ft. **Personnel:** permanent party military, 3,900; DOD civilians, 440. **Housing:** single family, officer, 64, enlisted, 137; unaccompanied, UAQ/UEQ, 783; visiting, 328, TLF, 36.

Ramstein AB, Germany, APO AE 09094-0385; adjacent to the city of Ramstein, 10 mi. W of Kaiserslautern. **Phone:** (cmcl, from CONUS) 011-49-6371-47-1110; DSN 314-480-1110. **Majcom:** USAFE. **Host:** 86th AW. **Mission:** C-20, C-21, C-40, and C-130E operations; provides expeditionary airlift for first-in base opening capabilities; 86th AW commander also serves as commander of the Kaiserslautern Military Community; also at Ramstein is the 435th Air Base Wing and the 38th Combat Support Wing. The 435th ABW provides expeditionary combat support and quality of life services for the Kaiserslautern community; the 38th CSW provides mission support to geographically separated units delivering American and European alliance combat support. **Major tenant:** USAFE. **History:** activated and US presence began 1953. **Area:** 3,212 acres. **Runways:** 10,498 ft. and 8,015 ft. **Altitude:** 782 ft. **Personnel:** permanent party military, 14,761; DOD civilians, 6,698. **Housing:** single family, officer, 473, enlisted, 4,588; unaccompanied, UOQ, 32, UAQ/UEQ, 1,795; visiting, 547, TLF, 70. **Clinic.**

Randolph AFB, Tex. 78150-5000; 17 mi. NE of San Antonio. **Phone:** 210-652-1110; DSN 487-1110. **Majcom:** AETC. **Host:** 12th FTW. **Mission:** conducts T-1, T-6, and T-38 instructor pilot training and combat systems officer training in the T-43. **Major tenants:** AETC; 19th Air Force; Air Force Personnel Center; Air Force Manpower Agency; Air Force Recruiting Service. **History:** dedicated June 1930. Named for Capt. William M. Randolph, killed Feb. 17, 1928. **Area:** 5,044 acres. **Runways:** two, 8,350 ft. each. **Altitude:** 761 ft. **Personnel:** permanent party military, 3,800; DOD civilians, 4,325. **Housing:** single family, officer, 218, enlisted, 441; unaccompanied, UOQ, 200, UEQ, 168; visiting, VOQ, 381, VAQ/VEQ, 169, TLF, 30. **Clinic.**

Robins AFB, Ga. 31098; 15 mi. SSE of Macon at Warner Robins. **Phone:** 478-926-1110; DSN 468-1001. **Majcom:** AFMC. **Host:** 78th ABW. **Mission:** Warner Robins Air Logistics Center provides worldwide logistics management for the C-5, C-17, C-130, E-8, F-15, U-2, and various special operations forces aircraft and helicopters. Provide combat-ready weapon systems, equipment, services, and support personnel for the Air Force. Deliver best-value sustainment and contingency response for US and allied warfighters through world-class cradle-to-grave management, maintenance, and combat support. **Major tenants:** Air Force Reserve Command; 116th Air Control Wing (ACC), E-8; 19th ARG (AMC), KC-135; 5th Combat Communications Gp. (ACC); 367th Air Force Recruiting Gp.; Defense Information Systems Agency. **History:** activated March 1942. Named for Brig. Gen. Augustine Warner Robins, an early chief of the Materiel Division of the Army Air Corps, who died June 16, 1940. **Area:** 8,700 acres. **Runway:** 12,000 ft. **Altitude:** 294 ft. **Personnel:** permanent party military, 5,369; DOD civilians, 12,605. **Housing:** single family, officer, 108, enlisted, 675; unaccompanied, UAQ/UEQ, 672; visiting, VOQ, 134, VAQ/VEQ, 157, TLF, 50. **Clinic.**

Schriever AFB, Colo. 80912-2101; 10 mi. E of Colorado Springs. **Phone:** 719-567-1110; DSN 560-1110. **Majcom:** AFSPC. **Host:** 50th SW. **Mission:** Provide space combat capability through command, control, operations, and support of more than 170 communication, navigation, warning, surveillance, and weather satellite weapon systems and conduct of expeditionary operations. **Major tenants:** Joint National Integration Center; Space Battlelab; 310th Space Gp. (AFRC); Space Innovation and Development Center. **History:** designated as Falcon AFB June 1988. Renamed in June 1998 for Gen. Bernard A. Schriever. **Area:** 3,840 acres. **Runway:** none. **Altitude:** 6,267 ft. **Personnel:** permanent party military, 1,710; DOD civilians, 645. **Housing:** none. **Medical and dental clinic.**

Scott AFB, Ill. 62225-5000; 6 mi. ENE of Belleville. **Phone:** 618-256-1110; DSN 576-1110. **Majcom:** AMC. **Host:** 375th AW. **Mission:** C-21 operations. **Major tenants:** TRANSCOM; AMC; Military Surface Deployment and Distribution Command; 18th Air Force; Air Force Communications Agency; Defense Information Technology Contracting Office; 126th ARW (ANG), KC-135; 932nd AW (AFRC), C-9, C-40. **History:** activated June 14, 1917. Named for Cpl. Frank S. Scott, the first enlisted man to die in an aircraft accident, killed Sept. 28, 1912. **Area:** 3,230 acres. **Runways:** 10,000 ft. and 8,000 ft. (joint-use airfield). **Altitude:** 453 ft. **Personnel:** permanent party military, 5,884; DOD civilians, 3,156. **Housing:** single family, officer, 298, enlisted, 1,122; unaccompanied, UAQ/UEQ, 564; visiting, VOQ, 222, VAQ/VEQ, 173, TLF, 60. **Clinic.**

Seymour Johnson AFB, N.C. 27531; within city limits of Goldsboro. **Phone:** 919-722-1110; DSN 722-1110. **Majcom:** ACC. **Host:** 4th FW. **Mission:** F-15E operations and training. **Major tenant:** 916th ARW (AFRC), KC-135R. **History:** activated June 12, 1942. Named for Navy Lt. Seymour A. Johnson, Goldsboro native, killed March 5, 1941. **Area:** 3,558 acres. **Runway:** 11,758 ft. **Altitude:** 110 ft. **Personnel:** permanent party military, 6,066; DOD civilians, 1,108. **Housing:** single family, officer, 150, enlisted, 1,117; unaccompanied, 794; visiting, VOQ, 63, VAQ/VEQ, 40, DV, 10, TLF, 49. **Clinic.**

Shaw AFB, S.C. 29152-5000; 8 mi. WNW of Sumter. **Phone:** 803-895-1110; DSN 965-1110. **Majcom:** ACC. **Host:** 20th FW. **Mission:** F-16CJ operations. **Major tenants:** 9th Air Force (ACC); CENTCOM Air Forces. **History:** activated Aug. 30, 1941. Named for 1st Lt. Ervin D. Shaw, one of the first Americans to see air action in WWI, killed in France July 9, 1918. **Area:** 121,930 acres. **Runways:** 10,000 ft. and 8,000 ft. **Altitude:** 242 ft. **Personnel:** permanent party military, 6,208; DOD civilians, 1,751. **Housing:** single family, officer, 160, enlisted, 1,362; unaccompanied, 1,112; visiting, VQ, 97, TLF, 19. **Hospital** (no emergency room).

Sheppard AFB, Tex. 76311-5000; 5 mi. N of Wichita Falls. **Phone:** 940-676-1110; DSN 736-2511. **Majcom:** AETC. **Host:** 82nd TRW. **Mission:** largest of AETC's four technical training centers. Conducts resident training in aircraft maintenance, aircraft avionics, aerospace propulsion, fuels, ammo and munitions, armament, aerospace ground equipment, life support, civil engineering, communications, and various medical and dental specialties; provides instruction in a wide range of specialties at more than 40 USAF installations worldwide. **Major tenant:** 80th FTW (AETC), conducts T-37 and T-38 UPT, instructor pilot training in the Euro-NATO Joint Jet Pilot Training program, and Introduction to Fighter Fundamentals course with AT-38 aircraft. **History:** activated June 14, 1941. Named for US Sen. Morris E. Sheppard, who died April 9, 1941. **Area:** 6,158 acres. **Runways:** 13,100 ft., 10,000 ft., 7,000 ft., and 6,000 ft. **Altitude:** 1,019 ft. **Personnel:** permanent party military, 3,419; DOD civilians, 1,440. **Housing:** single family, officer, 200, enlisted, 967; unaccompanied, UOQ, 196, UAQ/UEQ, 396; visiting, 1,278, TLF, 73. **Clinic.**

Spangdahlem AB, Germany, APO AE 09126-5000; 20 mi. NE of Trier; 9 mi. E of Bitburg. **Phone:** (cmcl, from CONUS) 011-49-6565-61-1110; DSN 452-1110. **Majcom:** USAFE. **Host:** 52nd FW. **Mission:** A/OA-10A and HARM-equipped F-16CJ operations; air control squadron operations with logistics responsibilities at dozens of GSUs. **History:** built by the French in 1951 and turned over to US in 1952. Named after nearby town. **Area:** 1,616 acres. **Runway:** 10,000 ft. **Altitude:** 1,196 ft. **Personnel:** permanent party military, 5,472; DOD civilians, 218. **Housing:** single family, officer, 73, enlisted, 114; unaccompanied, UAQ/UEQ, 792; visiting, 102, TLF, 54. **Hospital.**

Tinker AFB, Okla. 73145-3010; 8 mi. SE of Oklahoma City. **Phone:** 405-732-1110; DSN 884-1110. **Majcom:** AFMC. **Host:** 72nd ABW. **Mission:** Okla-

homa City Air Logistics Center manages and repairs the engines that power cruise missiles and a variety of Air Force and Navy aircraft. The center also accomplishes aircraft modifications and repairs and maintains bombers, refuelers, and reconnaissance aircraft, including the B-1, B-2, B-52, C/KC-135, E-3 AWACS, and E-6 Mercury. **Major tenants:** 552nd Air Control Wing (ACC), E-3; Navy Strategic Communications Wing One, E-6; 507th ARW (AFRC), KC-135; 513th Air Control Gp. (AFRC assoc.), E-3; Defense Information Systems Agency; Defense Distribution Center Oklahoma (DLA); 3rd Combat Communications Gp. (ACC); 38th Engineering Installation Gp. (AFMC). **History:** activated March 1942. Named for Maj. Gen. Clarence L. Tinker, who went down at sea June 7, 1942 while leading a group of LB-30 bombers against Japan. **Area:** 5,033 acres. **Runways:** 11,100 ft. and 10,000 ft. **Altitude:** 1,291 ft. **Personnel:** permanent party military, 6,113; DOD civilians, 13,547. **Housing:** single family, officer, 107, enlisted, 587; unaccompanied, UAQ/UEQ, 1,222; visiting, VOQ, 109, VAQ/VEQ, 50, TLF, 40. **Clinic.**

Travis AFB, Calif. 94535-5000; 50 mi. NE of San Francisco at Fairfield. **Phone:** 707-424-1110; DSN 837-1110. **Majcom:** AMC. **Host:** 60th AMW. **Mission:** C-5, C-17, and KC-10 operations. **Major tenants:** 615th Contingency Response Wing (AMC); 15th Expeditionary Mobility Task Force (AMC); 349th AMW (AFRC assoc.); USAF Band of the Golden West; Air Museum. **History:** activated May 17, 1943. Named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950. **Area:** 6,383 acres. **Runways:** two, approx. 11,000 ft. each. **Altitude:** 62 ft. **Personnel:** permanent party military, 8,443; DOD civilians, 3,511. **Housing:** single family, officer, 148, enlisted, 1,057; unaccompanied, UAQ/UEQ, 873; visiting, VQ, 340, TLF, 46. **David Grant Medical Center.**

Tyndall AFB, Fla. 32403-5000; 12 mi. E of Panama City. **Phone:** 850-283-1113; DSN 523-1113. **Majcom:** AETC. **Host:** 325th FW. **Mission:** F-15 and F-22 operations; trains USAF F-15 and F-22 pilots. **Major tenants:** 1st Air Force (ANG); Southeast Air Defense Sector (ANG); 53rd Weapons Evaluation Gp. (ACC); Air Force Civil Engineer Support Agency. **History:** activated Dec. 7, 1941. Named for 1st Lt. Frank B. Tyndall, WWI fighter pilot killed July 15, 1930. **Area:** 29,102 acres. **Runways:** 10,000 ft., 9,000 ft., and 7,000 ft. **Altitude:** 18 ft. **Personnel:** permanent party military, 3,421; DOD civilians, 565. **Housing:** single family, officer, 111, enlisted, 737; unaccompanied, UAQ/UEQ, 448; visiting, 648, TLF, 52. **Clinic.**

US Air Force Academy, Colo. 80840-5025; N of Colorado Springs. **Phone:** 719-333-1110; DSN 333-1110. **Host:** USAFA. **Mission:** inspires and develops outstanding young men and women to become Air Force officers with knowledge, character, and discipline. **History:** established April 1, 1954. Moved to permanent location August 1958. **Area:** 18,500 acres. **Runways:** 4,500 ft., 3,500 ft., and 2,300 ft. **Altitude:** 7,200 ft. **Personnel:** permanent party military, 1,973; DOD civilians, 2,000. **Housing:** single family, officer, 231, enlisted, 978; unaccompanied, 130; visiting, 90, TLF, 30. **Hospital.**

Vance AFB, Okla. 73705-5000; 3 mi. SSW of Enid. **Phone:** 580-213-5000; DSN 448-7110. **Majcom:** AETC. **Host:** 71st FTW. **Mission:** provides Joint SUPT in T-1, T-6, and T-38 aircraft. **History:** activated November 1941. Named for Lt. Col. Leon R. Vance Jr., Enid native, 1939 West Point graduate, and Medal of Honor recipient, killed July 26, 1944. **Area:** 2,000 acres. **Runways:** 9,200 ft., 9,200 ft., and 5,001 ft. **Altitude:** 1,307 ft. **Personnel:** permanent party military, 1,200; DOD civilians, 142. **Housing:** single family, 229; unaccompanied, UOQ, 200, UAQ/UEQ, 109; visiting, 62, TLF, 10. **Clinic.**

Vandenberg AFB, Calif. 93437-5000; 8 mi. NNW of Lompoc. **Phone:** 805-606-1110; DSN 276-1110. **Majcom:** AFSPC. **Host:** 30th SW. **Mission:** conducts polar-orbiting space launches and supports R&D tests and launch range operations for DOD, USAF, and NASA space, ballistic missile, and aeronautical systems and commercial space launches; provides test support for DOD space and ICBM systems; furnishes facilities and essential services to more than 36 aerospace contractors. **Major tenants:** 14th Air Force (AFSPC); 381st Training Gp. (AETC); 576th Flight Test Sq. (Space Warfare Center). **History:** originally Army's Camp Cooke. Activated October 1941; taken over by USAF June 7, 1957. Renamed for Gen. Hoyt S. Vandenberg, USAF's second Chief of Staff. **Area:** 98,400 acres. **Runway:** 15,000 ft. **Altitude:** 367 ft. **Personnel:** permanent party military, 3,400; DOD civilians, 1,400. **Housing:** single family, officer, 403, enlisted, 1,566; unaccompanied, dorm rooms, 670, UOQ, 43, UAQ/UEQ, 59; visiting, VOQ, 111, VAQ/VEQ, 124, DV, 18, TLF, 26. **Clinic.**

Whiteman AFB, Mo. 65305-5000; 2 mi. S of Knob Noster. **Phone:** 660-687-1110; DSN 975-1110. **Majcom:** ACC. **Host:** 509th BW. **Mission:** B-2 operations. **Major tenants:** 442nd FW (AFRC), A/OA-10; 1st Battalion, 135th Aviation Regiment (ARNG); Mobile Inshore Undersea Warfare Unit 114 (Navy Reserve). **History:** activated 1942. Named for 2nd Lt. George A. Whiteman, first pilot to die in aerial combat during the attack on Pearl Harbor. **Area:** 4,993 acres. **Runway:** 12,400 ft. **Altitude:** 871 ft. **Personnel:** permanent party military, 5,480; DOD civilians, 707. **Housing:** single family, officer, 116, enlisted, 968; unaccompanied, 674; visiting, VOQ, 52, VAQ/VEQ, 35, TLF, 31. **Clinic.**

Wright-Patterson AFB, Ohio 45433; 10 mi. ENE of Dayton. **Phone:** 937-257-1110; DSN 787-1110. **Majcom:** AFMC. **Host:** 88th ABW. **Mission:** Aeronautical Systems Center develops, acquires, modernizes, and sustains aerospace systems. **Major tenants:** Air Force Materiel Command; Development and Fielding Systems Gp.; Air Force Research Laboratory (AFMC); Air Force Security Assistance Center (AFMC); 445th AW (AFRC), C-141 (converting to C-5); Air Force Institute of Technology (AETC); National Air and Space Intelligence Center; National Museum of the US Air Force. **History:** originally separate, Wright Field and Patterson Field were merged and redesignated Wright-Patterson AFB Jan. 13, 1948. Named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918. The Wright brothers did much of their early flying on Huffman Prairie, now in Area C of the present base. The prairie is part of the Dayton Aviation Heritage National Historical Park. Site of US Air Force Marathon, held annually on Saturday nearest Sept. 18. **Area:** 8,357 acres. **Runway:** 12,600 ft. **Altitude:** 824 ft. **Personnel:** permanent party military, 5,863; DOD civilians, 10,954. **Housing:** single family, officer, 182, enlisted, 294; unaccompanied, UAQ/UEQ, 408; privatized housing, oficers, 566, enlisted, 970; visiting, 414, TLF, 41. **Wright-Patterson Medical Center.**

Yokota AB, Japan, APO AP 96328-5000; approx. 28 mi. W of downtown Tokyo. **Phone:** (cmcl, from CONUS) 011-81-311-755-1110; DSN 315-225-1110. **Majcom:** PACAF. **Host:** 374th AW. **Mission:** C-21, C-130, and UH-1N operations. Primary aerial port in Japan. **Major tenants:** US Forces, Japan; 5th Air Force (PACAF); 730th AMS (AMC); Det. 1, Air Force Band of the Pacific-Asia; American Forces Network Tokyo; DFAS-Japan. **History:** opened as Tama AAF by the Japanese in 1939. **Area:** 1,750 acres. **Runway:** 11,000 ft. **Altitude:** 457 ft. **Personnel:** permanent party military, 3,414; DOD civilians, 199. **Housing:** single family, officer, 683, enlisted, 1,956; unaccompanied, UOQ, 184, UAQ/UEQ, 896; visiting, VOQ, 202, VAQ/VEQ, 23, TLF, 189. **Hospital.**

USAF photo by SMSgt. Don Perrien

B-52s from Barksdale AFB, La., and Minot AFB, N.D., wait on the flight line at Andersen AFB, Guam, in preparation for their next mission.

ANG and AFRC Installations

This section consolidates Air National Guard and Air Force Reserve Command facilities into a single listing. Units are listed by base names or according to the airports whose facilities they share. In addition, some ANG and AFRC units are located on USAF bases and are included as major tenants on those bases in the "Major Active Duty Installations" section.

ANG and AFRC personnel are organized into two categories. Part-time personnel are traditional Guardsmen and Reservists who work in the private sector during the week, serve in ANG or AFRC one weekend each month, and go on active duty for two weeks during the year. If called up by the President, they go on active military status.

ANG's second category, full-time support personnel, are Title 32 Active Guard Reserve (AGR), Title 32 civilians, and Title 5 civilians. Guard AGR positions are controlled by the state. They do not serve at the national level. They receive the same benefits as regular active duty military. Title 32 civilian personnel are civilians employed full-time by the Guard and must also serve in military status one weekend per month and for two weeks of training per year. They can also be activated and mobilized during times of national crisis. Title 5 civilian personnel are federal civilian employees who hold administrative positions in ANG.

AFRC's second category, full-time support personnel, are Title 32 AGR, Title 32 Air Reserve Technicians (ART), and Title 5 civilians. Reservists in AGR positions serve primarily in flight training and flight testing units, as recruiters, or at the headquarters level. They receive the same benefits as regular active duty military. Title 32 ARTs are full-time federal civilian employees who serve in the same position as Reservists at least one weekend per month and for two weeks of training per year. They can also be activated and mobilized during times of national crisis. Title 5 personnel are federal civilian employees who hold administrative positions in AFRC.

Abraham Lincoln Capital Arpt., Ill. 62707-5001; 4 mi. NW of Springfield. **Phone:** 217-757-1219; DSN 892-8219. **Unit:** 183rd Fighter Wing (ANG). **Area:** 91 acres. **Runways:** 8,000 ft., 7,000 ft., and 5,300 ft. **Altitude:** 588 ft. **Full-time personnel:** 304.

Allen C. Thompson Field, Miss. 39232-8881; 6 mi. E of Jackson. **Phone:** 601-936-8370; DSN 731-9370. **Unit:** 172nd Airlift Wing (ANG). **Area:** 140 acres. **Runway:** 8,500 ft. **Altitude:** 346 ft. **Full-time personnel:** 449.

Alpena County Regional Arpt., Mich. 49707; 5 mi W of Alpena. **Phone:** 989-354-6210; DSN 741-3210. **Unit:** Combat Readiness Training Center (ANG). **Area:** 610 acres. **Runways:** 9,000 ft. and 5,030 ft. **Altitude:** 682 ft. **Full-time personnel:** 83.

Atlantic City Arpt., N.J. 08234-9500; 9 mi. NW of Atlantic City. **Phone:** 609-645-6000; DSN 455-6000. **Unit:** 177th Fighter Wing (ANG). **Area:** 296 acres. **Runways:** 10,000 ft. and 6,144 ft. **Altitude:** 71 ft. **Full-time personnel:** 272.

Bangor Arpt., Maine 04401-8009; within city of Bangor. **Phone:** 207-990-7700; DSN 698-7700. **Units:** 101st Air Refueling Wing (ANG); 776th Radar Sq. (ACC). **Area:** 503 acres. **Runway:** 11,400 ft. **Altitude:** 178 ft. **Full-time personnel:** 370. Commissary; exchange.

Barnes Arpt., Mass. 01085-1482; 3 mi. N of downtown Westfield. **Phone:** 413-568-9151; DSN 636-9210. **Unit:** 104th Fighter Wing (ANG). **Area:** 186 acres. **Runway:** 9,000 ft. **Altitude:** 271 ft. **Full-time personnel:** 263.

Birmingham Arpt., Ala. 35217-3545, 7 mi. E of Birmingham. **Phone:** 205-714-2000; DSN 778-2210. **Unit:** 117th Air Refueling Wing (ANG). **Area:** 145 acres. **Runway:** 10,000 ft. **Altitude:** 644 ft. **Full-time personnel:** 240.

Boise Air Terminal (Gowen Field), Idaho 83705-8006; 1 mi. S of Boise. **Phone:** 208-422-5322; DSN 422-5322. **Units:** 124th Wing (ANG). Also host for the Army National Guard (ARNG); Army Reserve; Army Research Institute; Navy/Marine Corps Reserves; and Civil Air Patrol. **History:** named for Lt. Paul R. Gowen, killed in B-10 crash in Panama July 11, 1938. **Area:** 576 acres. **Runway:** 9,800 ft. **Altitude:** 2,836 ft. **Full-time personnel:** 542. Limited transient facilities available during ARNG camps.

Bradley Arpt., Conn. 06026-9309; 15 mi. N of Hartford. **Phone:** 860-292-2526; DSN 636-8310. **Units:** 103rd Fighter Wing (ANG); ARNG aviation battalion. **History:** named for Lt. Eugene M. Bradley, killed in P-40 crash August 1941. **Area:** 148 acres. **Runway:** 9,600 ft. **Altitude:** 172 ft. **Full-time personnel:** 278.

Burlington Arpt., Vt. 05403-5872; 1 mi. E of Burlington. **Phone:** 802-660-5215; DSN 220-5215. **Unit:** 158th Fighter Wing (ANG). **Area:** 230 acres. **Runway:** 7,800 ft. **Altitude:** 355 ft. **Full-time personnel:** 297.

Channel Islands ANGS, Calif. 93041-4002, 3 mi. SE of Oxnard. **Phone:** 805-986-8000; DSN 893-7000. **Unit:** 146th Airlift Wing (ANG). **Area:** 206 acres. **Runway:** 11,100 ft. **Altitude:** 12 ft. **Full-time personnel:** 290.

Charlotte/Douglas Arpt., N.C. 28208, 6 mi. W of downtown Charlotte. **Phone:** 704-391-4100; DSN 583-9129. **Unit:** 145th Airlift Wing (ANG). **Area:** 79 acres. **Runway:** 10,000 ft. **Altitude:** 745 ft. **Full-time personnel:** 285.

Cheyenne Arpt., Wyo. 82009. **Phone:** 307-772-6110; DSN 943-6110. **Unit:** 153rd Airlift Wing (ANG). **Area:** 77 acres. **Runway:** 9,202 ft. **Altitude:** 6,250 ft. **Full-time personnel:** 252.

Des Moines Arpt., Iowa 50321-2799; within Des Moines. **Phone:** 515-256-8210; DSN 946-8210. **Unit:** 132nd Fighter Wing (ANG). **Area:** 162 acres. **Runway:** 9,000 ft. **Altitude:** 942 ft. **Full-time personnel:** 304.

Dobbins ARB, Ga. 30069-4904; 16 mi. NW of Atlanta. **Phone:** 678-655-5467; DSN 625-1110. **Units:** Hq. 22nd Air Force (AFRC); 94th Airlift Wing (AFRC); Hq. Ga. ANG; Army Aviation Group (Ga. ARNG); US Army Reserve Center; 283rd Combat Communications Sq.; and Marine Corps Reserve Center Atlanta. **History:** activated 1943. Named for Capt. Charles Dobbins, pilot killed in WWII. **Area:** 1,660 acres. NAS Atlanta and Lockheed Martin Aeronautical Systems Co./Air Force Plant 6 adjoin Dobbins ARB and use airfield facilities. **Runway:** 10,000 ft. **Altitude:** 193 ft. **Full-time personnel:** AFRC, 689, ANG, 29.

Duke Field, Fla. 32542-6644; 6 mi. S of Crestview. **Phone:** 850-883-6347; DSN 875-6347. **Unit:** 919th Special Operations Wing (AFRC). **History:** Named for Lt. Robert L. Duke, pilot killed Dec. 29, 1943 in test flight. **Area:** 1,348 acres. **Runway:** 8,000 ft. **Altitude:** 193 ft. **Full-time personnel:** active duty, 300; ARTs, 265, ANG, 1.

Duluth Arpt., Minn. 55811-6036; 5 mi. WNW of Duluth. **Phone:** 218-788-7210; DSN 825-7210. **Unit:** 148th Fighter Wing (ANG). **Area:** 285 acres. **Runway:** 10,150 ft. **Altitude:** 1,430 ft. **Full-time personnel:** 282.

Eastern West Virginia Arpt. (Shepherd Field), W. Va. 25401-7702; 4 mi. S of Martinsburg. **Phone:** 304-616-5100; DSN 242-5100. **Unit:** 167th Airlift Wing (ANG). **Area:** 340 acres. **Runway:** 7,000 ft. **Altitude:** 556 ft. **Full-time personnel:** 309.

Ellington Field, Tex. 77034-5586; a city of Houston airport 10 mi. SE of downtown Houston. **Phone:** 281-929-2337; DSN 454-2337. **Units:** 147th Fighter Wing (ANG); 111th FIS; NASA Flight Operations; US Coast Guard; ARNG; FAA. **History:** named for Lt. Eric L. Ellington, pilot killed November 1913. **Area:** 190 acres. **Runway:** 9,000 ft. **Altitude:** 34 ft. **Full-time personnel:** 272.

Forbes Field, Kan. 66619-5370; 6 mi. S of Topeka. **Phone:** 785-861-4210; DSN 720-4210. **Unit:** 190th Air Refueling Wing (ANG). **History:** named for Maj. Daniel H. Forbes Jr., pilot killed June 5, 1948 test-flying the Northrop YB-49 "Flying Wing." **Area:** 193 acres. **Runway:** 12,819 ft. **Altitude:** 1,079 ft. **Full-time personnel:** 253.

Fort Smith Arpt., Ark. 72903; within Fort Smith. **Phone:** 479-573-5188; DSN 778-5188. **Unit:** 188th Fighter Wing (ANG). **Area:** 130 acres. **Runway:** 8,000 ft. **Altitude:** 468 ft. **Full-time personnel:** 280.

Fort Wayne Arpt., Ind. 46809-0122; 8 mi. SSW of downtown Fort Wayne. **Phone:** 260-478-3210; DSN 786-1210. **Unit:** 122nd Fighter Wing (ANG). **Area:** 166 acres. **Runway:** 12,000 ft. **Altitude:** 802 ft. **Full-time personnel:** 330.

Francis S. Gabreski Arpt., N.Y. 11978-1201; 1 mi. N of Westhampton Beach. **Phone:** 631-288-7335; DSN 456-7335. **Unit:** 106th Rescue Wing (ANG). **History:** named for Col. Francis S. Gabreski, WWII and Korean War ace. **Area:** 88 acres. **Runways:** 9,000 ft., 5,000 ft., and 3,000 ft. **Altitude:** 68 ft. **Full-time personnel:** 245.

Fresno Yosemite Arpt., Calif. 93727-2199; within Fresno. **Phone:** 559-454-5100; DSN 949-9100. **Unit:** 144th Fighter Wing (ANG). **Area:** 111 acres. **Runway:** 9,222 ft. **Altitude:** 332 ft. **Full-time personnel:** 278.

General Mitchell Arpt./ARS, Wis. 53207-6299; SW corner of Milwaukee. **AFRC phone:** 414-482-5488;

AGS	Air Guard Station
ANGB	Air National Guard Base
ANGS	Air National Guard Station
ARB	Air Reserve Base
Arpt.	Airport
ARS	Air Reserve Station
JRB	Joint Reserve Base
NAS	Naval Air Station

DSN 741-5488. **ANG phone:** 414-944-8410; DSN 580-8410. **Units:** 440th Airlift Wing (AFRC); 128th Air Refueling Wing (ANG). **History:** named for Maj. Gen. William "Billy" Mitchell. **Area:** AFRC, 103 acres; ANG, 70 acres. **Runway:** 9,690 ft. **Altitude:** 670 ft. **Full-time personnel:** AFRC, 280; ANG, 18.

Greater Peoria Arpt., Ill. 61607-5023; 5 mi. SW of Peoria. **Phone:** 309-633-5210; DSN 724-5210. **Unit:** 182nd Airlift Wing (ANG). **Area:** 339 acres. **Runways:** 10,000 ft. and 8,006 ft. **Altitude:** 656 ft. **Full-time personnel:** 289.

Great Falls Arpt., Mont. 59404-5570; 5 mi. SW of Great Falls. **Phone:** 406-791-6285; DSN 279-2285. **Unit:** 120th Fighter Wing (ANG). **Area:** 141 acres. **Runways:** 10,502 ft. and 6,357 ft. **Altitude:** 3,679 ft. **Full-time personnel:** 290.

Grissom ARB, Ind. 46971-5000; 15 mi. N of Kokomo. **Phone:** 765-688-3348; DSN 928-3348. **Unit:** 434th Air Refueling Wing (AFRC). **History:** activated January 1943 as Bunker Hill NAS. Reactivated June 1954 as Bunker Hill AFB. Renamed in May 1968 for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967 in Apollo capsule fire. Realigned as an AFRC base Oct. 1, 1994. **Area:** 1,127 acres. **Runway:** 12,500 ft. **Altitude:** 800 ft. **Housing:** 485 transient. **Full-time personnel:** 583.

Gulfport-Biloxi Arpt., Miss. 39507; within Gulfport. **Phone:** 228-214-6002; DSN 363-6002. **Units:** Combat Readiness Training Center; 255th Air Control Sq. (ANG); 209th Civil Engineering Sq. An air-to-ground gunnery range is located 70 mi. N of site. **History:** established as a Permanent Field Training Site in 1954 and redesignated as a CRTC in 1990. **Area:** 224 acres. **Runway:** 9,000 ft. **Altitude:** 26 ft. **Full-time personnel:** 119.

Hancock Field, N.Y. 13211-7099; 4 mi. NE of Syracuse. **Phone:** 315-454-6100; 1-800-982-3696; DSN 489-9100. **Units:** 174th Fighter Wing (ANG); 152nd Air Operations Gp.; 274th Air Support Operations Sq. (N.Y. ARNG). **Area:** 356 acres. **Runways:** 9,300 ft. and 7,500 ft. **Altitude:** 410 ft. **Full-time personnel:** 325.

Harrisburg Arpt., Pa. 17057; 6 mi. SE of Harrisburg. **Phone:** 717-948-2200; DSN 423-2200. **Unit:** 193rd Special Operations Wing (ANG). **Area:** 39 acres. **Runway:** 9,501 ft. **Altitude:** 355 ft. **Full-time personnel:** 297.

Hector Arpt., Fargo, N.D. 58102-1051. **Phone:** 701-451-2110; DSN 362-8110. **Unit:** 119th Fighter Wing (ANG). **Area:** 260 acres. **Runways:** 9,500 ft., 6,300 ft., and 3,800 ft. **Altitude:** 895 ft. **Full-time personnel:** 350.

Homestead ARB, Fla. 33039-1299; 5 mi. NE of Homestead. **Phone:** 305-224-7303; DSN 791-7303. **Units:** 482nd Fighter Wing (AFRC); Det. 1, 125th Fighter Wing (Fla. ANG, NORAD); US Customs Miami Aviation Branch; Fla. ARNG 50th ASG; Defense Logistics Agency; Civil Air Patrol Sq. 279; AFOSI; Naval Intelligence; FBI. **Area:** approx. 1,000 acres. **Runway:** 11,200 ft. **Altitude:** 11 ft. **Full-time personnel:** AFRC, 595.

Hulman Arpt., Ind. 47803; 6 mi. E of Terre Haute. **Phone:** 812-877-5210; DSN 724-1210. **Unit:** 181st Fighter Wing (ANG). **Area:** 279 acres. **Runways:** 9,025 ft. and 7,250 ft. **Altitude:** 585 ft. **Full-time personnel:** 274.

Jacksonville Arpt., Fla. 32218-7933; within Jacksonville. **Phone:** 904-741-7100; DSN 641-7100. **Unit:** 125th Fighter Wing (ANG). **Area:** 332 acres. **Runway:** 10,000 ft. **Altitude:** 25 ft. **Full-time personnel:** 359.

Joe Foss Field, S.D. 57104-0264; N side of Sioux Falls. **Phone:** 605-988-5700; DSN 798-7700. **Unit:** 114th Fighter Wing (ANG). **History:** named for Brig. Gen. Joseph J. Foss, WWII ace, former governor, former AFA national president, and founder of the S.D. ANG. **Area:** 214 acres. **Runways:** 9,000 ft. and 8,000 ft. **Altitude:** 1,420 ft. **Full-time personnel:** 348.

Key Field, Miss. 39307-7112; 3 mi. S of Meridian. **Phone:** 601-484-9000; DSN 778-9000. **Units:** 186th Air Refueling Wing (ANG); 238th Air Support Operations Sq. (ANG). **History:** named after Fred and Al Key, pioneers in air-to-air refueling and holders of flight endurance record (27 continuous days) in 1935 in *Ole Miss,* on permanent display at the National Air and Space Museum. **Area:** 117 acres. **Runways:** 10,000 ft. and 5,000 ft. **Altitude:** 295 ft. **Full-time personnel:** 426.

Klamath Falls Arpt./Kingsley Field, Ore. 97603; 5 mi. S of Klamath Falls. **Phone:** 541-885-6198; DSN 830-6198. **Units:** 173rd Fighter Wing (ANG); 114th FS (ANG); 116th OLAA (ANG); 270th ATCS (ANG). **Area:** 381 acres. **Runway:** 10,301 ft. **Altitude:** 4,088 ft. **Full-time personnel:** 479.

Kulis ANGB, Alaska 99502-1988. **Phone:** 907-249-1176; DSN 317-626-1176. **Units:** 176th Wing (ANG); 144th Airlift Sq. (ANG); 210th Rescue Sq. (ANG). **History:** named for Lt. Albert Kulis, killed in training flight in 1954. **Area:** 129 acres. **Runway:** 10,897 ft. **Altitude:** 94 ft. **Full-time personnel:** 433.

Lambert-St. Louis Arpt., Mo. 63044-2371; 20 mi. NW of downtown St. Louis. **Phone:** 314-527-7000; DSN 824-7000. **Unit:** 131st Fighter Wing (ANG). **Area:** 48 acres. **Runway:** 11,000 ft. **Altitude:** 604 ft. **Full-time personnel:** 368.

Lincoln Arpt., Neb. 68524-1880; 4 mi. NW of downtown Lincoln. **Phone:** 402-458-1234; DSN 946-1234. **Units:** 155th Air Refueling Wing (ANG); ARNG unit. **Area:** 179 acres. **Runways:** 13,500 ft. and 8,620 ft. **Altitude:** 1,050 ft. **Full-time personnel:** 280.

Louisville Arpt./AGS (Standiford Field). Ky. 40213; 5 mi. S of downtown Louisville. **Phone:** 502-364-9400; DSN 989-4400. **Units:** 123rd Airlift Wing (ANG); 223rd Communications Sq. (ANG). **Area:** 81 acres. **Runways:** 10,000 ft. and 7,800 ft. **Altitude:** 500 ft. **Full-time personnel:** 318.

Luis Munoz Marin Arpt., Puerto Rico 00979-1502; E of San Juan. **Phone:** 787-253-5101; DSN 860-9101. **Units:** 156th Airlift Wing (ANG); 612th ASOS Det. Coronet Oak. **Area:** 95 acres. **Runway:** 10,000 ft. **Altitude:** 6 ft. **Full-time personnel:** 305.

Mansfield Lahm Arpt., Ohio 44903-0179; 3 mi. N of Mansfield. **Phone:** 419-520-6100; DSN 696-6100. **Unit:** 179th Airlift Wing (ANG). **History:** named for nearby city and aviation pioneer Brig. Gen. Frank P. Lahm in 1948. **Area:** 67 acres. **Runways:** 9,000 ft. and 6,795 ft. **Altitude:** 1,299 ft. **Full-time personnel:** 230.

March ARB, Calif. 92518-9888; 9 mi. SE of downtown Riverside. **Phone:** 951-655-4137; DSN 447-4137. **ANG Phone:** 951-655-2556; DSN 447-2556. **Units:** 4th Air Force (AFRC); 452nd Air Mobility Wing (AFRC); Det.1, 144th FW (Calif. ANG); 163rd Air Refueling Wing (Calif. ANG); 4th Combat Camera Sq.; American Forces Radio and Television Broadcast Center; Defense Visual Information Center; Air Force Audit Agency directorate; US Customs Service Domestic Air Interdiction Coordination Center. **History:** activated March 1, 1918; named for 2nd Lt. Peyton C. March Jr., who died of crash injuries Feb. 18, 1918. **Area:** 2,300 acres. **Runway:** 13,300 ft. **Altitude:** 1,530 ft. **Full-time personnel:** AFRC, 984; ANG, 262. **Housing:** VOQ, 138, VAQ, 302.

Martin State Arpt., Md. 21220-2899; 8 mi. NE of Baltimore. **Phone:** 410-918-6210; DSN 243-6210. **Unit:** 175th Wing (ANG). **Area:** 175 acres. **Runway:** 8,100 ft. **Altitude:** 21 ft. **Full-time personnel:** 383.

McEntire ANGS, S.C. 29044; 15 mi. E of Columbia. **Phone:** 803-647-8300; DSN 583-8201. **Units:** 169th Fighter Wing (ANG); 240th Combat Communications Sq. (ANG); 245th Air Traffic Control Sq. (ANG); Combined Support Maintenance Shop (ARNG); 1/151st Aviation Battalion (ARNG). **History:** named for ANG Brig. Gen. B.B. McEntire Jr., killed in 1961 F-104 accident. **Area:** 2,301 acres. **Runway:** 9,000 ft. **Altitude:** 252 ft. **Full-time personnel:** 330.

McGhee Tyson Arpt., Tenn. 37777; 10 mi. SW of Knoxville. **Phone:** 865-985-3200; DSN 266-3200. **Units:** 134th Air Refueling Wing (ANG); 119th Air Control Sq.; 228th Combat Communications Sq.; ANG's I.G. Brown Training and Education Center. **Area:** 346 acres. **Runway:** 9,008 ft. **Altitude:** 923 ft. **Full-time personnel:** 332.

Memphis Arpt., Tenn. 38118; within Memphis. **Phone:** 901-291-7111; DSN 726-7120. **Unit:** 164th Airlift Wing (ANG). **Area:** 103 acres. **Runway:** 11,120 ft. **Altitude:** 332 ft. **Full-time personnel:** 278. Fitness center and mini-exchange.

Minneapolis-St. Paul Arpt./ARS, Minn. 55450-2100; in Minneapolis, near confluence of the Mississippi and Minnesota Rivers. **AFRC phone:** 612-713-1217; DSN 783-1217. **ANG phone:** 612-713-2501; DSN 783-2501. **Units:** 934th Airlift Wing (AFRC), C-130; 133rd Airlift Wing (ANG), C-130; 210th Engineering Installation Sq. (ANG); Naval Reserve Readiness Command, Region 16; Civil Air Patrol, NCLR, and MNLO; Rothe Development Inc. (AFRC). **Area:** AFRC, 300 acres; ANG, 128 acres. **Runways:** 11,006 ft., 10,000 ft., and 8,200 ft. **Altitude:** 840 ft. **Full-time personnel:** AFRC, 346; ANG, 267. Lodging, clubs, fitness center, and exchange.

Moffett Field, Calif. 94035; 2 mi. N of Mountain View. **Phone:** 650-603-9129; DSN 359-9129. **Unit:** 129th Rescue Wing (ANG). **Area:** 97 acres. **Runway:** 9,200 ft. **Altitude:** 34 ft. **Full-time personnel:** 271.

Montgomery Regional Arpt., Ala. 36108; 7 mi. SW of downtown Montgomery. **Phone:** 334-394-7200; DSN 358-9200. **Units:** 187th Fighter Wing (ANG); 232nd Combat Communications Sq. **History:** originally named for Ens. Clarence Dannelly, Navy pilot killed during WWII. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 221 ft. **Full-time personnel:** 268.

NAS JRB Fort Worth, Tex. 76127-6200, 7 mi. NW of Fort Worth. **Navy hosted switchboard:** 817-782-5000; DSN 739-5000. **ANG Phone:** 817-852-3202; DSN 874-3202. **Units:** 10th Air Force and 301st Fighter Wing (AFRC); 136th Airlift Wing (ANG). **Area:** Navy hosted base is 1,805 acres; ANG, 81 acres. **Runway:** 12,000 ft. **Altitude:** 650 ft. **Full-time personnel:** AFRC, 563; ANG, 244.

NAS JRB New Orleans, La. 70143-0050, 15 mi. S of New Orleans. **Phone:** 504-391-8600; DSN 457-8600. **Unit:** 159th Fighter Wing (ANG). **Area:** 3,239 acres. **Runways:** 8,000 ft. and 6,000 ft. **Altitude:** 3 ft. **Full-time personnel:** 324.

Nashville Arpt., Tenn. 37217-2538; 6 mi. SE of downtown Nashville. **Phone:** 615-399-5410; DSN 788-6210. **Unit:** 118th Airlift Wing (ANG). **Area:** 88 acres. **Runway:** 11,150 ft. **Altitude:** 570 ft. **Full-time personnel:** 297.

New Castle County Arpt., Del. 19720; 5 mi. S of Wilmington. **Phone:** 302-323-3500; DSN 445-7500. **Unit:** 166th Airlift Wing (ANG). **Area:** 79 acres. **Runways:** 7,170 ft. and 7,000 ft. **Altitude:** 80 ft. **Full-time personnel:** 240.

Niagara Falls Arpt./ARS, N.Y. 14304-5001; 6 mi. E of Niagara Falls. **Phone:** 716-236-2138; DSN 238-2138. **Units:** 914th Airlift Wing (AFRC), C-130H; 107th Air Refueling Wing (ANG), KC-135. **History:** activated January 1952. **Area:** 979 acres; ANG area, 108 acres. **Runway:** 9,135 ft. **Altitude:** 590 ft. **Full-time personnel:** AFRC, 361; ANG, 257. Lodging, exchange, and consolidated club.

Otis ANGB, Mass. 02542-1330; 7 mi. NNE of Falmouth. **Phone:** 508-968-4667; DSN 557-4667. **Units:** 102nd Fighter Wing (ANG), F-15A/B; 101st Fighter Sq. (ANG). **Tenant Units:** 202nd Weather Flt. (ANG); 253rd CCG (ANG); 267th CCS (ANG). **History:** named for 1st Lt. Frank J. Otis, Mass. ARNG flight surgeon and pilot killed in 1937 crash. **Area:** 4,069 acres. **Runways:** 9,500 ft. and 8,000 ft. **Altitude:** 103 ft. **Full-time personnel:** 374.

Pease Intl. Tradeport ANGS, Portsmouth, N.H.

03803-0157. **Phone:** 603-430-2453; DSN 852-2453. **Unit:** 157th Air Refueling Wing (ANG). **Area:** 218 acres. **Runway:** 11,318 ft. **Altitude:** 101 ft. **Full-time personnel:** 320.

Pittsburgh Arpt./ARS, Pa. 15108-4403; 12 mi. NW of Pittsburgh. **AFRC phone:** 412-474-8750; DSN 277-8750. **ANG phone:** 412-474-7359; DSN 277-7359. **Units:** 911th Airlift Wing, C-130H; 171st Air Refueling Wing (ANG), KC-135E. **History:** activated 1943. **Area:** AFRC, 115 acres; ANG, 179 acres. **Runway:** 11,500 ft. **Altitude:** 1,203 ft. **Full-time personnel:** AFRC, 321; ANG, 376. **Housing:** VOQ, 24, VEQ, 230. No on-base housing. Limited exchange.

Portland Arpt., Portland, Ore. 97218-2797. **Phone:** 503-335-4000; DSN 638-4000. **Units:** 142nd Fighter Wing (ANG); 125th Special Tactics Sq. (ANG); 272nd Combat Communications Sq. (ANG); Oregon Wing, CAP; 939th Air Refueling Wing (AFRC); Ore. ARNG. **Area:** 246 acres. **Runways:** 11,000 ft., 8,000 ft., and 7,000 ft. **Altitude:** 18 ft. **Full-time personnel:** ANG, 460; AFRC, 231.

Quonset State Arpt., R.I. 02852; 20 mi. S of Providence. **Phone:** 401-886-1210; DSN 476-3210. **Unit:** 143rd Airlift Wing (ANG). **Area:** 94 acres. **Runway:** 7,800 ft. **Altitude:** 19 ft. **Full-time personnel:** 230.

Reno/Tahoe Arpt. (May Field), Nev. 89502; 5 mi. SE of downtown Reno at 1776 NG Way. **Phone:** 775-788-4500; DSN 830-4500. **Unit:** 152nd Airlift Wing (ANG); 152nd Intel. Sq. (ANG). **History:** named for Maj. Gen. James A. May, Nevada adjutant general, 1947-67. **Area:** 64 acres. **Runways:** 10,00 ft., 9,000 ft., and 6,101 ft. **Altitude:** 4,660 ft. **Full-time personnel:** 280.

Richmond Arpt. (Byrd Field), Va. 23150; 7 mi. SE of downtown Richmond. **Phone:** 804-236-6000; DSN 864-6000. **Unit:** 192nd Fighter Wing (ANG). **History:** named for Adm. Richard E. Byrd, Arctic and Antarctic explorer. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 168 ft. **Full-time personnel:** 319.

Rickenbacker ANGB, Ohio 43217-1161; 13 mi. SSE of Columbus. **Phone:** 614-492-4468; DSN 696-4468. **Units:** 121st Air Refueling Wing (ANG); 164th Weather Flight (ANG); 52nd CST. **History:** activated 1942. Formerly Lockbourne AFB; renamed May 7, 1974 for Capt. Edward V. Rickenbacker. Base transferred from SAC to ANG April 1, 1980. **Area:** 203 acres. **Runway:** 12,100 ft. **Altitude:** 744 ft. **Full-time personnel:** 357.

Rosecrans Memorial Arpt., Mo. 64503; 4 mi. W of St. Joseph. **Phone:** 816-236-3300; DSN 356-3300. **Unit:** 139th Airlift Wing (ANG). **Area:** 102 acres. **Runway:** 8,059 ft. **Altitude:** 813 ft. **Full-time personnel:** 302.

Salt Lake City Arpt., Utah 84116; 3 mi. W of downtown Salt Lake City. **Phone:** 801-245-2200; DSN 245-2200. **Units:** 151st Air Refueling Wing (ANG); 169th Intel. Sq. (ANG); 130th Engineering Installation Sq. (ANG); 109th Air Control Sq. (ANG); 299th Range Control Sq. (ANG); 101st Information Warfare Flt. (ANG). **Area:** 135 acres. **Runway:** 12,000 ft. **Altitude:** 4,226 ft. **Full-time personnel:** 451.

Savannah Hilton Head Arpt., Ga. 31408; 4 mi. NW of Savannah. **Phone:** 912-966-8204; DSN 860-8204. **Units:** 165th Airlift Wing (ANG); Combat Readiness Training Center. **Area:** 234 acres. **Runway:** 9,351 ft. **Altitude:** 51 ft. **Full-time personnel:** 319.

Schenectady County Arpt. (Stratton ANGB), N.Y. 12302-9752; 2 mi. N of Schenectady. **Phone:** 518-344-2300; DSN 974-9300. **Unit:** 109th Airlift Wing (ANG), 14 C-130s, 10 with skis for Antarctic and Greenland missions. **Area:** 122 acres. **Runway:** 7,000 ft. **Altitude:** 328 ft. **Full-time personnel:** 474.

Selfridge ANGB, Mich. 48045-5046; 3 mi. NE of Mount Clemens. **Phone:** 586-307-4011; DSN 273-4011. **Units:** 127th Wing (ANG); 927th Air Refueling Wing (AFRC); Air Force, Army, Navy, and Marine Corps Reserve units; ARNG; Coast Guard Air Station for Detroit. **History:** activated July 1917; transferred to Mich. ANG July 1971. Named for 1st Lt. Thomas E. Selfridge, killed Sept. 17, 1908 at Ft. Myer, Va., when airplane piloted by Orville Wright crashed. **Area:** 3,070 acres. **Runway:** 9,000 ft. **Altitude:** 580 ft. **Full-time personnel:** ANG, 454; AFRC, 229.

Sioux Gateway Arpt./Col. Bud Day Field, Iowa 51111-1300; 7 mi. S of downtown Sioux City. **Phone:** 712-233-0210; DSN 585-0210. **Unit:** 185th Air Refueling Wing (ANG). **Area:** 288 acres. **Runway:** 9,000 ft. **Altitude:** 1,089 ft. **Full-time personnel:** 281.

Sky Harbor Arpt., Phoenix, Ariz. 85034. **Phone:** 602-302-9000; DSN 853-9000. **Unit:** 161st Air Refueling Wing (ANG). **Area:** 60 acres. **Runway:** 12,000 ft. **Altitude:** 1,000 ft. **Full-time personnel:** 256.

Springfield-Beckley Arpt., Ohio 45502-8783; 5 mi. S of Springfield. **Phone:** 937-327-2100; DSN 346-2100. **Units:** 178th Fighter Wing (ANG); 251st Combat Communications Gp. (ANG); 269th Combat Communications Sq. (ANG). **Area:** 114 acres. **Runway:** 8,999 ft. **Altitude:** 1,053 ft. **Full-time personnel:** 385.

Stewart ANGB, N.Y. 12550-5042; 15 mi. N of US Military Academy (West Point). **Phone:** 914-563-2001; DSN 636-2001. **Units:** 105th Airlift Wing (ANG). **History:** Stewart AFB until 1969; acquired by state of New York in 1970. **Area:** ANG, 267 acres. **Runway:** 12,000 ft. **Altitude:** 491 ft. **Full-time personnel:** 605 (ANG). Most military services available through West Point or subpost.

Toledo Express Arpt., Ohio 43558; 14 mi. W of Toledo. **Phone:** 419-868-4078; DSN 580-4078. **Unit:** 180th Fighter Wing (ANG). **Area:** 135 acres. **Runways:** 10,600 ft. and 5,600 ft. **Altitude:** 664 ft. **Full-time personnel:** 272.

Truax Field, Wis. 53704-2591; at Dane County Arpt. 2 mi. N of downtown Madison. **Phone:** 608-245-4300; DSN 724-8300. **Unit:** 115th Fighter Wing (ANG). **History:** activated June 1942 as AAF base; taken over by Wis. ANG April 1968. Named for Lt. T.L. Truax, killed in P-40 training accident in 1941. **Area:** 130 acres. **Runway:** 12,000 ft. **Altitude:** 800 ft. **Full-time personnel:** 350.

Tucson Arpt., Ariz. 85706-6052; within Tucson. **Phone:** 520-295-6210; DSN 924-6210. **Unit:** 162nd Fighter Wing (ANG). **Area:** 92 acres. **Runways:** 11,000 ft., 9,000 ft., and 7,000 ft. **Altitude:** 2,556 ft. **Full-time personnel:** 996.

Tulsa Arpt., Okla. 74115-1699; 6 mi. NE of downtown Tulsa. **Phone:** 918-833-7370; DSN 894-7370. **Units:** 138th Fighter Wing (ANG); 219th Engineering Installation Sq. **Area:** 81 acres. **Runway:** 10,000 ft. **Altitude:** 677 ft. **Full-time personnel:** 298.

Volk Field ANGB, Wis. 54618-5001; 87 mi. NW of Madison. **Phone:** 608-427-1210; DSN 871-1210. **Units:** Combat Readiness Training Center (ANG) featuring air-to-air and air-to-ground gunnery ranges; 128th Air Control Sq. **History:** named for Lt. Jerome A. Volk, first Wis. ANG pilot to be killed in the Korean War. **Area:** 2,336 acres. **Runway:** 9,000 ft. **Altitude:** 912 ft. **Full-time personnel:** 199.

W.K. Kellogg Arpt., Mich. 49015-5512; 1 mi. W of Battle Creek. **Phone:** 616-969-3400; DSN 580-3210. **Unit:** 110th Fighter Wing (ANG). **Area:** 320 acres. **Runway:** 10,003 ft. **Altitude:** 929 ft. **Full-time personnel:** 267.

Westover ARB, Mass. 01022-1825; 10 mi. NE of Springfield. **Phone:** 413-557-3500; DSN 589-3500. **Units:** 439th Airlift Wing (AFRC); Army, Navy, and Marine Corps Reserve units. **History:** dedicated April 6, 1940. Named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed Sept. 21, 1938. **Area:** 2,386 acres. **Runway:** 11,600 ft. **Altitude:** 245 ft. **Full-time personnel:** AFRC, 746; ANG, 27. **Housing:** VOQ, 41, VAQ, 142 beds.

Will Rogers World Arpt., Oklahoma City. 73179-1090; 9 mi. SW of downtown. **Phone:** 405-686-5210; DSN 720-5210. **Units:** 137th Airlift Wing (ANG); 205th Engineering Installation Sq. (ANG). **Area:** 133 acres. **Runways:** two, 9,800 ft. each, and 7,800 ft. **Altitude:** 1,272 ft. **Full-time personnel:** 263.

Willow Grove ARS, Pa. 19090-5300; 14 mi. N of Philadelphia. **AFRC phone:** 215-443-1000; DSN 991-1000. **ANG phone:** 215-443-1500; DSN 991-1500. **Units:** 913th Airlift Wing (AFRC); 111th Fighter Wing (ANG). **History:** activated August 1958 (AFRC); activated 1924 (ANG). **Area:** AFRC, 162 acres; ANG, 55 acres. **Altitude:** 356 ft. **Runway:** share use of NAS JRB Willow Grove runway (8,000 ft.). **Full-time personnel:** AFRC, 280; ANG, 273.

Yeager Arpt., W.Va. 25311; 4 mi. NE of downtown Charleston. **Phone:** 304-341-6126; DSN 366-6210. **Unit:** 130th Airlift Wing (ANG). **History:** named for Brig. Gen. Charles E. "Chuck" Yeager. **Area:** 109 acres. **Runway:** 6,300 ft. **Altitude:** 982 ft. **Full-time personnel:** 242.

Youngstown-Warren Arpt./ARS, Ohio 44473-5912; 14 mi. N of Youngstown. **Phone:** 330-609-1364; DSN 346-1364. **Units:** 910th Airlift Wing (AFRC); Army Corps of Engineers; Army, Navy, and Marine Corps Reserve units; FAA. **History:** activated 1953. **Area:** 230 acres. **Runways:** three, primary length 9,000 ft. **Altitude:** 1,196 ft. **Full-time personnel:** AFRC, 451; ANG, 17. **Lodging:** 142 beds. Limited exchange.

DOD photo

Active duty, Guard, and Reserve C-5As line up at Stewart Air National Guard Base in New York.

Records and Trophies

2007 USAF Almanac

Absolute Aviation World Records

The desirability of a standard procedure to certify air records was recognized early in the history of powered flight. In 1905, representatives of Belgium, France, Germany, Great Britain, Italy, Spain, Switzerland, and the US met in Paris to form the Federation Aeronautique Internationale, the world body of national aeronautic sporting interests. The FAI today comprises the national aero clubs of some 100 nations and certifies national records as world records. Since 1922, the National Aeronautic Association, based in Arlington, Va., has been the US representative to the FAI. The NAA supervises all attempts at world and world-class records in the United States. Absolute world records are the supreme achievements of all the records open to flying machines.

Speed around the world, nonstop, nonrefueled: 342.24 mph (550.8 kph). Steve Fossett in Virgin Atlantic *GlobalFlyer* at Salina, Kan., Feb. 28-March 3, 2005.

Great circle distance without landing: 25,766 miles (41,467 kilometers). Steve Fossett in Virgin Atlantic *GlobalFlyer* from NASA Kennedy Space Center to Bournemouth, England, Feb. 8-11, 2006.

Distance in a closed circuit without landing: 25,293.86 miles (40,706.53 kilometers). Steve Fossett in Virgin Atlantic *GlobalFlyer,* at Salina, Kan., March 14-17, 2006.

Altitude: 123,523.58 feet (37,650.00 meters). Alexander Fedotov flying E-266M, a modified MiG-25, at Podmoskovnoye, USSR, Aug. 31, 1977.

Altitude in horizontal flight: 85,068.997 feet (25,929.031 meters). USAF Capt. Robert C. Helt (pilot) and USAF Maj. Larry A. Elliott (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 28, 1976.

Speed over a straight course: 2,193.16 mph (3,529.56 kph). USAF Capt. Eldon W. Joersz (pilot) and USAF Maj. George T. Morgan Jr. (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 28, 1976.

Speed over a closed circuit: 2,092.294 mph (3,367.221 kph). USAF Majs. Adolphus H. Bledsoe Jr. (pilot) and John T. Fuller (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 27, 1976.

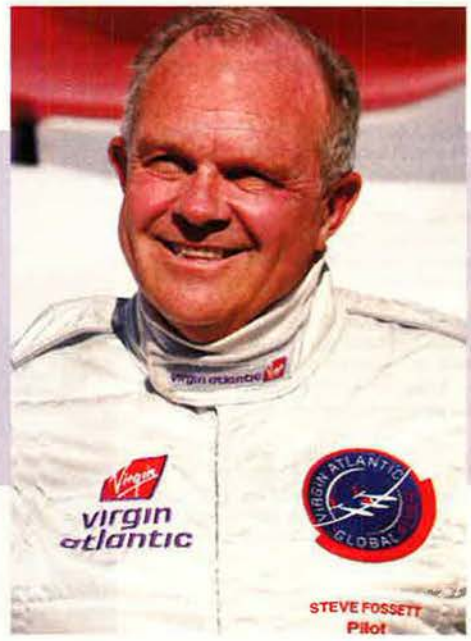


Photo by Mary Frances Howard

In March 2006, Steve Fossett in Virgin Atlantic GlobalFlyer *set the world record for distance in a closed circuit without landing (25,293.86 miles).*

The Robert J. Collier Trophy

This award, presented by the National Aeronautic Association, is the most prestigious in American aviation. It recognizes the "greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency, and safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year." The award is named for a prominent publisher, sportsman, and aviator. Collier, the first person to purchase a Wright airplane for personal use, commissioned the trophy and presented it to the Aero Club of America (the forerunner of the NAA) in 1911.

1911 Glenn H. Curtiss. Hydro-aeroplane.
1912 Glenn H. Curtiss. Flying boat.
1913 Orville Wright. Automatic stabilizer.
1914 Elmer A. Sperry. Gyroscopic control.
1915 W. Sterling Burgess. Burgess-Dunne hydro-aeroplane.
1916 Elmer A. Sperry. Drift indicator.
1917 No award.
1918 No award.
1919 No award.
1920 No award.
1921 Grover Loening. Aerial yacht.
1922 US Air Mail Service. One year without fatality.
1923 US Air Mail Service. Commercial night flying.
1924 US Army Air Service. First aerial flight around world.
1925 S. Albert Reed. Metal propeller.
1926 Maj. E.L. Hoffman. Practical parachute.
1927 Charles L. Lawrance. Radial air-cooled engine.
1928 Commerce Dept., Aeronautics Branch. Airways, air navigation facilities.
1929 National Advisory Committee for Aeronautics. Cowling for radial air-cooled engines.
1930 Harold Pitcairn and staff. Autogiro.
1931 Packard Motor Car. Diesel aircraft engine.
1932 Glenn L. Martin. Two-engined, high-speed, weight-carrying airplane.
1933 Hamilton Standard Propeller, Frank W. Caldwell. Controllable-pitch propeller.
1934 Maj. Albert F. Hegenberger. Blind-landing experiments.
1935 Donald Douglas and staff. DC-2.
1936 Pan American Airways. Trans-Pacific and overwater operations.
1937 Army Air Corps. Design, flight test of XC-35 first pressurized cabin.
1938 Howard Hughes and crew. Around-the-world flight.
1939 US airlines. Air travel safety record.
1940 Sanford Moss, Army Air Corps. Turbo-supercharger.
1941 US Army Air Forces and US airlines. Pioneering worldwide operations.
1942 Gen. H.H. Arnold. Leadership of US Army Air Forces.
1943 Capt. Luis De Florez (USNR). Synthetic training devices.
1944 Gen. Carl A. Spaatz. US air campaign against Germany.
1945 Luis W. Alvarez. Ground-control approach radar landing system.
1946 Lewis A. Rodert. Thermal ice-prevention system.
1947 Lawrence D. Bell, John Stack, Capt. Charles E. Yeager. Supersonic flight.
1948 Radio Technical Commission for Aeronautics. All-weather air traffic control system.
1949 William P. Lear. F-5 automatic pilot, automatic approach control coupler system.
1950 Helicopter industry, military services, Coast Guard. Rotary-wing aircraft in air rescue.
1951 John Stack, associates at Langley Aeronautical Laboratory, NACA. Transonic wind tunnel throat.
1952 Leonard S. Hobbs. J57 jet engine.
1953 James H. Kindelberger, Edward H. Heinemann. Supersonic airplanes (F-100, F4D).
1954 Richard Travis Whitcomb. Discovery, verification of area rule, yielding higher speed and greater range.
1955 William M. Allen, Boeing Airplane, Gen. Nathan F. Twining, US Air Force. B-52 bomber.
1956 Charles J. McCarthy; Chance-Vought Aircraft; Vice Adm. James S. Russell; US Navy Bureau of Aeronautics. F8U Crusader.
1957 Edward P. Curtis. "Aviation Facilities Planning" report. USAF/Lockheed/GE F-104 team. F-104.
1958 Clarence L. Johnson, airframe design; Neil Burgess, Gerhard Neumann, J79 turbojet engines; Maj. Howard C. Johnson, landplane altitude record; Capt. Walter W. Irwin, straightaway speed record.
1959 USAF, General Dynamics-Convair, Space Technology Laboratories. Atlas ICBM.
1960 Vice Adm. William F. Raborn. Polaris ballistic missile.
1961 A. Scott Crossfield, Cmdr. Forrest Petersen, Joseph A. Walker, Maj. Robert M. White. X-15 test flights.
1962 Lt. Col. John H. Glenn Jr. (USMC), Cmdr. Walter M. Schirra Jr., Cmdr. Alan B. Shepard Jr., Lt. Cmdr. M. Scott Carpenter, Maj. L. Gordon Cooper, Maj. Virgil I. Grissom, Maj. Donald K. Slayton. Pioneering US manned spaceflight.
1963 Clarence L. Johnson. A-11 (A-12) Mach 3 aircraft.
1964 Gen. Curtis E. LeMay. Expanding frontiers of American aeronautics and astronautics.
1965 James E. Webb, Hugh L. Dryden. Gemini spaceflight program.
1966 James S. McDonnell. F-4 Phantom and Gemini space vehicles.
1967 Lawrence A. Hyland, Hughes Aircraft, Jet Propulsion Laboratory, associated organizations. Surveyor program.
1968 Col. Frank Borman, Capt. James A. Lovell Jr. (USN), Lt. Col. William A. Anders. Apollo 8, first manned lunar orbit mission.
1969 Col. Edwin E. Aldrin Jr., Neil A. Armstrong, Col. Michael Collins. Apollo 11 moon landing.
1970 Boeing with Pratt & Whitney and Pan Am. Commercial 747 service.
1971 Robert T. Gilruth, Col. James B. Irwin, Col. David R. Scott, Lt. Col. Alfred M. Worden. Apollo 15 mission.
1972 Adm. Thomas H. Moorer, USAF 7th and 8th Air Forces, Navy Task Force 77. Operation Linebacker II.
1973 Skylab Program, William C. Schneider, Skylab astronauts. Skylab operations.
1974 John F. Clark, NASA; Daniel J. Fink, GE; RCA; Hughes. Resource and environmental management in space technology; LANDSAT.
1975 David S. Lewis, General Dynamics, USAF-industry team. F-16 aviation technologies.
1976 USAF, Rockwell, B-1 industry team. B-1 bomber.
1977 Gen. Robert J. Dixon; Tactical Air Command. Red Flag.
1978 Sam B. Williams, Williams Research. Turbofan cruise missile engines.
1979 Paul B. MacCready, AeroEnvironment, Inc., Bryan Allen. *Gossamer Albatross.*
1980 NASA's Voyager mission team, Edward Stone. Voyager flyby of Saturn.
1981 NASA, Rockwell, Martin Marietta, Thiokol, government-industry shuttle team, and astronauts Capt. Robert L. Crippen (USN), Col. Joe H. Engle, Capt. Richard H. Truly (USN), John W. Young. First flights of *Columbia,* first shuttle.
1982 T.A. Wilson, Boeing, supported by FAA, industry, airlines. 757 and 767 airliners.
1983 US Army, Hughes Helicopters, industry team. AH-64A Apache helicopter.
1984 NASA, Martin Marietta, Walter W. Bollendonk, astronaut Capt. Bruce McCandless II (USN), Charles

E. Whitsett Jr. Manned maneuvering units, satellite rescues.
1985 Russell W. Meyer, Cessna Aircraft, Cessna Citation business jets. Outstanding safety.
1986 Jeana L. Yeager, Richard G. Rutan, Elbert L. Rutan, Bruce Evans, team of volunteers. *Voyager* flight.
1987 NASA Lewis Research Center, NASA-industry team. Advanced turboprop propulsion concepts.
1988 Rear Adm. Richard H. Truly. Manned space recovery program.
1989 Ben R. Rich, Lockheed-USAF team. F-117A.
1990 Bell-Boeing team. V-22 Osprey.
1991 Northrop-USAF industry team. B-2.
1992 Global Positioning System team: USAF, US Naval Research Lab, Aerospace Corp., Rockwell, IBM Federal Systems. Navstar GPS system.
1993 Hubble Space Telescope recovery team. Successful orbital recovery and repair.
1994 USAF, McDonnell Douglas, US Army, C-17 industry team. C-17.
1995 Boeing 777 team. Boeing 777.
1996 Cessna Citation X design team. Cessna Citation X.
1997 Gulfstream Aerospace, Gulfstream V industry team. Gulfstream V.
1998 Lockheed Martin, GE Aircraft Engines, NASA, Air Combat Command, Defense Intelligence Agency. U-2S/ER-2.
1999 Boeing, Hornet industry team, and US Navy. F/A-18E/F.
2000 Northrop Grumman, Rolls Royce, Raytheon, L-3 Communications, USAF, DARPA. Global Hawk.
2001 Pratt & Whitney, Rolls Royce, Lockheed Martin, Northrop Grumman, BAE Systems, JSF Program Office. Integrated lift fan propulsion system.
2002 Sikorsky Aircraft and the S-92 industry team. S-92 helicopter.
2003 Gulfstream G550 team. Ultra long-range business jet.
2004 Paul G. Allen, Elbert L. Rutan, Michael W. Melvill, and entire *SpaceShipOne* team.
2005 Eclipse Aviation. Eclipse 500 light jet.

The Mackay Trophy

The Mackay Trophy was established by Clarence H. Mackay, an industrialist, philanthropist, communications pioneer, and aviation enthusiast. Presented by the National Aeronautic Association, the trophy recognizes "the most meritorious flight of the year" by an Air Force member, members, or organization.

1912 2nd Lt. H.H. Arnold.
1913 2nd Lts. J.E. Carberry and F. Seydel.
1914 Capt. T.F. Dodd and Lt. S.W. Fitzgerald.
1915 Lt. B.Q. Jones.
1916 No award.
1917 No award.
1918 Capt. E.V. Rickenbacker.
1919 Lt. Col. H.E. Hartney; Capts. J.O. Donaldson, L.H. Smith, and F. Steinle; Lts. B.G. Bagby, D.B. Gish, E.M. Manzelman (posthumously), B.N. Maynard, R.S. Northington, and A. Pearson Jr.
1920 Capt. St.C. Streett; 1st Lt. C.C. Nutt; 2nd Lts. C.H. Crumrine, R.C. Kirkpatrick, and E.H. Nelson; Sgts. J.E. English, E. Henriques, and A.T. Vierra.
1921 Lt. J.A. Macready.
1922 Lts. J.A. Macready and O.G. Kelly.
1923 Lts. J.A. Macready and O.G. Kelly.
1924 Capt. L.H. Smith; 1st Lts. L.P. Arnold, E.H. Nelson, and L. Wade; 2nd Lts. J. Harding Jr. and H.H. Ogden.
1925 Lts. C.K. Bettis and J. Doolittle.
1926 Pan American Goodwill Fliers: Maj. H.A. Dargue; Capts. I.C. Eaker, A.B. McDaniel, and C.F. Woolsey (posthumously); 1st Lts. J.W. Benton (posthumously), M.S. Fairchild, C.McK. Robinson, B.S. Thompson, L.D. Weddington, and E.C. Whitehead.
1927 Lts. A.F. Hegenberger and L.J. Maitland.
1928 1st Lt. H.A. Sutton.
1929 Capt. A.W. Stevens.
1930 Maj. R. Royce.
1931 Brig. Gen. B.D. Foulois.
1932 11th Bombardment Sq., March Field, Calif., 1st Lt. C.H. Howard.
1933 Capt. W.T. Larson.
1934 Brig. Gen. H.H. Arnold.
1935 Capts. O.A. Anderson and A.W. Stevens.
1936 Capt. R.E. Nugent; 1st Lts. J.A. Miller and E.G. Simenson; 2nd Lts. B.W. Armstrong, H. Morgan Jr., and W.P. Ragsdale Jr.; TSgt. G.W. Olson; SSgt. H.M. Miller; Cpl. Air Mechanic 2nd Class F.B. Connor.
1937 Capts. C.J. Crane and G.V. Holloman.
1938 2nd Bombardment Group, Lt. Col. R. Olds.
1939 Majs. C.V. Haynes and W.D. Old; Capt. J.A. Samford; 1st Lts. R.S. Freeman and T.G. Wold; MSgt. A. Cattarius; TSgts. W.J. Heldt, H.L. Hines, and D.L. Spicer; SSgts. R.E. Junior and J.E. Sands.
1940 No award.
1941 No award.
1942 No award.
1943 No award.
1944 No award.
1945 No award.
1946 No award.
1947 Capt. C.E. Yeager.
1948 Lt. Col. E. Beaudry.
1949 Capt. J.G. Gallagher and crew of *Lucky Lady II.*
1950 27th Fighter Wing.
1951 Col. F.J. Ascani.
1952 Majs. L.H. Carrington Jr. and F.W. Shook; Capt. W.D. Yancey.
1953 40th Air Division, SAC.
1954 308th Bombardment Wing (M) and 38th Air Div., SAC.
1955 Col. H.A. Hanes.
1956 Capt. I.C. Kincheloe Jr., Air Research and Development Command.
1957 93rd Bombardment Wing, SAC.
1958 TAC Air Strike Force, X-Ray Tango.
1959 US Air Force Thunderbirds.
1960 6593rd Test Sq., Hickam AFB, Hawaii.
1961 Lt. Col. W.R. Payne and Majs. W.L. Polthemus and R.R. Wagener, 43rd Bomb Wing, SAC.
1962 Maj. R.G. Sowers and Capts. R. MacDonald and J.T. Walton.
1963 Capts. D.R. Mack, J.R. Ordemann, and W.P. Tomsett; TSgt. E.P. Inlow; SSgts. F.C. Barrett and J.E. Morgan.
1964 464th Troop Carrier Wing, TAC.
1965 YF-12A Test Force (Col. R.L. Stephens; Lt. Col. D. Andre; Majs. W.F. Daniel and N.T. Warner; Capt. J.P. Cooney).

1966 Lt. Col. A.R. Howarth.
1967 Maj. J.H. Casteel; Capts. D.L. Hoar and R.L. Trail; MSgt. N.C. Campbell.
1968 Lt. Col. D.D. Cole.
1969 49th Tactical Fighter Wing, TAC.
1970 Capt. A.D. Milacek and AC-119K crew (Capts. R.E. Clancy, R.C. Jones, B.C. O'Brien, and J.A. Russell; TSgt. A.A. Nash; SSgts. A. Lopez Jr. and R.R. Wilson; Sgt. K.E. Firestone; A1C D.H. Cofer).
1971 Lt. Col. T.B. Estes and Maj. D.C. Vick.
1972 Capts. C.B. DeBellevue, J.S. Feinstein, and R.S. Ritchie.
1973 MAC aircrews.
1974 Majs. W.R. MacFarlane, D.W. Peterson, and R.J. Smith.
1975 Maj. R.W. Undorf.
1976 Capt. J.A. Yule.
1977 C-5 aircrew (Capt. D.M. Sprinkel and crew).
1978 C-5 aircrews (Lt. Col. R.F. Schultz and crew and Capt. T.H. Hohberger and crew, 436th Military Airlift Wing).
1979 Maj. J.E. McArdle Jr.
1980 Crews S-21 and S-31, 644th Bombardment Sq.
1981 Capt. J.J. Walters.
1982 B-52 Crew E-21, 19th Bombardment Wing.
1983 Capt. R.J. Goodman and his crew, 42nd Bombardment Wing, SAC.
1984 Lt. Col. J.L. Hobson Jr.
1985 Lt. Col. D.E. Faught.
1986 KC-10 crew (Capts. M.D. Felman and T.M. Ferguson; MSgts. C. Bridges Jr., P.S. Kennedy, and G.G. Treadwell; TSgts. L.G. Bouler and G.M. Lewis; SSgts. S.S. Flores, S.A. Helms, and G.L. Smith), 68th Air Refueling Group, SAC.
1987 Det. 15, USAF Plant Representative Office, and B-1B SPO.
1988 C-5 crew, 436th Military Airlift Wing.
1989 B-1B crew, 96th Bomb Wing.
1990 AC-130 crew, 16th Special Operations Sq.
1991 MH-53 crew, 20th Special Operations Sq.
1992 C-130 crew, 310th Airlift Sq., ACC, Howard AFB, Panama.
1993 B-52 crew, 668th Bomb Sq., ACC.
1994 HH-60G crew of Air Force Rescue 206 and 208, 56th Rescue Sq., ACC, NAS Keflavik, Iceland.
1995 Aircrew BAT 01, Dyess AFB, Tex.
1996 Aircrew Duke 01, 2nd Bomb Wing, Barksdale AFB, La.
1997 Crew of Whiskey 05, 7th Special Operations Sq., RAF Mildenhall, UK.
1998 Crew of Air Force Rescue 470, 210th Rescue Sq., Kulis ANGB, Alaska.
1999 Capt. J.G.J. Hwang, 173rd FW, Oregon ANG, Klamath Falls Airport, Ore.
2000 Crew of Air Evac 10E1/10E2, 86th AES and 75th AS, Ramstein AB, Germany.
2001 Crew of Knife 04, 20th SOS, Hurlburt Field, Fla.
2002 Crew of Grim 31, 16th SOS, Hurlburt Field, Fla.
2003 Crew of Vijay 10, 62nd AW, McChord AFB, Wash.
2004 Crews of Jolly 11 and Jolly 12, 41st and 38th Rescue Sqs. (respectively), Moody AFB, Ga.
2005 Crew of Train 60, 41st Airlift Sq., Pope AFB, N.C.; 37th AS, Ramstein AB, Germany; 50th AS, Little Rock AFB, Ark.; and 40th AS, Dyess AFB, Tex.

In 2004, the Mackay Trophy for most meritorious flight of the year was awarded to the crews of Jolly 11 and Jolly 12, pictured here.

USAF photo by SSgt. Prentice Colter

The Gen. Thomas D. White USAF Space Award

The Gen. Thomas D. White USAF Space Award is named for the fourth Air Force Chief of Staff, a longtime champion of USAF's role in space. The Air Force selects the recipients among USAF individuals or organizations that made the year's outstanding progress in the field of aerospace. It was established in 1961 and, until 1996, sponsored by the National Geographic Society. It is now an AFA national award sponsored by the Gen. B.A. Schriever Los Angeles Chapter.

1961 Capt. Virgil I. Grissom.
1962 Maj. Robert M. White.
1963 Maj. L. Gordon Cooper.
1964 Air Force Systems Command.
1965 Lt. Col. Edward H. White II.
1966 Alexander H. Flax.
1967 Gen. John P. McConnell.
1968 Col. Frank Borman, Capt. James A. Lovell Jr. (USN), Lt. Col. William A. Anders.
1969 Col. Edwin E. Aldrin Jr., Neil A. Armstrong, Col. Michael Collins.
1970 Brig. Gen. Robert A. Duffy.
1971 Lt. Gen. Samuel C. Phillips.
1972 Hon. Robert C. Seamans Jr.
1973 Lt. Col. Henry Hartsfield Jr.
1974 No award.
1975 Maj. Gen. Thomas P. Stafford.
1976 Gen. William J. Evans.
1977 Lt. Col. Charles G. Fullerton, Fred W. Haise Jr.
1978 No award.
1979 Maj. Gen. John E. Kulpa Jr.
1980 Gen. Lew Allen Jr.
1981 Col. Joe Engle, Capt. Richard H. Truly (USN).
1982 Lt. Gen. Richard C. Henry.
1983 Gen. James V. Hartinger.
1984 Lt. Gen. Forrest S. McCartney.
1985 Maj. Gen. Donald W. Henderson.
1986 Gen. Donald J. Kutyna.
1987 Col. Victor W. Whitehead.
1988 Robert R. Barthelemy.
1989 Launch Systems Directorate, Space Systems Division.
1990 Gen. John L. Piotrowski, USAF (Ret.), Lt. Gen. Donald L. Cromer.
1991 Lt. Gen. Thomas S. Moorman Jr.
1992 Maj. Gen. Nathan J. Lindsay, USAF (Ret.).
1993 Gen. Merrill A. McPeak.
1994 Gen. Charles A. Horner.
1995 Gen. Joseph W. Ashy.
1996 No award.
1997 Lt. Gen. Patrick P. Caruana.
1998 Gen. Howell M. Estes III.
1999 Lt. Gen. Lance W. Lord.
2000 Gen. Richard B. Myers.
2001 Gen. Ralph E. Eberhart.
2002 Lt. Gen. Roger G. DeKok, USAF (Ret.).
2003 Maj. Robert K. Sheehan.
2004 Brig. Gen. Duane W. Deal.
2005 Peter B. Teets

The Raytheon Hughes Achievement Award

The Raytheon Hughes Achievement Award (formerly the Hughes Trophy) is presented annually to the top Air Force squadron with an air defense/air superiority mission.

Year	Unit, Base	Aircraft
1953	58th FIS, Otis AFB, Mass.	F-94C
1954	96th FIS, New Castle County Airport, Del.	F-94C
1955	496th FIS, Landstuhl AB, West Germany	F-86D
1956	317th FIS, McChord AFB, Wash.	F-86D/F-102A
1957	512th FIS, RAF Bentwaters, UK	F-86D
1958	31st FIS, Elmendorf AFB, Alaska	F-102A
1959	54th FIS, Ellsworth AFB, S.D.	F-89J
1960	460th FIS, Portland Arpt., Ore.	F-102A
1961	83rd FIS, Hamilton AFB, Calif.	F-101B
1962	444th FIS, Charleston AFB, S.C.	F-101B
1963	497th FIS, Torrejon AB, Spain	F-102A
1964	329th FIS, George AFB, Calif.	F-106A/B
1965	317th FIS, Elmendorf AFB, Alaska	F-102A
1966	32nd FIS, Soesterberg AB, Netherlands	F-102A
1967	317th FIS, Elmendorf AFB, Alaska	F-106A/B
1968	64th FIS, Clark AB, Philippines	F-102A
1969	71st FIS, Malmstrom AFB, Mont.	F-106A/B
1970	57th FIS, NAS Keflavik, Iceland	F-102A
1971	48th FIS, Langley AFB, Va.	F-106A/B
1972	43rd TFS, Elmendorf AFB, Alaska	F-4E
1973	555th TFS, Udorn RTAB, Thailand	F-4D
1974	119th FIG (ANG), Hector Field, N.D.	F-101B
1975	318th FIS, McChord AFB, Wash.	F-106A/B
1976	57th FIS, NAS Keflavik, Iceland	F-4C
1977	43rd TFS, Elmendorf AFB, Alaska	F-4E
1978	49th FIS, Griffiss AFB, N.Y.	F-106A/B
1979	32nd TFS, Soesterberg AB, Netherlands	F-15A/B
1980	32nd TFS, Soesterberg AB, Netherlands	F-15A/B
1981	12th TFS, Kadena AB, Japan	F-15C/D
1982	44th TFS, Kadena AB, Japan	F-15C/D
1983	67th TFS, Kadena AB, Japan	F-15C/D
1984	318th FIS, McChord AFB, Wash.	F-15A/B
1985	120th FIG (ANG), Great Falls Arpt., Mont.	F-106A/B
1986	67th TFS, Kadena AB, Japan	F-15C/D
1987	57th FIS, NAS Keflavik, Iceland	F-15C/D
1988	22nd TFS, Bitburg AB, West Germany	F-15C/D
1989	67th TFS, Kadena AB, Japan	F-15C/D
1990	58th TFS, Eglin AFB, Fla.	F-15C/D
1991	58th TFS, Eglin AFB, Fla.	F-15C/D
1992	59th FS, Eglin AFB, Fla.	F-15C/D
1993	71st FS, Langley AFB, Va.	F-15C
1994	178th FS (ANG), Hector Arpt., N.D.	F-16A/B
1995	27th FS, Langley AFB, Va.	F-15C/D
1996	60th FS, Eglin AFB, Fla.	F-15C/D
1997	493rd FS, RAF Lakenheath, UK	F-15C
1998	71st FS, Langley AFB, Va.	F-15C/D
1999	493rd FS, RAF Lakenheath, UK	F-15C
2000	19th FS, Elmendorf AFB, Alaska	F-15C/D
2001	71st FS, Langley AFB, Va.	F-15C/D
2002	27th FS, Langley AFB, Va.	F-15C/D
2003	67th FS, Kadena AB, Japan	F-15C
2004	60th FS, Eglin AFB, Fla.	F-15C/D
2005	71st FS, Langley AFB, Va.	F-15C/D

Gallery of USAF Weapons

2007 USAF Almanac

By Susan H.H. Young

Note: Inventory numbers are total active inventory figures as of Sept. 30, 2006.

Bombers

B-1 Lancer

Brief: A long-range, air refuelable multirole bomber capable of flying missions over intercontinental range, then penetrating enemy defenses with the largest payload of guided and unguided weapons in the Air Force inventory.

Function: Long-range conventional bomber.

Operator: ACC, AFMC.

First Flight: Dec. 23, 1974 (B-1A); Oct. 18, 1984 (B-1B).

Delivered: June 1985-May 1988.

IOC: Oct. 1, 1986, Dyess AFB, Tex. (B-1B).

Production: 104.

Inventory: 67.

Unit Location: Dyess AFB, Tex., Ellsworth AFB, S.D., Edwards AFB, Calif.

Contractor: Boeing; AIL Systems; General Electric.

Power Plant: four General Electric F101-GE-102 turbofans, each 30,780 lb thrust.

Accommodation: four, pilot, copilot, and two systems officers (offensive and defensive), on zero/zero ACES II ejection seats.

Dimensions: span spread 137 ft, swept aft 79 ft, length 146 ft, height 34 ft.

Weights: empty equipped 192,000 lb, max operating weight 477,000 lb.

Ceiling: more than 30,000 ft.

Performance: max speed at low level high subsonic; 900+ mph (Mach 1.2 at S/L); range intercontinental.

Armament: three internal weapons bays capable of accommodating a wide range of weapons incl up to 84 Mk 82 (500-lb) bombs or Mk 62 Quick Strike naval mines; up to 30 CBU-87/103 Combined Effects Munitions (CEMs), 30 CBU-89 Gator munitions, and 30 CBU-97 Sensor Fuzed Weapons (SFWs); potentially a combination of up to 30/15/15 (fwd/mid/aft bay) CBU-103/104/105 Wind-Corrected Munitions Dispensers (WCMD); up to 24 GBU-31 (2,000-lb) or 15 GBU-38 (500-lb) Joint Direct Attack Munitions (JDAMs), and 24 AGM-158A Joint Air-to-Surface Standoff Missiles (JASSMs).

COMMENTARY

Of blended wing/body configuration, the B-1's variable-geometry design and turbofan engines combine to provide greater range and high speed at low level, with enhanced survivability. Unswept wing settings provide for maximum range during high-altitude cruise. The fully swept position is used in supersonic flight and for high subsonic, low-altitude penetration.

The bomber's offensive avionics include a strategic Doppler radar, enabling aircrews to navigate, update target coordinates in flight and precision bomb. Radar features include synthetic aperture radar (SAR), ground moving target indicator (GMTI), ground moving target track (GMTT), and terrain-following. Offensive avionics also include an extremely accurate Global Positioning System/inertial navigation system (GPS/INS) and computer-driven avionics.

The current defensive avionics package, built around the ALQ-161 electronic countermeasures (ECM) system, is supplemented by the ALE-50 towed decoy and chaff and flares to protect against radar-guided and heat-seeking missiles. Aircraft structure and radar-absorption materials reduce the aircraft's radar signature to approximately one percent that of a B-52. The ALE-50 provides greater protection against RF threats.

B-1A. USAF acquired four prototype flight-test models of this new strategic bomber in the 1970s, but the program was canceled in 1977. Flight-test of the four B-1A models continued through 1981.

B-1B Lancer (SSgt. David Miller)

B-1B. Initiated in 1981, the first production model of the improved variant B-1 flew in October 1984. USAF produced a total of 100. The active B-1B inventory was reduced to 67 aircraft (from the remaining 92) with consolidation to two main operating bases within Air Combat Command at Dyess AFB, Tex., and Ellsworth AFB, N.D. First used in combat against Iraq during Desert Fox in December 1998, the B-1B has since supported operations in Afghanistan in Enduring Freedom and in Iraqi Freedom.

B-1B's speed, superior handling qualities, and large payload make it a key element of any joint/composite strike force, combining long endurance with the flexibility to deliver a wide range of guided or unguided weapons to strike emerging targets rapidly and efficiently.

The recently completed conventional mission upgrade program (CMUP) has significantly enhanced B-1B lethality and survivability. Block D upgrades include GPS receivers, a MIL-STD-1760 weapon interface, secure interoperable radios, and improved computers to support precision weapons, initially the GBU-31 JDAM. Block E, which completed its final delivery in August 2006, includes follow-on computer and software upgrades permitting simultaneous carriage of mixed guided and unguided weapons and WCMD/JASSM and GBU-38 JDAM integration. Future upgrades will provide improved network centric warfighting capability with cockpit avionics upgrades to enhance crew communications and situational awareness. A program to provide a fully integrated data link capability, including Link 16 and Joint Range Extension along with upgraded displays at the rear crew stations, began in FY05. In addition, a radar modernization effort began in FY06, to be followed by integration of a targeting pod capability beginning in FY13.

B-2 Spirit

Brief: Stealthy, long-range multirole bomber that can deliver conventional and nuclear munitions anywhere on the globe by flying through previously impenetrable defenses.

Function: Long-range heavy bomber.

Operator: ACC.

First Flight: July 17, 1989.

Delivered: Dec. 11, 1993-2002.

IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 20.

Unit Location: Whiteman AFB, Mo.

Contractor: Northrop Grumman; Boeing; LTV.

Power Plant: four General Electric F118-GE-100 turbofans, each 17,300 lb thrust.

Accommodation: two, mission commander and pilot, on zero/zero ejection seats.

Dimensions: span 172 ft, length 69 ft, height 17 ft.

Weight: empty 125,000-153,700 lb, typical T-O weight 336,500 lb.

Ceiling: 50,000 ft.

Performance: minimum approach speed 140 mph, typical estimated unrefueled range for a hi-lo-hi mission with 16 B61 nuclear free-fall bombs is 5,000 miles, with one aerial refueling more than 10,000 miles.

Armament: in a nuclear role: up to 16 nuclear weapons (B61 Mod 7, B61 Mod 11, B83) on rotary launchers. In a conventional role, 80 Mk 82 500-lb bombs, 34 tactical munitions dispensers, 80 Mk 62 sea mines, or 80 GBU-38 (500-lb) JDAMs mounted on bomb rack assemblies, or up to 16 rotary launcher-mounted weapons: 16 GBU-31 (2,000-lb) JDAMs, or a penetration version of a BLU-109, or 16 Mk 84 2,000-lb bombs; 16 JSOWs, 16 JASSMs, or eight 4,700-lb GBU-37/GBU-28C/B guided weapons.

COMMENTARY

The B-2 bomber is a unique, highly advanced system, combining sophisticated technologies, notably low observable (LO) stealth design, with high aerodynamic efficiency, enabling it to attack heavily defended targets and neutralize enemy defenses.

Based on the flying wing concept, the B-2 has no vertical tail surfaces. The smoothly blended "fuselage" section accommodates two flight crew and two large weapons bays side by side in the lower centerbody. These bays contain rotary launchers or bomb rack assemblies capable of carrying up to 40,000 lb of weapons.

Four nonafterburning turbofan engines are mounted in pairs within the wing structure, with scalloped over-wing intake ducts and shielded over-wing trailing edge nozzles. The aircraft has a quadruple-redundant fly-by-wire digital flight-control system, actuating moving surfaces at the wing trailing edges that combine aileron, elevator, and rudder functions. A landing gear track of 40 ft enables the B-2 to use any runway that can handle a Boeing 727 airliner.

B-2A. B-2 production represents three successive blocks of capability. Block 10 aircraft carried B83 nuclear bombs or 16 Mk 84 2,000-lb conventional munitions. Block 20 aircraft additionally carried B61/7 and B61/11 nuclear

B-2 Spirit (SSgt. Bennie J. Davis III)

bombs, as well as GPS-aided munitions (GAMs), and GBU-36B, on two rotary launcher assemblies, providing an interim, near-precision strike capability. All Block 10 and 20 aircraft have been upgraded to Block 30. (The last original Block 20 B-2, used as a test aircraft at Edwards AFB, Calif., was refurbished as an operational bomber and entered operational service in September 2002.)

Block 30 configuration added significant new weapons capability. Using the rotary launcher assembly, all B-2s are capable of employing 16 Mk 84 JDAMs, 16 JSOWs, 16 JASSMs, 16 BLU-109 JDAMs or eight GBU-37s or GBU-28C/Bs. All B-2s are also capable of substituting bomb rack assemblies in place of the rotary launchers, providing the capability to employ 80 500-lb Mk 82s, 34 tactical munitions dispensers, or 80 Mk 62 sea mines. Modifications to the bomb racks add carriage of 80 independently targeted GBU-38 (500-lb) JDAMs. Other Block 30 enhancements include fully operational defensive and offensive avionics, a more sophisticated mission planning system, and additional operating modes for the synthetic aperture radar. A new stealth coating introduced under the Alternative High Frequency Material (AHFM) program is dramatically improving combat readiness. The entire fleet will be converted by 2012.

Beyond Block 30, USAF plans to add UHF/EHF satellite communications systems and Link 16 digital data sharing capability and to replace the current mechanically scanned phased-array antenna with an active electronically scanned array.

The first use of B-2s in combat took place March 24, 1999, against Serb targets in Allied Force, with two aircraft each dropping 16 JDAMs. In October 2001, B-2s flew the longest combat sorties during Enduring Freedom, flying 44-hour sorties from Whiteman AFB, Mo., striking targets in Afghanistan, then landing in Diego Garcia for an engine running crew change, with the second crew flying a 29-hour sortie back to Whiteman. B-2s operate from three forward locations—Andersen AFB, Guam, RAF Fairford, UK, and Diego Garcia in the Indian Ocean.

B-52 Stratofortress

Brief: A long-range, heavy multirole bomber that can carry nuclear or conventional ordnance or cruise missiles, with worldwide precision navigation capability.

Function: Long-range heavy bomber.

Operator: ACC, AFMC, AFRC.

First Flight: April 15, 1952 (YB-52 prototype).

Delivered: November 1955-October 1962.

IOC: June 19, 1955.

Production: 744.

Inventory: 94.

Unit Location: Barksdale AFB, La. (ACC, AFRC), Edwards AFB, Calif. (AFMC), Minot AFB, N.D.

Contractor: Boeing.

Power Plant: eight Pratt & Whitney TF33-P-3 turbofans, each 17,000 lb thrust.

Accommodation: two pilots, side by side, plus navigator, radar navigator, and electronic warfare officer.

Dimensions: span 185 ft, length 159.3 ft, height 40.7 ft.

Weight: empty approx 188,000 lb, gross 488,000 lb.

Ceiling: 50,000 ft.

Performance (approx): max level speed 449 mph, range more than 10,000 miles.

Armament: 12 AGM-86B Air Launched Cruise Missiles (ALCMs) or AGM-129A Advanced Cruise Missiles (ACMs) externally, with provision for eight more ALCMs or gravity weapons internally. Conventional weapons incl AGM-86C/D Conventional ALCMs (CALCMs), naval mines, bombs up to 2,000 lb, CBU 87/89/97 unguided munitions, CBU-103/104/105 Wind-Corrected Munitions Dispenser (WCMD)-guided munitions, GBU-31 and GBU-38 JDAMs, and JASSMs. Future weapons incl CBU-113/115 WCMD-Extended Range (WCMD-ER) and the Miniature Air Launched Decoy (MALD), as well as laser guided bombs.

B-52H Stratofortress (SMSgt. John Rohrer)

COMMENTARY

The B-52's still-expanding weapons capability reflects its continued ability to perform a wide range of missions, including show of force, maritime operations, long-range precision strikes, close air support (CAS), offensive counterair, air interdiction, and defense suppression. USAF still is considering whether to use B-52s as standoff electronic warfare platforms.

Equipment includes GPS, ARC-210 radios, Have Quick II antijam radio, KY-100 secure radio, an electro-optical (EO) viewing system that uses forward-looking infrared (FLIR) and high-resolution low-light-level television (LLLTV) sensors to augment the targeting, battle assessment, flight safety, and terrain avoidance systems, improving combat and low-level flight capability. Pilots have night vision goggles (NVGs) to further enhance operation. Some B-52s are modified to carry weapons targeting pods. Future plans include modification of the entire fleet with an integrated self-targeting and battle damage assessment (BDA) capability. B-52s support a MIL-STD-1760 interface resulting in an improved weapons capability for precision weapons externally, including naval mines, precision guided weapons, and advanced weapons such as JDAM, JASSM, and WCMD. The B-52's ECM suite uses a combination of electronic detection, jamming, and infrared (IR) countermeasures to protect against hostile air defense systems.

AFMC is using a B-52 to conduct synthetic fuel experiments.

Several versions of the Stratofortress were procuced, including:

B-52A. Initial production version, with J57-P-1W engines and provision for in-flight refueling. First flown Aug. 5, 1954, the three aircraft built were used by Boeing for technical development purposes. Delivered to SAC November 1957. Finally retired 1969.

B-52B. First operational version, 23 of which were built. Also, 27 RB-52B dual-role bomber/reconnaissance variants. First flown January 1955, with deliveries between June 1955-August 1956; powered by J57-P-1W, -19W, -29W, or -29WA engines. Retired in the mid-1960s.

B-52C. Multimission version with increased gross weight and larger under-wing tanks. Powered by J57-P-19W or -29WA engines. First flown March 1956; 35 were delivered June-December 1956. Majority retired 1971.

B-52D. Long-range bomber version, first flown June 1956 and used during the Vietnam War. Total of 170 built, with deliveries beginning late 1956. Retired 1982-83.

B-52E. Version with improved bombing, navigation, and electronics systems. First flown October 1957. One hundred delivered October 1957-June 1958. Retired 1969-70.

B-52F. Version with uprated J57-P-43WA engines, first flown in May 1958. Eighty-nine delivered June 1958-February 1959. Retired 1978.

B-52G. Introduced important design changes, including a redesigned wing containing integral fuel tanks for increased range, fixed under-wing external tanks, a shorter tail fin of greater chord, and a remotely controlled tail gun turret that allowed the gunner to be repositioned with the rest of the crew. Initial flight August 1958, with the first of 193 aircraft entering service in February 1959. Operated as the primary bomber during the first Gulf War. Retired 1994.

B-52H. The only version still in service, the H introduced TF33 turbofans, providing increased unrefueled range, and improved defensive armament. First flown July 1960, 102 were built, with deliveries between May 1961 and October 1962.

The B-52 currently is employable for both conventional and nuclear missions. As the Air Force's only nuclear cruise missile carrier, it performs multiple cruise missile launches at high altitude, often followed by B-52 penetration to attack other targets. When tasked with precision weapons delivery, it conducts close air support and attacks targets using GPS/INS guided weapons.

Ongoing modernization of its conventional capabilities is extending the B-52's service life well into the 21st century, with the ability to provide massive firepower in low- to mid-threat environments supplemented by a standoff attack capability. Iraqi Freedom saw B-52s delivering laser guided bombs for the first time using Litening targeting pods. Use of heavy stores adapter beams enable aircraft to carry most B-52-certified munitions. ALCMs, CALCMs, or ACMs are carried on unique pylons or internally on a rotary launcher. Avionics improvements include the avionics midlife improvement (AMI) program, which replaces the current system processors, inertial navigation unit (INU), and data transfer system (DTS) cartridges. Electronic attack improvements include the ECM improvement upgrade to the ALQ-172 set. The Combat Network Communications Technology (CONECT) improvement will provide a modern cockpit information avionics architecture, in-flight beyond-line-of-sight (BLOS) data link connectivity, and mission/weapon reprogramming capability.

Fighter and Attack Aircraft

A-10 Thunderbolt II

Brief: A simple, effective, and survivable twin-engine aircraft specifically designed for close air support (CAS) of ground forces against a wide range of ground targets, including tanks and other armored vehicles.

Function: Attack aircraft.

Operator: ACC, AFMC, PACAF, USAFE, ANG, AFRC.

First Flight: Feb. 15, 1975 (preproduction).

Delivered: November 1975-March 1984.

IOC: October 1977.
Production: 713.
Inventory: 248 (A-10); 108 (OA-10).
Unit Location: Active: Davis-Monthan AFB, Ariz., Eglin AFB, Fla., Eielson AFB, Alaska, Nellis AFB, Nev., Osan AB, South Korea, Pope AFB, N.C., Spangdahlem AB, Germany. ANG: Barnes Arpt., Mass., Boise Air Terminal, Idaho, Bradley Arpt., Conn., Martin State Arpt., Md., W.K. Kellogg Arpt., Mich., Willow Grove ARS, Pa. AFRC: Barksdale AFB, La., Langley AFB, Va. (assoc.), Whiteman AFB, Mo.
Contractor: Fairchild Republic; now Lockheed Martin.
Power Plant: two General Electric TF34-GE-100 turbofans, each 9,065 lb thrust.
Accommodation: pilot only, on zero-height/518 mph-zero-speed ejection seat.
Dimensions: span 57.5 ft, length 53.3 ft, height 14.7 ft.
Weight: empty 28,000 lb, max gross 51,000 lb.
Ceiling: 37,000 ft.
Performance: speed 518 mph, combat range with 9,500 lb of weapons and 1.7 hr loiter, 20 min reserve, 288 miles.
Armament: one 30 mm, seven-barrel, 1,174-rd capacity GAU-8 Gatling gun capable of carrying inert target practice (TP) rds, straight high-explosive incendiary (HEI), or anti-armor tailored HEI/API "combat mix"; 11 hardpoints for up to 16,000 lb of ordnance, incl various types of free-fall or guided bombs such as Mk 82, Mk 84, GBU-10/12/38, CBU-87 Combined Effects Munition (CEM), 2.75-in high-explosive, white phosphorous, and covert illumination rockets, SUU-25 overt/covert flare dispensers, up to six AGM-65B/D/G/H/K Maverick missiles, and up to four AIM-9 Sidewinder missiles. Up to 480 chaff and flares carried internally to counter radar or IR threats. Up to three 600-gallon fuel tanks can also be carried. Future weapons incl JDAM and Wind-Corrected Munitions Dispenser (WCMD) and possibly Small Diameter Bomb II and Hellfire.

COMMENTARY

Supporting the CAS, airborne forward air controller (FAC(A)), interdiction, combat search and rescue (CSAR) ("Sandy") missions, and special operations forces (SOF) support, the A-10 combines large diverse weapons payload, long loiter, austere airfield capability, maneuverability, and wide combat radius with the ability to operate under 1,000-ft ceilings, with 1.5-mile visibility, in darkness with NVGs and advanced targeting pods, and around 20,000 ft. In a typical mission, the A-10, nicknamed Warthog, can fly 150 miles with a standard payload and remain on station (loiter) for two hours or much longer with air refueling. The 30 mm GAU-8 gun provides a cost-effective weapon with which to defeat a wide array of ground targets, including heavily armored tanks. The gun-rocket-Maverick medley provides a unique combination of "point-shoot," low-collateral damage, and mobile target capabilities demanded by the danger-close proximity to friendly forces or urban terrain. The cockpit is protected with titanium armor, capable of withstanding projectiles up to 23 mm. A-10s were used extensively in Desert Storm, Allied Force, Enduring Freedom, and Iraqi Freedom, the last operation seeing several A-10 combat firsts, including first use of Litening II targeting pod, first self-lased laser guided bomb (LGB) delivery, and first AGM-65H/K employment. The A-10 is projected to serve well into the 2020s.

A/OA-10A equipment includes an enhanced GPS/INS (EGI), head-up display (HUD), NVGs, and an Integrated Flight and Fire Control Computer (IFFCC) to enhance weapons delivery accuracy, cockpit presentations, targeting pod integration, and terrain avoidance. Other equipment consists of Pave Penny laser target identification pod and self-protection/penetration aids including ALQ 131/184 ECM pods, ALR-69 radar warning receiver and countermeasures system (CMS) to digitally integrate the ALE-40 chaff-flare dispenser and automate future extended IRCM solutions.

A/OA-10C is the new designation for A model aircraft currently being upgraded for precision engagement, with new glass cockpit displays, full targeting pod integration, hands-on throttle and stick (HOTAS), digital stores management, a Situational Awareness Data Link (SADL), and JDAM/WCMD integration. Debut flight of the upgraded A-10 occurred January 2005, and first production aircraft rolled out in August 2006. An upgraded automated chaff and flare system is planned for 2007. Other planned improvements include enhanced communication and improved situational awareness systems, as well as Sniper and Litening targeting pod capability and the Remotely Operated Video Enhanced Receiver (ROVER). These improvements will permit A-10 attack from higher altitudes. Additionally, the entire fleet is to receive structural improvements including rewinging where necessary.

Aircraft designated **OA-10A/C** are used primarily for FAC(A), combat escort, CSAR, and visual reconnaissance missions. The OA-10 is identical to the A-10. Mission configurations typically include large weapons loads of white phosphorous marking rockets and covert/overt illumination rockets/flares to mark/illuminate targets for strike aircraft or friendly ground forces. The first OA-10 unit reached initial operational capability (IOC) in October 1987. All squadrons are now A/OA-10 mix configuration.

***A-10C** Thunderbolt II* (A1C Alesia Goosic)

AC-130 Gunship

Brief: Heavily armed aircraft using side-firing weapons integrated with sophisticated sensor, navigation, and fire-control systems to provide precise firepower or area saturation for long periods, at night and in adverse weather.
Function: Attack aircraft.
Operator: AFSOC.
First Flight: 1967.
Delivered: 1968-present.
IOC: 1972 (AC-130H); 1996 (AC-130U).
Production: 43; including four recent conversions.
Inventory: eight (AC-130H); 15 (AC-130U).
Unit Location: Hurlburt Field, Fla.
Contractor: Lockheed Martin (airframe); Boeing (AC-130H); Rockwell, now Boeing (AC-130U).
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: AC-130H crew of 14; AC-130U crew of 13.
Dimensions: span 132.6 ft, length 99 ft, height 38.5 ft.
Weight: gross 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 289 mph, range 1,500 miles, with air refueling unlimited.
Armament: two 20 mm Vulcan cannons with 3,000 rd (AC-130H); one 25 mm Gatling gun (AC-130U); one 40 mm Bofors cannon with 256 rd, and one 105 mm Howitzer with 100 rd; 30 mm Bushmaster cannons with 200 rd replace 25 mm and 40 mm guns in new conversions.

COMMENTARY

The AC-130 is a C-130 modified with gun systems, electronic and EO sensors, fire-control systems, enhanced navigation systems, sophisticated communications, defensive systems, and in-flight refueling capability. These systems give the gunship crew the capability to acquire and identify targets day or night, coordinate with ground forces and command and control (C2) agencies, and deliver surgical firepower in support of both conventional and special operations missions. During operations in Afghanistan and Iraq, the AC-130 gunships worked in conjunction with the MQ-1 Predator, the latter providing live video and target referencing information.

AC-130A was the initial version, deployed in Vietnam 1968-69. Eighteen produced.

AC-130E, an improved version, of which eight were built. Converted to H standard after service in Vietnam.

AC-130H Spectres serve with the 1st SOW. The unit has eight, each equipped with a digital fire-control computer. They employ EO sensors and target-acquisition systems, including FLIR and LLLTV, and are capable of in-flight refueling. Fire-control computers, navigation, communications, and sensor suites have been upgraded; an infrared suppression system (IRSS) overhaul is under way. In addition, USAF is evaluating wingtip tanks as replacements for the existing under-wing tanks as a means of improving performance.

AC-130U Spooky, gunship conversions by Rockwell, of which 13 were delivered to AFSOC's 4th SOS in 1994-95. Four additional aircraft are being converted by Boeing to U standard, with 30 mm Bushmaster cannons replacing the 25 mm and 40 mm guns. (Modification of remaining AC-130U aircraft with new cannon anticipated by FY 2010). The first new AC-130U is expected to be declared operational in July 2007, with the remaining three delivered by the end of the year. These AC-130Us have greater altitude capability and combine increased firepower, reliability, and superior accuracy with the latest methods of target location. All weapons can be subordinated to the APQ-180 digital fire-control radar, FLIR, or all-light-level television (ALLTV) for adverse weather attack operations. The AC-130U program currently is exploring Viper Strike, a small precision-attack munition already used in support of the Global War on Terrorism and capable of destroying mobile targets from standoff ranges.

Although the AC-130H Spectre and AC-130U Spooky gunships use dissimilar avionics and other systems, fire support to troops on the ground is generally comparable. The AC-130U will not be required for most fire support missions but provides benefits under certain circumstances (weather, dual target attack, and defensive avionics).

F-15 Eagle

Brief: A supersonic, all-weather, highly maneuverable tactical fighter designed to permit USAF to swiftly gain

***AC-130** Gunship* (DOD photo)

and maintain air superiority in aerial combat.

Function: Air superiority fighter.

Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.

First Flight: July 27, 1972.

Delivered: November 1974-85.

IOC: September 1975.

Production: 874.

Inventory: 485.

Unit Location: Active: Eglin AFB, Fla., Elmendorf AFB, Alaska, Kadena AB, Japan, Langley AFB, Va., Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath UK, Robins AFB, Ga., Tyndall AFB, Fla. ANG: Hickam AFB, Hawaii, Jacksonville Arpt., Fla., Klamath Falls Arpt., Ore., Lambert-St. Louis Arpt., Mo., NAS JRB New Orleans, La., Otis ANGB, Mass., Portland Arpt., Ore. AFRC: Langley AFB (assoc.), Va.

Contractor: McDonnell Douglas (now Boeing); Raytheon.

Power Plant: F-15C: two Pratt & Whitney F100-PW-220 turbofans, each 25,000 lb thrust with max afterburner.

Accommodation: pilot only in F-15A/C; two seats in F-15B/D.

Dimensions: span 42.8 ft, length 63.8 ft, height 18.7 ft.

Weight: empty 28,600 lb, gross 68,000 lb.

Ceiling: 65,000 ft.

Performance: F-15C: max speed Mach 2.5, T-O run 900 ft, landing run without braking parachute 3,500 ft, ferry range with external fuel tanks more than 2,878 miles.

Armament: one internally mounted M61A1 20 mm six-barrel cannon; up to four AIM-9L/M/X Sidewinder and up to four AIM-7 Sparrow air-to-air missiles, or up to eight AIM-120 Advanced Medium-Range Air-to-Air Missiles (AMRAAMs), carried externally.

COMMENTARY

Since introduction into the inventory more than 30 years ago, the F-15 has had the ability to penetrate hostile defenses and establish air superiority over enemy systems through a combination superior maneuverability and acceleration, range, weapons, and avionics. F-15 fighters deployed to the Persian Gulf for Desert Storm accounted for 34 of the 37 USAF air-to-air victories and in Iraqi Freedom F-15Cs led coalition aircraft in maintaining aerial dominance.

F-15A (single-seat) and **F-15B** (two-seat) fighters became USAF's front-line fighter immediately upon introduction in the mid-1970s. A multimission avionics system includes APG-63 pulse-Doppler radar for long-range detection and tracking of small high-speed objects down to treetop level and effective weapons delivery, a HUD for close-in combat, identification, friend or foe (IFF), and INS. F-15A/Bs now serve with ANG. In February 2004, Florida's 125th FW received the first F-15A/Bs retrofitted with E-kit upgrades, providing additional thrust and improved combat capability.

F-15C (single-seat) and **F-15D** (two-seat) models followed in June 1979. Improvements included 2,000 lb of additional internal fuel and provision for carrying conformal fuel tanks (CFTs), reducing in-flight refueling requirements and increasing time in the combat zone. From 1983 through 1997, tactical capabilities were enhanced extensively through the multistaged improvement program (MSIP), a program of installation of new or modification of existing avionics equipment, allowing for the carriage of more advanced weapons, and increased self-protection. The last 43 aircraft were delivered with the APG-70 radar. The long-term F-15C/Ds that will remain in the fleet until 2025 have been subsequently upgraded with the APG-63(V)1. One squadron in Alaska received the later APG-63(V)2, featuring an active electronically scanned array (AESA), permitting the aircraft to track multiple targets and to guide air-to-air missiles against them. The Joint Helmet Mounted Cuing System (JHMCS), a "look and shoot" head-mounted system, is intended, along with the AIM-9X, to significantly enhance lethality in close-range aerial combat. Other modifications include improved engines, GPS equipment, Litening targeting pods, and the Link 16 fighter data link. Flight testing of the next generation APG-63(V)3 AESA radar, projected for the F-15C, has been undertaken.

F-15E Strike Eagle

Brief: A heavily modified, two-seat, dual-role variant of the original F-15, with weapons systems totally integrated for all-weather deep interdiction missions as well as air-to-air combat.

Function: Dual-role fighter.

Operator: ACC, AFMC, PACAF, USAFE.

First Flight: Dec. 11, 1986.

Delivered: April 1988-2004.

IOC: May 1989.

Production: 236.

Inventory: 223.

Unit Location: Eglin AFB, Fla., Elmendorf AFB, Alaska, Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Robins AFB, Ga., Seymour Johnson AFB, N.C.

Contractor: McDonnell Douglas (now Boeing); Raytheon.

Power Plant: two Pratt & Whitney F100-PW-220, each 25,000 lb thrust; or F100-PW-229 turbofans, each 29,000 lb thrust with max afterburner.

Accommodation: crew of two, on zero/zero ejection seats.

Dimensions: span 42.8 ft, length 63.8 ft, height 18.5 ft.

Weight: empty 45,000 lb, gross 81,000 lb.

Ceiling: 50,000 ft.

Performance: max level speed at altitude Mach 2.5, ferry range with CFTs 3,000 miles.

Armament: one internally mounted M61A1 20 mm six-barrel cannon; up to four AIM-9 Sidewinder and up to four AIM-7 Sparrow air-to-air missiles, or up to eight AIM-120 AMRAAMs; up to six AGM-65 Maverick air-to-surface missiles; AGM-130; EGBU-15 and GBU 10/12/15/24/28 guided munitions; CBU 87/88/97 unguided munitions; GBU-31 and GBU-38 JDAM, CBU-103/104/105 Wind-Corrected Munitions Dispenser (WCMD)-guided munitions, GBU-39 SDB, and nuclear weapons.

COMMENTARY

F-15E has a strengthened airframe for increased gross weight at takeoff and maneuver at nine Gs throughout the flight envelope. Cockpit controls and displays are improved, and a wide-field-of-view (WFCV) HUD is included.

For low-altitude, high-speed penetration and precision attack on tactical targets at night and in adverse weather, the F-15E carries a high-resolution APG-70 radar which provides a high-resolution synthetic aperture radar (SAR) map and LANTIRN (Low-Altitude Navigation and Targeting Infrared for Night) pods, with wide-field FLIR. The APG-70 gives the F-15E, with its AMRAAM, AIM-7, and AIM-9 load, a true multirole capability with the inherent air-to-air capability of the F-15C. The triple-redundant digital flight-control system, in combination with the LANTIRN navigation pod and the WFOV HUD, permits automatic terrain following. Other improvements include an EGI and Link 16 data link. F-15E aircraft have been JSOW-, JDAM-, and WCMD-capable since 2003. In addition, some F-15E aircraft have been equipped with Litening and Sniper targeting pods for improved precision attack capability. External CFTs have been fitted to increase combat range while carrying ordnance. System upgrades under way include programmable armament control sets (PACS), ready-installed software for delivery of JDAM, JSOW, and WCMD, and an enhanced night vision capability. New core processors ensuring increased capability and reliability are being retrofitted to allow employment of the newly operational GBU-39 SDB. A number of F-15Es are to receive an AESA radar to improve targeting and mapping capabilities.

During Desert Storm, 48 USAF F-15Es were deployed to the Persian Gulf where they operated mainly at night, hunting Scud missile launchers and artillery sites using the LANTIRN system; the ability to operate in conjunction with E-8 Joint STARS aircraft both then and in current operations in Iraq and Afghanistan has been critical to their ongoing success.

***F-15** Eagle* (TSgt. Shane A. Cuomo)

***F-16C** Fighting Falcon* (SSgt. Joshua Strang)

F-16 Fighting Falcon

Brief: A compact, versatile, and low-cost multirole fighter aircraft that is highly maneuverable and has repeatedly proved itself in air-to-air combat and air-to-surface attack.

Function: Multirole fighter.

Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.

First Flight: Dec. 8, 1976 (full-scale development).

Delivered: August 1978-2005.

IOC: October 1980, Hill AFB, Utah.

Production: 2,206.

Inventory: 1,315.

Unit Location: 13 active wings, 27 ANG, and five AFRC units (two associate).

Contractor: Lockheed Martin; Northrop Grumman.

Power Plant: one augmented turbofan. General Electric F110-GE-100 (27,600 lb thrust) and Pratt & Whitney F100-PW-220 (23,450 lb thrust) are alternative standard engines. Increased performance engines (IPEs) in aircraft delivered from late 1991: Block 50: F110-GE-129 (29,000 lb thrust); Block 52: F100-PW-229 (29,100 lb thrust).

***F-22A** Raptor* (USAF photo)

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: wingspan with missiles 32.7 ft, length overall 49.4 ft, height 16.7 ft.

Weight: (F-16C) empty (F100-PW-229) 18,591 lb, (F110-GE-129) 18,917 lb; gross, with external load (Block 40/42) 42,000 lb.

Ceiling: 50,000 ft.

Performance: max speed Mach 2, radius of action: Block 40 with two 2,000-lb bombs, two AIM-9 missiles, and external fuel, hi-lo-lo-hi 852 miles; combat range 575 miles.

Armament: one M61A1 20 mm multibarrel cannon, with 511 rd, mounted in fuselage; wingtip-mounted missiles; seven other external stores stations for fuel tanks and a range of air-to-air and air-to-surface munitions.

COMMENTARY

The F-16 is the workhorse of the USAF fighter fleet, constituting more than 50 percent of its strength through at least 2010. The 200+ USAF F-16 multimission fighters deployed to the Persian Gulf Theater flew more sorties than any other type during Desert Storm, with 13,500 missions. In Iraqi Freedom, the F-16 flew hundreds of missions helping to destroy the unit cohesion of the Republican Guard.

F-16A (single-seat) and **F-16B** (two-seat) versions, which entered service with the 388th TFW, Hill AFB, Utah, incorporated advanced technologies from the start, making these aircraft two of the most maneuverable fighters built. Equipment includes a multimode radar with a clutter-free look-down capability, advanced radar warning receiver (RWR), HUD, internal chaff/flare dispensers, and a 500-rd 20 mm internal gun.

Production of the F-16A and B for USAF ended in 1985. Most now belong to ANG. A midlife update program, undertaken cooperatively by USAF and NATO operators, includes improvement to the radar, fire-control computer, stores-management computer, and avionics software, giving F-16A/Bs the ability to use next generation air-to-air and air-to-surface weapons.

Reliability and maintainability improvements include a ring-laser gyro INS and installation of the upgraded F100-PW-220E turbofan engine.

The Multinational Staged Improvement Program, implemented in 1980, ensured the aircraft could accept systems under development, thereby minimizing retrofit costs. All F-16s delivered since November 1981 have had built-in structural and wiring provisions and systems architecture that expand the single-seater's multirole flexibility to perform precision strike, night attack, and beyond-visual-range intercept missions.

F-16C (single-seat) and **F-16D** (two-seat) aircraft were introduced at production Block 25 with MSIP II improvements in the cockpit, airframe, and core avionics and an increased-range APG-68 radar. Block 30 and 40 aircraft incorporate the General Electric F110-GE-100 engine. Deliveries began in 1984. With the exception of AFMC, all of the active and many of the Guard and Reserve units have since converted to F-16C/Ds. Block 30/40 aircraft are now GBU-31/38 JDAM and AGM-158 JASSM capable.

ANG and AFRC Block 25/30/32 F-16s are receiving upgrades aimed at increasing throughput and memory for new weapon capabilities, including GBU-38 JDAM, plus Advanced Identification Friend/Foe (AIFF) to reduce the risk of fratricide. These aircraft also carry the Theater Airborne Reconnaissance System (TARS), a podded system with EO sensors and future high-capacity data link to move the imagery to users on the ground.

ANG F-16s are equipped with Litening II/Litening ER targeting pods.

F-16CG Block 40/42 aircraft specialize in night attack operations with precision guided weapons. Follow-on improvements include ALE-47 improved defensive countermeasures, ALR-56M advanced RWR (Block 40 only), Very High Speed Integrated Circuit (VHSIC) technology in the APG-68(V5) fire-control radar, a ring-laser gyro INS, GPS, a LANTIRN nav/attack system, core avionics hardware, enhanced-envelope gunsight, digital flight controls, automatic terrain following, increased takeoff weight and maneuvering limits, an 8,000-hour airframe, IPEs, and expanded envelope nine-G capability.

F-16CJ designated Block 50/52 aircraft are equipped with the High-speed Anti-Radiation Missile (HARM) targeting system (HTS) for suppression of enemy air defenses (SEAD). Block 50/52 F-16CJs have MSIP Stage III improvements, which also show up in selected retrofits of earlier F-16 blocks. These aircraft incorporate the General Electric F110 and Pratt & Whitney F100 increased performance engines (IPEs), the latest cockpit control and display technology, including a wide-angle HUD. Weapons improvements include multishot AMRAAM compatibility, GBU-31/38 JDAM, AGM-154 JSOW, and Wind-Corrected Munitions Dispenser (WCMD).

Block 50/52 aircraft, followed by Block 40/42 from 2006-10, have been undergoing a program of retrofit with a new modular mission computer developed under an F-16 common configuration implementation program (CCIP), aimed at extending operational flexibility and maintenance commonality. This effort includes the participating European governments of the F-16 Multinational Fighter Program. CCIP also includes new color displays, Sniper XR targeting pod, JHMCS, AIM-9X, Link 16, and improved weapons capabilities. First delivery was made January 2002, and modification of Block 50/52 aircraft was completed in 2006; the program is expected to finish by 2010. The Block 50/52 aircraft have dual/alternate carriage of HARM targeting system (HTS) and Smart Targeting and Identification via Networked Geolocation (STING) and advanced targeting pods (ATP). Planned future upgrades include enhanced GPS/INS (CG/CJ aircraft) and upgraded radar with SAR capability (CJ aircraft).

Under Falcon STAR (STructural Augmentation Roadmap), all blocks of F-16 aircraft are undergoing a structural modification program to remedy fatigue problems caused by increased usage rates and heavier than forecast gross weights. Delivery of modified aircraft started October 2004.

F-22A Raptor

Brief: High-technology follow-on for the F-15C. An all-weather, multirole fighter that combines an extremely maneuverable airframe with stealth technologies, supercruise, and integrated avionics to penetrate advanced anti-air threats and achieve air dominance.

Function: Fighter.

Operator: ACC, AETC, AFMC, ANG.

First Flight: Sept. 7, 1997.

Delivery: 2001 (first production representative aircraft).

IOC: Dec. 15, 2005.

Production: TBD.

Inventory: 73.

Unit Location: Langley AFB, Va. (first operational location), Edwards AFB, Calif., Nellis AFB, Nev., Tyndall AFB, Fla.

Contractor: Lockheed Martin; Boeing.

Power Plant: two Pratt & Whitney F119-PW-100 turbofans, each in 35,000-lb thrust class.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: span 44.5 ft, length 62 ft, height 16.6 ft.

Weight: gross 50,000 lb.

Ceiling: above 50,000 ft.

Performance (design target): max level speed at S/L 900+ mph, range more than 2,000 miles.

Armament: one internal M61A2 20 mm gun, two AIM-9 Sidewinders stored internally in the side weapons bays; six AIM-120 AMRAAMs in the main weapons bay; for ground attack two GBU-32 (1,000-lb) JDAMs replace four AMRAAMs internally; up to eight Small Diameter Bombs (SDBs) can be carried in place of the two JDAMs (projected by 2009).

COMMENTARY

Built to lead USAF's "kick down the door" force, by day and night, and across the spectrum of missions, the F-22A presents an unparalleled combination of stealth, supercruise (ability to cruise at supersonic speed without using its afterburners), maneuverability, and integrated avionics allowing it to counter multiple anti-access threats. Integrated avionics and intraflight data link permit simultaneous engagement of multiple targets. The combination of flight controls, structural strength, and high-performance engines with thrust vectoring nozzles results in exceptional maneuverability. The cockpit is fitted with six color LCDs. The Projection Primary Multifunction Display provides a plan view of the air and ground tactical situation, including threat identity, threat priority, and tracking information. Two displays give navigation, communication, identification, and flight information, with three secondary displays showing air and ground threats, stores management, and air threat information. A HUD displays target status, weapon status, weapon envelopes, and shoot cues. Other equipment includes AN/APG-77 radar, an electronic warfare system with radar warning

***F-35** Lightning II* (Pratt & Whitney photo by Jody Brewer)

receiver and missile launch detector, JTIDS, IFF, laser gyroscope inertial reference, and GPS.

The F-22A entered engineering and manufacturing development (EMD) in August 1991. Nine aircraft were built, three without avionics to explore flight characteristics, flutter, loads, propulsion, envelope expansion, and weapons separation, and six with avionics to complete integration work, refine the pilot vehicle interface, and fly guided weapons launch tests. In addition, one static and one fatigue test airframe were built. One de-engined aircraft is now used for ground maintenance training at Tyndall AFB, Fla.

Initial operational test and evaluation (IOT&E) examining the Raptor's air dominance mission concluded mid-September 2004. JDAM capability was demonstrated that same month. Follow-on OT&E (FOT&E) completed in 2005. The F-22A had proved its air-to-air and air-to-ground attack capability when it reached IOC in December 2005, and on Jan. 21, 2006, it flew its first operational sortie from Langley AFB, Va., as part of Operation Noble Eagle.

Production aircraft have been delivered to Nellis AFB, Nev., and to Tyndall, where they are used to train F-22 pilots, and to Langley, the first operational base. USAF plans to put F-22s at Elmendorf AFB, Alaska, Hickam AFB, Hawaii, and Holloman AFB, N.M. All F-22 squadrons will involve Total Force integration with Guard and Reserve forces.

F-35 Lightning II

Brief: An affordable, highly common family of next generation strike aircraft.

Function: Multirole fighter.

Operator: ACC for USAF.

First Flight: Dec. 15, 2006 (F-35A prototype)

Delivery: 2009 (anticipated first production aircraft).

IOC: 2013 (USAF).

Production: planned: 1,763 (USAF), 680 total F-35B (USMC) and F-35C (USN), 150 (UK).

Inventory: TBD.

Unit Location: Planned: Edwards AFB, Calif.; Eglin AFB, Fla.; Hill AFB, Utah; Kadena AB, Japan; Nellis AFB, Nev.; Shaw AFB, S.C. ANG McEntire ANGB, S.C.

Contractor: Lockheed Martin, with Northrop Grumman and BAE Systems; Pratt & Whitney is propulsion contractor; General Electric is second source engine contractor for the production phase.

Power Plant: currently one Pratt & Whitney F135, in 35,000-lb thrust class.

For USAF, the **F-35A** will replace its current force of F-16 and A-10 aircraft with a stealthy multirole fighter that will comprise the bulk of USAF's fighter fleet for up to 50 years. This advanced multimission fighter is designed to penetrate high-threat enemy airspace and engage all enemy targets in any conflict. In addition to its advanced stealth design, the F-35 incorporates maneuverability, long range, and highly advanced avionics to accomplish the bulk of USAF missions. Its fully integrated avionics and weapons systems will permit simultaneous engagement of multiple targets in enemy airspace. USAF has also stated interest in the **F-35B** STOVL variant.

The concept demonstration phase (CDP) of the program commenced November 1996, with competitive contract awards to Lockheed Martin (X-35A) and Boeing (X-32A). CDP concluded in fall 2001 with Lockheed Martin declared the winner. The system development and demonstration (SDD) phase, begun in October 2001, focuses on system development, test and evaluation, logistics support, and LRIP planning. A total of 22 test aircraft are being built, 14 for flight testing, seven for nonairborne activities, and one to evaluate the F-35's radar signature. Lockheed Martin completed assembly of the first F-35A flight-test aircraft in February 2006 and flight testing commenced Dec. 15, 2006. The F-35 is powered by the F135, a derivative of the Pratt & Whitney F119 engine. General Electric has been under contract to develop an interchangeable power plant, the F136, but DOD put no money in the Fiscal 2008 budget proposal for the alternate production engine.

F-117 Nighthawk

Brief: World's first operational aircraft designed to exploit low observable (LO) stealth technology to expand the range of heavily defended critical targets that can be attacked.

Function: Attack aircraft.

Operator: ACC, AFMC.

First Flight: June 18, 1981.

Delivered: 1982-summer 1990.

IOC: October 1983.

Production: 59.

Inventory: 52.

Unit Location: Eglin AFB, Fla., Holloman AFB, N.M.

Contractor: Lockheed Martin; Raytheon.

Power Plant: two General Electric F404-GE-F1D2 nonafterburning turbojets, each 9,040 lb thrust.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: span 43.3 ft, length 65.9 ft, height 12.4 ft.

Weight: empty (estimated) 29,500 lb, max gross 52,500 lb.

Ceiling: 35,000 ft.

Performance: high subsonic, top speed 646 mph (0.9 Mach), mission radius, unrefueled (5,000-lb weapons load) 656 miles.

Armament: full internal carriage of a variety of tactical weapons, incl laser- and GPS-guided 2,000-lb munitions, unguided general-purpose bombs, and cluster munitions. JDAM capability being introduced.

COMMENTARY

F-117 is the Air Force's primary attack aircraft for penetrating high-threat target areas with precision weapons. Its small radar signature, LO technologies, and advanced targeting system allow the aircraft to penetrate dense threat environments and to deliver precision weapons against heavily defended, high-value targets with pinpoint accuracy. Primary missions include precision attack, air interdiction, SEAD, and special operations.

Acknowledged publicly in November 1988, the F-117's first operational deployment was to Panama in 1989 for Just Cause.

F-117A development and manufacture began simultaneously in November 1978 within a highly classified environment, using many parts either transferred or modified from existing aircraft. The F-117As were deployed with the 4450th Tactical Group (redesignated 37th TFW in 1989) at Tonopah Test Range Airfield, Nev., where operations were restricted mainly to night flying to maintain secrecy. In 1992, they were transferred to the 49th FW at Holloman AFB, N.M.

To achieve the aircraft's minimal radar signature, the skin panels of the arrowhead-shaped airframe are divided into many small, perfectly flat surfaces (facets), which deflect at a variety of angles all signals from probing hostile ground or airborne radars. In addition, much of the aircraft's external surface is made of composites and radar-absorbent materials. The F-117A's dull black finish reflects little light, and the engine air intakes and exhaust nozzles are above the wings and rear fuselage, respectively, to shield them from IR seekers below. The two nonafterburning turbofans give the aircraft low noise signature and high subsonic performance.

Key features include a state-of-the-art digital avionics suite integrating sophisticated navigation and attack systems, complemented by a specially developed automated mission-planning system. A high-precision INS coupled to GPS is installed. An upgraded dual-turret IR targeting system, combined with boresight laser designators and autotracker, ensures precision attack.

Other improvements since 1989 have included upgraded cockpit display and instrumentation and adverse weather capability via advanced weapons. Current modifications will sustain the fleet through its service life. USAF plans to retire the F-117 over the next two years.

YAL-1A Attack Airborne Laser

Brief: The prototype YAL-1A, using a modified 747-400F platform, will be used to demonstrate the ability of an airborne high-energy laser to shoot down ballistic missiles in their boost phase.

Function: Airborne laser.

Operator: AFMC.

First Flight: July 18, 2002 (Block 04 test bed).

Delivered: 2002.

IOC: TBD.

Production: TBD.

Inventory: TBD.

***F-117A** Nighthawk* (A1C Russell Scalf)

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: approx. span 35 ft, length 50.5 ft, height 17.3 ft.

Weight: TBD.

Ceiling: TBD.

Performance (design targets): mil power level speed at S/L, 630 knots calibrated airspeed (KCAS) for the F-35A conventional takeoff and landing (CTOL) variant (Mach 1 max power for CTOL only) and the F-35C carrier variant (CV), and 600 KCAS for the F-35B short takeoff and vertical landing (STOVL) aircraft, combat radius more than 590 miles for CTOL variant, 600 miles for CV, and 450 miles for STOVL.

Armament: (main weapons bay): CTOL: one internal 25 mm gun, two AIM-120Cs, and two GBU-31 JDAMs. CV: two AMRAAMs and two GBU-31 JDAMs. STOVL: two AMRAAMs and two GBU-32 JDAMs. External carriage also will be available. (Note: Numerous other weapons capabilities will be added as system development continues.)

COMMENTARY: The F-35 Lightning II Joint Strike Fighter is a multinational cooperative development program aimed at developing and fielding an affordable, highly common family of next generation strike fighters.

***YAL-1A** Airborne Laser* (Kellie Masters)

Unit Location: Edwards AFB, Calif.
Contractor: Boeing (ABL platform; battle management (BM) system); TRW (now Northrop Grumman) (COIL and subsystems); Lockheed Martin (beam control system).
Power Plant: four GE CF6-80 turbofans, each 61,500 lb thrust.
Accommodation: flight crew of two, plus four mission specialists.
Dimensions: span 211.4 ft, length 228.8 ft, height 63.7 ft.
Weight: empty 423,882 lb, gross 800,000 lb.
Ceiling: 45,000 ft.
Performance: max operating speed Mach 0.83, max laser weapon range hundreds of miles, unrefueled endurance at 40,000 ft with operational laser weapon load approx six hr. Chemical fuel carried on board will enable more than 20 shots.

COMMENTARY

The Airborne Laser (ABL) has been projected as the first directed energy weapon in the US arsenal. However, the Fiscal 2007 defense budget downgraded the program to a demonstration project, culminating in a planned test destruction of a boosting ballistic missile over the Pacific in late 2009. Overall direction and budget authority for the program lies with the Missile Defense Agency (MDA), while USAF continues to man and develop the program through its Airborne Laser System Program Office at Kirtland AFB, N.M. Planning and engineering for future operational aircraft is on hold pending the results of the test.

Operational concepts call for ABLs to fly continuous patrols over deployed US forces, at an altitude of 40,000 ft. The aircraft would detect and shoot down any ballistic missiles launched at US forces or nearby allied nations. The ABL also would have the capability of determining hostile launch locations and passing that information to other US assets.

Central to the system is a Chemical-Oxygen Iodine Laser (COIL) system, running down the interior of the aircraft. Laser fire will emerge through a large ball turret in the nose. The system is designed to track ballistic missiles and maintain laser focus on their skin, which, when sufficiently heated, will cause the pressurized fuel within to explode.

The lightweight, megawatt-class COIL technology can deliver high energy over a great distance largely because of its IR wavelength. In addition to the COIL, the ABL houses three other lasers: the active ranger system, which provides preliminary tracking data; the track illuminator laser, which produces more refined data; and the beacon illuminator laser, which measures atmospheric disturbance.

Following a two-year structural modification, the ABL platform's first flight took place July 18, 2002 from Boeing's Wichita, Kan., facility. A 10-month laser module test was completed in 2002, and, in December 2002, the platform was flown to Edwards AFB, Calif., for system installation. With YAL-1A in the hangar, tests were conducted independently on the ABL optical system and the six laser modules that make up the complete COIL system. All six modules were successfully tested on Nov. 10, 2004. The aircraft resumed airworthiness flight testing in December 2004, following installation of the beam control/fire-control system; performance demonstration of these systems was completed in August 2005. During 2006, modification of the aircraft was undertaken in preparation for installation of the COIL laser in 2007.

Reconnaissance and Surveillance Aircraft

E-3 Sentry
Brief: Heavily modified Boeing 707-320B aircraft, fitted with an extensive complement of mission avionics providing all-weather air surveillance and command, control, and communications for tactical and air defense forces.
Function: Airborne early warning, tactical battle management, and C2 of theater air forces.
Operator: ACC, PACAF, AFRC (assoc.).
First Flight: Oct. 31, 1975 (full avionics).
Delivered: March 1977-84.
IOC: 1977.
Production: 34.
Inventory: 32.
Unit Location: Elmendorf AFB, Alaska, Kadena AB, Japan, Tinker AFB, Okla. AFRC: (assoc.) Tinker AFB, Okla.
Contractor: Boeing; Northrop Grumman (radar); Lockheed Martin (computer).
Power Plant: four Pratt & Whitney TF33-PW-100/100A turbofans, each 21,000 lb thrust.
Accommodation: flight crew of four; 13-19 mission specialists.

***E-3C** Sentry* (SSgt. Matthew Hannen)

Dimensions: span 145.8 ft, length 152.9 ft, height 41.5 ft.
Weight: gross 347,000 lb.
Ceiling: 38,000 ft.
Performance: optimum cruise Mach 0.78, endurance eight hr unrefueled.

COMMENTARY

A critical component of the USAF inventory, the E-3 Airborne Warning and Control System (AWACS) aircraft is capable of surveillance from Earth's surface up to the stratosphere, over land or water, at more than 200 miles. During conflict it will coordinate the actions of hundreds of strike, support, and cargo aircraft. As an integrated Air Force command control battle management (C2BM) surveillance, target detection, and tracking platform, AWACS is directly subordinate to the joint air operations center. Its extensive range of mission avionics enables it to provide an accurate real-time battlespace picture of friendly, neutral, and hostile activity; command and control of an area of responsibility; battle management of theater forces; all-altitude/all-weather surveillance of the battlespace; and early warning of enemy actions.

AWACS may be employed alone or horizontally integrated with other C2BM and ISR elements. It provides the theater with the ability to find, fix, track, and target airborne or maritime threats and to locate and identify emitters. It can operate beyond the coverage of ground-based C2 and can exchange data with other C2 platforms and weapon systems.

E-3A. Of the 24 built for USAF in standard production configuration, 22 were later upgraded.

An improved US/NATO Standard E-3A configuration was initiated with the 25th USAF Sentry, delivered in December 1981, with a larger-memory computer and a maritime detection capability. Nine were built new for USAF, and one of the original E-3As was upgraded.

E-3B is the upgraded earliest version E-3A. Twenty-two product prototypes were produced. Improvements include much-enhanced computer capabilities, jam-resistant communications, austere maritime surveillance capability, additional radio communications, and five additional display consoles.

E-3C is an upgrade to the original 10 US/NATO Standard E-3A aircraft, with additional radio, console, and radar capabilities. Redelivered 1984.

A series of major sustainability, reliability, and availability upgrades for USAF E-3s has been undertaken to support the continuing demands on the system. Upgrades include new passive detection systems, known as electronic support measures (ESM), that complement the active beaming radar, enabling the aircraft to detect signals emitted by both hostile and friendly targets, improved Joint Tactical Information Distribution System (JTIDS), jam-resistant communications, increased computer capacity, and GPS capability. Radar system improvements permit AWACS aircraft operating in the pulse-Doppler mode to detect smaller, stealthier targets. Installation begun in 2005 of new air traffic management systems and advanced satellite communications permits use of optimum altitudes and flight routes. A single, long-term contract awarded in 2001 provides for further improvement and management support.

E-8 Joint STARS
Brief: A modified Boeing 707 equipped with a large, canoe-shaped radome mounted under the forward part of the fuselage, housing long-range, air-to-ground radar capable of locating, classifying, and tracking vehicles moving on Earth's surface out to distances in excess of 124 miles. Such data are then transmitted via data link to ground stations or other aircraft.
Function: Ground surveillance, battle management (BM), C2 aircraft.
Operator: ACC and ANG, as the blended 116th Air Control Wing.
First Flight: December 1988.
Delivered: May 1996-present
IOC: Dec. 18, 1997.
Production: 18.
Inventory: 18.
Unit Location: Robins AFB, Ga.
Contractor: Northrop Grumman; Motorola; Cubic; Raytheon.
Power Plant: four Pratt & Whitney TF33-102C turbojets, each 19,200 lb thrust.

E-8 Joint STARS (Northrop Grumman photo)

Accommodation: mission crew of 21 Air Force/Army operators (can be augmented to 34).
Dimensions: span 145.8 ft, length 152.9 ft, height 42.5 ft.
Weight: gross 336,000 lb.
Ceiling: 42,000 ft.
Performance: max operating speed Mach 0.84, endurance with one in-flight refueling 20 hr.

COMMENTARY

Joint STARS (Surveillance Target Attack Radar System) is a battle management (BM) platform capable of providing commanders with transformational C2 and near-real time wide area surveillance ultimately passing targeting information to air and ground commanders. Joint STARS battle managers use the sensor and a robust communications suite to engage enemy forces in day, night, and adverse weather conditions. The radar subsystem features a multimode, side-looking, phased-array radar that provides interleaved moving target indicator (MTI) information, synthetic aperture radar (SAR) imagery, and fixed target indicator imagery. Joint STARS downlinks via a secure, jam-resistant digital data link and beyond-line-of-sight satellite radio communications. Multiple receivers are in use, predominantly the US Army's Common Ground Station and Joint Services Work Station.

As part of their operational test and evaluation, Joint STARS aircraft flew more than 150 operational missions during Desert Storm (with two E-8A development aircraft) and Joint Endeavor (with one E-8A and one test bed E-8C). During Iraqi Freedom, EC-8C Joint STARS aircraft were airborne 24 hours a day to help coalition forces maintain battlefield awareness. The E-8C's unique, long-dwell MTI capability is being used in increasingly creative ways, keeping it relevant to the joint force commander.

E-8A. Prototype version, with specialized equipment installed aboard two specially modified 707-300 airframes. One was converted to an in-flight pilot trainer in 1997, and the second was scrapped.

E-8C. Production version, based on former commercial 707-300 airframes. Equipped with 18 operations and control consoles, two of which double as communications stations, all the aircraft have been modified to the more capable Block 20 aircraft, featuring more powerful computers and an Internet protocol local area network. The first E-8C became operational in 1996, and these aircraft are expected to remain airworthy until at least 2034. System improvements under way include Link 16 upgrade for improved control and battle management; enhanced radar modes; new satellite communications radios; upgrades to allow Joint STARS to assume the Airborne Battlefield Command and Control Center (ABCCC) mission of attack support to ground force commanders; installation of the Force XXI Battle Command Brigade and Below (FBCB2) terminal, greatly enhancing situational awareness to friendly forces; IP connectivity; and communications navigation surveillance air traffic management upgrades to permit use of optimum altitudes and flight routes in increasingly congested commercial airspace in response to new stringent international navigation standards. USAF will seek to re-engine the E-8C to improve operational performance following cancellation of the E-10 program.

MQ-1 Predator

Brief: A medium-altitude, long-endurance unmanned aerial vehicle (UAV), flown remotely. Joint force commander multimission asset, combining imagery sensors with strike capability.
Function: Reconnaissance, interdiction, and close air support aircraft.
Operator: ACC; AFSOC; ANG.
First Flight: July 1994.
Delivered: July 1994 (USAF from 1996)-present.
IOC: 2003.
Production: 170 air vehicles—ongoing.
Inventory: five.
Unit Location: Creech AFB, Nev., Nellis AFB, Nev.
Contractor: General Atomics Aeronautical Systems.
Power Plant: one Rotax 914 turbocharged engine.
Accommodation: unmanned system.
Dimensions: length 27 ft, height 7.2 ft, span 48.7 ft.
Weight: empty 950 lb, gross 2,250 lb.
Ceiling: 25,000 ft.
Performance: cruise speed 80 mph, up to 138 mph, endurance 24 hr (460 miles with 16 hr on station).
Armament: Two Hellfire missiles.

COMMENTARY

Operated currently by ACC's 11th, 15th, and 17th RSs, AFSOC's 3rd SOS, and ANG's 163rd RW, the Predator UAV has evolved into a vital component of USAF's warfighting inventory. A Predator system includes four air vehicles, a ground control station, satellite link, and about 55 personnel for 24-hour operations. The Predator crew comprises a pilot and two sensor operators.

MQ-9 Reaper (SrA. Larry E. Reid Jr.)

DOD first used the advanced concept technology demonstration (ACTD) Predator in 1995 to support Provide Promise. In 1997, USAF took over the Predator program, and in 1999, while the UAV was still in development, the service deployed the system operationally for surveillance missions over Bosnia and Iraq. In February 2001, USAF successfully completed Phase 1 of the Hellfire demonstration. Since then, Predators armed with the Hellfire missiles have been used to attack targets in Afghanistan, Yemen, and Iraq. USAF changed the designation for Predator A to MQ-1 to denote its multimission capability for both reconnaissance and strike. All RQ-1 aircraft have been or will be retrofitted for MQ-1 configuration.

MQ-1 designates the multimission weaponized Predator A. It carries an MTS sensor ball supplied by Raytheon in place of the Wescam sensor ball. The MTS provides a laser target designator with EO/IR sensors in a single package. The SAR must be removed to make room for some of the laser designator equipment. The MQ-1 can be controlled via direct line of sight or via satellite from a remote location. Currently, most Predator missions are controlled remotely from the US.

RQ-1A. The ACTD version of Predator A.

RQ-1B. The reconnaissance-only version of Predator A, with an internal 450-lb surveillance payload that includes two EO and one IR video cameras carried in a ball-shaped turret under the nose and produced by Wescam. The internal sensor payload also includes a SAR still imagery camera for a day/night, all-weather reconnaissance capability. USAF is retrofitting RQ-1Bs to MQ-1 configuration.

MQ-9 Reaper

Brief: A medium-to-high altitude, long-endurance remotely piloted UAV. Joint force commander multimission asset as a persistent hunter-killer against emerging targets.
Function: Unmanned attack and reconnaissance aircraft.
Operator: ACC.
First Flight: February 2001.
Delivered: November 2003.
IOC: FY09.
Production: 60 (planned).
Inventory: eight.
Unit Location: Creech AFB, Nev.
Contractor: General Atomics Aeronautical Systems.
Power Plant: one Honeywell TPE-331-10GDT turboprop engine.
Accommodation: unmanned system.
Dimensions: length 36.2 ft, span 66 ft.
Weight: empty 4,680 lb, gross 10,500 lb.
Ceiling: 30,000+ ft.
Performance: cruise speed 172 mph, up to 230 mph, endurance 14+ hours.
Armament: up to 3,000-lb external payload capacity to include Hellfire, GBU-12, JDAM, and SDB.

COMMENTARY

The typical MQ-9 system consists of several aircraft, a ground control station, communications equipment/links, spares, and active duty and/or contractor personnel. The crew is one pilot and one sensor operator. The aircraft is flown from within the ground control station using either a C-band line-of-sight data link or a Ku-band beyond-line-of-sight data link.

The sensor suite for targeting includes a color/monochrome daylight TV, infrared, image intensified TV with a laser rangefinder/designator to precisely designate targets for laser guided munitions. The SAR enables GBU-38 JDAM targeting. The sensor is capable of very fine resolution in both spotlight and strip modes. The SAR also has ground moving target indicator capability.

OC-135 Open Skies

Brief: A modified C-135 aircraft that flies unarmed observation and verification flights over nations that are parties to the 1992 Open Skies Treaty.
Function: Reconnaissance aircraft.
Operator: ACC.
First Flight: 1993.
Delivered: 1993-96.
IOC: October 1993.
Production: three.
Inventory: two.
Unit Location: Offutt AFB, Neb.
Contractor: Boeing.
Power Plant: four Pratt & Whitney TF33-P-5 turbofans, each 16,050 lb thrust.
Accommodation: seating for 35, incl cockpit crew, aircraft maintenance crew, foreign representatives, and crew members from the Defense Threat Reduction Agency.
Dimensions: span 131 ft, length 135 ft, height 42 ft.
Weight: gross 297,000 lb.
Ceiling: 50,000 ft (basic C-135).
Performance: speed: 500+ mph, unrefueled range 3,900 miles.

COMMENTARY

A modified version of the WC-135, used for specialized arms control treaty observation and imagery collection missions with vertical-looking and panoramic optical cameras installed in the rear of the aircraft.

OC-135B modifications include one vertical and two oblique KS-87E framing cameras, used for photography approximately 5,000 ft above the ground, and one KA-91C panoramic camera, which pans from side to side to provide a wide sweep for each picture, used for high-altitude photography up to approximately 35,000 ft. Data is processed and recorded by a recording and annotation system.

RC-135

Brief: Specially configured variant of the Boeing C-135 Stratolifter, having an elongated nose and cheeks containing highly advanced electronic signal collection systems. Used to acquire real-time electronic and signals intelligence data for theater and tactical commanders.
Function: Electronic reconnaissance aircraft.
Operator: ACC.
First Flight: not available.
Delivered: circa 1973-99.
IOC: circa 1973 (Rivet Joint).
Production: (converted).
Inventory: 22.
Unit Location: Offutt AFB, Neb.
Contractor: Boeing (airframe); L3 Communications; Textron.
Power Plant: four CFM International F-108-CF-201 turbofans, each 24,000 lb thrust.
Accommodation: flight crew of three; 25-35 mission crew.
Dimensions: span 131 ft, length 140 ft, height 42 ft
Weight: max gross 299,000 lb.
Ceiling: 35,000 ft.
Performance: speed 500+ mph, range, with air refueling, unlimited.

COMMENTARY

The 55th Wing at Offutt AFB, Neb., operates a highly specialized fleet of RC-135s for worldwide reconnaissance missions. All are subject to ongoing modernization, with upgrade of avionics and primary mission equipment to expand capability and maintain effectiveness.

RC-135S Cobra Ball (CB). Three aircraft. Cobra Ball collects measurement and signature intelligence (Masint) data, providing the capability to monitor missile-associ-

ated signal activity and to track missiles during boost and re-entry phases of flight. Cobra Ball can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance for treaty verification and theater ballistic missile proliferation. Equipment includes wide-area IR sensors, long-range optical cameras, and an advanced communications suite.

RC-135U Combat Sent (CS). Two aircraft. Each Combat Sent aircraft has a specifically designed signals intelligence (Sigint) suite used primarily to collect scientific and technical (S&T) electronic intelligence (Elint) data against air-, land-, and sea-based emitter systems. The accuracy of CS data is critical to the effective design, programming, and reprogramming of radar warning receivers as well as jammers, decoys, and anti-radiation missiles and to the development of effective threat simulators.

RC-135V/W Rivet Joint (RJ). Seventeen aircraft. Rivet Joint is a self-contained standoff airborne signals intelligence (Sigint) collection system. Its primary role is to exploit the "electronic" battlefield and deliver near-real-time (NRT) intelligence-surveillance-reconnaissance (ISR) information to tactical forces, combatant commanders, and national command authorities across the full spectrum of conflict. Onboard collection capabilities encompass rapid search, detection, measurement, identification, demodulation, geolocation, and fusion of data from potentially thousands of electronic emitters.

TC-135S/W. Used for training purposes.

***U-2R** Dragon Lady* (DOD photo)

***RQ-4** Global Hawk* (Northrop Grumman photo)

RQ-4 Global Hawk

Brief: A high-altitude, long-range, long-endurance UAV.

Function: Unmanned reconnaissance aircraft.

Operator: ACC.

First Flight: Feb. 28, 1998.

Delivered: seven advanced concept technology demonstrators; five production vehicles.

IOC: used operationally in Afghanistan and Iraq while still in development phase. Operational status achieved October 2004.

Production: 51 (planned).

Inventory: 11.

Unit Location: Beale AFB, Calif., Eglin AFB, Fla., (planned) Andersen AFB, Guam, by 2009.

Contractor: Northrop Grumman (prime); Raytheon.

Power Plant: one Rolls Royce-North American AE 3007H turbofan, 7,600 lb thrust.

Accommodation: unmanned system.

Dimensions: RQ-4A: length 44.4 ft, height 15.2 ft, span 116.2 ft.; RQ-4B: length 47.6 ft, span 130.9 ft.

Weight: gross (RQ-4A) 25,600 lb; (RQ-4B) 32,250 lb.

Ceiling: 65,000+ ft.

Performance: objective endurance up to 40 hr (RQ-4B 33 hr) at a cruise speed of 400 mph and at an altitude of 65,000 ft allowing loiter on station 1,380 miles from base for 24 hr. Combat range 15,525 miles.

Armament: none.

COMMENTARY

The **RQ-4A** is a high-altitude endurance UAV carrying a 1,900-lb payload, incorporating EO/IR and SAR sensors that permit switching among radar, IR, and visible wavelengths as required. The Global Hawk system operates in conjunction with its ground launch recovery element and mission control element for command and control.

The **RQ-4B** system increases payload capacity to 3,000 lb for future sensors/capabilities, including signals collection and electronics intelligence. Navigation is by GPS/INS. Global Hawk flies autonomously from takeoff to landing, providing near-real-time imagery products for tactical and theater commanders. Vehicle ground track and mission plan can be updated in real time to respond to changing air traffic control needs and/or mission collection needs.

Global Hawk began as an advanced concept technology demonstrator in 1995. Engineering and manufacturing development (EMD) was approved in March 2001. While still a development system, Global Hawk deployed operationally to support Enduring Freedom in Afghanistan in November 2001, flying more than 50 missions and 1,000 combat hours. The RQ-4 program has been accelerated to meet the continuing heavy demand for its capabilities.

Global Hawk provides continuous, all-weather, day/night, wide area surveillance. It will operate in low-to-moderate air defense threat environments with the ability to fly above or stand off from enemy defenses.

U-2 Dragon Lady

Brief: Single-seat, single-engine, high-altitude endurance reconnaissance aircraft carrying a wide variety of sensors and cameras, providing continuous day or night, high-altitude, all-weather area surveillance in direct support of US forces.

Function: High-altitude reconnaissance.

Operator: ACC.

First Flight: Aug. 4, 1955 (U-2); 1967 (U-2R); October 1994 (U-2S).

Delivered: 1955-October 1989.

IOC: circa 1956.

Production: 35 (U-2S/ST).

Inventory: 34.

Unit Location: Beale AFB, Calif.

Contractor: Lockheed Martin.

Power Plant: F118-GE-101 turbojet.

Accommodation: one (two for trainer).

Dimensions: span 103 ft, length 63 ft, height 16 ft.

Weight: gross 40,000 lb.

Ceiling: above 70,000 ft.

Performance: speed 475 mph; range more than 4,500 miles; max endurance 10+ hr.

COMMENTARY

The U-2 is the Air Force's premier high-altitude reconnaissance platform, capable of carrying multi-int sensors simultaneously, making it USAF's only truly operational multi-intelligence platform and a key performer in combat operations.

Although the U-2 was designed initially in the 1950s, current aircraft were produced primarily in the 1980s, when the production line was reopened to produce the TR-1, a significantly larger and more capable version than the earlier aircraft. Deliveries ended in October 1989.

U-2R (single-seat) and **U-2RT** (two-seat) aircraft. In 1992, all existing U-2s and tactical TR-1s were consolidated under the designation U-2R.

U-2S (single-seat) and **TU-2ST** (two-seat). The current designations of all aircraft in the inventory. Conversion to S model configuration began in October 1994. Included in the ongoing $1.5 billion improvement program are new F118-GE-101 engines, a complete electrical system replacement, a new glass cockpit using multifunction displays (MFDs), a digital autopilot, an electro-optical view sight, and a new electronic warfare system. Sensor upgrades include the ASARS-2A SAR sensor, which provides enhanced imaging modes and improves geo-location accuracy; the SYERS-2 EO imagery system providing DOD's only multispectral and IR capability; enhanced RF-intelligence capability; and new data links enabling the U-2 to connect in near real time with network-centric hubs as well as line-of-sight ground stations, airborne data relays, and beyond-line-of-sight satellite data relays simultaneously.

NASA has two ER-2 versions of the U-2 used for high-altitude scientific experiments and atmospheric research, including investigation of global ozone depletion.

Special Duty Aircraft

E-4B National Airborne Operations Center

Brief: A four-engine, swept-wing, long-range, high-altitude airplane providing a highly survivable C3 center allowing national/defense leaders to direct US forces, execute emergency war orders, and coordinate actions by civil authorities.

Function: Airborne operations center.

Operator: ACC.

First Flight: June 13, 1973 (E-4A); June 10, 1978 (E-4B).

Delivered: December 1974-85.

IOC: December 1974 (E-4A); January 1980 (E-4B).

Production: four.

Inventory: four.

Unit Location: Offutt AFB, Neb.

Contractor: Boeing; Rockwell; Raytheon E-Systems.

Power Plant: four General Electric CF6-50E2 turbofans, each 52,500 lb thrust.

Accommodation: up to 114 (63 crew/battle staff; 51 passengers.

Dimensions: span 195.7 ft, length 231.3 ft, height 63.4 ft.

Weight: gross 800,000 lb.

Ceiling: above 40,000 ft.

Performance: 6,900+ miles; unrefueled endurance in excess of 12 hr; with aerial refueling up to 72 hr.

COMMENTARY

A militarized version of the Boeing 747-200, **E-4B** aircraft perform the National Airborne Operations Center (NAOC) mission. The E-4B fleet provides a survivable C3 platform throughout the full threat spectrum, including sustained operations in a nuclear environment. First operational mission was flown in March 1980.

E-4Bs are hardened against the effects of nuclear explosions, including electromagnetic pulse, and have in-flight refueling capability. A 1,200-kVA electrical system supports advanced system electronics as well as state-of-the-art communications and data processing

equipment such as EHF Milstar satellite terminals and six-channel International Maritime Satellite (Inmarsat). A triband radome also houses the E-4B's super-high frequency (SHF) frequency division multiple access (FDMA) communications antenna, the only such system on an airborne platform.

The E-4B system is capable of linking with commercial telephone and radio networks and could be used for radio broadcasts to the general population. E-4Bs also support the Federal Emergency Management Agency (FEMA).

In early 2000, the E-4B entered the SDD phase of a modernization program aimed at updating the electronic infrastructure supporting the aircraft's primary mission equipment and increasing the bandwidth of external communications and onboard data transfer. These updates, along with changes to the aircraft's interior configuration, internal noise reduction modifications, BM improvements, and Global Air Traffic Management (GATM) avionics modifications, ensure the E-4B aircraft will effectively execute its NAOC mission, providing C3 in the homeland security environment and beyond for the foreseeable future.

EC-130 Commando Solo

Brief: A heavily modified C-130 used for EW and electronic combat.

Function: psychological warfare.

Operator: ANG.

First Flight: January 1990.

Delivered: March 1990 (J model from 2003).

IOC: December 1990.

Production: (no new-build E); seven (J).

Inventory: three (E); seven (J).

Unit Location: ANG: Harrisburg Arpt., Pa.

Contractor: Lockheed Martin; Raytheon; General Dynamics.

Power Plant: (EC-130E) T-56-A-15 turboprops, each 4,200 shp; (EC-130J) four Rolls Royce-Allison AE2100D turboprops, each 4,591 shp.

Accommodation: three flight crew, six mission (J).

Dimensions: EC-130J: span 132.6 ft, length 97.8 ft, height 38.9 ft.

Weight: EC-130J: gross 175,000 lb.

Ceiling: EC-130J: 30,500 ft.

Performance: speed 299 mph, range in excess of 2,100 miles; (C-130J) 393 mph, range 4,140 miles.

COMMENTARY

EC-130E ABCCC Airborne Battlefield Command and Control Center. Seven aircraft were updated by Unisys to ABCCC III standard. The advanced JTIDS received data transmitted by AWACS aircraft and other systems, enabling the crew to see a real-time picture of air operations over a combat area. Now retired.

EC-130E Commando Solo. Version used by the ANG as a broadcasting station for psychological warfare operations. Specialized modifications include enhanced navigation systems, self-protection equipment, and worldwide color television configuration. Replaced by EC-130J version.

EC-130J Commando Solo II. Specialized versions of the latest-model C-130 aircraft, ordered to replace E models, with current mission equipment transferred from the older E model Commando Solo aircraft. Entered service mid-2003 with the 193rd SOW (ANG).

Commando Solo aircraft have been used in numerous military operations, including Iraqi Freedom. They also have a role in civil emergencies. Secondary mission is electronic attack in the military frequency spectrum.

EC-130H Compass Call

Brief: A heavily modified C-130 for electronic combat.

Function: Electronic warfare.

Operator: ACC.

First Flight: 1981.

Delivered: 1982.

IOC: 1983; (Block 30) February 1999.

Production: (converted).

Inventory: 14.

Unit Location: Davis-Monthan AFB, Ariz.

Contractor: Lockheed Martin.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: standard crew 13, incl 9 mission.

Dimensions: span 132.6 ft, length 99 ft, height 38 ft.

Weight: 155,000 lb.

Ceiling: 25,000 ft.

Performance: speed 374 mph at 20,000 ft.

COMMENTARY

A variant used as an airborne communications jamming and information warfare platform. The system disrupts enemy C2 communications. Modifications include electronic attack (EA) system and air refueling capability. Programmed upgrades will expand the EC-130H's mission by procuring a secondary EA capability against early warning and acquisition radars. Completion expected FY11.

WC-130 Hercules

Brief: A high-wing, medium-range aircraft flown by AFRC for weather reconnaissance missions. It flies into the eye of tropical cyclones or hurricanes, collecting weather data from within the storm's environment.

Function: Weather reconnaissance aircraft.

Operator: AFRC.

First Flight: circa 1959.

Delivered: October 1999-2002.

IOC: 1959.

Production: no new-build WC-130H; 10 WC-130J.

Inventory: 10 (H); 10 (J).

Unit Location: AFRC: Keesler AFB, Miss.

Contractor: Lockheed Martin.

Power Plant: WC-130J: four Rolls Royce AE2100D3 turboprops, each 4,500 shp.

Accommodation: six.

Dimensions: WC-130J: span 132.6 ft, length 97.8 ft, height 38.9 ft.

Weight: WC-130J: gross 175,000 lb.

Ceiling: WC-130J: 30,500 ft.

Performance: speed 374 mph at 20,000 ft.

COMMENTARY

The WC-130 is flown by AFRC's "Hurricane Hunters." The hurricane reconnaissance area includes the Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and central Pacific Ocean areas.

WC-130B/E. Early version C-130 modified for weather reconnaissance. Now retired.

WC-130H. Later version C-130s modified for weather reconnaissance duties, equipped with two external 1,400-gallon fuel tanks, an internal 1,800-gallon fuel tank, and uprated Allison T56-A-15 turboprops, each 4,910 shp. The 10 WC-130H aircraft still counted in the inventory have been recycled for other operational uses.

WC-130J. Weather reconnaissance version of the most recent C-130 model, operated by the 53rd WRS for weather reconnaissance duties, including penetration of tropical storms, to obtain data for forecasting storm movements. Features include improved radar, four Rolls Royce AE2100D3 turboprops, and Dowty 391 six-bladed composite propellers.

An average weather reconnaissance mission might last 11 hours and cover almost 3,500 miles while the crew collects and reports weather data every minute. Results are transmitted via satellite to the National Hurricane Center, Miami.

Tanker Aircraft

HC-130N/P

Brief: An extended-range, combat search and rescue (CSAR)-configured C-130 that extends the range of rescue helicopters through in-flight refueling and performs tactical delivery of pararescue jumper (PJ) specialists and/or equipment in hostile environments.

Function: Aerial refueling/transport.

Operator: ACC, AETC, ANG, AFRC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: (converted).

Inventory: 10 (N); 23 (P).

Unit Location: Active: Davis-Monthan AFB, Ariz., Kirtland AFB, N.M., Moody AFB, Ga. ANG: Francis S. Gabreski Arpt., N.Y., Kulis ANGB, Alaska. AFRC: Patrick AFB, Fla.

Contractor: Lockheed Martin.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: four flight crew, plus mission crew.

Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.

Weight: gross 155,000 lb.

Ceiling: 33,000 ft.

Performance: speed 289 mph, range more than 4,000 miles.

COMMENTARY

The HC-130 can perform extended visual/electronic searches over land or water and operate from unimproved airfields. A three-man PJ team, trained in emergency trauma medicine, harsh environment survival, and assisted evasion, is part of the normal mission crew complement.

Combat air forces' HC-130 aircraft are equipped with

***EC-130J** Commando Solo II* (SrA. Matt Schwartz)

***KC-135** Stratotanker* (SSgt. Suzanne Day)

***MC-130P** Combat Shadow preparing to refuel HH-60G Pave Hawk* (DOD photo)

an integrated GPS/INS navigation package, radar/missile warning receivers, and chaff/flare countermeasures dispensers. Some aircraft have FLIR systems and personnel locating systems (PLS) compatible with aircrew survival radios. Additional modifications include an improved digital low-power color radar, integrated satellite communications radio, NVG-compatible interior/exterior lighting, and cockpit armor. The C-130 avionics modernization program (AMP) provides for complete update of the HC-130 avionics. Four retired EC-130E ABCCC and 10 WC-130H aircraft are being converted to HC-130 standard.

KC-10 Extender

Brief: A modified McDonnell Douglas DC-10 that combines in a single aircraft the operations of aerial refueling and long-range cargo transport.

Function: Aerial refueling/transport.

Operator: AMC, AFRC (assoc.).

First Flight: April 1980.

Delivered: March 1981-April 1990.

IOC: August 1982.

Production: 60.

Inventory: 59.

Unit Location: Active and AFRC assoc.: McGuire AFB, N.J., Travis AFB, Calif.

Contractor: McDonnell Douglas (now Boeing).

Power Plant: three General Electric CF6-50C2 turbofans, each 52,500 lb thrust.

Accommodation: crew of four; additional seating possible for up to 75 persons with 17 pallets; max 27 pallets; max cargo payload 169,409 lb.

Dimensions: span 165.4 ft, length 181.6 ft, height 58.1 ft.

Weight: gross 593,000 lb.

Ceiling: 42,000 ft.

Performance: cruising speed Mach 0.825, range with max cargo 4,400 miles.

COMMENTARY

The KC-10 combines the tasks of tanker and cargo aircraft in a single unit, enabling it to support worldwide fighter deployments, strategic airlift, strategic reconnaissance, and conventional operations.

The KC-10 can be air refueled by a KC-135 or another KC-10, increasing its range and diminishing the need for forward bases, leaving vital fuel supplies in the theater of operations untouched.

KC-10A is a DC-10 Series 30CF, modified to include fuselage fuel cells, an air refueling operator's station, aerial refueling boom and integral hose reel/drogue unit, a receiver refueling receptacle, and military avionics. Wing-mounted pods enhance the aircraft's capabilities. Other modifications include the addition of communications, navigation, and surveillance equipment to meet civil air traffic control requirements.

Because it has both types of tanker refueling equipment installed, the KC-10A can service USAF, USN, USMC, and allied aircraft on the same mission. Special lighting permits night operations.

KC-135 Stratotanker

Brief: A short- to medium-range tanker aircraft, meeting the air refueling needs of USAF bomber, fighter, cargo, and reconnaissance forces. It also supports USN, USMC, and allied aircraft.

Function: Aerial refueling/airlift.

Operator: AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1956.

Delivered: January 1957-65.

IOC: June 1957, Castle AFB, Calif.

Production: 732.

Inventory: 117 (B/D/E); 364 (R); 54 (T).

Unit Location: Altus AFB, Okla., Fairchild AFB, Wash., Grand Forks AFB, N.D., Kadena AB, Japan, MacDill AFB, Fla., McConnell AFB, Kan., RAF Mildenhall, UK, Robins AFB, Ga. ANG: 21 units. AFRC: nine units.

Contractor: Boeing.

Power Plant: KC-135R/T: four CFM International F108-CF-100 turbofans, each 22,224 lb thrust; KC-135E: four Pratt & Whitney TF33-PW-102 turbofans, each 18,000 lb thrust.

Accommodation: crew of four; up to 80 passengers.

Dimensions: span 130.8 ft, length 136.2 ft, height 38.3 ft.

Weight: empty 119,231 lb, gross 322,500 lb (KC-135E 301,600 lb).

Ceiling: 50,000 ft.

Performance: max speed at 30,000 ft 610 mph, range with max fuel 11,015 miles.

COMMENTARY

Mainstay of the USAF tanker fleet, the long-serving KC-135 is similar in size and appearance to commercial 707 aircraft but was designed to military specifications, incorporating different structural details and materials. The KC-135 fuel tanks are located in the "wet wings" and in fuel tanks below the floor in the fuselage.

KC-135A. Original version with J57 turbojets. USAF built 732, since modified to other standards.

KC-135E/D. The JT3D re-engining program upgraded USAF, AFRC, and ANG KC-135As to KC-135E standard with JT3D turbofans and related components removed from surplus commercial 707s; fuel carrying capacity increased by 20 percent. The KC-135Es in service with the ANG and AFRC represent some of the oldest aircraft in the USAF inventory, and USAF expects to retire some 29 aircraft this year. Four KC-135Ds are similar but have minor configuration differences as they were converted from RC-135A aircraft.

KC-135R/T. Designation of re-engined KC-135A/Es with F108 turbofans. They embody modifications to 25 major systems and subsystems and not only carry more fuel farther but have reduced maintenance costs, are able to use shorter runways, and meet Stage III (noise abatement) requirements. The first KC-135R flight was in October 1982, and deliveries began in July 1984. KC-135T aircraft (formerly KC-135Q) were capable of refueling the now-retired SR-71s and retain the capability to carry different fuels in the wing and body tanks. Eight KC-135Rs are air refuelable. Twenty KC-135Rs have wing-mounted refueling pods for enhanced refueling of USN and NATO aircraft.

Ongoing modifications are extending the capability and operational utility of the KC-135 well into the 21st century. The Pacer CRAG avionics modernization program installed a new compass, radar, and GPS navigation systems, a traffic alert and collision avoidance system (TCAS), and new digital multifunctional cockpit displays. The Global Air Traffic Management (GATM) modification further improves the avionics, ensuring future access into premium airspace. Forty KC-135R/T aircraft are outfitted with the capability to relay Link 16 tactical information beyond line of sight of other aircraft.

MC-130P Combat Shadow

Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for special operations forces (SOF) helicopters or to air-drop small special operations teams, small bundles, and zodiac and combat rubber raiding craft.

Function: Air refueling for SOF helicopters/airdrop.

Operator: AETC, AFSOC, ANG, AFRC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: (converted).

Inventory: 27.

Unit Location: Active: Eglin AFB, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK. ANG: Moffett Field, Calif. AFRC: Duke Field, Fla.

Contractor: Lockheed Martin (airframe); Boeing.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: four flight crew, plus four mission crew.

Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.

Weight: gross 155,000 lb.

Ceiling: 33,000 ft.

Performance: speed 290 mph, range with max normal payload 1,208 miles, unlimited with air refueling.

COMMENTARY

MC-130P Combat Shadow aircraft are currently tasked with clandestine formation or single-ship intrusion of hostile territory to provide aerial refueling of special operations helicopters and the infiltration, exfiltration, and resupply of SOF by airdrop or air-land operations. To perform these missions, depending upon the enemy threat, crews navigate using both visual and electronic means or visual means only. Primary emphasis is on NVG operations.

Modifications include improved secure communications, advanced integrated navigation equipment, including digital scan radar, ring-laser gyro INS, FLIR, GPS, and dual nav stations, and missile warning systems and countermeasures for refueling missions in hostile environments. Some aircraft have been modified with an in-flight refueling system allowing them to be air refuelable.

MC-130W

Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for special operations forces (SOF) helicopters or to

***C-5M** Galaxy* (Lockheed Martin photo by David Key)

air-drop small special operations teams, small bundles, and zodiac and combat rubber raiding craft.

Function: Air refueling for SOF vertical lift assets/ airdrop.

Operator: AFSOC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: June 2006.

IOC: 2006.

Production: (converted).

Inventory: 12 (planned).

Unit Location: Hurlburt Field, Fla.

Contractor: Boeing.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: four flight crew, plus three mission crew.

Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.

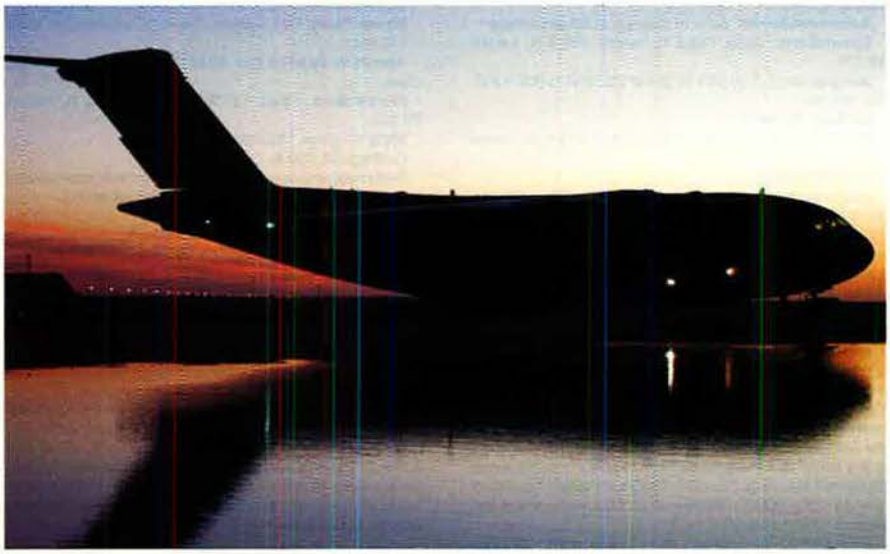
Weight: gross 155,000 lb.

Ceiling: 33,000 ft.

Performance: speed 290 mph, range with max normal payload 1,208 miles, unlimited with air refueling.

COMMENTARY

The first of 12 **MC-130W** aircraft was received by the "J" Special Operations Wing at Hurlburt Field, Fla., in July 2006. The aircraft is a C-130H airframe modified to include an electronic warfare capability, low-light-level operational capability, and a strengthened tail to permit high-speed, low-level airdrop operations. The MC-130W is equipped with technically advanced refueling pods, providing the ability to refuel SOF helicopters and the CV-22. It also has limited command and control capabilities. The aircraft itself can be air refueled to extend its mission range. The MC-130Ws replace AFSOC MC-130Hs and MC-130Ps lost in combat.



***C-17** Globemaster III* (SSgt. Edward D. Holzapfel)

Strategic Transports

C-5 Galaxy

Brief: A heavy-lift, air refuelable cargo transport for massive strategic airlift over long ranges, including outsize cargo. Supports special operations missions.

Function: Cargo and troop transport.

Operator: AETC, AFMC, AMC, ANG, AFRC.

First Flight: June 30, 1968.

Delivered: October 1969-April 1989.

IOC: September 1970.

Production: 131.

Inventory: 60 (A), 49 (B), two (C).

Unit Location: Active: Altus AFB, Okla., Dover AFB, Del., Travis AFB, Calif. ANG: Memphis Arpt., Tenn., Stewart Arpt., N.Y. AFRC: Dover AFB (assoc.), Del., Lackland AFB, Tex., Travis AFB (assoc.), Calif., Westover ARB, Mass., Wright-Patterson AFB, Ohio.

Contractor: Lockheed.

Power Plant: four General Electric TF39-GE-1C turbofans, each 41,000 lb thrust. C-5M: four General Electric CF6-80C2 turbofans.

Accommodation: normal crew of six (two pilots, two engineers, and two loadmasters), plus rest area for 15 (relief crew, etc.) and seating for 73. There is no piece of Army combat equipment the C-5 can't carry. Possible loads: six Apache helicopters, two M1 main battle tanks (each weighing 135,400 lb), six Bradley vehicles, three CH-47 helicopters, the 74-ton mobile bridge, a quarter-million pounds of relief supplies, or a maximum of 340 passengers in an airbus configuration. Airdrop capability for single platforms weighing up to 42,000 lb.

Dimensions: span 222.8 ft, length 247.9 ft, height 65.1 ft.

Weight: empty 374,000 lb, gross 769,000 (wartime 840,000) lb.

Ceiling: 45,000 ft.

Performance: max speed at 25,000 ft 571 mph, T-O run at S/L 8,300 ft, landing run, max landing weight at S/L 2,380 ft, range with max payload 3,434 miles, range with max fuel 7,245 miles. Normal cruising speed at altitude 518 mph (Mach 0.77).

COMMENTARY

One of the world's largest aircraft, the C-5 is able to carry unusually large and heavy cargo for intercontinental ranges at jet speeds. It can take off and land in relatively short distances and taxi on substandard surfaces during emergency operations. Front and rear cargo openings permit simultaneous drive-through loading and off-loading.

C-5A. USAF took delivery of 81 of these basic models between December 1969 and May 1973. A major wing modification was subsequently undertaken, extending the aircraft's service life by 30,000 flight hours. Additionally, the avionics subsystems developed for the C-5B have been incorporated into the C-5A fleet. USAF has proposed retiring the C-5As but is pursuing a reliability and maintainability assessment.

C-5B. Generally similar to the C-5A but embodies all the improvements introduced since completion of C-5A production, including the strengthened wings, improved turbofans, and updated avionics, with color weather radar and triple INS. The first C-5B flew for the first time in September 1985 and was delivered to Altus AFB, Okla., in January 1986.

C-5C. Two C-5As assigned to Travis AFB, Calif., were modified to carry outsize space cargo for NASA by extending the cargo bay and modifying the aft doors.

C-5M. All USAF Galaxys are undergoing programs aimed at extending their service life into the middle of the 21st century. A complete avionics modernization program (AMP) is installing a state-of-the-art cockpit and ensuring global access navigation safety compliance; first upgraded aircraft flew December 2002. Additionally, the Air Force has established a reliability enhancement and re-engining program (RERP) for all 111 C-5 aircraft to include the General Electric CF6-80C2 turbofan. The first of three production representative aircraft, designated C-5M, made its debut flight on June 16, 2006 at Dobbins ARB, Ga.; flight test will continue through FY07, with OT&E completing in FY08. Program completion is expected 2020. To enhance force protection, a number of C-5Bs have been equipped with an aerial defense system.

C-17 Globemaster III

Brief: A heavy-lift, air refuelable cargo transport for intertheater (strategic) and intratheater (tactical) direct delivery airlift of all classes of military cargo, including outsize items.

Function: Cargo and troop transport.

Operator: AETC, AFMC, AMC, ANG, AFRC, PACAF.

First Flight: Sept. 15, 1991.

Delivered: June 1993-ongoing.

IOC: Jan. 17, 1995.

Production: 190 (contractual).

Inventory: 157.

Unit Location: Active: Altus AFB, Okla., Charleston AFB, S.C., Edwards AFB, Calif., Hickam AFB, Hawaii, McChord AFB, Wash., McGuire AFB, N.J., Travis AFB, Calif., and planned 2007 Elmendorf AFB, Alaska. ANG: Hickam AFB (assoc.), Hawaii, Allen C. Thompson Field, Miss., and planned 2007 Elmendorf AFB (assoc.), Alaska. AFRC: Charleston AFB (assoc.), S.C., March ARB, Calif., McChord AFB (assoc.), Wash., McGuire AFB (assoc.), N.J., Travis AFB (assoc.), Calif.

Contractor: Boeing.

Power Plant: four Pratt & Whitney F117-PW-100 turbofans, each 40,440 lb thrust.

Accommodation: normal flight crew of three (two pilots plus loadmaster); additional pilot may be carried. Provisions for full range of military airlift missions, incl capacity for up to 189 passengers, 102 paratroops, or 36 litters; range of military cargo incl tanks and up to three AH-64A helicopters; three Bradley vehicles; one M1A2 main battle tank with other equipment; airdrop capability for single platforms weighing up to 60,000 lb; palletized passenger seats.

Dimensions: span over winglet tips 169.8 ft, length 173.9 ft, height 55.1 ft.

Weight: empty 277,000 lb, max payload 170,900 lb, gross 585,000 lb (extended range).

Ceiling: 45,000 ft.

Performance: normal cruising speed 484 mph at 35,000 ft or 518 mph (Mach .77) at 28,000 ft, unrefueled range with 160,000-lb payload 2,760 miles, additional 690 miles with extended-range fuel containment system (ERFCS), unlimited with refueling.

COMMENTARY

Developed to meet US force projection requirements, the C-17 is able to operate routinely into small, austere airfields (3,000 ft x 90 ft) previously limited to C-130s and provides the first capability to air-land or air-drop outsize cargo directly to the tactical environment. Other missions include aeromedical evacuation.

C-17s have flown numerous operational and humanitarian missions and have assumed the special operations low level (SOLL) mission previously supported by the C-141. The C-17 was the only aircraft capable of delivering outsize cargo into austere operations in Afghanistan and Iraq. C-17s performed their first operational strategic brigade airdrop in March 2003, when a formation of 15 aircraft delivered a US Army brigade, complete with equipment, directly into northern Iraq.

C-17 is the first military transport to feature a full digital fly-by-wire control system and two-person cockpit, with two full-time, all-function HUDs and four multifunction electronic displays. Defensive systems include Large Aircraft Infrared Countermeasures (LAIRCM) and flares. Ongoing modernization through block upgrades continue to improve C-17 operational capability. Significant improvements since 2001 include: (Block 12) ERFCS upgrade, a terrain awareness warning system (TAWS), and Mobility 2000 (M2K) C2 modernization program; (Block 15) a new Communications Open System Architecture (COSA) radio system; and (Block 16) a weather radar replacement. Block 17 marks the last block upgrade for the fleet. Full retrofit up to Block 17 of previously delivered aircraft is scheduled to begin in 2007 and will take approximately 11 years. Purchase of a further 10 aircraft has been authorized.

Theater and Special Use Transports

C-9 Nightingale

Brief: A twin-engine, medium-range, swept-wing jet aircraft used for DV duties.

Function: DV duties.

Operator: AFRC.

First Flight: August 1968.

Delivered: August 1968-February 1975.

IOC: circa 1968.

Production: 24.

Inventory: three (C).

Unit Location: Scott AFB, Ill.

Contractor: Boeing (McDonnell Douglas).

Power Plant: two Pratt & Whitney JT8D-9A turbofans, each 14,500 lb thrust.

Accommodation: crew of three.

Dimensions: span 93.2 ft, length 119.2 ft, height 27.4 ft.

Weight: gross 108,000 lb.

Ceiling: 35,000 ft.

Performance: max cruising speed at 25,000 ft 565 mph, range 2,500 miles.

COMMENTARY

C-9A. A derivative of the DC-9 Series 30 commercial airliner, the C-9A was the only USAF aircraft modified specifically for the aeromedical evacuation mission, a role now undertaken by C-130 and C-17 aircraft.

C-9C. Three specially configured C-9s, delivered to Andrews AFB, Md., in 1975 for the special air mission (SAM) supporting the President and other US government officials, are now in use by AFRC. Upgrades included improvements to the passenger communications equipment, GATM, TAWS, and vertical separation equipment.

C-12 Huron

Brief: Aircraft to provide airlift support for attache and military advisory groups worldwide.

Function: Special airlift.

Operator: AFMC, PACAF.

First Flight: Oct. 27, 1972 (Super King Air 200).

Delivered: 1974-late 1980s.

IOC: circa 1974.

Production: 88.

Inventory: 28.

Unit Location: Elmendorf AFB, Alaska, Osan AB, South Korea, various overseas embassies.

Contractor: Beech.

Power Plant: (C-12J) two Pratt & Whitney Canada PT6A-65B turboprops, each 1,100 shp.

Accommodation: crew of two; C-12C: up to eight passengers; C-12J: up to 19 passengers.

Dimensions: (C-12J) span 54.5 ft, length 43.8 ft, height 15 ft.

Weight: (C-12J) empty 9,850 lb, gross 16,600 lb.

Ceiling: (C-12J) 25,000 ft.

Performance: (C-12J) max cruising speed at 16,000 ft 307 mph, range with 10 passengers 1,806 miles.

COMMENTARY

C-12C. Re-engined C-12As, with PT6A-41 turboprops, deployed to overseas embassies.

C-12D. Similar to C model and also deployed to overseas embassies.

C-12F. With uprated PT6A-42 engines, can support medical airlift.

C-12J. A military version of the larger Beechcraft Model 1900, operated by PACAF.

C-20 Gulfstream

Brief: A twin-engine turbofan aircraft acquired to provide airlift for high-ranking government and DOD officials.

Function: Operational support airlift; special air missions.

Operator: AMC, USAFE.

First Flight: December 1979.

Delivered: September 1983-89.

IOC: circa 1983.

Production: not available.

Inventory: 10.

Unit Location: Andrews AFB, Md., Ramstein AB, Germany.

Contractor: Gulfstream.

Power Plant: C-20A/B: two Rolls Royce-Spey MK511-8 turbofans, each 11,400 lb thrust; C-20H: two Rolls Royce-Tay MK611-8 turbofans, each 13,850 lb thrust.

Accommodation: crew of five; 12 passengers.

Dimensions: span 77.8 ft; length (C-20A/B) 83.1 ft, (C-20H) 88.3 ft; height 24.3 ft.

Weight: C-20A/B gross 69,700 lb; C-20H gross 74,600 lb.

Ceiling: 45,000 ft.

Performance: max cruising speed 576 mph, range 4,800 miles.

COMMENTARY

C-20A. Three Gulfstream III transports were acquired to replace aging C-140B aircraft. They provided USAFE's operational support airlift fleet with intercontinental range and ability to operate from short runways. Retired in September 2002.

C-20B. Five C-20B versions, with advanced mission communications equipment and revised interior, were acquired in the late 1980s.

C-20H. Two Gulfstream IV SP aircraft, with advanced-technology flight-management systems and upgraded Rolls Royce engines, were acquired by USAF to meet expanding SAM requirements. The two C-20H aircraft were reassigned to USAFE to replace retired C-20As.

Upgrade for C-20B/H aircraft includes GPS, vertical separation equipment, GATM, and TCAS.

C-21

Brief: Aircraft designed to provide cargo and passenger airlift and transport litters during medical evacuations.

Function: Pilot seasoning, passenger and cargo airlift.

Operator: AETC, AMC, PACAF, USAFE, ANG.

First Flight: January 1973.

Delivered: April 1984-October 1985.

IOC: April 1984.

Production: 84.

Inventory: 76.

Unit Location: Keesler AFB, Miss., Ramstein AB, Germany, Scott AFB, Ill., Yokota AB, Japan.

Contractor: Gates Learjet.

Power Plant: two AlliedSignal TFE731-2 turbofans, each 3,500 lb thrust.

Accommodation: crew of two and up to eight passengers or 3,153 lb cargo. Convertible to aeromedical evacuation configuration.

Dimensions: span 39.5 ft, length 48.6 ft, height 12.2 ft.

Weight: empty, equipped 10,119 lb, gross 18,300 lb.

Ceiling: 51,000 ft.

Performance: max level speed at 25,000 ft 542 mph, range with max passenger load 2,306 miles, with max cargo load 1,653 miles.

COMMENTARY

C-21A aircraft provide operational support airlift for time-sensitive movement of people and cargo throughout the US and the Pacific and European Theaters, including aeromedical missions if required. Upgrades include GATM and TCAS. Older US-based aircraft are being retired.

C-32

Brief: A modified Boeing 757-200 used to provide backup transportation for the President. It is the primary means of travel for the vice president, Cabinet, Congressional members, and other high-ranking US and foreign officials.

Function: VIP air transport.

Operator: AMC.

First Flight: Feb. 19, 1982 (USAF Feb. 11, 1998).

Delivery: June-December 1998.

IOC: 1998.

Production: six.

Inventory: six.

Unit Location: Andrews AFB, Md.

Contractor: Boeing.

Power Plant: two Pratt & Whitney PW2040 turbofans, each 41,700 lb thrust.

Accommodation: 16 crew and 45 passengers.

Dimensions: span 124.8 ft, length 155.2 ft, height 44.5 ft.

Weight: empty 127,800 lb, gross 255,000 lb.

Ceiling: 41,000 ft.

Performance: cruise speed Mach 0.8-0.86 (530 mph), range 5,750 miles.

COMMENTARY

A military version of the commercial Boeing 757-200, four new **C-32As** were purchased as replacements for C-137B/C aircraft. The commercial DV interior includes a crew rest area, DV stateroom, conference area, and general passenger area. The passenger communications system provides worldwide clear and secure voice and data communications. Modern flight deck avionics allow operations to any suitable airfield in the world and provide an upgrade path as new capabilities become available. Upgrades include installation of a digital communications management system and broadband data transmit and receive, providing an office-in-the-sky capability.

C-37A

Brief: A modified Gulfstream V utilized as part of the executive fleet, providing transportation for the vice president, Cabinet, Congressional members, Secretary of Defense, service Secretaries, and other prominent US and foreign officials.

Function: VIP air transport.

Operator: AMC, PACAF, USAFE.

First Flight: USAF October 1998.

Delivery: October 1998-present.

IOC: Dec. 9, 1998.

Production: 10.

Inventory: nine.

Unit Location: Andrews AFB, Md., Chievres, Belgium, Hickam AFB, Hawaii, MacDill AFB, Fla.

Contractor: Gulfstream.

Power Plant: two BMW-Rolls Royce BR710A1-10 turbofans, each 14,750 lb thrust.

Accommodation: five crew and 12 passengers.

Dimensions: span 93.5 ft, length 96.4 ft, height 25.8 ft.

Weight: empty 47,601 lb, gross 90,500 lb.

Ceiling: 51,000 ft.

Performance: cruise speed Mach 0.8 (530 mph), range 6,095 miles.

COMMENTARY

The **C-37A** is a military version of the Gulfstream V. Two C-37As, along with the C-32s, were purchased as replacements for the VC-137B/C aircraft. The interior includes separate DV and passenger areas and a communications system capable of worldwide clear and secure voice and data. Aircraft are capable of operations at any suitable civilian or military airfield worldwide. A third C-37A was purchased for combatant commander support airlift and was based at Chievres, Belgium. It has since been reassigned to Andrews AFB, Md. One C-37 was purchased for crisis response support. Five C-37As are being leased from Gulfstream Aerospace as combatant commander support aircraft; three are assigned to MacDill AFB, Fla.; one to Chievres; and one to Hickam AFB, Hawaii. Upgrades include GATM and continuing passenger communications system upgrades to the Andrews-based aircraft.

C-38A

Brief: A twin-engine transcontinental aircraft used to provide transportation for DVs such as Congressional or high-ranking military members. It can also be configured for medevac and a wide range of special missions including C3 in time of war.

Function: VIP air transport and operational support.

Operator: ANG.

First Flight: 1998.

Delivered: April-May 1998.

IOC: 1998.

Production: two.

Inventory: two.

Unit Location: Andrews AFB, Md.

Contractor: Tracor (Israel Aircraft Industries Ltd).

Power Plant: two AlliedSignal TFE731-40R-200G, each 4,250 lb thrust.

Accommodation: typically two crew and eight passengers. In medevac role: two Spectrum 500 Life Support Units and two medical attendants. All seats removable for cargo.

Dimensions: span 54.6 ft, length 55.6 ft, height 18.2 ft.

Weight: gross 24,800 lb.

Ceiling: cruise, 33,000 ft.

Performance: cruise speed Mach 0.87.

COMMENTARY

The **C-38A** is a military version of the Astra SPX produced by IAI and supported worldwide by Galaxy Aerospace. Equipment includes the most up-to-date navigation, communication, vertical separation, and safety equipment as well as state-of-the-art avionics.

C-40

Brief: A Boeing 737-700 used for medium-range airlift of personnel.

Function: Passenger transportation.

Operator: AMC, PACAF, USAFE, ANG.

First Flight: USN C-40A: April 14, 1999.

Delivered: 2002.

Production: seven.

Inventory: seven.

Unit Location: Andrews AFB, Md., Hickam AFB, Hawaii, Ramstein AB, Germany.

Contractor: Boeing.

Power Plant: two General Electric CFM56-7 turbofans, each 24,000 lb thrust.

Accommodation: flight crew of four, plus three or four cabin crew; up to 89 passengers.

Dimensions: span 112 ft 7 in, length 110 ft 4 in, height 41 ft 2 in.

Weight: gross 171,000 lb.

Ceiling: 41,000 ft.

Performance: cruise speed 0.78-0.82 Mach, range 3,450 miles.

COMMENTARY

The C-40 is the military version of the commercial Boeing 737-700 increased gross weight aircraft. C-40s are used for transporting senior government officials and regional combatant commanders.

C-40B. The B model is equipped with a DV suite, staff work area, conference area, and worldwide secure communications and data capability. USAF purchased three and leased one C-40B. Two are assigned to Andrews and one each to Hickam and Ramstein.

C-40C. The C model has a DV seating area, general passenger seating area and secure communications capability. Three leased C-40Cs operate from Andrews.

C-130 Hercules

Brief: A rugged aircraft capable of operating from rough dirt strips to provide theater airlift and paradropping of troops and equipment into hostile areas.

Function: Inter- and intratheater airlift.

Operator: AETC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1954 (C-130A).

Delivered: December 1956-present (C-130J).

IOC: circa 1958.

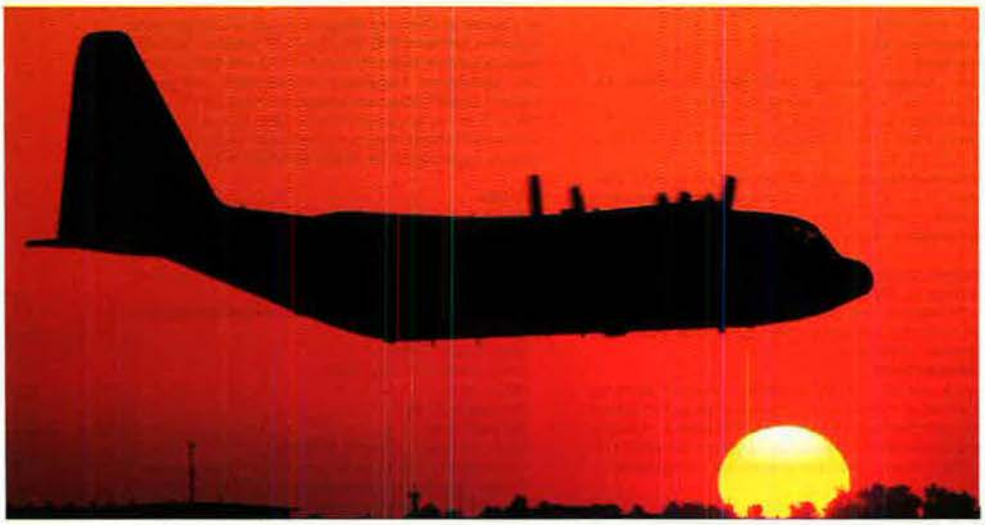
Production: more than 2,200.

Inventory: 170 (E); 290 (H); 36 (J).

Unit Location: Active: Dyess AFB, Tex., Elmendorf AFB, Alaska, Little Rock AFB, Ark., Pope AFB, N.C., Ramstein AB, Germany, Yokota AB, Japan. ANG: 24 units. AFRC: 10 units.

Contractor: Lockheed Martin.

Power Plant: (C-130H) four Rolls Royce-Allison T56-A-15 turboprops, each 4,300 shp. (C-130J) four Rolls



***C-130** Hercules* (SSgt. Michael R. Holzworth)

Royce-Allison AE2100D3 turboprops, each 4,591 shp.

Accommodation: (C-130H) crew of five; up to 92 ground troops, 64 paratroops, 74 litter patients plus attendants, 54 passengers on palletized seating, or up to five 463L standard freight pallets, etc.; max load, 45,000 lb.

Dimensions: span 132.6 ft, length 97.8 ft, height 38.1 ft.

Weight: C-130H: empty 81,000 lb, fuel/cargo max gross 155,000 lb; C-130J: gross 175,000 lb.

Ceiling: 33,000 ft at 100,000 lb T-O weight.

Performance: (C-130H) max cruising speed 430 mph, T-O run 3,585 ft, landing run (at 130,000 lb) 1,700 ft, range with 40,000-lb payload 2,240 miles; range 3,450 miles.

COMMENTARY

First delivered 50 years ago, the C-130 Hercules transport continues in production and has been delivered to more than 60 countries. Basic and specialized versions operate throughout USAF, performing diverse roles in both peace and war situations, including airlift support, Arctic ice cap resupply, aeromedical missions, aerial spray missions (AFRC), fire-fighting duties (AFRC and ANG) for the US Forest Service, and natural disaster and humanitarian relief missions.

C-130A, B, and D. Early versions, now retired. The initial production C-130A had four Allison T56-A-11 or -9 turboprop engines. USAF ordered a total of 219. The C-130B had improved range and higher weights and introduced Allison T56-A-7 turboprops; 134 were produced, with delivery from April 1959. Twelve were modified beginning 1961 as **JC-130Bs** for air-snatch satellite recovery together with three early H models. Twelve C-130Ds were modified As for Arctic operations.

C-130E is an extended-range development of the C-130B, with large under-wing fuel tanks; 389 were ordered, with deliveries beginning in April 1962. A wing modification to correct fatigue and corrosion extended the life of the aircraft well into this century. Other modifications include a self-contained navigation system, with an integrated communications/navigation management suite, GPS capability, and a state-of-the-art autopilot that incorporates a ground collision avoidance system.

C-130H is generally similar to the E model but has updated turboprops, a redesigned outer wing, and improved pneumatic systems; delivery began in July 1974. Subsequent improvements include updated avionics, improved low-power color radar, and other minor modifications. Night vision instrumentation system was introduced from 1993, TCAS II in new aircraft from 1994. ANG **LC-130H** aircraft are modified with wheel-ski gear to support Arctic and Antarctic operations. Two **DC-130Hs** were modified for UAV control duties.

A major AMP for the C-130 includes digital displays, flight-management systems, multifunction radar, new communications systems, and a single air data computer. Planned completion is for 2016. The AMP upgrade includes all C-130 models except the C-130E, older C-130H, and the new C-130J aircraft. In addition, work has begun on replacing wing boxes on 155 C-130s in a move to alleviate/pre-empt operational restrictions; completion is planned for 2020.

C-130J. Most recent model featuring a three-crew flight operation system, 6,000 shp Rolls Royce-Allison AE2100D engines, all composite six-blade Dowty Aerospace R391 propeller system, digital avionics, and mission computers. Compared to earlier production C-130Es, its speed is up 21 percent, cruising altitude is 40 percent higher, and range 40 percent longer. The J also features improved reliability and maintainability. ANG and AFRC units began receiving J models in 1999. First active duty unit, the 48th AS at Little Rock AFB, Ark., received its first C-130J aircraft in March 2004. First wartime deployment occurred December 2004, although official IOC was only declared in October 2006. The stretch version of the C-130J **(C-130J-30)**, with an additional 15 feet of fuselage and capable of carrying up to 128 ground troops or 92 paratroops, is replacing the oldest 1960s-vintage C-130Es. Deliveries to ANG began in 2001 and to USAF and AFRC in 2004.

CV-22

Brief: A tilt-rotor, multimission transport aircraft designed to have the maneuverability and lift capability of a helicopter and the speed of a fixed-wing aircraft.

Function: Multimission airlift.

Operator: AETC, AFSOC.

First Flight: March 19, 1989 (V-22).

Delivery: 2006.

IOC: 2009 (planned).

Production: 50 (planned).

Inventory: four.

Unit Location: Hurlburt Field, Fla., Kirtland AFB, N.M.

Contractor: Bell Boeing; Raytheon.

Power Plant: two Rolls Royce-Allison AE1107C turboshafts, each 6,200 shp.

Accommodation: four (two pilots, two flight engineers); additional pilot for extended duration missions; up to 18 troops or 8,000 lb internal cargo.

Dimensions: proprotor diameter 38 ft, width, rotors turning 84.6 ft, fuselage length 57.3 ft, height 22 ft.

Weight: gross weight 34,900 lb, max VTO 52,870 lb; STO 57,000 lb, self-deploy T-O 60,500 lb.

Ceiling: 26,000 ft.

Performance: typically will carry troops or cargo over a 500-mile combat radius at 265 mph. Self-deployment range with one air refueling 2,417 miles.

COMMENTARY

CV-22 is the designation for the US Special Operations Command variant of the V-22 Osprey. The CV-22 is a multi-engine, dual-piloted, self-deployable, medium-lift vertical takeoff and landing (VTOL) tilt-rotor aircraft for the conduct of special operations, including nuclear, biological, and chemical (NBC) warfare conditions. It will operate from land bases and austere forward operating locations, as well as air capable ships without reconfiguration or modification. An in-flight refueling capability extends combat mission range when required, and the aircraft will be self-supporting to the maximum practical extent. The CV-22's mission is long-range clandestine penetration of denied areas in adverse weather and low visibility to infiltrate, exfiltrate, and resupply SOF.

CV-22 avionics include a fully integrated precision navigation suite, with GPS and INS; a digital cockpit management system oriented around four multifunction displays (MFDs); FLIR; an integrated NVG HUD; terrain-following/terrain-avoidance (TF/TA) radar; and digital map system. Additionally, it is equipped with robust self-defensive avionics and secure antijam, redundant communications compatible with current and planned systems used by command and control agencies and ground forces. The CV-22 unrefueled combat range satisfies current and emergent major theater war (MTW) requirements, as well as national mission tasking. The aircraft is capable of completing most assigned missions during one period of darkness.

A third aircraft joined the two test aircraft based at Edwards AFB, Calif., in February 2005. The first production example was delivered to USAF in September 2005 and the first combat-configured aircraft in March 2006. Operational utility evaluation was completed in summer 2006 and flight crew training began in late 2006 at Kirtland AFB, N.M. Operational test and evaluation is scheduled for fall 2007. IOC is anticipated for early 2009 at Hurlburt Field, Fla. USAF may place detachments of CV-22s in US European Command and US Pacific Command theaters.

MC-130E/H Combat Talon

Brief: A modified C-130 able to provide global, day, night, and adverse weather capability to air-drop personnel and to deliver personnel and equipment to support US and allied SOF.

Function: SOF infiltration, exfiltration, and resupply.

Operator: AETC, AFSOC, AFRC.

First Flight: circa 1965 (E); January 1990 (H).

Delivered: initially 1966.

IOC: 1966 (E); June 1991 (H).

Production: 22 new-build Hs.

Inventory: 14 (E); 20 (H).

Unit Location: Active (assoc.) and AFRC MC-130Es at Duke Field, Fla. Active: MC-130H at Hurlburt Field, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK.

Contractor: Lockheed Martin (airframe); Boeing integrated weapons system support.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: E: crew of nine; 53 troops or 26 paratroops; H: crew of seven; 77 troops 52 paratroops, or 57 litters.

Dimensions: span 132.7 ft, height 38.6 ft, length 100.8 ft (E), 99.8 ft (H).

Weight: empty 72,892 lb, gross 155,000 lb.

Ceiling: 30,000 ft.

Performance: max speed 289 mph, range 3,110 miles,

CV-22 (A1C Russell Scalf)

unlimited with refueling.

COMMENTARY

MC-130 Combat Talon aircraft are equipped with terrain following radars, precision navigation systems using INS/GPS, and electronic and infrared countermeasures for self-protection. Both aircraft are capable of in-flight refueling, are NVG-compatible and have a high-speed aerial delivery system. The primary mission of the aircraft is to conduct infiltration, resupply, and exfiltration of special operations forces (SOF). They are also capable of supporting psychological operations. Combat Talons are able to air-drop or to land on austere unmarked landing or drop zones.

MC-130E Combat Talon I. Fourteen modified C-130E aircraft were additionally equipped with a pod-based system to air refuel SOF helicopters.

MC-130H Combat Talon II. New-build MC-130Hs modified with an integrated glass cockpit were acquired in the early 1990s to supplement the Combat Talon Is. All are currently being modified with a state-of-the-art pod-based aerial refueling system to augment the MC-130E and MC-130P aerial refueling fleet. The 1st, 7th, and 15th SOSs provide support to SOF in Europe, the Pacific, and CONUS, respectively. The 58th SOS at Kirtland AFB, N.M., is responsible for MC-130H mission qualification training.

VC-25 Air Force One

Brief: A specially configured Boeing 747-200B used for air transport of the President and his entourage. When the President is aboard, it has the radio call sign "Air Force One."

Function: Air transport of the President.

Operator: AMC.

First Flight: first flown as Air Force One Sept. 6, 1990.

Delivered: August-December 1990.

IOC: circa 1990.

Production: two.

Inventory: two.

Unit Location: Andrews AFB, Md.

Contractor: Boeing.

Power Plant: four General Electric CF6 turbofans, each 56,700 lb thrust.

Accommodation: crew of 26; up to 76 passengers.

Dimensions: span 195.7 ft, length 231.8 ft, height 63.4 ft.

Weight: long-range mission T-O weight 803,700 lb., gross 833,000 lb.

Ceiling: 45,000 ft.

Performance: speed 630 mph (Mach 0.92), normal cruising speed Mach 0.84, unrefueled range 7,820 miles.

COMMENTARY

Based on the Boeing 747-200B airframe, two **VC-25As** assigned to Andrews AFB, Md., support the President. Aircraft are equipped with staff work areas, a conference room, a general seating area, and an executive office. Communications capability includes worldwide secure and clear communications equipment. Upgrades include GATM and installation of a broadband data transmit and receive capability to provide video teleconferencing and office-in-the-sky capability.

Trainer Aircraft

T-1A Jayhawk

Brief: A medium-range, twin-engine jet trainer version of the Beechcraft 400A. It is used by the Air Force to train student pilots to fly airlift and tanker aircraft.

Function: Advanced pilot training.

Operator: AETC, AFRC.

First Flight: Sept. 22, 1989 (Beechcraft 400A).

Delivered: Jan. 17, 1992-July 1997.

IOC: January 1993.

Production: 180.

Inventory: 179.

Unit Location: Active: Columbus AFB, Miss., Laughlin AFB and Randolph AFB, Tex., Vance AFB, Okla., NAS Pensacola, Fla. (forward operating station). AFRC: (assoc.) Randolph AFB, Tex.

Contractor: Raytheon.

Power Plant: two Pratt & Whitney Canada JT15D-5B turbofans, each 2,900 lb thrust.

Accommodation: two, side by side, and one to the rear; rails are fitted to accommodate an extra four seats to permit transport of maintenance teams.

Dimensions: span 43.5 ft, length 48.4 ft, height 13.9 ft.

Weight: empty 5,200 lb, gross 16,100 lb.

Ceiling: 41,000 ft.

Performance: max speed at 27,000 ft 538 mph, range 2,400 miles.

***MC-130E** Combat Talon I* (DOD photo)

COMMENTARY

The swept-wing **T-1A** Jayhawk is a military version of the Beech 400A used in the advanced phase of joint specialized undergraduate pilot training (JSUPT) for students selected to go on to fly transports such as the C-5 and C-17 or tankers such as the KC-10 and KC-135. It has cockpit seating for an instructor and two students. Special mission equipment includes GPS, an electronic flight instrument system (EFIS) avionics system, a single-point refueling system, an additional fuselage fuel tank, and increased bird-strike protection in the windshield and leading edges for sustained low-level operation. T-1As typically log 100,000 flying hours a year, supporting all-weather training operations at high and low altitudes.

T-6A Texan II

Brief: A single-engine turboprop aircraft used for training student pilots, combat systems officers, and naval flight officers in fundamentals of aircraft handling and instrument, formation, and night flying.

Function: Primary trainer.

Operator: AETC, AFRC, USN.

First Flight: July 15, 1998.

Delivery: May 2000-present (operational aircraft).

IOC: November 2001.

Production: Planned: USAF 372, USN 328.

Inventory: 272 (USAF).

Unit Location: USAF: Active: Columbus AFB, Miss., Laughlin AFB and Randolph AFB, Tex., Moody AFB, Ga., Vance AFB, Okla. Planned: Sheppard AFB, Tex. USN: NAS Corpus Christi, Tex., NAS Whiting, Fla.

Contractor: Hawker Beechcraft (formerly Raytheon).

Power Plant: one Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.

Accommodation: two, in tandem, on zero/zero ejection seats.

Dimensions: span 33.5 ft, length 33.4 ft, height 10.7 ft.

Weight: empty (approx) 4,707 lb; gross 6,500 lb.

Ceiling: 31,000 ft.

Performance: max speed 368 mph, range 920 miles.

COMMENTARY

The Joint Primary Aircraft Training System (JPATS) **T-6A** Texan II is based on the Swiss Pilatus PC-9 aircraft, modified to include a strengthened fuselage, zero/zero ejection seats, increased aircrew accommodation, upgraded engine, increased fuel capacity, pressurized cockpit, larger, bird-resistant canopy, and new digital avionics. The JPATS replaces USAF's T-37Bs and USN's T-34Cs in primary pilot training, as well as supporting undergraduate naval flight officer and USAF combat systems officer training.

T-37 Tweet

Brief: A twin-engine jet used for training undergraduate pilots and undergraduate combat system officer students in fundamentals of aircraft handling and instrument, navigation, formation, and night flying.

Function: Primary trainer.

Operator: AETC, AFRC.

First Flight: September 1955.

Delivered: December 1956-68.

IOC: 1957.

Production: 985.

Inventory: 171.

Unit Location: Active: Columbus AFB, Miss., Randolph AFB and Sheppard AFB, Tex. AFRC: (assoc.) Randolph AFB, Tex.

Contractor: Cessna.

Power Plant: two Continental J69-T-25 turbojets, each 1,025 lb thrust.

Accommodation: two, side by side, on ejection seats.

Dimensions: span 33.7 ft, length 29.2 ft, height 9.1 ft.

Weight: empty 3,870 lb, gross 6,625 lb.

Ceiling: 35,000 ft.

Performance: max speed at S/L 315 mph, range 460 miles.

***T-6A** Texan II* (MSgt. David Richards)

T-38 Talon (SrA. Matthew C. Simpson)

COMMENTARY

USAF's first purpose-built jet trainer, the T-37 has been AETC's standard two-seat primary trainer for several decades. Its distinctive blue-and-white finish is intended to help formation training and ease maintenance.

T-37A, with J69-T-9 turbojets; all have been modified to T-37B standards.

T-37B. The original T-37A was superseded in November 1959 by the T-37B, with improved radio navigational equipment, UHF radio, and upgraded instruments. Kits were subsequently produced to extend the capability of the T-37 by modifying or replacing critical structural components. AETC has been replacing the T-37B with the T-6A Texan II since 2000.

T-38 Talon

Brief: A twin-engine, high-altitude, supersonic jet trainer used in a variety of roles, primarily for undergraduate pilot and pilot instructor training.

Function: Trainer.
Operator: ACC, AETC, AFMC, AFRC.
First Flight: April 1959.
Delivered: 1961-72.
IOC: March 1961.
Production: more than 1,100.
Inventory: 489.
Unit Location: Active: Beale AFB and Edwards AFB, Calif., Columbus AFB, Miss., Holloman AFB, N.M., Laughlin AFB, Randolph AFB, and Sheppard AFB, Tex., Moody AFB, Ga., Vance AFB, Okla., Whiteman AFB, Mo. AFRC: (assoc.) Randolph AFB, Tex.
Contractor: Northrop Grumman.
Power Plant: two General Electric J85-GE-5A turbojets, each 2,680 lb thrust dry, 2,900 lb thrust with afterburning.
Accommodation: two, in tandem, on ejection seats.
Dimensions: span 25.3 ft, length 46.3 ft, height 12.8 ft.
Weight: empty 7,164 lb, gross 12,500 lb.
Ceiling: above 55,000 ft.
Performance: max level speed 812 mph, range 1,000 miles.

COMMENTARY

Most of the T-38s in service are used by AETC for advanced bomber-fighter training track in JSUPT. Capabilities are being enhanced through an ongoing program of modifications and structural renewal, including a full avionics upgrade with a HUD and integrated GPS/INS, and a propulsion modernization. As a result of the reduction in the T-38's workload through introduction of the T-1A and JSUPT, the service life of the T-38s should extend well beyond 2020.

T-38A. Close in structure to the F-5A export tactical fighter, the T-38A was the world's first supersonic trainer aircraft. It is used to teach supersonic techniques, aerobatics, formation, night and instrument flying, and cross-country and low-level navigation. The aircraft is also used by AFMC to train test pilots and flight-test engineers at Edwards AFB, Calif., in experimental techniques, and by ACC to maintain pilot proficiency.

AT-38B. A slightly different version, with a gunsight and practice bomb dispenser, the AT-38B is used by AETC for Introduction to Fighter Fundamentals.

T-38C. All T-38A and AT-38B airframes will be redesignated as C models upon modification of the avionics systems begun in 2000. The first T-38C was received late summer 2002; planned program completion is 2008. The propulsion system is also being upgraded to improve performance and reliability. In addition, the Escape System Upgrade program is under way to further improve safety and sustainability of the aircraft and increase aircrew accommodation.

T-41 Mescalero

Brief: Short-range, high-wing trainer used primarily for aerodynamic and navigation courses.

Function: Training, support.
Operator: AETC.
Delivered: 1969.
Inventory: four.
Unit Location: USAFA, Colo.
Contractor: Cessna.
Power Plant: one Continental IO-360-DB piston engine, 210 hp.
Accommodation: two, side by side.
Dimensions: span 36.1 ft, length 26.5 ft, height 8.9 ft.
Weight: gross 2,550 lb.
Ceiling: 16,000 ft.
Performance: speed 182 mph, range 690 miles.

COMMENTARY

The **T-41D,** a military version of the Cessna 172, is an all-metal, strut-braced high-wing monoplane. The aircraft is equipped with modern avionics, GPS, and other equipment appropriate to its mission. It is used for Aero 456 flight testing, USAFA flying team support, and orientation flights.

T-43

Brief: A medium-range, swept-wing jet aircraft equipped with navigation and communications equipment to train navigators for strategic and tactical aircraft.

Function: Navigation trainer.
Operator: AETC.
First Flight: April 1973.
Delivered: September 1973-July 1974.
IOC: 1974.
Production: 19.
Inventory: eight.
Unit Location: Randolph AFB, Tex.
Contractor: Boeing.
Power Plant: two Pratt & Whitney JT8D-9 turbofans, each 14,500 lb thrust.
Accommodation: crew of two; 12 students and six instructors.
Dimensions: span 93 ft, length 100 ft, height 37 ft.
Weight: gross 115,500 lb.
Ceiling: 37,000 ft.
Performance: econ cruising speed 535 mph (Mach 0.7), operational range 2,995 miles.

COMMENTARY

T-43A. The T-43A was derived from the commercial Boeing Model 737-200 and was equipped with the same onboard avionics as most USAF operational aircraft, including mapping radar, VHF omnidirectional radio and Tacan radio systems, INS, radar altimeter, all required communications equipment, and celestial navigation capability. A number of T-43s are configured for passengers and provide operational support to assigned commands.

T-51

Brief: A light aircraft used by USAFA flying team for training and competition.

Function: Training, competition.
Operator: AETC.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: Cessna.
Power Plant: one Lycoming 0-320 E2D piston engine, 150 hp.
Accommodation: two, side by side.
Dimensions: span 33.3 ft, length 24.8 ft, height 8.5 ft.
Weight: (Cessna 150M) gross 1,600 lb.
Ceiling: 14,000 ft plus.
Performance: speed 124 mph, range 475 miles.

COMMENTARY

The **T-51** is a military version of the Cessna 150 used by students at USAFA for training and competition.

TG-10B Merlin

Brief: Two-seat medium-performance sailplane used for introductory glider training, instructor upgrade training, spin training, and basic cross-country soaring training.

Function: Trainer.
Operator: AETC.
Delivered: May 2002.
IOC: December 2002.
Production: 12.
Inventory: 12.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 55.4 ft, length 27.9 ft, height 6.2 ft.
Weight: 1,168 lb.
Performance: speed 142.6 mph, glide ratio 28:1.

COMMENTARY

The **TG-10B** is an L-23 Super Blanik dual sailplane, produced in the Czech Republic and used by USAFA to introduce cadets to flight through the Basic Soaring program.

TG-14A (USAF photo)

TG-10C Kestrel
Brief: Two-seat medium-performance sailplane used for spin and aerobatic training.
Function: Trainer.
Operator: AETC.
Delivered: May 2002.
IOC: December 2002.
Production: five.
Inventory: five.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 46.6 ft, length 27.6 ft, height 6.9 ft.
Weight: 1,100 lb.
Performance: speed 146.1 mph, glide ratio 26:1.
COMMENTARY
The **TG-10C** is an L-13AC Blanik dual sailplane, produced in the Czech Republic and used primarily for spin and aerobatic training.

TG-10D Peregrine
Brief: Single-seat medium-performance sailplane used for cross-country soaring training and high-altitude wave flight.
Function: Trainer.
Operator: AETC.
Delivered: May 2002.
IOC: December 2002.
Production: four.
Inventory: four.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: single.
Dimensions: span 46.3 ft, length 21.7 ft, height 4.7 ft.
Weight: 750 lb.
Performance: speed 149.5 mph, glide ratio 33:1.
COMMENTARY
The **TG-10D** is an L-33 Solo Blanik sailplane produced in the Czech Republic. It is a medium-performance sailplane that allows students to master basic flight maneuvers while solo, before progressing to a more advanced sailplane. It is primarily used for cross-country training and high-altitude wave flight.

TG-14A
Brief: A two-place, side-by-side motorized glider for use by USAFA in its Introductory Flight Training Program (IFTP) flight screening/primary training program.
Function: Trainer.
Operator: AETC.
Delivered: September 2002.
IOC: December 2002.
Production: 14.
Inventory: 14.
Unit Location: USAFA, Colo.
Contractor: Grupo Aeromot, Brazil.
Power Plant: one Rotax 912A, 81 hp engine.
Accommodation: two, side by side.
Dimensions: span 57.3 ft, length 26.4 ft, height 6.3 ft.
Weight: gross 1,874 lb.
Performance: cruise speed 110 mph, glide ratio 31:1, range 690 miles at high-speed cruise, max endurance seven hr.
COMMENTARY
The **TG-14A** is a version of the Ximango AMT-200S Sport Grupo Aeromot selected for use at USAFA in IFTP, replacing the Enhanced Flight Screening Program performed by civilian flying schools since the grounding of the T-3A Firefly in 1997. Cockpit and avionics are arranged for military use. Students use it to practice multiple pattern, aerial maneuvers, and landing procedures, reducing by half the number of sorties needed to achieve a solo flight.

TG-15A
Brief: A two-seat high-performance advanced training/cross-country sailplane for use by USAFA cadets in support of glider competition events nationwide.
Function: Trainer/cross-country competition sailplane.
Operator: AETC.
Unit Location: USAFA, Colo.
Inventory: two.
Contractor: Schempp-Hirth, Germany.
Accommodation: two-seat.
Dimensions: span 65.6 ft, length 28.3 ft.
Weight: gross 1,543 lb.
Performance: max permitted speed 155 mph, aspect ratio 24:4.
COMMENTARY
The **TG15A** is a high-performance advanced training/cross-country sailplane manufactured by Schempp-Hirth of Germany under the civilian designation Duo Discus. This world-class competition glider is dual seated and is intended for use nationwide by USAFA cadets for glider competition events.

***HH-60G** Pave Hawks* (DOD photo)

TG-15B
Brief: A single-seat high-performance advanced training/cross-country sailplane for use by USAFA cadets for glider competition events nationwide.
Function: Trainer/cross-country competition sailplane.
Operator: AETC.
Unit Location: USAFA, Colo.
Inventory: three.
Contractor: Schempp-Hirth, Germany.
Accommodation: single seat.
Dimensions: span 49.2 ft, length 32.3 ft.
Weight: gross 1,157 lb.
Performance: max permitted speed 155 mph, aspect ratio 22:2.
COMMENTARY
The **TG15B** is a high-performance advanced training/cross-country sailplane manufactured by Schempp-Hirth of Germany under the civilian designation Discus 2b. This world-class competition glider is single seated and is intended for use nationwide by USAFA cadets for glider competition events.

UV-18 Twin Otter
Brief: Modified utility transport used for parachute jump training.
Function: Paradrop.
Operator: AETC.
First Flight: May 1965 (commercial version).
Delivered: 1977.
IOC: 1977.
Production: three.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: de Havilland Aircraft of Canada.
Power Plant: two Pratt & Whitney Canada PT6A-27 turboprops, each 620 ehp.
Accommodation: crew of two and up to 20 passengers.
Dimensions: span 65 ft, length 51.8 ft, height 19.5 ft.
Weight: gross 12,500 lb.
Ceiling: 26,700 ft.
Performance: max cruising speed 210 mph, range with 2,500 lb payload 806 miles.
COMMENTARY
The **UV-18B** is a military version of the DHC-6 Twin Otter STOL utility transport used for parachute jump training at USAFA.

Helicopters

HH-60G Pave Hawk
Brief: Specially modified helicopters used primarily for combat search and rescue; also aeromedical evacuation, civil SAR, and other support missions.
Function: CSAR medium-lift helicopter.
Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.
First Flight: October 1974.
Delivered: from 1982.
IOC: circa 1982.
Production: 105.
Inventory: 101.
Unit Location: Davis-Monthan AFB, Ariz., Kadena AB, Japan, Kirtland AFB, N.M., Moody AFB, Ga., Nellis AFB, Nev., RAF Lakenheath, UK. ANG: Francis S. Gabreski

***MH-53M** Pave Low IV* (DOD photo)

Arpt., N.Y., Kulis ANGB, Alaska, Moffett Field, Calif. AFRC: Davis-Monthan AFB, Ariz., Patrick AFB, Fla.

Contractor: Sikorsky.

Power Plant: two General Electric T700-GE-700/701C turboshafts, each 1,560-1,940 shp.

Accommodation: crew of six; 8-12 troops, two litters, or internal or external cargo.

Dimensions: rotor diameter 53.6 ft, length of fuselage 64.7 ft, height 16.7 ft.

Weight: max gross 22,000 lb.

Ceiling: 14,200 ft.

Performance: max speed 173 mph, max range 373 miles (internal fuel), 500 miles (auxiliary tank).

Armament: two 7.62 mm miniguns, with provision for two .50-caliber machine guns in cabin doors.

COMMENTARY

Black Hawk helicopters were modified to **HH-60G** Pave Hawk configuration for use by active duty, ANG, and AFRC air rescue units for CSAR and mission activities worldwide. The Pave Hawk is a highly modified version of the Army Black Hawk helicopter, featuring an upgraded communications/navigation suite that includes INS/GPS/Doppler navigation systems, satellite communications (SATCOM), secure/antijam communications, and a PLS that provides range/steering data to compatible survivor radios.

Additional modifications include an automatic flight-control system, NVG lighting, FLIR, color weather radar, engine/rotor blade anti-ice system, retractable in-flight refueling probe, internal auxiliary fuel tanks, and an integral rescue hoist. Combat enhancements include RWR, IR jammer, flare and chaff countermeasures dispensing system, and two 7.62 mm or .50-caliber machine guns.

MH-53 Pave Low

Brief: Specially outfitted heavy-lift helicopters used by Air Force special operations forces for infiltration/exfiltration as well as CSAR missions.

Function: SOF heavy-lift helicopter.

Operator: AETC, AFSOC.

First Flight: March 1967.

Delivered: from July 1987 (MH-53J).

IOC: 1988 (MH-53J).

Production: not available.

Inventory: 11 (J); 21 (M).

Unit Location: AETC: Kirtland AFB, N.M. AFSOC: Hurlburt Field, Fla., RAF Mildenhall, UK.

Contractor: Sikorsky; Texas Instruments.

Power Plant: two General Electric T64-GE-100 turboshafts, each 4,330 shp.

Accommodation: crew of six; up to 38 troops.

Dimensions: rotor diameter 72.2 ft, length of fuselage (without refueling probe) 67.2 ft, height 25 ft.

Weight: gross 50,000 lb.

Ceiling: 16,000 ft.

Performance: speed 164 mph, max range 630 miles, unlimited with air refueling.

Armament: mounts for any combination of three 7.62 miniguns and .50-caliber machine guns.

COMMENTARY

MH-53H. Older version of the helicopter, all of which, together with all HH/CH-53B/Cs, were upgraded to MH-53J Pave Low III "Enhanced" standard from 1986.

MH-53J. A long-range deep penetration helicopter, adverse weather capable and equipped for extended operations when air refueled. Equipped with a nose-mounted FLIR, an integrated digital avionics suite that includes TF/TA radar, Kalman filtered navigation suite (GPS, INS, Doppler), projected map display, secure UHF, VHF, FM, HF communications, PLS, SATCOM, hover coupler, rescue hoist, mission commander's C2 panel, armor plating, and an ECM suite with radar and IR missile jammers, flare/chaff dispensers, RWR, and missile launch detectors.

A service life extension program (SLEP) upgraded the aircraft's hydraulics, wiring, and basic airframe structure for increased gross weight, and an automated blade/pylon fold system optimized for shipboard compatibility. All aircraft modified to support aircrew eye/respiratory protection system.

MH-53M. MH-53J helicopters upgraded to Pave Low IV standard, delivered from 1999. Upgrades include the interactive defensive avionics suite/multimission advanced tactical terminal capability which integrates onboard EW systems with off-board, over-the-horizon, near-real-time intelligence, and mission software improvements. Cockpit modifications include three MFDs, integrated digital map, and mission commander situation awareness panel in the cabin area.

UH-1

Brief: Modified Bell helicopter used to support Air Force ICBM facilities, undergraduate pilot training, and administrative airlift.

Function: Utility and training helicopter.

Operator: AETC, AFMC, AFSOC, AFSPC, AMC, PACAF.

First Flight: 1956.

Delivered: from September 1970.

IOC: circa 1970.

Production: 79 (USAF).

Inventory: 27 (H); 62 (N).

Unit Location: Andrews AFB, Md., Fairchild AFB, Wash., F.E. Warren AFB, Wyo., Ft. Rucker, Ala., Hurlburt Field, Fla., Kirtland AFB, N.M., Malmstrom AFB, Mont., Minot AFB, N.D., Robins AFB, Ga., Vandenberg AFB, Calif., Yokota AB, Japan.

Contractor: Bell.

Power Plant: UH-1H: one Lycoming T53-L-13B turboshaft, 1,400 shp. UH-1N: Pratt & Whitney Canada T400-CP-400 Turbo 'Twin-Pac,' 1,290 shp.

Accommodation: two pilots and 14 passengers or cargo, or external load of 4,000 lb.

Dimensions: UH-1H: rotor diameter 48.3 ft, fuselage length 57.1 ft, height 13 ft. UH-1N: rotor diameter (with tracking tips) 48.1 ft, fuselage length 42.3 ft, height 14.3 ft.

Weight: UH-1H: gross 9,500 lb. UH-1N: gross 11,200 lb.

Ceiling: UH-1H: 15,000 ft. UH-1N: 13,000 ft.

Performance: max cruising speed at S/L 115 mph, max range, no reserves, 261 miles.

Armament: (optional) two General Electric 7.62 mm miniguns or two 40 mm grenade launchers; two seven-tube 2.75-in rocket launchers.

COMMENTARY

UH-1H is a former Army-owned training helicopter transferred to USAF in 2004 for use by the 23rd Training Group at Ft. Rucker, Ala., for Air Force undergraduate helicopter pilot training.

UH-1N is a twin-engine version of the UH-1 utility helicopter (Bell Model 212), most of which are allocated for AFSPC missile site support and for admin strative/DV airlift. The UH-1N is also used by AETC's 53th SOW, Kirtland AFB, N.M. for training purposes and by the 336th TG, Fairchild AFB, Wash., for aircrew survival training. Two UH-1N helicopters are maintained by AFSOC for aviation advisory aircrew flight proficiency.

***LGM-30** Minuteman III*
(DOD photo)

Strategic Missiles

AGM-86 Air Launched Cruise Missile

Brief: A small, subsonic, winged air vehicle, deployed on B-52H aircraft, which can be equipped with either a nuclear or conventional warhead and can be used to help dilute air defenses and complicate an enemy's air defense task.

Function: Strategic air-to-surface cruise missile.

Operator: ACC.

First Flight: June 1979 (full-scale development).

Delivered: from 1981.

IOC: December 1982, Griffiss AFB, N.Y.

Production: 1,700+.

Unit Location: Barksdale AFB, La., Minot AFB, N.D.

Contractor: Boeing.

Power Plant: Williams/Teledyne CAE F107-WR-10 turbofan, 600 lb thrust.

Guidance: AGM-86B: inertial plus Terrain Contour Matching (TERCOM); AGM-86C: inertial plus GPS.

Warhead: AGM-86B: W80-1 nuclear; AGM-86C: blast/fragmentation conventional; AGM-86D: hard target penetrating warhead.

Dimensions: length 20.8 ft, body diameter 2 ft, wingspan 12 ft.

Weight: 3,150 lb (B), 3,277 lb (C).

Performance (approx): speed 550 mph (Mach 0.6), range 1,500+ miles (AGM-86B).

COMMENTARY

AGM-86A. A prototype cruise missile, developed in the mid-1970s. Slightly smaller than the later versions, it never entered production.

AGM-86B. First production version, the B is programmed for strategic attack on surface targets. Small radar signature and low-level flight capability enhance the missile's effectiveness. The last of 1,715 production models was delivered in October 1986. Has been undergoing SLEP to extend service life to 2030; however, USAF now wants to retire all but 528.

AGM-86C. A conventional warhead version, developed from June 1986, the Conventional Air Launched Cruise Missile (CALCM) was first used operationally during Gulf War I and has since been used widely in combat operations. CALCM provides the warfighter with an adverse weather, day/night, air-to-surface, accurate, standoff outside theater defenses strike capability, with a range greater than 500 miles and a 3,000-lb class warhead. CALCM has proved equally effective for stand-alone, clandestine/punitive strikes and fully integrated theater warfare. From 1986, Boeing converted 622 Bs to the conventional configuration, the first of which was delivered in December 1987. The remaining CALCMs feature Block 1A enhancements with improved accuracy and increased immunity to electronic jamming. Since Iraqi Freedom, few CALCMs remain.

AGM-86D. CALCM penetrator version with a Lockheed Martin AUP-3(M) warhead. The CALCM penetrator provides the warfighter with a standoff outside theater defenses capability against a wide range of hardened, deeply buried targets. The CALCM penetrator was used with success in Iraqi Freedom.

AGM-129 Advanced Cruise Missile

Brief: A stealthy, long-range, winged air vehicle equipped with a nuclear warhead and designed to evade enemy air and ground-based defenses in order to strike hard, heavily defended targets at standoff distances.

Function: Strategic air-to-surface cruise missile.

Operator: ACC.

First Flight: July 1985.

Delivered: June 1990-August 1993.

IOC: circa 1991.

Production: 461.

Unit Location: Barksdale AFB, La., Minot AFB, N.D.

Contractor: General Dynamics (now Raytheon); McDonnell Douglas (now Boeing).

Power Plant: Williams International F112-WR-100 turbofan.

Guidance: inertial, with TERCOM update.

Warhead: W80-1 nuclear.

Dimensions: length 20.8 ft, body width 2.2 ft, wingspan 10.2 ft.

Weight: 3,700 lb.

Performance (approx): range 2,300+ miles, speed 550 mph.

COMMENTARY

AGM-129A. Embodying stealth technology, the AGM-129A is an air-launched strategic cruise missile with significant improvements over the AGM-86B in range, accuracy, and survivability. Armed with a W-80 warhead, it is designed to evade air- and ground-based defense systems in order to strike heavily defended, hardened targets at any location within an enemy's territory. Developed by General Dynamics, McDonnell Douglas was certified as second source for this advanced system, which is carried externally on B-52H aircraft. The ACM has been undergoing modification to extend its service life to 2030; however USAF now is seeking Congressional approval to retire the ACMs earlier.

LGM-30 Minuteman

Brief: A solid-fuel ICBM capable of being fired from silo launchers and delivering a thermonuclear payload of one to three warheads with high accuracy over great distances.

Function: Strategic surface-to-surface ballistic missile.

Operator: AFSPC.

First Flight: February 1961.

Delivered: 1962-December 1978.

IOC: December 1962, Malmstrom AFB, Mont.

AGM-88 HARM (DOD photo)

Production: 1,800.
Unit Location: F.E. Warren AFB, Wyo., Malmstrom AFB, Mont., Minot AFB, N.D.
Contractor: Boeing.
Power Plant: stage 1: Thiokol M-55 solid-propellant motor, 210,000 lb thrust; stage 2: Aerojet General SR19-AJ-1 solid-propellant motor, 60,300 lb thrust; stage 3: Thiokol SR73-AJ-1 solid-propellant motor, 34,400 lb thrust.
Guidance: inertial guidance system.
Warheads: one-three Mk 12/12A MIRVs (downloaded to one).
Dimensions: length 59.8 ft, diameter of first stage 5.5 ft.
Weight: launch weight (approx) 78,000 lb.
Performance: speed at burnout more than 15,000 mph, highest point of trajectory approx 700 miles, range with max operational load more than 6,000 miles.
COMMENTARY
A key element in the US strategic deterrent posture, Minuteman is a three-stage, solid-propellant ICBM, housed in an underground silo.

LGM-30A/B. Minuteman I version deployed in the early 1960s. The last Minuteman I missile was removed from its silo at Malmstrom AFB, Mont., in February 1969. USAF had deployed 150 A and 650 B models in 16 squadrons.

LGM-30F. Minuteman II version incorporated a larger second stage, an improved guidance package, greater range and payload capability, and hardening against the effects of nuclear blast. IOC was reached in October 1965 at Grand Forks AFB, N.D. USAF deployed 450 in nine squadrons.

LGM-30G. The Minuteman III became operational in June 1970, providing improved range, rapid retargeting, and the capability to place three MIRVs on three targets with a high degree of accuracy. USAF initially deployed 550 in 11 squadrons.

A single re-entry vehicle configuration for some missiles has been demonstrated, planned for, and is being worked in accordance with strategic arms control negotiations. Currently a total of 500 Minuteman IIIs are based at Minot AFB, N.D.; F.E. Warren AFB, Wyo.; and Malmstrom.

An extensive life extension program is ensuring Minuteman III's viability to 2020. Major upgrades include refurbishment of liquid propulsion post-boost rocket engine, remanufacture of the solid-propellant rocket motors, replacement of the environmental control system, repair of launch facilities, installation of updated, survivable communications equipment, and a C2 sustainment program.

Tactical Missiles and Weapons

AGM-65 Maverick
Brief: A tactical, TV- or imaging infrared (IIR)-guided air-to-surface missile carried by fighters and designed for use in CAS, interdiction, and defense suppression missions, having standoff capability and high probability of strike against a wide range of targets.
Function: Air-to-surface guided missile.
First Flight: August 1969.
Delivered: from August 1972.
IOC: February 1973.
Production: sustainment phase.
Contractor: Raytheon.
Power Plant: Thiokol TX-481 solid-propellant rocket motor.
Guidance: self-homing, EO guidance system (IIR on D and G models).
Warhead: AGM-65A/B/D/H 125-lb high-explosive, shaped charge; AGM-65G/K 298-lb blast fragmentation.
Dimensions: length 8.2 ft, body diameter 1 ft, wingspan 2.3 ft.
Weight: launch weight (AGM-65A) 462 lb, (AGM-65G) 670 lb.
Performance: range about 9.2 miles.
COMMENTARY
Maverick missiles have a long and distinguished combat record. They were first employed by USAF in Vietnam and were used extensively during Gulf War I and II. They currently equip A-10, F-15E, and F-16 aircraft for use against tanks and columns of vehicles and in the SEAD role.

AGM-65A. The basic Maverick is a launch-and-leave, TV-guided air-to-surface missile that enables the pilot of the launch aircraft to seek other targets or leave the target area once the missile has been launched. Production was initiated in 1971, following successful test launches over distances ranging from a few thousand feet to many miles and from high altitudes to treetop level.

AGM-65B. A version with a "scene magnification" TV seeker that enables the pilot to identify and lock on to smaller or more distant targets.

AGM-65D. System developed to overcome limitations of the TV Maverick, which can be used only in daylight and clear-weather conditions. This version has an IIR seeker as well as a lower-smoke motor. IIR Maverick became operational in February 1986 on A-10 aircraft.

AGM-65G. Uses the IIR seeker with an alternate 298-lb blast fragmentation warhead for use against hardened targets. Software is modified to include options for targeting ships and large land targets as well as mobile armor. This version also has a digital autopilot and a pneumatic, rather than hydraulic, actuation system. USAF received its first G model in 1989.

AGM-65H. AGM-65B modified with an upgraded TV seeker providing significant reliability, maintainability, and performance improvements over the AGM-65B seeker and double the standoff range.

AGM-65K. AGM-65G modified with the same upgraded TV seeker as in the AGM-65H to provide a TV-guided version of the Maverick with the 298-lb blast fragmentation warhead.

AGM-88 HARM
Brief: An air-to-surface tactical missile designed to seek and destroy enemy radar-equipped air defense systems, using an advanced guidance system that senses and homes in on enemy radar emissions.
Function: Air-to-surface antiradiation missile.
First Flight: April 1979.
Delivered: 1982-98.
IOC: circa 1984.
Production: sustainment phase.
Contractor: Raytheon.
Power Plant: Thiokol smokeless, dual-thrust, solid-propellant rocket motor.
Guidance: passive homing guidance system, using seeker head that homes on enemy radar emissions.
Warhead: high-explosive fragmentation, weighing 145 lb.
Dimensions: length 13.7 ft, body diameter 10 in, wingspan 3.7 ft.
Weight: 795 lb.
Performance: cruising speed supersonic, altitude limits S/L to 40,000 ft, range more than 10 miles.
COMMENTARY
The High-speed Anti-Radiation Missile (HARM) exhibits great velocity along with an ability to cover a wide range of frequency spectrums through the use of programmable digital processors in both the carrier aircraft's avionics equipment and in the missile. The combination gives this second generation anti-radiation missile (ARM) greatly improved capability over first generation Shrikes and Standard ARMs. The AGM-88 proved highly effective against enemy ground radar in Gulf War I and in subsequent operations. HARMs equip F-16 Block 50/52s (F-16CJ) dedicated to the SEAD mission.

AGM-88A. A factory-programmed version used to equip the now-retired F-4G Wild Weasel to increase its lethality in electronic combat. No longer operational.

AGM-88B. Incorporated erasable electronically programmable read-only memory, permitting changes to missile memory in the field. Older versions of the AGM-88B have software upgrades to satisfy current-standard capability requirements.

AGM-88C. This current production version has a more lethal warhead, containing tungsten alloy cubes, rather than steel, and the enhanced-capability AGM-88C-1 guidance head.

Upgrade initiatives are aimed at increasing capability of both B and C versions against target shutdown, blanking, and blinking and at reducing potential damage to friendly radars in the target area. Further upgrades being evaluated include GPS precision navigation capability through a modification of the control section known as the HARM Destruction of Enemy Air Defenses (DEAD) Attack Module, or HDAM.

AGM-154 Joint Standoff Weapon
Brief: Joint USAF and Navy family of low-cost, glide weapons with a standoff capability.
Function: Air-to-surface guided missile.
First Flight: December 1994.
Delivered: from 2000.
IOC: 2000 (USAF).
Production: 6,114 (originally planned).
Contractor: Raytheon.
Guidance: INS/GPS.
Dimensions: length 13.3 ft.
Weight: 1,065-1,500 lb.
Performance: range: low-altitude launch 17 miles, high-altitude launch 40+ miles.
COMMENTARY
A medium-range, INS/GPS-guided, standoff air-to-ground weapon designed to attack a variety of soft and armored area targets (fixed, relocatable, and mobile) during day/night/adverse weather conditions. JSOW enhances aircraft survivability by providing the capability for launch aircraft to stand off outside the range of enemy point defenses. JSOW accuracy and launch-and-leave capability allows several target kills per aircraft sortie. JSOW arms B-2 and F-16 aircraft. Production for USAF terminated FY05.

AGM-154A. The baseline BLU-97 variant for use against area targets.

AGM-154B. The BLU-108 variant providing anti-armor capability; development complete, production deferred.

AGM-154C. The third variant (used by Navy only), JSOW/Unitary integrates an IIR terminal seeker and a 500-lb unitary warhead.

AGM-158A Joint Air-to-Surface Standoff Missile
Brief: An advanced weapon designed to attack heavily defended targets with high precision at great standoff range.
Function: Air-to-surface guided weapon.
First Flight: April 8, 1999.
Delivered: through FY19 (planned).
IOC: September 2003. JASSM-ER projected 2010.
Production: 2,400, plus 2,500 JASSM-ER (planned).
Contractor: Lockheed Martin; Raytheon; Honeywell.
Guidance: INS, GPS, and IIR terminal seeker.
Power Plant: Teledyne Continental Motors.
Dimensions: length 14 ft.
Weight: 2,250 lb.
Performance: 1,000-lb class penetrator and blast-fragmentation warheads; standoff range greater than 200 miles.
COMMENTARY
JASSM is a next generation missile that enables Air Force fighters and bombers to destroy the enemy's war-sustaining capabilities from outside the ranges of enemy air defenses. This autonomous precision strike weapon has a range greater than 200 miles and can attack both fixed and relocatable targets, ranging from nonhardened

above ground to moderately hardened buried targets. JASSM is equipped with INS/GPS guidance, an IIR terminal seeker, and a stealthy LO airframe. The system also offers low operational support costs. IOC has been declared on the B-1B, B-2, B52H, and F-16. Integration on F-15E aircraft is contracted. The B-1B is the only aircraft capable of redirecting a JASSM route prior to launch. An extended-range version **(JASSM-ER),** with a range of more than 500 miles, entered development in FY04; flight testing began in 2006; operational test and evaluation is expected to begin in mid-2008.

AIM-7 Sparrow

Brief: A supersonic, medium-range, semiactive radar-guided air-to-air missile with all-weather, all-altitude, and all-aspect offensive capability and a high-explosive warhead, carried by fighter aircraft.

Function: Air-to-air guided missile.

First Flight: December 1983 (AIM-7M).

Delivered: from 1956.

IOC: April 1976 (AIM-7F).

Production: sustainment phase.

Contractor: Hughes; General Dynamics (now Raytheon).

Power Plant: Hercules Mk 58 Mod 0 4.5 sec boost-11 sec sustain rocket motor.

Guidance: AIM-7M: monopulse semiactive radar.

Warhead: high-explosive, blast fragmentation, weighing 86 lb.

Dimensions: length 12 ft, body diameter 8 in, wingspan 3.3 ft.

Weight: launch weight 504 lb.

Performance (estimated): max speed more than 2,660 mph (Mach 3.5), range more than 34 miles.

COMMENTARY

Early versions. Production of Sparrow has been under way for nearly half a century. Approximately 34,000 early models (AIM-7A/B/C/D/E) were produced. Compared to the earlier versions, the advanced solid-state AIM-7F, introduced into USAF service in 1976, had a larger motor, Doppler guidance, improved ECM, and better capability over both medium and "dogfight" ranges. USAF produced approximately 5,000, but none are now in USAF service.

AIM-7M. A joint Navy-USAF project aimed at producing a monopulse version of Sparrow at reduced cost and with improved performance in the ECM and look-down clutter regions. It began operational service in FY83. This version provides all-weather, all-altitude, all-aspect capability and equips USAF F-15s and F-16s (ADF) and Navy F-14s and F-18s.

AIM-7P. Block 1 retrofit to AIM-7M guidance and control sections (GCSs), providing low-altitude guidance and fuzing capability. Block 2 provides new-build for AIM-7P GCSs.

AIM-9 Sidewinder

Brief: A supersonic, short-range, IR-guided air-to-air missile carried by fighter aircraft, having a high-explosive warhead.

Function: Air-to-air missile.

First Flight: September 1953.

Delivered: 1957-present. First production AIM-9X delivered May 1, 2002.

IOC: circa 1983 (AIM-9M).

Production: sustainment phase (AIM-9M); LRIP from November 2000, with full rate from November 2004 (AIM-9X).

Contractor: Raytheon; Loral.

Power Plant: Thiokol Mk 36 Mod 11 solid-propellant rocket motor.

Guidance: solid-state IR homing guidance.

AIM-9 Sidewinder (USAF photo by TSgt. Jeffrey Allen)

Warhead: high-explosive, weighing 20.8 lb.

Dimensions: length 9.4 ft, body diameter 5 in, finspan 2.1 ft.

Weight: launch weight 190 lb.

Performance: max speed Mach 2+, range 10+ miles.

COMMENTARY

Early versions. AIM-9A was the prototype version. The AIM-9B, initial production version, entered the inventory in 1957 and was effective only at close range during day. These shortcomings were eliminated on subsequent AIM-9E/H/J/P versions. The third generation Sidewinder, AIM-9L, added a more powerful solid-propellant rocket motor as well as tracking maneuvering ability. Production and delivery began in 1976; production ended in 1981.

AIM-9M. A joint Navy-USAF project aimed at producing an improved version of AIM-9L with all-altitude, all-aspect, launch-and-leave intercept capability. Can equip: A-10, F-14, F-15, F-16, F-16 ADF, and F-18 aircraft. This version has increased infrared counter-countermeasures (IRCCM) capability, improved background discrimination, and a reduced-smoke rocket motor. First flight of prototype was in February 1978. Full production began in FY81.

AIM-9M-9. A modification to improve IRCCM capability of early missiles. Complete.

AIM-9X. Deriving from a jointly funded Navy-USAF project, the AIM-9X entered LRIP in November 2000. USAF's F-15-equipped 12th and 19th FS, part of the 3rd Wing at Elmendorf AFB, Alaska, became the first operational units to receive AIM-9Xs in November 2003. The first full-rate production contract was signed in November 2004. USAF plans to buy 5,097 missiles.

The AIM-9X incorporates advanced technologies such as a focal plane array imaging seeker, high off-boresight sensor (HOBS), and a highly maneuverable jet-vane control system. The missile utilizes the existing AIM-9M rocket motor, warhead, and fuze. It will be integrated with the JHMCS to maximize its HOBS capability. Intended carrier aircraft include the F-15, F-16, F-22, F-35, and F/A-18.

AIM-120 AMRAAM

Brief: A new generation supersonic, medium-range, active radar-guided air-to-air missile with a high-explosive warhead.

Function: Air-to-air guided missile.

First Flight: December 1984.

Delivered: 1988-July 2010 (planned).

IOC: September 1991.

Production: 10,917+ planned for USAF/USN.

Contractor: Raytheon.

Power Plant: Alliant boost-sustain solid-propellant rocket motor.

Guidance: inertial/command, inertial with active radar terminal homing.

Warhead: high-explosive directed fragmentation weighing 48 lb.

Dimensions: (A/B models) length 12 ft, body diameter 7 in, span of tail control fins 2.1 ft.

Weight: 335 lb.

Performance: cruising speed approx Mach 4, range more than 23 miles.

COMMENTARY

A joint project between the Navy and USAF, the AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) is a replacement for the AIM-7 Sparrow. The AIM-120 equips F-15, F-16, F-22, F-35, and F/A-18 fighters. Inertial and command inertial guidance and active radar terminal homing provide launch-and-maneuver capability. Significant improvements in operational effectiveness over the AIM-7 include increased average velocity, reduced miss distance, improved fuzing, increased warhead lethality, multiple target engagement capability, improved clutter rejection in low-altitude environments, enhanced electronic protection capability, increased maximum launch range, a reduced-smoke motor, and improved maintenance and handling.

AIM-120A was the first production version, delivered by Hughes in 1988 to the 33rd TFW at Eglin AFB, Fla.

AIM-120B/C/D are upgraded, reprogrammable variants of the AIM-120. The AIM-120C currently in production has smaller, clipped control surfaces to provide for internal carriage capability in the F-22A and F-35, with HOBS launch capability. The latest development effort (AMRAAM Phase 4) adds GPS to improve navigational accuracy and enhanced data link capabilities in the AIM-120D version. Production began 2006.

CBU-87/103 Combined Effects Munition

Brief: The CBU-87 CEM is an area munition effective against light armor, materiel, and personnel and used by USAF and Navy fighters and bombers for interdiction.

Function: Area munition.

Production: sustainment phase.

Contractor: Aerojet General; Honeywell; Alliant Tech.

Guidance: none (CBU-87).

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 949 lb.

Performance: dispenses 202 BLU-97 combined effects bomblets over an area roughly 800 ft by 400 ft.

COMMENTARY

The CBU-87 Combined Effects Munition dispenses 202 BLU-97 shaped charge antipersonnel/antimateriel fragmentary/incendiary bomblets over the target in a rectangular pattern. It is currently delivered by USAF and Navy aircraft as an unguided gravity weapon. Density and size of the area covered depends on release parameters and spin rates.

CBU-103. USAF is retrofitting a portion of its inventory of unguided CBU-87 CEMs with the Wind-Corrected Munitions Dispenser (WCMD) tail kit. The WCMD improves the munitions delivery accuracy when released from medium to high altitude.

CBU-89/104 Gator

Brief: The CBU-89 Gator is an anti-armor/antipersonnel mine dispenser used by USAF and Navy fighters and bombers for interdiction.

Function: Scatterable mines.

AIM-120 AMRAAM (DOD photo)

Production: sustainment phase.
Contractor: Honeywell; Aerojet General; Olan; Alliant Tech.
Guidance: none (CBU-89).
Dimensions: length 7.7 ft; diameter 1.3 ft.
Weight: 705 lb.
Performance: dispenses 72 BLU-91 anti-armor and 22 BLU-92 antipersonnel mines.
COMMENTARY
The CBU-89 Gator dispenser holds 94 mines, of which 72 are antitank and 22 are antipersonnel. The mines are dispersed over the target in a circular pattern. The antitank mines, which can be fuzed for three different time delay settings, have a magnetic influence fuze to sense armor.
CBU-104. USAF has retrofitted a portion of its inventory of Gators with the Wind-Corrected Munitions Dispenser (WCMD) tail kit, which improves the munitions delivery accuracy when released from medium to high altitude.

CBU-97/105/115 Sensor Fuzed Weapon
Brief: The CBU-97 SFW is an anti-armor munition used by fighters and bombers for multiple kills per pass against moving and stationary land combat vehicles.
Function: Wide-area munition.
First Flight: circa 1990.
Delivered: 1994-2013 (planned).
IOC: 1997.
Production: 6,500 (planned).
Contractor: Textron Systems.
Guidance: IR sensors in each warhead search for targets, then detonate over them.
Dimensions: length 7.7 ft; diameter 1.3 ft.
Weight: 920 lb.
Performance: delivers 40 lethal projectiles over an area of about 500 ft by 1,200 ft.
COMMENTARY
The **CBU-97** Sensor Fuzed Weapon (SFW) comprises an SUU-66/B tactical munitions dispenser with an FZU-39 fuze and a payload of 10 BLU-108 submunitions. Each tactical munitions dispenser contains 10 BLU-108 submunitions, and each submunition contains four "skeet" projectiles that, upon being thrown out, seek out their target and deliver an explosively formed penetrator. Each SFW can deliver a total of 40 lethal projectiles. The skeet's active laser and passive IR sensors can detect a vehicle's shape and IR signature; if no target is detected, the warhead detonates after a preset time. The SFW's primary targets are massed tanks, armored personnel carriers, and self-propelled targets. It also provides direct attack capability and interdiction against C2 centers.
The CBU-97 SFW is delivered as an unguided gravity weapon from the A-10, B-1, B-2, B-52H, F-15E, and F-16. The initial baseline SFW systems contained the BLU-108/B and BLU-108A/B submunition. A preplanned product improvement SFW submunition, the BLU-108B/B, entered production in 2001, incorporating improvements such as an active laser sensor, multimission warhead, and increased footprint.
CBU-105. Designation of an unguided CBU-97 equipped with a Wind-Corrected Munitions Dispenser (WCMD) tail kit. The CBU-105 can be accurately delivered from high altitude and in adverse weather from the B-1, B-52H, F-15E, and F-16. Combat debut for the CBU-105 occurred April 2003, during Iraqi Freedom, from a B-52H.
CBU-115. USAF began installing WCMD-ER wing and tail kits on SFW P31 weapons in FY06. The WCMD-ER provides increased accuracy and standoff capability from outside point defense ranges.

CBU-107 Passive Attack Weapon
Brief: The CBU-107 Passive Attack Weapon (PAW) provides the capability to attack nonhardened surface targets, with a minimum of collateral and environmental damage.
Function: Wide-area munition.
First Flight: 2002.
Delivered: 2002-03.
IOC: December 2002.
Production: not available, but completed March 2003.
Contractor: General Dynamics (kinetic energy penetrator payload and cannister); Lockheed Martin (WCMD); Textron (tactical munition dispenser kit).
Guidance: via WCMD.
Dimensions: length 7.7 ft; diameter 1.3 ft.
Weight: 1,000 lb.
Performance: delivers a high-speed volley of 3,000+ metal "arrows" projected from a single canister; three types of projectiles: 350 x 15 in-long rods, 1,000 x 7 in-long rods, and 2,400 small-nail size.
COMMENTARY
The CBU-107 Passive Attack Weapon (PAW) was developed from September 2002 to provide USAF aircraft with a new weapon that destroys targets with kinetic energy rods rather than explosives, thereby minimizing collateral and environmental damage. Following release from an aircraft, the WCMD-equipped weapon glides toward its target. Before impact, the inner chamber containing the rods begins to rotate and the "arrows" are ejected in rapid succession by centrifugal force, penetrating a target within a 200-ft radius. Two CBU-107s were used during Iraqi Freedom. CBU-107s are intended for use on B-52, F-15E, and F-16 aircraft.

GBU-10 Paveway II
Brief: An unpowered laser guided bomb (LGB) used to destroy high-value enemy targets from short standoff distances.
Function: Air-to-surface guided munition.
First Flight: early 1970s.
Delivered: from 1976.
IOC: 1976.
Production: 10,000; continuing.
Contractor: Lockheed Martin; Raytheon.
Guidance: semiactive laser.
Warhead: GBU-10C/D/E/F: Mk 84 bomb (2,000-lb unitary); GBU-10G/H/J: BLU-109.
Dimensions: length GBU-10C/D/E/F: 14.1 ft; GBU-10G/H/J: 14 ft, body diameter GBU-10C/D/E/F: 1.5 ft; GBU-10G/H/J: 1.2 ft, wingspan 5.5 ft.
Weight: 1,985 lb.
Performance: circular error probable (CEP) 29.7 ft; range 9.2 miles.
COMMENTARY
Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The GBU-10 is used primarily for precision bombing against nonhardened targets but is capable of greater penetration than previous version. It can operate in cloud ceilings down to 2,500 ft. GBU-10 platforms include A-10, B-52, F-15E, F-16, and F-117 aircraft.

GBU-12 Paveway II
Brief: An unpowered LGB used to destroy high-value enemy targets from short standoff distances.
Function: Air-to-surface guided munition.
First Flight: early 1970s.
IOC: 1976.
Production: about 30,000; continuing.
Contractor: Lockheed Martin; Raytheon.
Guidance: semiactive laser.
Warhead: Mk 82 (500 lb) blast/fragmentation bomb.
Dimensions: length 10.9 ft, body diameter 10.7 in, wingspan 4.4 ft.
Weight: 603 lb.
Performance: CEP 29.7 ft; range about 6 miles.
COMMENTARY
Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The LGB is used primarily to strike fixed armor. It can operate in cloud ceilings down to 2,500 ft. GBU-12 platforms include A-10, B-52, F-15E, F-16, and F-117 aircraft.

GBU-15
Brief: An unpowered bomb carried by the F-15E and used to destroy high-value enemy targets from short standoff distances.
Function: Air-to-surface guided munition.
First Flight: 1975.
Delivered: 1983-complete.
IOC: 1983.
Production: more than 2,000.
Contractor: Boeing; Raytheon.
Guidance: TV or IIR seeker.
Warhead: Mk 84 bomb (2,000-lb unitary) or BLU-109.
Dimensions: length 12.8 ft, body diameter 1.5 ft, wingspan 4.9 ft.
Weight: 2,500 lb.
Performance: cruising speed subsonic; range about 17 miles; CEP about 10 ft.
COMMENTARY
GBU-15 is an air-launched, cruciform-wing glide bomb fitted with a guidance system designed to give it pinpoint accuracy from low or medium altitudes. It also has a standoff capability. Development began in 1974, based on experience gained in Vietnam with the earlier Pave Strike GBU-8 modular weapon program. The GBU-15 is intended for tactical use to suppress enemy defenses and to destroy heavily defended targets. The target-detecting device is carried on the front of the warhead. The control module, with autopilot and data link module, attaches to the rear.
The weapon has two modes of attack. In direct attack, the weapon is locked on to the target before launch and flies a near-line-of-sight profile to impact. In the indirect mode, the seeker can be locked on to the target after launch, or the operator can fly the weapon manually to impact, using guidance updates provided through the data link. A "buddy" system may be operated whereby the weapon is launched from one aircraft and controlled by another. The GBU-15 is deployed with the F-15E.
GBU-15(V)1/B. A TV-guided variant, qualified for operational service in 1983 (production complete).
GBU-15(V)2/B. IIR version entered service in 1987.
GBU-15-I. Combines accuracy of GBU-15 with the penetration capability of the improved 2,000-lb BLU-109/B penetrator bomb.
EGBU-15. GPS-guided variant, allowing pilot to select either TV, IR, or GPS guidance over the target, depending on weather and/or threat conditions. USAF had 100 initially produced for Allied Force, with field-level upgrade of over 1,200 existing GBU-15s.

GBU-16 Paveway II
Brief: An unpowered LGB used to destroy high-value enemy targets from short standoff distances.
Function: Air-to-surface glide munition.
First Flight: early 1970s.
IOC: 1976.
Production: not available.
Contractor: Lockheed Martin; Raytheon.
Guidance: semiactive laser.
Warhead: Mk 83 (1,000 lb) bomb.
Dimensions: length 12.1 ft, body diameter 1.2 ft, wingspan 5.5 ft.
Weight: approx 1,000 lb.
Performance: CEP about 29 ft; range 9.2 miles.
COMMENTARY
Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The GBU-16 LGB is used primarily to strike fixed armor. Its platforms include A-10, F-15E, and F-16 aircraft.

GBU-24 Paveway III
Brief: A precise air-to-ground low-level LGB (LLLGB) equipped with an advanced guidance kit.
Function: Air-to-surface penetrating glide bomb.
First Flight: GBU-24A/B (USAF) in service May 1985; GBU-24B (Navy) June 1992.
Delivered: from 1986.
IOC: 1986.
Production: USAF 14,000; Navy 12,000.
Contractor: Raytheon.
Guidance: semiactive laser.
Warhead: BLU-109 (A/B); BLU-116 (C/D).
Dimensions: length 14.2 ft.
Weight: 2,350 lb.
Performance: range more than 11.5 miles.
COMMENTARY
GBU-24A/B. An air-to-ground weapon equipped with the third generation Paveway III guidance kit, integrated with a BLU-109 penetrating warhead. The kit consists of an advanced guidance section and high-lift airframe. It is extremely precise and highly effective against a broad range of high-value hard targets. The system can be employed from low, medium, and high altitudes, providing operational flexibility through the use of an adaptive digital autopilot and large field-of-regard, highly sensitive scanning seeker. The GBU-24A/B was highly successful during Desert Storm.
GBU-24C/D. Variant integrated with the BLU-16 advanced unitary penetrator (AUP).
The GBU-24 adapts to conditions of release, flies an appropriate midcourse, and provides trajectory shaping for enhanced warhead effectiveness. The weapon is deployed on USAF F-15E, F-16, and F-117 and Navy F/A-18.

GBU-27
Brief: A precise air-to-ground penetrating LGB equipped with an advanced guidance kit.
Function: Air-to-surface guided glide bomb.
First Flight: not available.
Delivered: from 1988.
IOC: 1988 (unconfirmed).
Production: approx 3,000.
Contractor: Raytheon.
Guidance: semiactive laser.
Dimensions: span 5.5 ft, length 13.9 ft.
Weight: 2,170 lb.
Performance: range more than 11.5 miles.
COMMENTARY
To meet the unique requirements of the F-117A, the GBU-24A/B was adapted to GBU-27 standard, incorporating specific guidance features to accomplish this mission. The GBU-27 is extremely precise and was used to great effect in Desert Storm.
EGBU-27. Integrates GPS/INS guidance into the existing GBU-27 laser seeker to provide adverse weather capability and improved target location. Entered production in FY98. First operational use was in Iraqi Freedom.

GBU-28
Brief: A large 5,000-lb class air-to-ground penetrating warhead (BLU-113/B) equipped with an advanced laser guidance kit, used for striking and destroying hard and deeply buried targets.
Function: Air-to-surface guided glide bomb.
First Flight: February 1991.
Delivered: circa 1991.
IOC: 1991.

***GBU-32** Joint Direct Attack Munition* (DOD photo)

Production: approx 500.
Contractor: Raytheon.
Guidance: laser.
Dimensions: length 19.2 ft, diameter 1.2 ft.
Weight: 4,676 lb.
Performance: range more than 5.75 miles.
COMMENTARY
Under USAF's rapid-response program, the GBU-28 bunker-busting LGB was developed for Desert Storm for use against deeply buried, hardened C2 facilities. Four of the GBU-28 weapons were used during the war: two for testing and two by F-111Fs against a bunker complex Feb. 27, 1991. Guidance is by a modified GBU-27 system.

GBU-28B/B. Integrates GPS/INS guidance into the existing GBU-28 guidance control unit to provide adverse weather capability and improved target location. Entered production in FY99.

GBU-28C/B. Utilizes the improved BLU-122/B warhead for increased penetration, lethality, and survivability. Guidance and control is provided by an Enhanced Paveway III system with GPS/INS and laser capability. Entered production in FY05.

GBU-31/32/38 Joint Direct Attack Munition
Brief: A joint USAF-Navy INS/GPS-guided weapon, carried by fighters and bombers, that provides highly accurate, autonomous, all-weather conventional bombing capability.
Function: Air-to-surface guided bomb.
First Flight: Oct. 22, 1996.
Delivered: 1998-2013 (planned).
IOC: 1998.
Production: 213,521 (planned).
Contractor: Boeing; Textron; Honeywell.
Guidance: INS/GPS.
Dimensions: Mk 84 with JDAM 12.8 ft; BLU-109 with JDAM 12.4 ft; Mk 83 with JDAM 10 ft; Mk 82 with JDAM 8 ft.
Weight: Mk 84 2,036/2,056 lb (USAF/USN); BLU-109 2,115/2,135 lb; Mk 83 1,013/1,028 lb; Mk 82 552/558 lb.
Performance: range up to 17 miles, CEP with GPS 16.4 ft; CEP with INS only 98 ft.
COMMENTARY
JDAM upgrades the existing inventory of general-purpose bombs by integrating them with a GPS/INS guidance kit to provide accurate all-weather attack from medium/high altitudes. While still aboard the launch aircraft, JDAM is passed target information through the aircraft's avionics system. Once released, the inertial guidance kit takes over and, with periodic GPS updates to the INS, guides the weapon to its target. JDAM is integrated on AV-8B, B-1, B-2, B-52, F-14, F-15E, F-16, F-22, F-117A, and F/A-18C/D/E/F aircraft, with future integration on A-10, F-35, and MQ-9B aircraft.

GBU-31. Variant that adds an INS/GPS guidance kit to the 2,000-lb general-purpose Mk 84 bomb or the 2,000-lb BLU-109 penetrator. First used in combat March 24, 1999.

GBU-32. Variant that adds an INS/GPS guidance kit to the 1,000-lb general-purpose Mk 83 bomb or the 1,000-lb BLU-110 thermal coated bomb.

GBU-38. Variant that adds an INS/GPS guidance kit to the 500-lb general-purpose Mk 82 bomb or the 500-lb BLU-111 thermal coated bomb. First production deliveries were in 2004 for the B-2.

Planned upgrades include an antispoofing GPS receiver and low-cost antijam antenna.

GBU-39B Small Diameter Bomb
Brief: Extended range all-weather, day/night 250-lb class near-precision guided munition. Provides increased loadout to achieve multiple kills per sortie and decreases collateral damage.
Function: Air-to-surface guided munition.
First Flight: May 23, 2003 (guided).
Delivered: TBD.
IOC: 2007.
Production: 24,000 munitions and 2,000 carriages (planned).
Contractor: Boeing, Raytheon.
Guidance: GPS/INS augmented by Differentia GPS.
Dimensions: length 70.8 in (munition); 126.4 in (carriage); 143.1 in (carriage with four munitions).
Weight: 285 lb (munition); 320 lb (carriage); 1 460 lb (carriage with four munitions).
Performance: near-precision capability at standoff range up to 46 miles.
COMMENTARY
The Small Diameter Bomb (SDB) system employs a BRU-61/A smart carriage capable of carrying four 250-lb class GBU-39/B near-precision guided air-to-surface munitions. It is capable of destroying high-priority fixed and stationary targets from both fighters and bombers in internal bays or on external hardpoints. SDBs can be targeted and released against single or multiple targets. Target coordinates are loaded in the weapon prior to release either on the ground or in the air by aircrew. Once the weapon is released, it relies on GPS/INS augmented by Differential GPS to self-navigate to the impact point. SDB increases loadout, decreases collateral damage, and improves aircraft sortie generation times. GBU-39 went operational in July 2006 on the F-15E. Objective aircraft include the A-10, B-1, B-2, B-52, F-16, F-22, F-35, F-117, and MQ-9. Boeing was awarded the contract to develop the SDB in October 2003. Further contracts were awarded in April 2006 to Boeing and Lockheed for Increment II; following a risk reduction phase, one contractor will be selected to develop the program.

Massive Ordnance Air Blast (MOAB) Bomb
Brief: A massive precision guided munition (PGM) designed to be dropped by B-1, B-2, or B-52 bombers.
Function: Massive bomb.
Guidance: GPS/INS.
Warhead: 18,000 lb, high explosive.
Dimensions: length 30 ft, diameter 3.3 ft.
Weight: 21,500 lb.
COMMENTARY
On March 11, 2003, USAF live-tested the largest PGM developed to date. Unlike the earlier unguided "Daisy Cutter" bomb, the MOAB does not require a parachute.

Wind-Corrected Munitions Dispenser (WCMD) and WCMD-ER
Brief: A tail kit fitted to various dispenser weapons that provides inertial guidance system corrections for launch transients and wind effects to enhance accuracy.
Function: Guidance tail kit.
First Flight: February 1996.
Delivered: from 2000.
IOC: FY00.
Production: WCMD: 27,700 (planned). WCMD-ER: 100.
Contractor: Lockheed Martin.
Dimensions: length 1.4 ft, diameter 1.3 ft.
Weight: WCMD: 100 lb. WCMD-ER: about 200 lb.
Performance: WCMD: range about eight miles. WCMD-ER: about 40 miles.
COMMENTARY
WCMD. USAF is modifying standard SUU-64/65/66 tactical munition dispensers with guidance kits to compensate for wind drift on downward flight from high a titudes. The combat-proven WCMD kits include an INS guidance unit, movable tail fins that pop out in flight, and a signal processor. The kits when fitted on CBU-87/89/97 inventory cluster weapons are designated: CEM (CBU-103), Gator (CBU-104), SFW (CBU-105), and PAW (CBU-107). Successful flight testing began in February 1996; WCMDs are now operational on B-1, B-52, F-15E, and F-16 aircraft. Objective aircraft include A-10, B-2, and F-35.

WCMD-ER. Augments WCMD baseline capability by adding GPS guidance and a wing kit for CBU-97 SFW dispenser weapons to provide increased accuracy and standoff capability from outside point defense ranges. First flight took place in November 2005.

Satellite Systems

Advanced EHF (AEHF)
Brief: Joint service satellite communications system that provides global, secure, protected, and jam-resistant strategic and tactical communications at all levels of conflict for high priority air, ground, and sea assets.
Function: near-worldwide, secure, survivable satellite communications.
Operator: AFSPC.
First Launch: April 2008 (planned).
IOC: 2010 (planned).
Constellation: three satellites.
Design Life: 14 years.
Launch Vehicle: SV 1: Atlas V Evolved Expendable Launch Vehicle (EELV); SV 2 and 3, TBD.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 22,000+ miles (geosynchronous).
Contractor: Lockheed Martin, Northrop Grumman team for system development and demonstration.
Dimensions: length 32 ft (across payload axis), width 75.8 ft (across solar array axis).
Weight: approx 13,500 lb at launch, 9,000 lb on orbit.
Performance: 10 times the capability of the Milstar Block II satellite.
COMMENTARY
The Advanced Extremely High Frequency (AEHF) system comprises three crosslinked satellites in geosynchronous orbit that provide at least 10 times the capacity of the 1990s-era Milstar Block II satellites. Advanced EHF allows the President, Secretary of Defense, and combat forces to control their tactical and strategic forces at all levels of conflict through general nuclear war and supports the attainment of information superiority. AEHF will provide connectivity across the spectrum of mission areas, including air, land, and naval warfare; special operations; strategic nuclear operations; strategic defense; theater missile defense; and space operations and intelligence.

Defense Meteorological Satellite Program
Brief: Satellites that collect air, land, sea, and space environmental data to support worldwide strategic and tactical military operations. Also shares data with civil agencies.
Function: Environmental monitoring satellite.
Operator: National Polar-orbiting Operational Environmental Satellite System (NPOESS) program office.
First Launch: May 23, 1962.
IOC: 1965.
Constellation/on-orbit: two.
Design Life: 48 months.
Launch Vehicle: Delta IV and Atlas V.
Unit Location: Suitland, Md. (operations).
Orbit Altitude: approx 575 miles.
Contractor: Lockheed Martin; Northrop Grumman.
Power Plant: solar arrays generating 1,200-1,300 watts.
Dimensions: length 25 ft (with array deployed), width 4 ft.
Weight: 2,545 lb (including 772-lb sensor).
Performance: DMSP satellites orbit Earth in polar orbits and primary sensor scans an area 1,800 miles wide. Each system covers the Earth in about 12 hr.
COMMENTARY
For the last 40-plus years, the DMSP constellation has provided high-quality, timely weather information to strategic and tactical warfighters worldwide. The operational linescan sensor "sees" visible and IR cloud-cover imagery to analyze cloud patterns. Secondary instruments include microwave imagers and sounders and a suite of space environment sensors that provide critical land, sea, and space environment data required by US forces across the globe. This data is also shared with civil agencies. The DMSP constellation will be replaced by the tri-agency NPOESS late in this decade.

Block 5D-2. The last Block 5D-2 satellite was launched in December 1999.

Block 5D-3. Two operational DMSP Block 5D-3 satellites survey the entire Earth four times a day. DMSP F16, the first Block 5D-3 satellite, was launched successfully on Oct. 18, 2003. (DMSP F15, which used a 5D-3 satellite bus but 5D-2 sensors, was launched Dec. 12, 1999 and is credited as the first 5D-3 launch.) Block 5D-3 satellites

have an improved spacecraft bus and sensors that provide for longer and more capable m ssions. The SLEP planned for F19 and F20, and the successful flyout of the DMSP Block 5D-3 satellites, will help ensure a seamless transition to the NPOESS program.

Defense Satellite Communications System

Brief: A spacecraft traveling in geosynchronous orbit used to transmit SHF high-priority C2 communication.

Function: Communications satellite.

Operator: AFSPC.

First Launch: 1971 (DSCS II); 1982 (DSCS III); 2000 (DSCS III/SLEP).

IOC: Dec. 13, 1978 (DSCS II).

Constellation: five (III).

Design Life: 10 yr (III).

Launch Vehicle: Atlas II.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 22,000+ miles in geosynchronous orbit.

Contractor: Lockheed Martin.

Power Plant: solar arrays generating 1,269 watts, decreasing to 980 watts after 10 yr; 1,500 watts (SLEP).

Dimensions: rectangular body 6 x 6 x 7 ft; 38-ft span with solar arrays deployed.

Weight: 2,580 lb; 2,716 lb (SLEP).

Performance: DSCS satellites orbit Earth at about 22,000 miles altitude and employ six SHF transponder channels for secure voice and high-rate data communications.

COMMENTARY

DSCS III satellites support globally distributed DOD and national security users. The final four of 14 satellites received SLEP modifications, providing substantial capacity improvements through higher power amplifiers, more sensitive receivers, and additional antenna connectivity options. The DSCS communications payload includes six independent super high frequency (SHF) transponder channels that cover a 500 MHz bandwidth. Three receive and five transmit antennas provide selectable options for Earth coverage, area coverage, and/or spot beam coverage. A special-purpose single channel transponder is also on board.

The DSCS III system provides the capabilities needed for effective implementation of worldwide military communications. It can adapt to dynamic operating conditions and perform under stressed environments, providing nuclear hardened, antijam, high data rate, long-haul communications to military users globally. The final DSCS III satellite was launched in August 2003. The modernization of satellite communications will continue with the deployment of the Wideband Global SATCOM (WGS).

Defense Support Program

Brief: An early warning spacecraft that travels in geosynchronous orbit and provides alert of possible ballistic missile attack on US forces or homeland.

Function: Strategic and tactical launch detection system.

Operator: AFSPC.

First Launch: November 1970.

IOC: circa 1972.

Constellation: classified.

Design Life: three yr requirement and five yr goal.

Launch Vehicle: Titan IV with inertial upper stage; Delta IV Heavy EELV.

Unit Location: Buckley AFB, Colo.

Orbit Altitude: 22,000+ miles in geosynchronous orbit.

Contractor: TRW (now Northrop Grumman) and Aerojet.

Power Plant: solar arrays generating 1,485 watts.

Dimensions: diameter 22 ft, height 32.8 ft, with solar paddles deployed.

Weight: 5,000 lb (approx).

Performance: orbits at approx 22,000 miles altitude in geosynchronous orbit; uses IR sensors to sense heat from missile and booster plumes against Earth's background.

COMMENTARY

The incredibly flexible Defense Support Program (DSP) satellite system was used extensively in Desert Storm to detect theater missile launches against coalition forces. Though not designed to spot and track smaller missiles, the system was highly successful in detecting launches, enabling timely warnings of Iraqi Scud attacks. The Space Based Infrared System (SBIRS) mission control station (MCS), located at Buckley AFB, Colo., became operational in December 2001 and now performs both the strategic and theater missile warning missions.

DSP satellites are a key part of the North American and theater early warning systems, capable of detecting missile launches and nuclear detonations. Warning data are fed to NORAD and US Strategic Command early warning centers at Cheyenne Mountain AFS, Colo. Since the first launch, DSP satellites have provided an uninterrupted early warning capability to the US. The final DSP is expected to be launched in 2007. America's early warning capability will be modernized with the introduction of the new SBIRS to be phased in at a future date.

Global Positioning System

Brief: A space-based radio-positioning system that provides 24-hour worldwide highly accurate three dimensional location information and precision velocity and timing services to military and civilian users.

Function: Worldwide navigation satellite constellation.

Operator: AFSPC.

First Launch: Feb. 22, 1978.

IOC: Dec. 9, 1993.

Constellation: Nominal 24 satellites in six orbital planes; max 30 sats; currently 28 operational.

Design Life: 7.5 yr (II/IIA); 10 yr (IIR/IIR-M); 12 yr (IIF).

Launch Vehicle: Delta II, Delta IV, Atlas V.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 10,988 miles.

Contractor: Boeing (II, IIA, IIF); Lockheed Martin (IIR, IIR-M).

Power Plant: solar panels generating 700 watts (II/IIA); 1,136 watts (IIR/IIR-M); up to 2,900 watts (IIF).

Dimensions: IIR/IIR-M: 5 x 6.3 x 6.25 ft, span incl solar panels 38 ft; IIF: 9.6 ft x 6.5 ft x 12.9 ft (span incl solar panels 43.1 ft.

Weight: on orbit: 2,370 lb (IIR/IIR-M); 3,439 lb (IIF).

Performance: GPS satellites orbit the Earth every 12 hr, emitting continuous navigation signals. The signals are so accurate that time can be figured to within one-millionth of a second, velocity within a fraction of a mile per hr, and location to within a few ft. Receivers are used in aircraft, ships, and land vehicles and can also be handheld.

COMMENTARY

Worldwide military operations, such as precision bombing, CSAR, mapping, and rendezvous, are successful in part due to the 24-hour, worldwide position navigation and timing service provided by the Global Positioning System (GPS) navigation satellite constellation. Accurate three-dimensional (latitude, longitude, and altitude) position, velocity, and precise time are provided continuously in real time to support an unlimited number of users around the globe, both civilian and military. Concern over potential enemy denial of GPS is being addressed under GPS modernization efforts. The modified Block IIR-M satellites, launched beginning September 2005, offers a variety of enhanced features for the GPS user, such as two new signals, enhanced encryption and anti-jamming capabilitieis for the military user, as well as a second civil signal. Block IIF satellites will have an extended design life, faster processors, and a new civil signal on a third frequency. Launch is scheduled for 2008. Future generation GPS satellites are slated for launch 2013.

Milstar Satellite Communications System

Brief: A joint service satellite communications system that provides global, secure, protected, and jam-resistant strategic and tactical communications at all levels of conflict for high-priority air, ground, and sea assets.

Function: Communications satellite.

Operator: AFSPC.

First Launch: Feb. 7, 1994.

IOC: July 1997 (Milstar I).

Constellation: five.

Design Life: 10 yr.

Launch Vehicle: Titan IV/Centaur.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 22,300 miles.

Contractor: Lockheed Martin; Boeing; TRW (now Northrop Grumman).

Power Plant: solar arrays generating 8,000 watts.

Dimensions: length 51 ft, width 116 ft with full solar array extension.

Weight: 10,000 lb.

Performance: constellation consists of five satellites in low-inclined geosynchronous orbit, providing worldwide coverage between 65° north and 65° south latitude. The oldest two satellites are still working beyond their 10-yr design life.

COMMENTARY

The backbone of strategic-tactical communications, Milstar is a joint service communications system that provides secure, jam-resistant worldwide communications through crosslinked satellites, eliminating the need for ground relay stations. Worldwide operations are made possible by this 24-hour, all-weather capability, ready to support any deployment at a moment's notice. The Milstar inventory was fully deployed in 2003, and modernization of satellite communications will continue with the Advanced EHF (AEHF) constellation deployment.

Polar MILSATCOM

Brief: Payload on a classified satellite that provides secure, survivable communications, supporting peacetime, contingency, and wartime operations in the North Pole region, above 65° north latitude.

Function: Communications satellite.

Operator: USN.

First Launch: late 1997.

IOC: 1997.

Constellation: three.

Design Life: host satellite dependent.

Launch Vehicle: not available.

Unit Location: Schriever AFB, Colo.

Orbit Altitude: 25,300 miles.

Contractor: classified.

Power Plant: 410 watts consumed by payload (power from host solar array).

Dimensions: numerous items integrated throughout host.

Weight: 470 lb (payload).

COMMENTARY

Augmenting the Milstar constellation, the Polar MILSATCOM payload is a cost-effective means of providing secure communications for the northern polar region. The system enables northern latitude operations by linking forces with secure, jam-resistant EHF communication links. Polar 2 availability occurred in 2006, with Polar 3 due in 2008. An improved next generation polar system is planned.

Space Based Infrared System

Brief: Advanced surveillance system for missile warning, missile defense, battlespace characterization, and technical intelligence. System includes satellites in geosynchronous Earth orbit (GEO) and highly elliptical orbit (HEO).

Function: IR space surveillance.

Operator: AFSPC.

First Launch: (planned) GEO: late 2008.

IOC: TBD.

Constellation: High: four GEO sats, two HEO sensors.

Design Life: not available.

Launch Vehicle: Evolved Expendable Launch Vehicle (EELV) Heavy.

Unit Location: Buckley AFB, Colo.

Orbit Altitude: High at approx 22,300 miles.

Contractor: Lockheed Martin; Northrop Grumman.

Power Plant: solar array, 2,435 watts.

Dimensions: 6 x 7 x 17 ft.

Weight: 5,442 lb.

SBIRS (Lockheed Martin illustration)

COMMENTARY

The follow-on to the DSP is the Space Based Infrared System (SBIRS). The system includes GEO satellites, HEO payloads, and ground assets.

SBIRS is being fielded incrementally. Increment 1 consolidated all DSP ground processing in one CONUS master control station at Buckley AFB, Colo. IOC was declared Dec. 18, 2001. Increment 2 will field the space and ground assets. SBIRS is in the EMD phase led by a Lockheed Martin team. HEO-1 initial early on-orbit checkout of the first SBIRS payload was announced in November 2006. The payload operating in HEO is the first component of the Increment 2 constellation.

Space Tracking and Surveillance System

Brief: Advanced surveillance system with IR and visible sensors for detecting and tracking ballistic missiles. STSS (formerly SBIRS Low) will have satellites in low Earth orbit (LEO) that work in concert with SBIRS High and other missile defense systems.

Function: Missile defense.
Operator: Missile Defense Agency.
First Launch: FY07 (planned).
IOC: FY07.
Constellation: two demonstration sats; operational sats TBD.
Design Life: not available.
Launch Vehicle: Delta II.
Unit Location: Colorado Springs, Colo.
Orbit Altitude: 830+ miles.
Contractor: Northrop Grumman (completion and launch of two R&D satellites); Raytheon (payload).
Power Plant: TBD.
Dimensions: not available.
Weight: not available.

COMMENTARY

The Missile Defense Agency manages the Space Tracking and Surveillance System (STSS), which, in December 2002, replaced the program known as SBIRS Low. In April 2002, MDA ended the SBIRS Low program definition and risk reduction competition and named TRW (now Northrop Grumman) as prime contractor for a redefined space-based sensor R&D element of MDA's integrated Ballistic Missile Defense System (BMDS). The initial STSS contract calls for completion and launch of two LEO satellites in FY06-07 under Block 2006. New technologies will be inserted into subsequent R&D satellites under Block 2008 and beyond, leading to an operational system.

Wideband Global SATCOM (WGS)

Brief: Satellites that provide wideband communications for deployed tactical forces (air, land, and sea).

Function: Worldwide satellite communications.
Operator: AFSPC.
First Launch: 2007 (planned); two further launches planned within a year.
IOC: August 2008 (planned).
Constellation: five satellites.
Design Life: 14 years.
Launch Vehicle: EELV, Delta IV.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: GEO.
Contractor: Boeing.
Power Plant: solar arrays generating 9,934 watts.
Dimensions: based on Boeing 702 Bus.
Weight: 13,200 lb at launch.
Performance: approx 12 times the capability of a DSCS satellite.

COMMENTARY

Wideband Global SATCOM, previously known as the Wideband Gap-filler System, will augment DCSCS III and the Navy's Global Broadcast System (GBS) Phase II. WGS is a fully duplexed communications platform offering warfighters a significant increase in capacity, connectivity, and interoperability. It will provide two-way services for national leaders, Diplomatic Telecommunications Service, Defense Information System Network, and all military ground fixed and mobile users. In addition, it will provide direct broadcast of digital multimedia, high-bandwidth imagery, and video information directly from global and theater sites to deployed warfighters. Primarily a commercial product, the satellites will have X-band (DSCS III-like), Ka-band broadcast (GBS Phase 2-like), two-way Ka-band services, and cross-channelization between its X- and Ka-band services.

Aerial Targets

BQM-34 Firebee

Brief: A jet-powered, variable speed, recoverable target drone.

Function: Aerial target.
Operator: ACC.
First Flight: 1951; 1958 (BQM-34A).
Delivered: from 1951.

BQM-34 Firebee (Northrop Grumman photo)

IOC: circa 1951.
Production: 1,800+.
Inventory: 33.
Unit Location: Tyndall AFB, Fla.
Contractor: Teledyne Ryan.
Power Plant: one General Electric J85-GE-100 turbojet, 2,850 lb thrust.
Guidance and Control: remote-control methods incl choice of radar, radio, active seeker, and automatic navigator developed by Teledyne Ryan; the current model of the BQM-34A is configured to accommodate the Gulf Range Drone Control Upgrade System (GRDCUS), which allows multiple targets to be flown simultaneously.
Dimensions: length 22.9 ft, body diameter 3.1 ft, span 12.9 ft.
Weight: launch weight 2,500 lb.
Performance: max level speed at 6,500 ft 690 mph, operating height range 10 ft to more than 60,000 ft, max range 796 miles, endurance (typical configuration) 30 min.

COMMENTARY

Current BQM-34As, with an upgraded General Electric J85-100 engine that provides a thrust-to-weight ratio of 1:1, offer higher climb rates and six-G maneuvering capability. A new microprocessor flight-control system provides a prelaunch and in-flight self-test capability. BQM-34s are used for research, development, test, and evaluation and the Weapon System Evaluation Program.

BQM-167 Skeeter

Brief: A jet-powered, variable speed, recoverable target drone.

Function: Aerial target.
Operator: ACC.
First Flight: Jan. 3, 2005.
Production: initial production began in 2004.
Unit Location: Tyndall AFB, Fla.
Contractor: Composite Engineering Inc.
Power Plant: Microturbo Tri 60-5+ turbojet.
Guidance and Control: remote piloting methods.
Dimensions: length 20 ft, body diameter 2 ft, span 11 ft.
Weight: not available.
Performance: max level speed Mach 0.9 mph, operating height range 20,000-50,000 ft, endurance 3 hr.

COMMENTARY

BQM-167A is to replace both the aging MQ-107 and BQM-34A as the Air Force's subscale aerial target. It features an increased load capability, higher speeds and G-loads, a digital architecture for avionics, and a composite airframe making it significantly lighter than the earlier platforms. Development on this target will take it to supersonic speeds, internalize and miniaturize many countermeasures systems, and expand the flight envelope beyond any target system in the inventory today.

MQM-107 Streaker

Brief: A jet-powered, variable speed, recoverable target drone.

Function: Aerial target.
Operator: ACC.
First Flight: not available.
Delivered: from 1984 (B).
IOC: 1987.
Production: 70 (B); 221 (D); 78 (E).
Unit Location: Tyndall AFB, Fla.
Contractor: Raytheon (D model); Marconi (formerly Tracor) (E model).
Power Plant: initially on D model, one Teledyne CAE 373-8 engine, 950 lb thrust; MQM-107Ds delivered since 1989 have 950 lb thrust TRI 60-5 turbojets. Microturbo TRI 60-5 engine, 1,061 lb thrust or TCAE 373-8B (E model).
Guidance and Control: analog or digital, for both ground control and preprogrammed flight (D model); high-G autopilot provisions; digital autopilot and remote control by the Gulf Range Drone Control Upgrade System (GRDCUS), a multifunction C2 multilateration system (E model).
Dimensions: length 18.1 ft, body diameter 1.3 ft, span 9.8 ft.
Weight: max launch weight (excl booster) 1,460 lb.
Performance: operating speed 207-630 mph, operating height 50-40,000 ft, endurance 2 hr 15 min.

COMMENTARY

MQM-107D. A third generation version of the MQM-107 Streaker, it is a recoverable, variable-speed target drone used for research, development, test, and evaluation and the Weapon System Evaluation Program.

MQM-107E. Improved performance follow-on to the MQM-107D. In operational service, it replaces the MQM-107D and expands the flight envelope.

MQM-107 Streakers are being replaced by the BQM-167 Skeeter.

QF-4

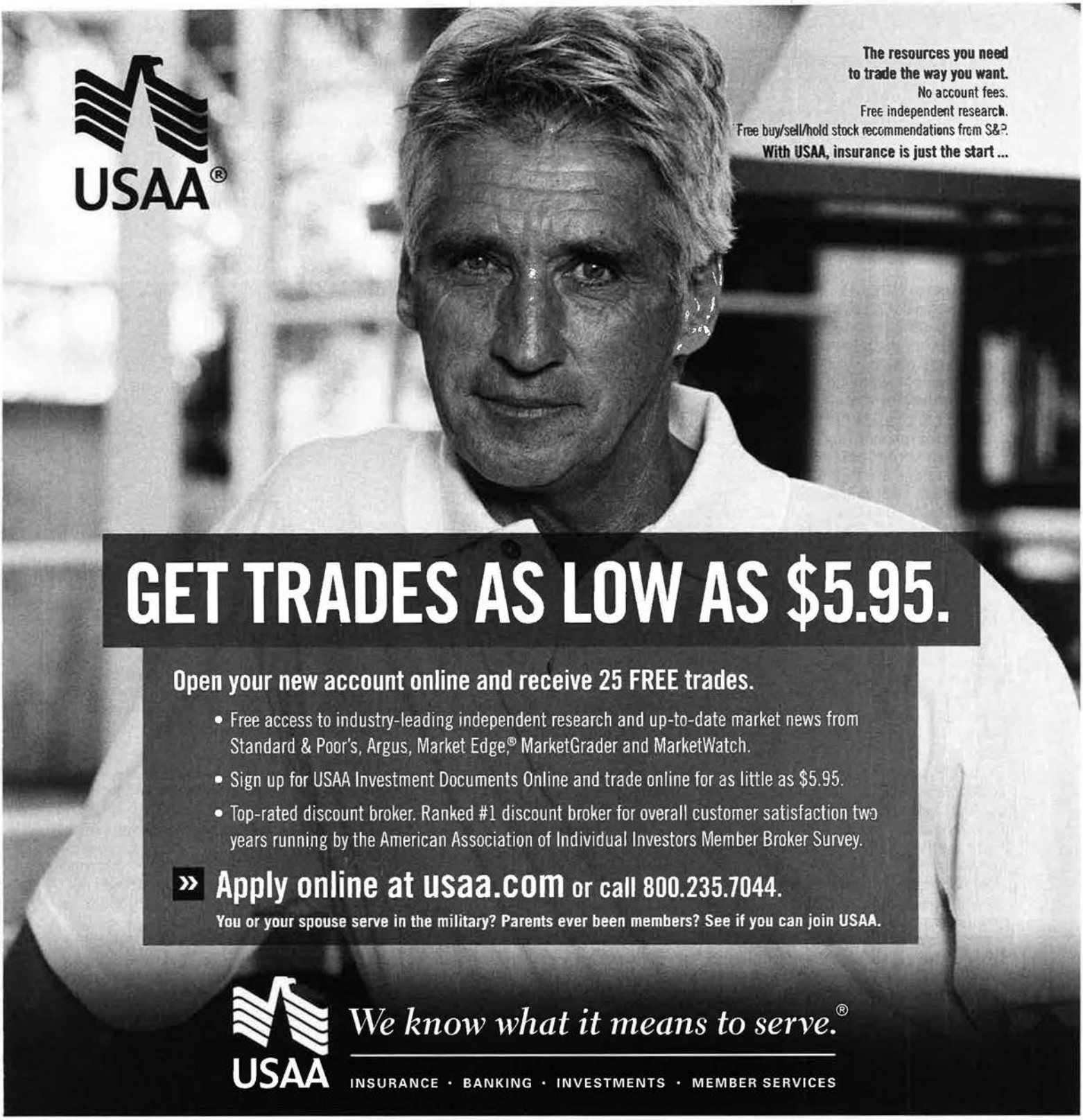
Brief: A converted, remotely piloted F-4 Phantom fighter used for full-scale training or testing.

Function: Aerial target.
Operator: ACC.
First Flight: August 1993.
IOC: not available.
Unit Location: Tyndall AFB, Fla. (detachment at Holloman AFB, N.M.)
Contractor: Marconi (formerly Tracor).
Power Plant: two General Electric J79-GE-17 turbojets, each with approx 17,000 lb thrust with afterburning.
Guidance and Control: remote-control methods incl the GRDCUS (Tyndall) and the Drone Formation and Control System (Holloman); will also accommodate the triservice Target Control System currently under development.
Dimensions: length 16 ft, height 6 ft, wingspan 38.4 ft.
Weight: mission operational weight 49,500 lb.
Performance: max speed Mach 2+, ceiling 55,000 ft, range (approx) 500 miles.

COMMENTARY

The QF-4 replaced the QF-106 Full-Scale Aerial Target (FSAT) in 1998 when the F-106 inventory was depleted. The QF-4 provides for a larger operational performance envelope (maneuvering) and greater payload capability compared with its predecessors.

More than 160 F-4 surplus aircraft have been converted to QF-4 FSATS since 1995. QF-4s are used for research, development, test, and evaluation and the Weapon System Evaluation Program. ▪



Free trade offer expires June 30, 2007. Offer not eligible for transaction fee mutual funds. Free trades limited to domestic, NYSE-, AMEX- or NASDAQ-listed securities, up to 1,000 shares placed on the Internet or self-service telephone system. After 25 free trades or 60 days, whichever comes first, account will revert to platinum or gold fee schedule, depending on asset and activity levels. Offer limited to one account per person. Valid for U.S. citizens or permanent residents. Void where prohibited. Offer may be modified or terminated without notice and is not valid with any other offers. Other restrictions may apply. Commissions may change without notice. For information and a commission schedule, visit usaa.com. • Brokerage account holders who have signed up to receive all investment account confirmations and account statements online and who trade stocks 25 or more times per quarter or who trade stocks 16 or more times per quarter and have $50,000 or more in eligible assets with USAA Investments qualify for $5.95 Internet or self-service telephone trades. Commissions are based on stock trades executed in a rolling 90-day period. Commission rate applies up to 1,000 shares. Eligible assets include those held in USAA Private Investment Management, USAA Strategic Fund Adviser and USAA College Savings Plan (529) accounts and USAA mutual funds; non-USAA-managed assets held in USAA brokerage or Asset Management Accounts (AMA) are not included in calculation of eligible assets. Other restrictions may apply. Commissions may change without notice. For information and a commission schedule, visit usaa.com and enter Keyword: BrokerageValue. • The American Association of Individual Investors (AAII) is an independent nonprofit association whose purpose is to help its members become effective managers of their own assets through programs of education, information and research. USAA was ranked #1 for overall satisfaction and #2 for trade price, execution speed and reliability. In the 2005 Survey, USAA ranked #1 in all four categories. The 2006 Survey, reported in the February 2007 issue of the *AAII Journal*, asked its members to identify and then rate their discount brokers for trade price, execution speed, reliability and overall satisfaction. Fifty-six firms were covered, and the 10 most popular brokers (those for whom 10 or more member responses were received) were ranked based on member ratings. Go to www.AAII.com for more information. • USAA Brokerage Services is a division of USAA Investment Management Company, a registered broker dealer. • The term "trade" refers to placing a trade order. • IRA account closing fees and other product fees still apply. • Property and casualty insurance products are available to military members and their families who meet certain membership eligibility criteria. To find out if you are eligible, contact USAA. Underwriting restrictions apply. • USAA means United Services Automobile Association and its affiliates. 1639:24604

AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

The Senior NCO

It's a classic first-assignment situation: A brand-new second lieutenant must learn to work alongside a senior noncommissioned officer—and vice versa.

It can be awkward, so at Florida State University, Col. Jeffrey Spraggins decided to prepare his cadets who are about to pin on their first set of gold bars. He invited retired CMSgt. John E. Schmidt Jr. to address the seniors in FSU's AFROTC Det. 145, in Tallahassee.

President of the **Col. H.M. "Bud" West Chapter (Fla.),** Schmidt served 30 years of active duty in the Air Force. He was the Senior NCO of the Year at the Air Force Academy in 1970 and later was the base sergeant major at Tyndall AFB, Fla. He also has had plenty of time at the blackboard, having been an aerospace science instructor at a Tallahassee high school for 15 years.

Schmidt's "war stories" included a description of his time at Headquarters Military Assistance Command Vietnam and how officers and NCOs worked together in a joint service organization during the 1968 Tet Offensive.

The students asked Schmidt how they should handle being a newcomer and how to cope with the major age difference between themselves and senior NCOs. Schmidt talked about the training, leadership development, and professional military education that enlisted leaders receive. He assured the cadets that they would find an educated enlisted force on the job, trained for mission accomplishment and teamwork.

"You don't become a chief just by serving time," he said.

USAF photo by Jennifer L. Duncan

AFA Board Chairman Bob Largent (right) presents the CMSAF James M. McCoy Academic Achievement Award to MSgt. Jeremy Johnson at February's USAF Senior NCO Academy graduation ceremony at Maxwell AFB, Ala. The award is named after McCoy, who is also a former AFA Chairman of the Board.

Virtual Dogfights

Frank Luke Chapter (Ariz.) members have provided computer simulation programs for AFJROTC units. It's led to aerial dogfights among the aspiring young pilots.

In February, cadets at Peoria (Ariz.) High School received an F-16 flight simulation program and a new flight stick (a joystick modeled after the control stick of an airplane). The 121 cadets are "already having dogfights, with upper classmen showing sophomores and freshmen how to use the program," reports Chapter President Harry H. Bailey.

For the AFJROTC unit at Agua Fria High School in Avondale, the chapter arranged the repair of an older computer and installed the flight simulator program on it. Local residents donated two computer monitors and new flight sticks for this project.

Capt. Rex Weber, the chapter aerospace education VP, will arrange the next step: to have an active duty F-16 pilot from the 56th Fighter Wing, Luke AFB, Ariz., visit the schools to give the cadets some tips on flying the Falcon.

The chapter counts 17 AFJROTC units in their area.

Preserving the Pacific Legacy

When the Atterbury Circle flagpole area at Hickam AFB, Hawaii, needed renovation, the **Hawaii Chapter** saw an opportunity.

According to Col. Timothy L. Saffold, chapter president, several airmen sug-

AFA Conventions

May 4-5	**South Carolina State Convention,** Columbia, S.C.
May 11-12	**Tennessee State Convention,** Chattanooga, Tenn.
May 16-17	**New Jersey State Convention,** Atlantic City, N.J.
June 8-9	**Virginia State Convention,** Charlottesville, Va.
June 8-10	**New York State Convention,** Albany, N.Y.
June 23	**Pennsylvania State Convention,** State College, Pa.
June 29-30	**California State Convention,** Sacramento, Calif.
July 14	**Florida State Convention,** Daytona Beach, Fla.
July 27-28	**Colorado State Convention,** Denver
July 27-29	**Texas-Oklahoma State Convention,** Wichita Falls, Tex.
Aug. 11	**Georgia State Convention,** Warner Robins, Ga.
Aug. 25	**North Carolina State Convention,** Raleigh, N.C.
Sept. 22-23	**AFA National Convention,** Washington, D.C.
Sept. 24-26	**Air and Space Conference,** Washington, D.C.

gested turning the flagpole area—which already had a few plaques in place—into more of a memorial, commemorating those who have served in the Pacific. The airmen proposed repaving the flagpole area with bricks, paid for by donors. A donor would specify the name of a military person to be inscribed on the brick, along with a unit, duty, and dates of service in the Pacific Theater.

The project needed the support of a nonprofit organization, and Saffold quickly volunteered the Hawaii Chapter to manage sales, arrange for the inscriptions, and carry out future maintenance. Chapter member 1st Lt. George M. Allen now heads the project committee. He is backed by a deputy, MSgt. Darrick E. Barnes, and SSgt. Fern K. Kim, who manages the order collection and administration.

The chapter originally set a February deadline for ordering one of the 5,000 inscribed bricks, but Saffold said orders continue to come in at a rate of about 160 per month.

He said phase two of the project involves brass plaques, also paid for by donors, to commemorate units that served in the Pacific. The plaques will be mounted on four walls within the park. There is space for only 300 of them, and Saffold has already had an inquiry from a bomb group that wants to buy a plaque and dedicate it during a unit reunion in Hawaii.

The Atterbury Circle renovation project, Saffold noted, is a way for airmen to preserve their legacy of service in the Pacific Theater.

Employer Support

An official with the California Committee for the Employer Support of the Guard and Reserve spoke to the February meeting of the **San Gabriel Valley Chapter** in Altadena, Calif.

Tom Jones, the committee's vice chairman for the Los Angeles County office, described how the organization assists Guardsmen and Reservists in resuming their civilian lives after returning from overseas duty. Jones spoke about leave of absence policies, job reinstatement, seniority, health insurance, training, and other regulations. He covered the other side of the coin, too—the employee's obligations to the boss.

Martin W. Ledwitz, the chapter's veterans affairs and government relations VP, said Jones mentioned that 35 percent of veterans returning from Iraq and Afghanistan are in need of care because of post-traumatic stress.

DOD established ESGR in 1972 to promote understanding between Guard and Reserve personnel and their civilian employers.

Joint Engagement

A sibling connection brought the quarterly meeting's guest speaker to the **Strom Thurmond Chapter** in Clemson, S.C.

Maj. Gen. Richard E. Webber, Air Force Space Command's director of installations and mission support, traveled from Peterson AFB, Colo., to Clemson University, where his younger brother, Lt. Col. Ron Webber, is an Army ROTC instructor.

The Air Force officer first addressed the AFA chapter's luncheon, speaking about USAF's recapitalization efforts, the Global War on Terror, and ongoing technology upgrades.

Col. Lance S. Young, president of the chapter and head of Air Force ROTC at Clemson, said the luncheon audience included not only cadets but also chapter

AFA In Action

The Air Force Association works closely with lawmakers on Capitol Hill, bringing to their attention issues of importance to the Air Force and its people.

AFA Conducts Hill Briefing

During February and March, AFA and the Air Force's Office of Legislative Liaison co-hosted a variety of briefings for Congressional staffers. The series began with Space 201, which built on a previous 101-level briefing. Space 201 focused on program-specific aspects such as the Space Based Infrared System satellite network and the Transformational Satellite Communications System. Next, AFA highlighted long-range strike by discussing the Air Force's current bomber fleet as well as the new long-range strike requirement, which calls for a system with initial operational capability by 2018. AFA also sponsored a briefing on air battle management. It covered how crews in E-3 AWACS and E-8 Joint STARS aircraft work to process information and help facilitate actions in a battle arena.

Air Force Chief of Staff Meets With Air Force Caucus

The month of March saw AFA and the Air Force Caucus co-host an event where Air Force Chief of Staff **Gen. T. Michael Moseley** addressed members of Congress and their staffers about the current challenges facing USAF. The address was well received and resulted in an editorial submitted by Air Force Caucus Co-Chair Rep. Cliff Stearns (R-Fla.) to the *Gainesville Sun* and a floor statement delivered by Rep. Rob Bishop (R-Utah) in support of Air Force recapitalization efforts.

AFA Board Chairman Meets Military Legislative Assistants

AFA Chairman of the Board **Bob Largent** spent a day in the Senate, bringing military legislative assistants up to date on current Air Force and veterans' issues. These appointments were with **Stephen Hedger** of **Sen. Claire C. McCaskill's** office (D-Mo.), **Doug Babcock** of **Sen. Sherrod Brown's** office (D-Ohio), **Tom Sullivan** of **Sen. Amy Klobuchar's** office (D-Minn.), **Jamie Wise** of **Sen. Jon Tester's** office (D-Mont.), and **Sarah Greenberger** with the office of **Sen. Benjamin L. Cardin** (D-Md.).

members and Community Partners.

That evening, Webber delivered the keynote address at the university's Joint Army-Air Force ROTC Military Ball. His remarks covered a wide range, including challenges the cadets will face after earning their commissions. More than 200 cadets, faculty members, and guests attended the formal affair, held at Clemson's conference center.

More AFA News

■ The **Lance P. Sijan Chapter** in Colorado Springs, Colo., hosted "Heritage to Horizons," a black-tie ball in February that celebrated the Air Force's 60th anniversary. The commander of Air Force Space Command, Gen. Kevin P. Chilton, headed the list of VIPs that included Peter B. Teets, the former undersecretary of the Air Force; L. Boyd Anderson, AFA's vice chairman for aerospace education; and Brian A. Binn, chapter president. Continuing a ball tradition, Chilton—the most senior USAF member—cut a ceremonial birthday cake with A1C Archie Garcia—the most junior member. Garcia is assigned to the 21st Security Forces Squadron.

■ Arnold Air Society cadets at the Rochester Institute of Technology invited Alfred E. Smith, president of New York State and the **Genesee Valley Chapter (N.Y.)** to their induction ceremony in February. Cadets Brandon Belanger, Orion Kellogg, Adam Machamer, John Parkes, and Alex Seidel formally joined the society, having completed a 10-week course for candidates. Smith said his attendance at this event was part of a drive to more closely involve the cadets—who belong to the chapter—in its activities.

■ When Lt. Gen. Carrol H. Chandler, the USAF deputy chief of staff for operations, plans, and requirements, had to cancel his speaking engagement at the **Donald W. Steele Sr. Memorial (Va.) Chapter's** March meeting, his deputy, Maj. Gen. Richard Y. Newton III, stepped in. Newton spoke about the Air Force's funding priorities and how they shape the force's warfighting capabilities. He also described USAF's vision for a cyber command. The 70 luncheon attendees included chapter members, industry partners, and foreign air attaches, reported George DeFilippi, chapter aerospace education VP.

■ The **Lindbergh/Sikorsky Chapter** co-hosted the first AFJROTC Day at the New England Air Museum in Windsor Locks, Conn. More than 100 cadets from four high schools in Danbury, Norwalk, Naugatuck, and Torrington participated. The students toured the museum, listened to a presentation by Lt. Col. Bryan Holmes on aircraft engines, climbed into cockpit displays, and had a chance to speak to pilots about flying and the artifacts in the museum. Chapter VP Alton G. Hudson said AFJROTC Day was such a success that the chapter will team with the other AFA Connecticut chapter—the **Flying Yankees/Gen. George C. Kenney Chapter**—next October to host all of the state's JROTC units for a day at the museum. ■

Have AFA News?

Contributions to "AFA National Report" should be sent to *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Phone: (703) 247-5828. Fax: (703) 247-5855. E-mail: natrep@afa.org. Digital images submitted for consideration should have a minimum pixel count of 900 by 1,500 pixels.

At the Delaware Galaxy Chapter's awards reception in March, Carol Ramirez and Thomas Greenstreet received honors as outstanding cadets at Dover High School. Their instructor, retired Maj. John Murphy—the chapter treasurer—is at center.

THE EAGLE IS EVERYWHERE.

At Pratt & Whitney, we find a better way. Advancing freedom by powering the world's best fighter jets. Delivering a true choice by creating competitor engine parts. Developing game-changing technology to create the next generation of single-aisle aircraft. Backed by a worldwide network of service and support. Our goal? To create a higher standard for you. Pratt & Whitney. **The Eagle is everywhere.**

Pratt & Whitney
A United Technologies Company

www.pw.utc.com

Unit Reunions

reunions@afa.org

20th/81st TFW, England. Sept. 13-16 in Cleveland. **Contact:** Dave Hayes (330-225-7153) (buzzardsinn@webtv.net).

20th FW Assn. Sept. 19-22 in Denver. **Contacts:** John Walters, 9649 Timber Hawk Cir. #13, Highlands Ranch, CO 80126 (johnwalters@iqmail.net) or Dennis Schaan (dlschaan@compuserve.com).

27th Air Transport Gp, including **310th, 311th, 312th, 325th Ferrying Sqs; 86th, 87th, 320th, 321st Transport Sqs;** and **519th** and **520th Service Sqs.** Sept. 27-30 in Washington, DC. **Contact:** Fred Garcia, 6533 W. Altadena Ave., Glendale, AZ 85304 (623-878-7007).

64th TCG. October in Williamsburg, VA. **Contact:** Elizabeth Haynes, 7418 Spring Village Dr., Springfield, VA 22150-4931 (703-569-4282) (edhaynes@erols.com).

75th Air Depot Wg, Europe, Japan, and Korea (1952-55). Sept. 6-9 in Portland, OR. **Contact:** Walt Walko, 13616 Paradise Villas Grove, Colorado Springs, CO 80921 (719-488-1106) (wawlaw2@juno.com).

81st FW. Oct. 18-21 at the Homewood Suites in Grapevine, TX. **Contact:** Harry Eckes, 3000 Yale Dr., Flower Mound, TX 75022 (972-539-7529) (harryeckes@verizon.net).

366th TFW. Oct. 11-14 in Fort Worth, TX. **Contact:** John France (817-860-2780) (johnandnanfrance@sbcglobal.net).

388th BG Assn. Aug. 29-Sept. 1 in New Orleans. **Contact:** Bit Snead (253-719-8314) (bfsnead@comcast.net).

461st BW. Sept. 27-30 in Branson, MO. **Contact:** Bill Davies, 23 Queenspark Rd., Little Rock, AR 72227-4815 (501-225-2400) (wjdavies3@comcast.net).

496th FIS. Oct. 14-19 in Laughlin, NV. **Contact:** Jan Barmore (253-564-9040) (janmarbar@earthlink.net).

600th/601st Photo Sqs and the **Aerospace Audio Visual Service.** Sept. 20-22 in Orlando, FL. **Contact:** Bill Britton (bbritton135@cfl.rr.com).

1502nd Flight Line Maintenance Sq. Sept. 24-25 at the Radisson Hotel in Branson, MO. **Contact:** Tony Auretto (508-394-8515) (awettoe@comcast.net).

Air Rescue Assn/Pedro Rescue Helicopter Assn. Sept. 19-22 at the Galt House Hotel & Suites in Louisville, KY. **Contacts:** Marilyn Nicholas, 8715 E. Boston St., Wichita, KS 67207 (316-686-0430) (mjnyk@sbcglobal.net) or John Flournoy (jflournoy2@comcast.net) or Ed Cartwright (edlcartwright@yahoo.com).

B-27 Canberra Assn. Sept. 6-10 in Portland, OR. **Contact:** Dave Baird, P.O. Box 256, Spray, OR 97874 (503-781-9426) (dclarnob@comcast.net).

Berlin Airlift Veterans Assn (1948-49). Sept. 28-Oct. 2 in Norfolk, VA. **Contact:** J.W. Studak, 3204 Benbrook Dr., Austin, TX 78757-6804 (512-452-0903).

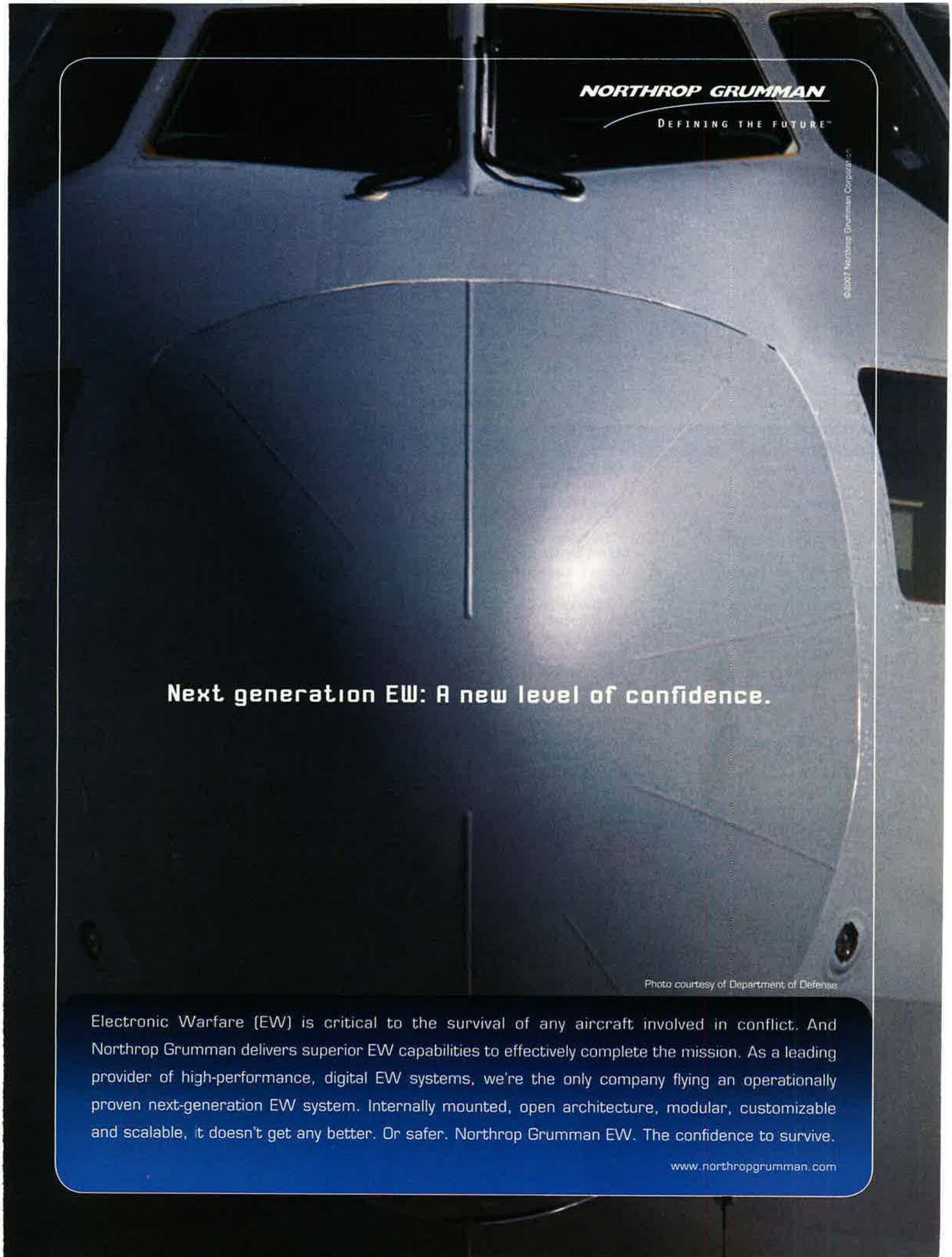
Det. 10, 7232 MMG (USAFE). Sept. 6-8 at the Embassy Suites Hotel in Colorado Springs, CO. **Contact:** R. Gibson, 4054 Rigel Ave., Lompoc, CA (805-733-2557) (richard.gibson26@verizon.net).

Pilot Training Class 58-G, Marana AB, AZ. Oct. 21-24 at the Tubac Resort in Tubac, AZ. **Contact:** Don Cassiday (639-859-1922) (colcass@sbcglobal.net).

Pleiku Air Base Assn. Sept. 19-23 in Branson, MO. **Contact:** Harry Beam (724-745-9129) (pleikulpa@sbcglobal.net).

SAC Airborne Command Control Assn. Oct. 15-19, 2008 at the Doubletree Hotel in Dayton, OH. **Contact:** Wilton Curtis (804-740-2290) (wcurtis135@aol.com).

■


NORTHROP GRUMMAN
DEFINING THE FUTURE™
©2007 Northrop Grumman Corporation
Next generation EW: A new level of confidence.
Photo courtesy of Department of Defense
Electronic Warfare (EW) is critical to the survival of any aircraft involved in conflict. And Northrop Grumman delivers superior EW capabilities to effectively complete the mission. As a leading provider of high-performance, digital EW systems, we're the only company flying an operationally proven next-generation EW system. Internally mounted, open architecture, modular, customizable and scalable, it doesn't get any better. Or safer. Northrop Grumman EW. The confidence to survive.
www.northropgrumman.com

This Is AFA

NATIONAL OFFICERS

BOARD CHAIRMAN

Robert E. "Bob" Largent
Harrison, Ark.

VICE CHAIRMAN, FIELD OPERATIONS

Joseph E. Sutter
Knoxville, Tenn.

VICE CHAIRMAN, AEROSPACE EDUCATION

L. Boyd Anderson
Ogden, Utah

SECRETARY

Judy K. Church
Lenexa, Kan.

TREASURER

Steven R. Lundgren
Fairbanks, Alaska

NATIONAL DIRECTORS

Craig E. Allen
Hooper, Utah

Robert C. Bienvenue
East Amherst, N.Y.

Michael J. Bolton
Savannah, Ga.

David T. Buckwalter
Portsmouth, R.I.

David R. Cummock
Port Orange, Fla.

Dennis R. Davoren
Woodland, Calif.

Angela Dupont
Billerica, Mass.

James Hannam
Burke, Va.

O. Thomas Hansen
Steilacoom, Wash.

Peter J. Hennessey
Columbus, Ohio

Buster Horlen
San Antonio

John P. Jumper
Burke, Va.

Jay W. Kelley
Colorado Springs, Colo.

James R. Lauducci
Alexandria, Va.

J. Ray Lesniok
Concord Township, Ohio

Jodi Lunt
Pleasant View, Utah

Lester L. Lyles
Vienna, Va.

Bruce E. Marshall
Shalimar, Fla.

Elizabeth McLaughlin
Bonaire, Ga.

George K. Muellner
Long Beach, Calif.

Gerald R. Murray
Marietta, Ga.

Richard B. Myers
Arlington, Va.

Charles A. Nelson
Sioux Falls, S.D.

Lloyd W. Newton
Lithia, Fla.

David B. Poythress
Atlanta

Joseph Price
Newport News, Va.

Michelle Ryan
Alexandria, Va.

Keith N. Sawyer
O'Fallon, Ill.

Sanford Schlitt
Sarasota, Fla.

Paul W. Schowalter
Hickory, N.C.

Cliff Stearns
Washington, D.C.

Charles G. Thomas
Albuquerque, N.M.

Mary Anne Thompson
Oakton, Va.

Raymond Turczynski Jr.
Fort Walton Beach, Fla.

Jerry E. White
Colorado Springs, Colo.

Jackson A. Winsett
Lenexa, Kan.

Charles P. Zimkas Jr.
Colorado Springs, Colo.

DIRECTORS EMERITUS

John R. Alison
Washington, D.C.

R. Donald Anderson
Poquoson, Va.

Joseph E. Assaf
Sandwich, Mass.

David L. Blankenship
Tulsa, Okla.

John G. Brosky
Carnegie, Pa.

Bonnie B. Callahan
Winter Garden, Fla.

Dan Callahan
Centerville, Ga.

George H. Chabbott
Dover, Del.

O.R. "Ollie" Crawford
San Antonio

Jon R. Donnelly
Richmond, Va.

Russell E. Dougherty*
Potomac Falls, Va.

George M. Douglas
Colorado Springs, Colo.

Michael J. Dugan
Dillon, Colo.

Charles G. Durazo
Yuma, Ariz.

Joseph R. Falcone
Charlottesville, Va.

Samuel M. Gardner
Garden City, Kan.

Don C. Garrison
Pendleton, S.C.

Richard B. Goetze Jr.
Arlington, Va.

John O. Gray*
Arlington, Va.

Emlyn I. Griffith
Rome, N.Y.

Martin H. Harris
Montverde, Fla.

Gerald V. Hasler
Encinitas, Calif.

Monroe W. Hatch Jr.*
Clifton, Va.

H.B. Henderson
Newport News, Va.

John P. Henebry
Winnetka, Ill.

Harold F. Henneke
Nashville, Ind.

Victoria W. Hunnicutt
Gray, Ga.

Leonard W. Isabelle
Lakeport, Calif.

David C. Jones
Potomac Falls, Va.

James M. Keck
San Antonio

Victor R. Kregel
Colorado Springs, Colo.

Jan M. Laitos
Rapid City, S.D.

Doyle E. Larson
Burnsville, Minn.

Hans Mark
Austin, Tex.

Robert T. Marsh
Falls Church, Va.

William V. McBride
San Antonio

James M. McCoy
Bellevue, Neb.

Thomas J. McKee
Arlington, Va.

Bryan L. Murphy Jr.
Fort Worth, Tex.

Ellis T. Nottingham
Arlington, Va.

John J. Politi
Fair Oaks Ranch, Tex.

Jack C. Price
Pleasant View, Utah

William C. Rapp
Williamsville, N.Y.

Mary Ann Seibel-Porto
Arlington,Va.

John A. Shaud*
Springfield, Va.

E. Robert Skloss
Park City, Utah

James E. "Red" Smith
Princeton, N.C.

R.E. "Gene" Smith
West Point, Miss.

Loren J. Spencer
Arlington, Va.

William W. Spruance
Las Vegas

Jack H. Steed
Warner Robins, Ga.

Harold C. Stuart
Jensen Beach, Fla.

Walter G. Vartan
Chicago

A.A. West
Williamsburg, Va.

Mark J. Worrick
Denver

Joseph A. Zaranka
Bloomfield, Conn.

EX OFFICIO

Stephen P. "Pat" Condon
Ogden, Utah

Donald L. Peterson
President
Air Force Association
Arlington, Va.

Donald J. Harlin
National Chaplain
LaGrange, Ga.

Dan Hixon
National Commander
Arnold Air Society
Clemson, S.C.

*Executive Director (President) Emeritus

AIR&SPACE CONFERENCE AND TECHNOLOGY EXPOSITION 2007

AND GLOBAL AIR CHIEF'S CONFERENCE

The Premier Air & Space Conference and Technology Exposition is scheduled to land in Washington, D.C., September 24-26, 2007, at the Marriott Wardman Park Hotel.

The 2007 ***Air & Space Conference and Technology Exposition*** will be a historic gathering of leaders from the US government, the Department of Defense, and the aerospace industry. In conjunction with the conference and exposition, the US Air Force will host a Global Air Chiefs Conference with 128 invited Air Chiefs attending from around the world.

The AFA ***Air & Space Conference and Technology Exposition*** will feature:

- ★ International Airpower Symposium and Professional Development Forums
- ★ Salute to the Air Force's 12 Outstanding Airmen
- ★ Black-tie dinner commemorating the 60th anniversary of the Air Force
- ★ Presentation of AFA awards, including our highest awards to civilian, industry, and military leaders
- ★ Aerospace Technology Exposition, with more than 52,000 square feet of exhibits highlighting the very latest in aerospace technology from companies all over the world. Exhibit space is still available.

For more information, call Katherine Ryan at (703) 247-5838 or e-mail kryan@afa.org.

In 2006, more than 1,800 registered attendees heard experts on air- and space power present 34 different conference addresses, workshops, and forums, including a Four-Star Forum and Command Chief Master Sergeants Forum. The Technology Exposition boasted 125 different exhibits featuring the cutting-edge technology of the future. The overall event drew an unprecedented 9,000 people. Come join us for yet another first-class professional development experience.

The conference headquarters hotel is the Marriott Wardman Park Hotel in Washington, D.C., (202) 328-2000.

For more information on both AFA and the ***Air & Space Conference and Technology Exposition***, visit the AFA Web site at www.afa.org.

THE AIR FORCE ASSOCIATION
PROMOTING AIR FORCE AIRPOWER
www.afa.org

Professional Development ★★★ FOR THE ★★★
TOTAL FORCE

Airpower Classics

Artwork by Zaur Eylanbekov

B-36

The gargantuan B-36, in service during the period 1948-59, was USAF's first true intercontinental bomber. It made heavy use of magnesium to reduce weight and was widely known as the "Magnesium Overcast." Another nickname—"Big Stick"—denoted its role as the strong sword of Strategic Air Command in the early days of the Cold War.

The B-36 dated to the World War II year of 1941, when it seemed Britain might fall and US Army Air Forces might have to carry out bombing operations against Germany from US bases. USAAF called for a 5,000-mile unrefueled range and a 10,000-pound bomb load. Consolidated won the competition and got a production contract in 1943. The result was the largest combat aircraft in history; one pilot likened it to "sitting on your front porch and flying your house around." It had six pusher engines, huge wings, and crew compartments fore and aft connected by an 80-foot tunnel. Because of its nuclear prowess, the B-36 was perceived as a threat to carrier aviation by Navy officials, a fact which led to an unsuccessful effort to kill it and a subsequent "Revolt of the Admirals" in 1949. The basic design was enhanced when the Air Force added four turbojet engines to increase the bomber's speed and carrying capacity. The B-36 deployed operationally only twice, during the Suez Crisis of 1956 and the Hungarian revolt against Soviet occupation that same year. While it never dropped a bomb in anger, its very existence had a deterrent effect on US enemies. Some think it may have prevented direct Soviet entry into the Korean War on the side of North Korea and China.

The last B-36 stood down in 1958 and was retired soon after, leaving the Air Force with an all-jet bomber force. Yet no one who saw it in flight or heard the roar of its 10 engines ever forgot it.

—Walter J. Boyne

This aircraft: B-36H—*#51-5718*—as it looked in spring 1953 when assigned to USAF Strategic Air Command's 42nd Bomb Squadron, 11th Bomb Group, at Carswell AFB, Tex.

In Brief

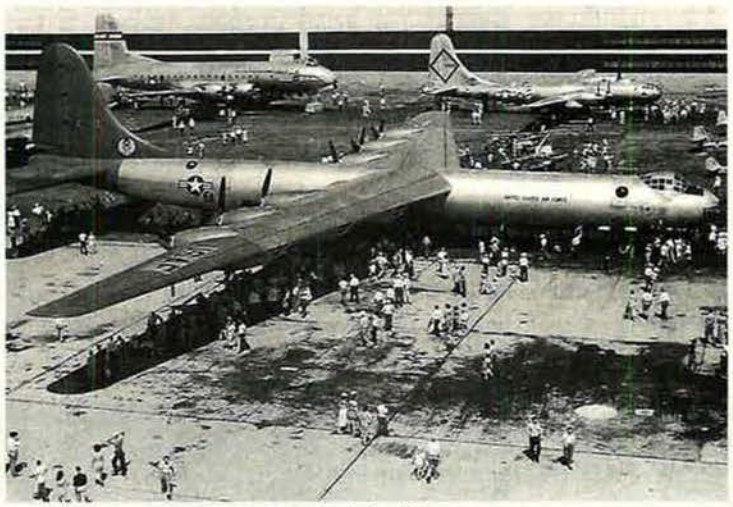
Designed, built by Consolidated-Vultee ★ first flight Aug. 8, 1946 ★ crew of 15 ★ number built 385 ★ **Specific to B-36D:** six P&W R-4360-41 radials + four GE J47-GE-19 turbojets ★ armament 16 20 mm cannon in 8 turrets ★ bomb load 72,000 lb nuclear or conventional bombs ★ max speed 439 mph ★ cruise speed 225 mph ★ max range 7,500 mi ★ weight (loaded) 357,500 lb ★ span 230 ft ★ length 162 ft 1 in ★ height 46 ft 8 in.

Famous Fliers

Gen. Lew Allen Jr., USAF Chief of Staff 1978-82; Maj. Gen. Christopher S. Adams Jr., SAC chief of staff 1982-83; Gen. Walter C. Sweeney Jr., TAC commander 1961-65; Brig. Gen. Richard E. Ellsworth, namesake of Ellsworth AFB, S.D.

Interesting Facts

No official name; "Peacemaker," often used, was unofficial ★ first US thermonuclear weapon delivery system ★ took part in six live nuclear weapon tests ★ featured in 1955 film "Strategic Air Command," starring Jimmy Stewart ★ used to test feasibility of atomic-powered aircraft ★ initial tires 9 feet tall, with enough rubber for 60 car tires ★ 32 lost in accidents ★ one-third built as or converted to RB-36 reconnaissance models ★ suffered two "Broken Arrow" incidents, one in Canada and one in New Mexico.



A B-36 at the 1949 National Air Fair in Chicago.

AVIATION NATION

THE NELLIS AFB–LAS VEGAS AIR SHOW
7-11 NOVEMBER 2007

CAPSTONE EVENT OF THE
USAF 60TH ANNIVERSARY

60TH ANNIVERSARY
UNITED STATES AIR FORCE
1947-2007

HERITAGE TO HORIZONS...
COMMEMORATING 60 YEARS
OF AIR & SPACE POWER

BE A PART OF THE PREMIER AIR SHOW
OF THE U.S. AIR FORCE

WWW.AVIATIONNATION.ORG
702.506.2065

TM

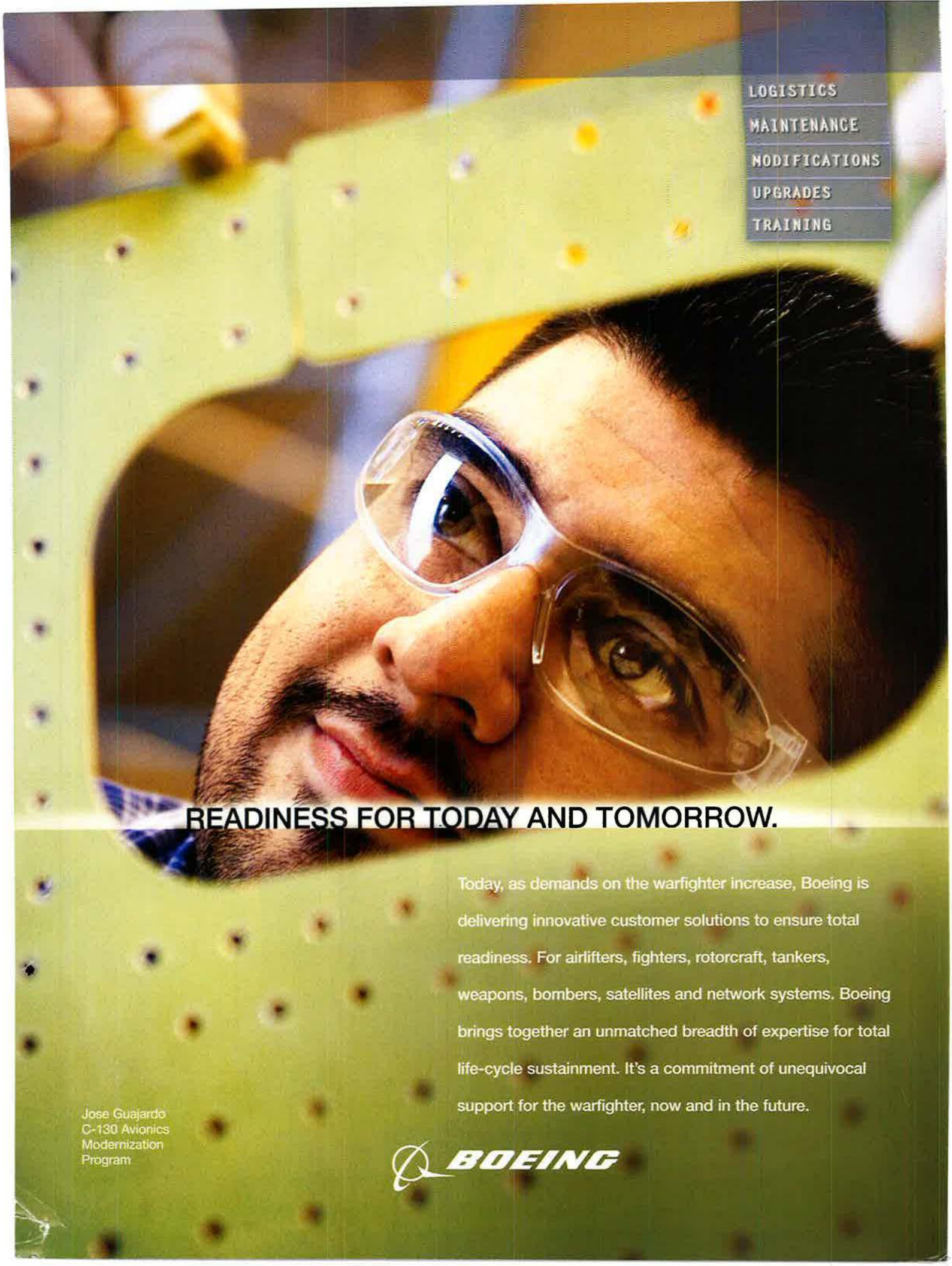
ONLY Vegas

These Organizations Salute Aviation Nation and the Air Force 60th Anniversary

Aviation Week • Bigelow Aerospace • Boeing • Bombardier • CSC • EG&G • General Atomics • GE Rolls-Royce Fighter Engine Team • JT3 • L3 Communications Lockheed Martin Aeronautics • Northrop Grumman • Pratt & Whitney • Raytheon • SAIC • Tetra Tech

Beasley Broadcasting • Boyd Gaming • Chrysler-Jeep-Dodge • City of Mesquite, Nevada • City of Las Vegas, Nevada • City of North Las Vegas, Nevada Clark County, Nevada • FedEx • Flight Journal Magazine • Guggenheim Capital • Honey Baked Ham Company • Las Vegas Motor Speedway • Las Vegas Review-Journal Las Vegas Events • LAS Worldwide • Memphis Championship Barbeque • Oracle • Outback Steakhouse • Popular Mechanics Magazine • theV.tv

No Government Endorsement of Sponsors is Intended



READINESS FOR TODAY AND TOMORROW.

Today, as demands on the warfighter increase, Boeing is delivering innovative customer solutions to ensure total readiness. For airlifters, fighters, rotorcraft, tankers, weapons, bombers, satellites and network systems. Boeing brings together an unmatched breadth of expertise for total life-cycle sustainment. It's a commitment of unequivocal support for the warfighter, now and in the future.

Jose Guajardo
C-130 Avionics
Modernization
Program

BOEING